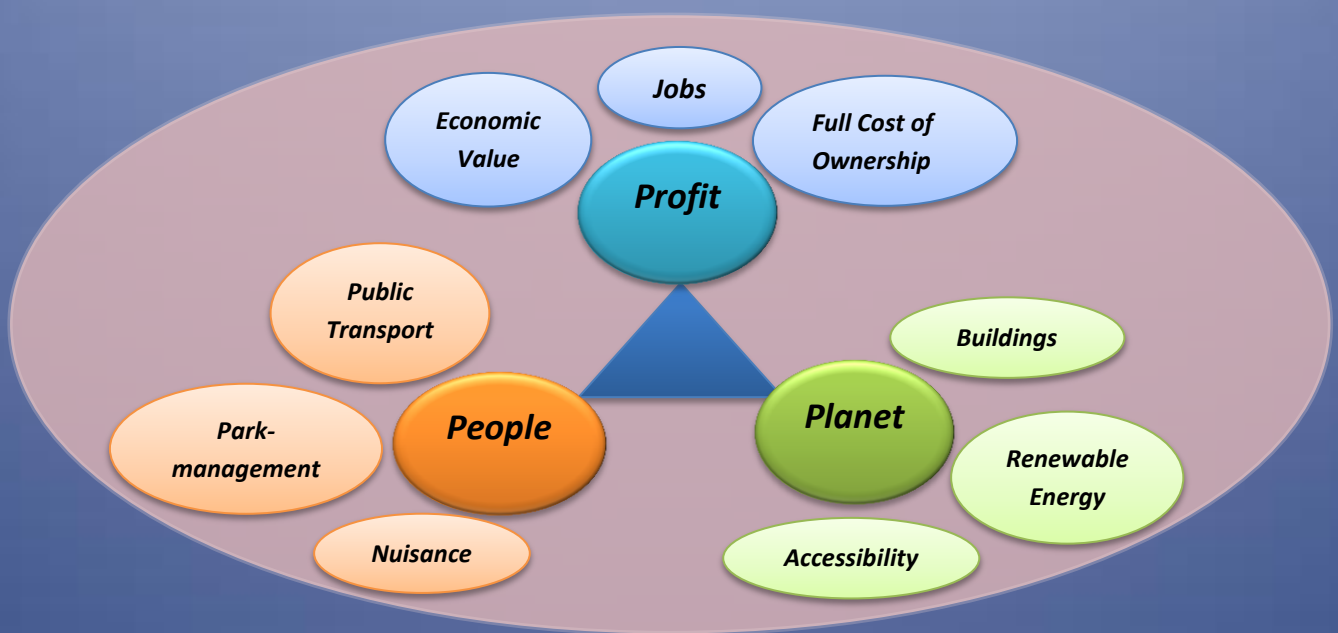


Sustainable Business Area Model

Designing a model that tests the degree to which business cases for restructuring business sites are sustainable



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Master Thesis

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The past few years the concept of sustainability has gained in popularity and it has become known to the overall public that there is more to regional development than economic indices alone. Social and environmental dimensions also have a large influence on how we shape the world and how the world shapes us. I find this kind of reasoning very interesting and have made it the center topic of my master thesis. Combining economic, social and environmental aspects are key topics here. Especially the practical dimension of how one can realize this captures me. An area where a lot of gains could be made in terms of sustainability is business sites. With this thesis I hope to contribute to the sustainability of business sites. Therefore I have dedicated my master thesis to creating a model that captures sustainable value creation of business cases and plans for restructuring business locations and parts of business sites.

Doing the research was a large endeavor that I could not have done without help. In fact, there are a number of people I would like to thank for helping me with my research. Without their help I would not have been able to write the master thesis.

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Nijmegen, January 2014.

Bert Hegger

Summary

Project Frame

Sustainable restructuring has an important place on the political agenda of the province of Gelderland, Netherlands. Spatial-economic developments (large vacancy at business sites) and new kinds of policies (revolving funds) have led to the writing of this master thesis.

In recent years the Netherlands has changed the way in which it restructures business sites. Instead of setting a goal concerning numbers of hectares of business sites that need to be restructured, different government branches try to look at where restructuring opens up chances for entrepreneurs. This strategy thus concerns a shift from supply oriented restructuring to demand oriented restructuring. This approach is also known as commercialization. Due to the large vacancy of business sites, it is unlikely that many new sites will be developed. Therefore, it would be wise to make sure that the quality of the existing sites is maintained or improved.

Goal

The goal of this thesis is develop a model that judges plans for restructuring (parts of) business sites for sustainability. These plans are also referred to as business cases in this thesis. On the one hand, this model will be developed to strengthen theories about demand oriented approaches in restructuring business sites. On the other hand, the model will give Oost NV a tool to analyze restructuring plans for (parts of) business sites.

Research goal: *To strengthen theories around demand oriented approaches in restructuring business locations/parts of business sites, by developing a model that captures the different ways in which sustainable value can be created and quantified by using the different business cases.*

This goal translates into the following research question: *How can value in terms of People, Planet, Profit be captured in a model and be tested on business cases for restructuring a business location/part of a business site?*

In order to frame the research question it is necessary to refer to value as *value which is projected to be created by business cases for improving a business site/location, that are created in the province of Gelderland during the period 2013-2014 and adhere to the criteria set by the province of Gelderland.*

Oost NV asked me to make sure that the model:

- can be applied in **1 day**;
- is **transparent**;
- is **practical** and **easy** to use;
- includes **criteria** that the province of Gelderland uses to decide whether it invests in a business case or not.

Theoretical framework

According to the UN Brundtland report 'Our common future', sustainable development is '*development which meets the needs of the present without compromising the ability of future generations to meet their own needs*' (UN, 1987). Sustainability is a concept that focuses its attention on the long term. Furthermore, sustainable development is a long term strategy that requires stability and continuity (Pike, Rodríguez-Pose & Tomeney, 2006). One framework, which has become part of mainstream theories about sustainability, is the ecological modernization stream. This stream argues that economic growth can go hand in hand with ecological improvement (Buttel, 2000).

Several methods went further with this line of thought and distinguished three dimensions that can, and must, be coupled to achieve sustainable growth. These methods were developed to measure sustainability in regional development and are used by the Telos Institute for Sustainability for example. They are roughly similar in the sense that they divide sustainability in three dimensions, namely a social dimension (People), an environmental dimension (Planet) and an economic dimension (Profit). The People, Planet, Profit framework measures the extent to which regional development is sustainable (Dagevos & Van Lamoen, 2009).

My research, however, takes the economic, social and environmental dimensions and applies it to the scale of business locations and parts of a business site (1 or more business locations). This is an addition to the already existing body of theory, since a sustainability model that works on the previously described scale is a new development. Furthermore, full cost of ownership (FCO) is a notion that has not been integrated in a model for measuring sustainability yet. FCO argues that external costs such as social and environmental costs should also be taken into account when doing an investment. Incorporating this notion in a model would be a great addition to the theories around commercialization when restructuring business sites.

Methods

In order to devise a model that measures the projected value creation of business cases, 9 experts were initially interviewed for: criteria of sustainability, experiences with restructuring business sites, full cost of ownership, sustainable company locations and the functioning of sustainability models. In order to find more information on certain topics, another expert was interviewed at a later stage. Furthermore, some other experts were contacted to provide important information. In addition to interviews, a thorough study of literature was done. The research perspective is grounded theory, meaning that existing theoretical insights will be expanded (building on the existing theory). In this case, the People, Planet, Profit framework will be remodeled to fit the scale of business locations/parts of business sites. Based on the data that the experts supplied, criteria were gathered and combined to make the model. After this the model was subjected to two business cases. With these business cases the prototype model was transformed into a tested, working model.

Results

The interviews with the experts proved to be most valuable to the research. Many common themes, which were used to create the model, sprang out. The experts argued that the extent to which

sustainable measures can be implemented at business sites/locations largely depends on the specific context. Every site/location is different, meaning that one should always respect the local circumstances at a business site/location.

A difficulty that some experts encountered lay in changing the mindset of people. Here, some experts said that a new way of thinking was necessary, namely to see sustainability as broader than simply reducing negative effects.

Concerning parkmanagement, it is very important to look at what is concretely done in practice in terms of organization at business sites. Just looking if a site performs parkmanagement is not enough, what matters is what is done in practice.

Validating model using business cases

After having constructed the first prototype version of the model, it became necessary to test the model on two business cases in order to create a tested, working model. By testing the model on two business cases for restructuring a business site/location, weaknesses became apparent. These weaknesses could be reflected upon and brushed up. The cases that were used involved the redeveloping of a building (Building A) at the Novio Tech Campus in Nijmegen and the expansion of the companies Nizo and Vika in Ede. The Novio Tech Campus offers space for companies specialized in the high tech, life science and health sectors. Building A will be restructured and will facilitate office space, a few research facilities and supporting functions such as a café/restaurant. The case of Nizo and Vika revolves around expanding the business locations in order to create room for activities that were previously outsourced. Testing the model on these cases went well, especially since some weaknesses became clear and were improved.

The tests on the cases revealed several flaws that were corrected. Some criteria were altered and some criteria, that were initially included in the model, were completely deleted. Furthermore, several lessons were learned regarding the application of the model. The most important lesson I learned was that I, being a graduate student, could not make the verdict. I needed information from colleagues who helped to create the business case. Someone from Oost NV will be able to perform the analysis alone, without asking colleagues for data.

Another reminder is that this model makes a verdict based on predictions. These predictions always have a margin for error.

A critical note that must be placed has to do with data availability and other practical limits. Due to a lack of data availability, some criteria do not function in the way I had initially envisioned. They were simplified or deleted altogether in order to create an academically sound and practically applicable model. I went beyond lengths to perfect the model as much as possible, but this was not possible for some criteria. Also, since judging business cases with the model should be done in (preferably) 1 day, some criteria could not be used, since data collection would take too long.

Sustainable Business Area Model

The model, which is christened as the '**Sustainable Business Area Model**' (SBAM), consists of 3 pillars, namely People, Planet and Profit. These are subdivided into separate capitals.

People pillar:

- **Public Transport** measures the public transport connections in the vicinity of the business site/location.
- **Parkmanagement** brings the level of organization and cooperation at the business site to the surface.
- Thirdly, the '**Nuisance**' capital is about the nuisance for people living near the site/location.

Planet pillar:

- **Buildings** describes the way in which land will be used after the restructuring process is finished.
- **Renewable Energy** refers to the amount of renewable energy generated at the business site/location.
- Finally, the '**Accessibility**' capital concerns the accessibility by car.

Profit pillar:

- **Economic Value** is about the way in which the economic value will be influenced by the restructuring process.
- The '**Jobs**' capital refers to the amount of jobs the restructuring process will help to create.
- Thirdly, **Full Cost of Ownership** concerns the decisions the entrepreneur makes in applying the full cost of ownership principle. This has to do with integrating sustainable measures in the business case during the design phase.

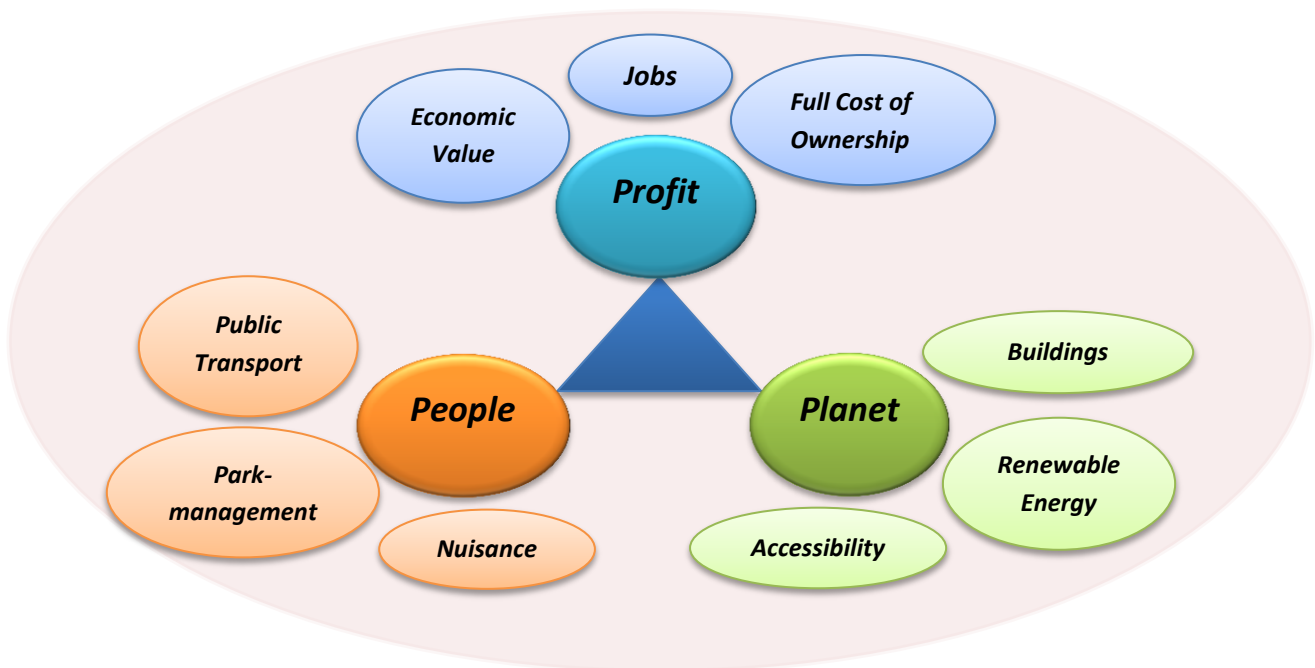
It is important to emphasize that the business cases speak of a future situation. The gathered information (as input for the analysis) thus predict a future situation.

Basically, the model serves two purposes:

- Firstly, it judges whether or not business cases for restructuring a part of a business site (1 or more company locations) are sustainable or not. This way, business cases can be compared.
- Secondly, the verdict gives an insight in people, planet, profit aspects where the case scores well and where the case does not score well. This way, the model can also be used to make recommendations on where and how improvements can be made to make the business case more sustainable.

Model 1 shows the Sustainable Business Area Model.

Model 1: Sustainable Business Area Model.



Conclusion

With the creation of a working, tested, Sustainable Business Area Model the research question has been answered and the research goal has been fulfilled. An important conclusion is that the model honors the initially stated points of being of being fast, transparent, practical and considerate of the situation in Gelderland:

- Performing an analysis and making a verdict can be done in approximately 1 or 2 days. This analysis can be done by 1 person;
- Each criterion (and allocation of the scores) is well-underpinned, which makes it easy for the reader/user to find out why certain choices were made;
- The model is easy to use and does not contain complex mathematics;
- Some of the criteria stated by the province of Gelderland (see p.6) are included in the model.

If one lets this time constraint go, one could paint a more accurate picture of sustainability of business cases (by including more criteria and more data for example). At the same time one would lose the unique feature of making an analysis in a very short time. Thus, this model paints a crude picture of the sustainability of business cases in a very short time. Other sustainability models need much more time and effort to come to a verdict.

Another conclusion is that this research has expanded the existing body of theory about restructuring business sites. With the creation of the Sustainable Business Area Model, demand oriented approaches in restructuring business sites can spawn sustainable business cases for restructuring business locations/parts of business sites. This way, future restructuring plans can contribute to a better world in terms of People, Planet and Profit.

Recommendations

Based on this research, several recommendations can be made. First, existing literature on sustainability and ecological modernization often does not include practical limitations of combining economic growth with ecological improvement. Entrepreneurs are often busy running their company, trying to keep it afloat. Sustainability measures that do not immediately translate in cost gains are often not introduced. These limitations may hamper with the implementation of sustainable measures and thus hamper with combining economic growth with ecological improvement. Therefore, future literature on sustainability and related concepts should include these practical limitations to paint a more realistic picture of combining economic growth with ecological improvement.

Second, this research took place in a Dutch context, which has influenced the research. Public transport, for example, is included in the model, because it is an important mode of transport in the Netherlands. In other countries, public transport might be far less important. Therefore, sustainability models from different countries should be compared. The lessons learned from such a study can be used to improve sustainability models.

Furthermore, I recommend that the future user of the Sustainability Business Area Model should be someone who (co) developed the business case. This person has a lot of knowledge of the business case and can thus perform a fast and thorough analysis without asking colleagues for information.

Finally, I would like to recommend that the analysis should be done when a business case is nearly finished. This way, enough information is available to do a proper analysis. At the same time, the results of the model can still be used to make the business case more sustainable.

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1 Introduction

1.1 Project frame

Business sites are large suppliers of employment, since roughly 1/3 of employment in the Netherlands is created by companies located at those sites (Provincie Gelderland, 2013a). As these sites age, restructuring eventually becomes necessary to ensure their quality and competitiveness. Over the last few years a new approach in restructuring business sites has been developed in the Netherlands. This approach focuses on government layers working together with entrepreneurs in the restructuring process and looking at chances and bottlenecks from the perspective of the entrepreneurs (Provincie Gelderland, 2013a). This way, funds can be allocated more efficiently and effectively to the restructuring of business sites.

The past few years, a shift from government to governance has occurred in policy making. Instead of government institutions dictating policies to society and the market, government institutions now attempt to develop their policies in cooperation with society and the market (Driessen & Leroy, 2007). The 'government' (top-down) approach means that policy is given by the government and that local market and civil society actors have little influence on it. The 'governance' (bottom-up) approach tries to coordinate its policy with market and civil society actors (Tielenburg, 2006). These actors can now exert a larger influence on government policies. This is a major shift in how society functions, since coordination of society by the state happens more and more in a horizontal way rather than a vertical way, namely by governance with market and society actors. A very interesting example is the restructuring of business sites in the Netherlands with a governance approach.

Studies have shown that the Dutch market for business sites has significant problems (Vlaming, 2010). Basically three problems exist; the first of which is an unhealthy market situation. In a healthy market situation the market would supply a product, which would be priced according to the law of supply and demand. Concerning business sites, municipalities offer a product (i.e. business sites) instead of the market at a wrong price. Here, the policy of municipalities regarding business sites is supply driven. This would be done, partly, because the selling of the business sites offered significant revenues to those municipalities. The municipalities with an active land policy have lost large sums of money in the last years (Luijten, 2011). Secondly, the supply of business sites is too large. This has to do with past government policies, which focused on creating and maintaining a number of hectares of business sites. Essentially, the policy of those municipalities was supply driven, meaning that they focused on creating a number of hectares of business sites. This problem is related to the first problem since the government is a large party that creates business sites and has now created too much space that is labeled as a business site. In fact, the vacancy of buildings at business sites is categorized as 'structural' by the Dutch association of brokers (NVM, 2010). As many lots are vacant, they lose quality and value, which calls for restructuring. This brings us to Vlaming's third point, namely that a large amount of business sites needs to be restructured in order to ensure spatial quality (2010). In fact, over 18.000 hectares of business sites need restructuring in the Netherlands (NVM, 2010).

These problems have called for new policies, which prevent and combat these issues. The shift from government to governance is not at all strange in this respect, as the different branches of government now attempt to coordinate their policy with market and society actors. By coordinating the

supply of business sites/locations, the different branches of government try to prevent the vacancy of these sites and the negative consequences associated with this. The policy regarding business sites developed by the province of Gelderland accompanies this shift (Provincie Gelderland, 2013a). The province acknowledges that the past, supply driven approach, which revolved around creating a number of hectares of business sites, was inadequate. This approach can be characterized as having the 'government', top-down approach, with vertical steering. The new policy looks at the wishes of the users of those business sites and can thus be characterized as having a bottom-up approach, with a more horizontal kind of steering. These policies are demand driven, meaning that business sites are created based on the demand for those sites. The details of this new approach can be read below.

Picture 1: Degraded business site (From: Tempelaars, 2008)



As has been argued, business sites facilitate employment; in fact roughly one third of employment in the Netherlands is generated by companies situated at business sites (Provincie Gelderland, 2013a). To keep those sites healthy and free of problems seems to be vital to the economy. In order to combat the problems that were mentioned, three strategies have been suggested. The first (1) of which is to restructure business sites that need restructuring and to catch up with restructuring targets that have been set. The second (2) strategy is commercialization (in Dutch: verzakelijking) of the development and maintenance of business sites. Traditionally, the supply of hectares was most important in dealing with business sites (Provincie Gelderland, 2013a). Making sure that enough space was available for entrepreneurs was a central issue here. The problem was that as soon as a business site would show signs of degradation, companies would relocate to neighboring business sites. The old location would often be filled with a company that put fewer requirements on spatial quality, thus fastening the process of degradation (Vlaming, 2010). Scarcity, in terms of supply of these sites, must be created in order to ensure a working market situation. The government has a facilitating role in this process and may be a producer of these sites (Vlaming, 2010). Thirdly (3), the scope of developing these sites must be regional, since this scope fits best with the range of business sites (Taskforce Herontwikkeling Bedrijventerreinen, 2008). According to the Taskforce Bedrijventerreinen Gelderland, one advantage of a regional approach is that a regional scale fits the scale on which business areas should be offered. Instead of municipalities competing with each other in creating business sites, they should now cooperate to create to right amount of business sites. In addition, when municipalities cooperate on a regional scale, economies of scale can be created in terms of expertise (Taskforce Herontwikkeling Bedrijventerreinen, 2008). The taskforce does not give a clear cut definition of a

region, but examples in practice suggest that a region in this case means a cooperation between several municipalities. An example would be the six regions in the province of Gelderland. Each region consists of several municipalities that work together with other municipalities in the region. In Gelderland, the smallest region consists of 6 municipalities and the largest of 18 (Provincie Gelderland, n.d.). Picture 2 shows the six regions in Gelderland, together with the larger cities.

Here, one could ask himself what the ideal size of a region is. These regions in Gelderland differ significantly from one another. The Stadsregio Arnhem-Nijmegen is an urban region and Noord-Veluwe is a more rural region. The kinds of companies and business sites one finds in Noord-Veluwe will be very different from the ones in the Stadsregio. Even within regions one can see differences, since the Stadsregio Arnhem-Nijmegen, for example, also has rural parts. Local circumstances seem to differ from place to place, also within regions.

Picture 2: Regions in Gelderland (From: Provincie Gelderland, 2012).



The province of Gelderland has developed an agenda which introduces a new way of restructuring business sites in Gelderland, namely by commercialization (in Dutch: verzakelijking).

Commercialization of business sites was introduced by the central Dutch government in 2010. The government describes the commercialization of business sites as follows: *'commercialization is a long term strategy, focused on the maintenance and growth of value business sites with the use of a professional and site-targeted approach, via a larger (financial) involvement of private parties (investors, developers, end users, regional development corporations) in agreement with governments'*. (Ministerie van VROM, 2010). This notion seems to be rather broad at first sight, but the provinces are free to fill this strategy in as they wish. The way the province of Gelderland implements the commercialization approach can be read further below on page 5.

Thus, the approach is directed at, among others, individual entrepreneurs that are situated at business sites. The agenda revolving around the restructuring of business sites with the 'commercialization' approach gives a central place to individual entrepreneurs. Entrepreneurs come up with plans for

restructuring, after which the province decides if it invests in these plans or not (Provincie Gelderland, 2013a). In using this approach in policy making, some Dutch provinces mentioned the role of investors and developers. These actors will play a role if they are needed in the business cases for restructuring business sites/locations in Gelderland. The size of the role they will play can differ per business case. In Gelderland, individual entrepreneurs form the center of the restructuring process, as the restructuring is done from the perspective of those entrepreneurs. They are the ones who propose plans for restructuring, after which the province of Gelderland decides to invest in these plans or not (Provincie Gelderland, 2013a). These plans are referred to as business cases. By analyzing which chances and bottlenecks exist in business sites, business cases are developed in cooperation with these entrepreneurs in order to restructure the business sites. By creating business cases for restructuring a business site, or a part of a business site, the perspective of the individual entrepreneurs plays a central role. Basically, if the entrepreneurs have a spatial-economic problem they can come up with plans for restructuring themselves (Provincie Gelderland, 2013a). These business cases may revolve around one single enterprise or multiple ones. Thus, these business cases are plans with which a business site or location could be restructured. They are made by entrepreneurs and municipalities in cooperation with advisory organizations.

Picture 3: Well-functioning business site (KennisparkTwente). (From: CME-Online, 2013)



In the process around the creation of the business cases for restructuring a business site/location, several actors play a role. Local municipalities and entrepreneurs play a key role, since they develop these business cases. Ontwikkelingsmaatschappij Oost Nederland NV (Oost NV) and Buck Consultants International have an advisory role in the development of these cases. They advise the municipalities and entrepreneurs with regard to the criteria set by the province. The province of Gelderland also helps to develop the business cases, but also decides if it invests in a plan for restructuring or not. The province of Gelderland ultimately decides if it will invest in the cases or not. It is the province that distributes revolving funds or subsidies to business cases that have the most potential.

Certain recommendations were made by Buck Consultants International regarding an entrepreneur directed approach. The first of which is to give the entrepreneurs a central place and find solutions to problems at business sites together with those entrepreneurs. A second recommendation is to give the economic functioning of business sites a central place. The economic urgency is most

important in restructuring business sites/locations. Thirdly, accountability should be taken for the amount of bottlenecks of businesses and locations that were solved. The number of hectares should not be the point of interest anymore (Provincie Gelderland, 2013a).

These business cases should adhere to certain criteria, which are set by the province of Gelderland (Provincie Gelderland, 2013b).

- Project should contribute to improving employment.
- There is a provable provincial economic interest.
- The plan for restructuring will not be initiated or completed individually by market actors.
- In the plan, public and private space will be looked at cohesively (optimal use of space).
- Entrepreneurs and municipalities support the plan.
- Structural supervision and maintenance is organized and budgeted.
- Municipalities, owners/users and/or developing market actors have the lead over the development of the plan.
- The province of Gelderland will finance 50% of total costs at most.
- Public and/or private actors finance the other part (50% or more).
- Use of provincial funds must be revolving, unless it has been proven that this is not possible.

Regarding those criteria one can make several critical notes. The sense that a project should contribute to improving employment seems to be somewhat short sighted to me. A restructuring project could, for instance, lead to a higher degree of automation of production processes within a company. This could, potentially, lead to less employment, since less people would need a certain production process. The business might then flourish even though it employs fewer people.

Additionally, it must be noted that the criterion of provable provincial economic interest is unclear in terms of measurability. 'When is there a provable provincial economic interest?' and 'when is there no interest?' are questions that are difficult to answer at this point. The province itself has not yet made this criterion measureable and is in the process of doing so. During meetings with local entrepreneurs, these entrepreneurs asked the province when there is a provable economic interest. The province declared that this was not yet clear to them and that they still had to sort this out. A critical note one could place is that they should have made this clear before rolling out this policy.

Also, one can ask why certain criteria were included. The province does not motivate exactly why it uses revolving funds for instance. The province could have made more of an effort in describing why it uses these criteria.

Picture 4:Three dimensions (From: Rethink Group, 2013)



One aspect concerning the restructuring of business sites, which local authorities could improve on, is the management of those sites after an investment has been done (Bugge, 2013). In addition, sustainability also is a dimension that local authorities could improve on (Bugge, 2013). Sustainability is a concept that focuses on the long run and is a strategy that needs continuity and stability (Pike, Rodríguez-Pose & Tomeney, 2006). Ecological modernization is a theoretical approach that argues that economic growth does not necessarily lead to environmental deterioration. Instead, economic growth can be coupled with ecological growth (Driessen & Leroy, 2007). This can be achieved with the use of cleaner technologies and by altering institutional arrangements (Mol & Jänicke, 2009). Following the ecological modernization approach, economic growth and environmental wellbeing is coupled by some approaches. The Telos approach adds a third dimension, namely a social dimension. This approach argues that for development to be sustainable, the economic dimension, ecological dimension and social dimension should not deteriorate, but grow. If any one of the dimensions declines in value, the development cannot be called sustainable. These dimensions are illustrated in picture 4.

Many investment and restructuring strategies put emphasis on the direct costs, such as the design and construction of facilities (Hodges, 2009). There are, however, indications that not only the direct costs of an investment exist. In addition to these costs, environmental costs also linger in the background and they are steadily increasing (PRI, 2010). In total, costs caused by environmental externalities make up as much as 11% of global GDP (which would be 6,6 trillion US dollars) (PRI, 2010). Instead of focusing on the direct investment costs, it might be wise to consider the full costs of an investment (so including the environmental costs). As the costs that environmental externalities represent are rising, it could be helpful to chart these costs, since they are formidable (i.e. 11% of global GDP). These costs are difficult to get an insight to, but may help to provide a complete picture of the total costs of an investment (AFM, 2012). The full cost of ownership approach would offer a framework that revolves around charting the full costs of an investment, and is described as follows by Reeve & Everdene: *'evaluating the full range of costs associated with the purchase of a given product or service over its lifetime from production to disposal'* (2006).

When considering business cases for restructuring a business site, it could be wise to look at the full costs of the restructuring process instead of only the initial costs. As social and environmental costs play a significant role in society, including them would paint a more complete picture of the full cost of the restructuring process. An option with a low initial investment cost, for example, may seem very attractive. In the long run, however, this kind of investment might not be so economical after all, since the yield of this investment might be relatively low. A sustainable way of investment might be more economical in the long run. This would mean that a more expensive option for restructuring could be chosen, which would last longer and be less costly in the long run (10-20 years). The government could help in financing such an endeavor, since businesses usually do not plan for such a long period of time (SBA, n.d.). The management of this site could also be part of a sustainable investment, meaning that the site will be actively maintained in order to guarantee its longevity. Thus, a sustainable dimension could be added to the framework for capturing value creation of business cases.

1.2 Research goal

My research will revolve around making a contribution to the theories around commercialization by developing a model for testing value of the previously described business cases, and testing a number of these cases with this model. This leads to the following research goal:

To strengthen theories around demand oriented approaches in restructuring business locations/parts of business sites, by developing a model that captures the different ways in which sustainable value can be created and quantified by using the different business cases.

Since the process of commercialization in Gelderland has recently been conceived, and the business cases are only being developed in the current time period, the business cases speak of value that is projected to be created. I have focused my research on business cases that are established in Gelderland, since it is the policy of this province that revolves around the type of commercialization that has previously been described. In addition, I wrote my thesis for Oost NV, which asked me to focus on these cases. The cases in Gelderland will be used to test the model to make sure that the final version of the model functions properly. As the policy is relatively new, the business cases will be created mostly in 2013 and 2014. This coincides with the running time of this research. One worry that I had was that these business cases would not be finished on time. If this were to be the case I could use finished cases from other provinces (that received funding). The different ways in which the business cases intend to create value will be analyzed.

The results (for example the intended creation of employment) could be analyzed to find out in what ways value will be created. In order to do this, a reference model that tests the projected value creation will be developed. Some business cases might speak of different means of value creation, such as the altering of certain rules or norms in order to, for example, allow for an expansion of business. It is the aim of this research to develop a model to analyze the different ways in which the business cases project to create value for the business site and, with that, the surrounding region.

The goal of the research is to develop a model that measures sustainable value creation of plans for restructuring business sites/locations. Essentially, this thesis builds on existing bodies of theory and hopes to strengthen those with new theoretical insights. Here, the model should capture the different ways in which value can be created and quantified by using the different business cases. This model will be inspired by the People, Planet, Profit framework. The model can help provinces and regional development organizations to give entrepreneurs a central position in restructuring business sites/locations. The model can be a tool that can be used to judge the sustainable value creation of plans for restructuring of entrepreneurs. With a thorough analysis a contribution can be made to the existing theories around entrepreneur directed approaches in restructuring business sites. In addition, this model will be used to analyze the projected value creation of a number of business cases. Several business cases will be analyzed with this model and be tested to see to what extent they create value. By applying the model to the business cases, I can find out how the model can be improved. The end goal of the thesis is to create a working model that has been tested on several business cases. The tests on the business cases will help me reflect on the model and improve it. Regarding the creation of value, three dimensions will play an important role, namely the economic, social and environmental

dimensions. Oost NV asked me to make sure that the model uses quantifiable data as much as possible. The reason for this is that Oost NV wants to make sure that the model is widely applicable.

Here, a critical note must be made, since some criteria cannot be captured in numbers alone. As has been described earlier, business sites might be different from place to place. Therefore some criteria will depend on the local context. One could, for example, include parkmanagement in the model. Here, it would be wiser to make a description of what is done under the umbrella of parkmanagement in practice rather than sticking a number on it. IVAM's DPL model, for example, gives a description of the degree of organization at a business site. This model uses descriptions and numbers to come to a verdict about sustainability at a business site. Since there is subjectivity in the data, one should always look further than just the data (Jeroen Krijgsman, persoonlijke communicatie, 7 February 2014). Other criteria in the model will measure costs and gains in terms of a quantifiable figure, such as a price in euros for example. This will be done to get an in-depth image of the costs and gains of a particular business case. Since using numbers alone will likely not lead to a satisfactory model, the model developed in this thesis will most likely feature both numbers and descriptions.

It must be noted that the model will be used on the level of the business cases. If it is a case for restructuring a business location, the model will operate on that level. If it is a case for restructuring multiple business locations, or part of a site, the model will operate on that level. It will not operate on a higher scale, since that scale is not the topic of interest in this research.

It is important to note that Oost NV would like the model to work without extra research being necessary. It should function fine with the information that is provided by the business cases. This way, Oost NV can instantly use the model without spending extra personnel and money on additional research to find information as input for the model. Oost NV specifically asked me to make sure that the model does not need extra information on top of the information provided by the business cases. Essentially, Oost NV would like to spend one day on reviewing a business case. Due to time/personnel limitations, it cannot afford to spend more time on reviewing a case. Therefore, they requested the model to be tailored to fit that requirement. Here, pragmatism is vital in creating the model, since not only the theoretical notions are to be considered. Practical constraints also play a role and must be paid attention to.

Here, again, critical comments need to be placed. Collecting data for IVAM's DPL model takes two weeks of intense research by a team of people (Jeroen Krijgsman, personal communication, 7 February 2014). Telos, too, does an intensive study to get all the necessary data for its model (John Dagevos, personal communication, 30 January 2014). Developing a model that can work without extra research being necessary will thus be a challenge. In order to make sure that I do not simplify reality too much I suspect that a search for information (on top of the information supplied by the business case) will be necessary. I suspect that the business case alone will not supply me with all the information I need, since the information needed as input for the model will likely be quite broad (including economic, social and environmental data). One can image that I might need certain data from the municipality or other institutions for example. Therefore, the model can most likely not instantly be used and extra work will be necessary.

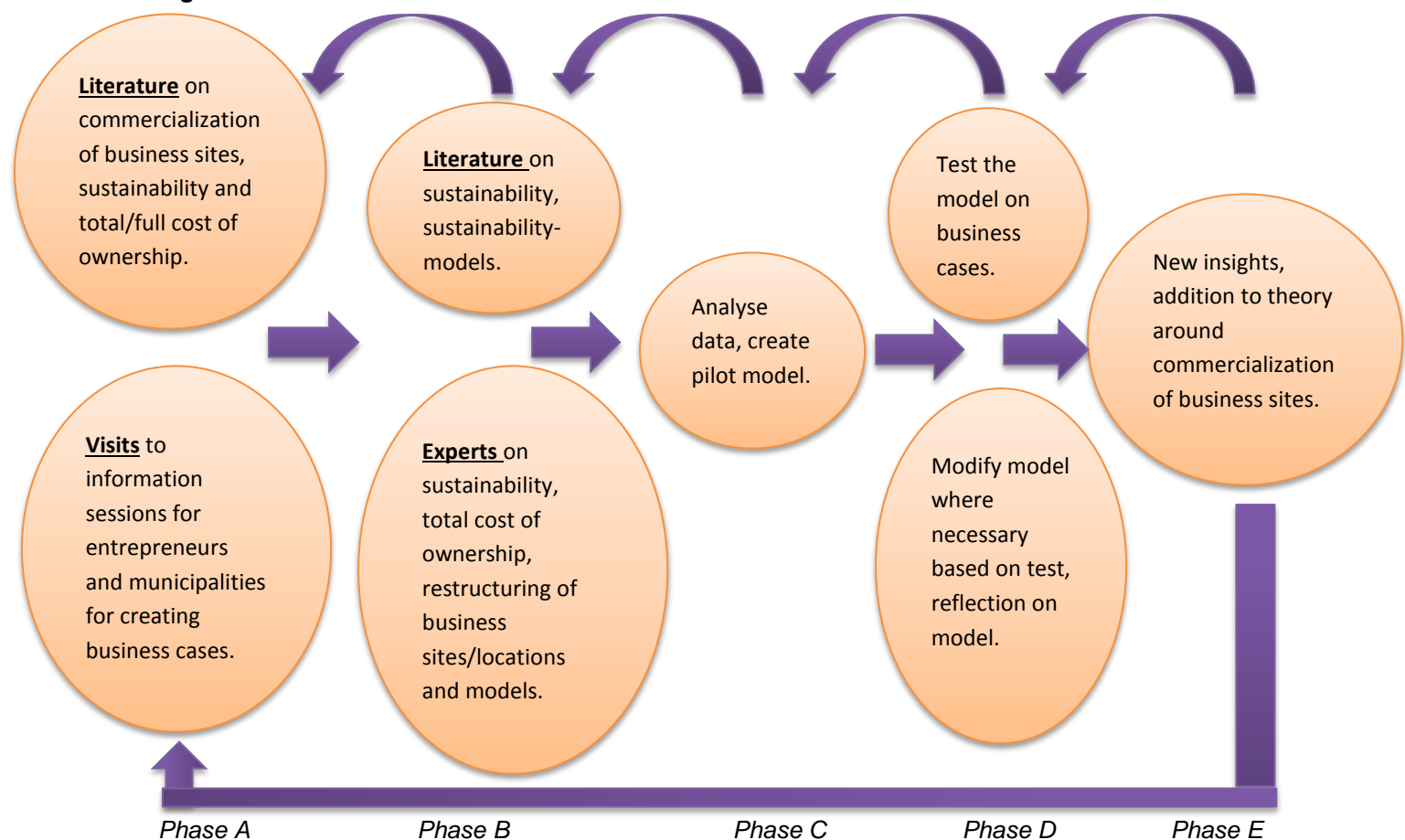
Additionally, one day reviewing for a business case seems to be very optimistic. One day, as

in from morning until the late afternoon is out of the question, since data collection will take far longer than that. Any institution where I request data will need some time to retrieve it and send it to me. Therefore, the day Oost NV gives me will probably be dispersed over a few weeks. This will give municipalities and other organizations the time necessary to find the data I requested. Testing the model on business cases will give a clear picture of how much time is necessary to judge a case.

1.3 Research model

In order to research these business cases I have developed a research model that summarizes the entire research process visually. The research model is shown in figure 1. The purple arrows represent the iterative character of the research. Critical feedback and new insights could require earlier steps in the research to be corrected.

Figure 1: Research model



As the model shows, the research is roughly divided in five phases. Phase A involved reading literature on commercialization of business sites, sustainability and full cost of ownership. By reading the literature, I discovered the important aspects of these topics and got a decent understanding of the project frame. In addition, the literature helped me to construct a theoretical framework which served as the basis for creating the model for testing sustainable value of business cases. Apart from reading a large body of literature, I visited introductory information sessions for entrepreneurs for creating business cases. In these sessions the province of Gelderland explained its policy and aims to

entrepreneurs and municipalities and invited them to create plans for restructuring a site which needs restructuring. This helped me to get a good overview of local conditions of those entrepreneurs and municipalities.

Phase B was the phase in which the empirical part of the research commenced. Here, literature on sustainability and full cost of ownership was read. More specifically, literature that focuses on criteria for measuring value that is created by restructuring projects was read. More importantly, in addition to reading, experts on total cost of ownership and sustainability were interviewed. It was my aim to interview people who have been part of a restructuring process of business sites. They had a lot of knowledge about these processes and supplied me with information that I used to formulate criteria to create a model for testing value that business cases attempt to create. The data was analyzed with the use of a computer. In this stage of the research the first steps in operationalizing the concept of 'value' were made. This was done by finding criteria that define 'sustainable value creation'.

A critical note that can be placed here is that a qualitative investigation, such as mine, does not create a universal truth. A certain perspective (people, planet, profit) is taken as a starting point for this research. The end product of this thesis, namely the model that judges the sustainability of plans for restructuring business sites/locations, is grounded in that perspective. The definition of sustainability is dependent on the perspective one takes. Here, there are no universal truths; all findings are grounded in a certain perspective (in my case 'people, planet, profit'). If one takes a different perspective as a starting point, one will get a different end product.

In phase C the gathered knowledge and information was used to create a model for testing the value that business cases attempt to create. In this phase choices were made regarding which criteria were to be used and which were not. The interviews and literature study created a large amount of information that can be used to form a model. Some criteria might be more useful than others. To make sure that the model was user-friendly, a selection of criteria was made. Criteria were selected based on two grounds. The first ground is that the experts must see the criteria as highly useful and well-tailored to measure sustainability of business locations/parts of business sites. The second ground is that the criteria need to be ready to use without extra research having to be done. In this phase, clear choices were made and it was decided which criteria would make up the model and which criteria would not. Only the criteria that are the most important and the most applicable were used. It is in this stage of the research that the rather vague concept of 'value' was demarcated and operationalized.

In phase D the model was used to analyze two business cases for the value they plan to create. It must be noted that I was able to test the model on only one business case. The business cases were studied and analyzed extensively. The value they attempt to create was analyzed by using three dimensions, namely an economic, social and environmental dimension. This has resulted in a verdict concerning the sustainability of the cases. In applying the model on the business cases, the model itself was tested as well. The application revealed several weaknesses that were corrected.

The final phase of the research is phase E, in which conclusions were drawn from the results. With these conclusions, I have acquired new insights about the commercialization approach in restructuring business sites. These insights will hopefully add to the theories around this topic and

provide Oost NV with a model that can be used for analyzing value creation when restructuring business sites.

Doing this research was an iterative process, meaning that when I was working in a certain phase of the research I found insights that could be of use in earlier phases of the research. Testing the model on business cases, for example, led to new insights that caused me to change the model to let it work better. Here, I used the insights to improve the research at an earlier phase, which had effects on the rest of the investigation as well. When I was creating the model, for example, I discovered that I needed to study more literature on a certain topic. At that point I studied the necessary literature, which had consequences for the model again. The arrows at the top of the model illustrate the iterative character of the research. Furthermore, in order to create the model I needed to test it, reflect on it, redesign it, validate it and retest it until it was perfectly tailored to answer the research goal and question.

It must be noted that the model I developed is inspired by the People, Planet, Profit framework; the same framework that the Telos institute uses. In a way, the Telos model served as an inspiration for my model, since I also try to measure sustainability by using the People, Planet, Profit framework. The difference is that Telos measures sustainability on a regional/provincial scale. I measure indices at the scale of business location and/or parts of business sites. This has generated a different model, with different characteristics that fit the scale of research. Criteria that are used in the Telos model might be very appropriate on a regional/provincial scale, but might not be so appropriate on the scale of business locations and/or parts of business sites. Another difference is that my model will generate quantifiable data such as the increase in economic value and jobs and qualitative data such as descriptions of, for instance, park management or land use. This is in contradiction to the Telos model, since the Telos model only uses quantifiable data. So the input of my model will be different from the input of the Telos model.

1.4 Research question

This goal translates into the following research question:

How can value in terms of People, Planet, Profit be captured in a model and be tested on business cases for restructuring a business location/part of a business site?

In order to frame the research question it is necessary to refer to value as *value which is projected to be created by business cases for improving a business site/location, that are created in the province of Gelderland during the period 2013-2014 and adhere to the criteria set by the province of Gelderland.*

Oost NV asked me to make sure that the model:

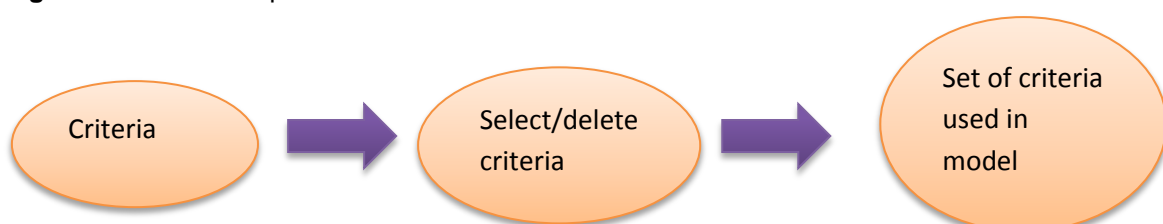
- can be applied in **1 day**. Basically, gathering data, performing an analysis and making a verdict should be done in 1 day;
- is **transparent**. All choices should be well-underpinned and it should be clear why the model functions in a certain way;

- is **practical** and **easy** to use. The model should be able to produce a result with information from the business case alone (preferable without much extra information due to time constraints). Furthermore, the model should be user-friendly;
- includes **criteria** that the province of Gelderland uses to decide whether it invests in a business case or not.

In addition, four partial questions have been distinguished which will help to answer the main research question. They are established to research different parts of the main research question and are listed below on page 14. The first partial question revolves around the definition of sustainable value creation. In the theoretical framework in chapter 2, it will be argued that economic growth does not necessarily have to be detrimental to the environment as will be outlined with the use of the ecological modernization perspective. This perspective will further elaborate on this notion in chapter 2. Other approaches move further with the notion that economic growth can be coupled with environmental development. In the People, Planet, Profit framework a third dimension is added, namely the social dimension. This creates the People, Planet, Profit framework, which can be used to measure the sustainability of regional development (Dagevos & Van Lamoen, 2009). As this thesis revolves around restructuring business locations/parts of business sites, the scale at which sustainable development is measured is a lot smaller. Therefore the criteria used in the People, Planet, Profit framework to measure regional development do not hold, since the scale they are applied to is too large. Only the three dimensions of sustainability, namely the economic, environmental and social dimension, will be used. The first partial question operates in the light of these dimensions and aims to discover criteria that can be used to measure sustainable development at the scale of business sites/locations. In answering this question the rather vague notion of 'value' was demarcated.

The interviews and literature spawned a great deal of information that was used to capture sustainable value creation. It must be noted, however, that in order to create a model that is user-friendly, there needs to be a definite selection of criteria. Therefore only the most useful criteria were used in the model. This was done to make sure that the research stayed feasible and manageable, and to make sure that the model itself would be relatively easy to use. In the second question a selection of the most important and most useful criteria for capturing value creation of business cases was made. In answering this question the notion of value was demarcated further by selecting the criteria that measure value, which were used in the model. Clear choices were made, and a clear selection of criteria which are used was made. Conversely, it also became clear which criteria were not used. These were criteria that, for instance, operate on a higher or lower scale, or that were simply not important enough. Figure 2 shows the selection in phase C.

Figure 2: Selection in phase C



Having done research to establish criteria that measure the value that the business cases aim to create, it becomes necessary to create a model with these criteria. The third partial question asks if a model, which tests projected value creation of business cases, can be created. The conceptual model, which will be outlined in chapter 2, served as an inspiration for the end model for measuring projected value creation of the cases. The three dimensions which define sustainability play a key role here. From this, a model was built that takes these dimensions, and the relations between them, into account. The criteria that have been found by answering the second partial question were transformed into a model that will test the value that the cases aim to create.

The fourth question is a question of practical nature and is about the application of the model in order to test the value that business cases aim to create. Here, two business cases were analyzed and tested. By applying the model to several cases, weaknesses in the model itself might be revealed. These will be solved in this part as well; this is part of the iterative process. By testing the cases, I got to the bottom of the intended value creation and found out to what extent the cases were sustainable. This will help Oost NV and the province of Gelderland in deciding which business cases are best for facilitating a sustainable restructuring process. Several business cases throughout Gelderland will be developed by entrepreneurs and municipalities in cooperation with Oost NV, Buck Consultants International and the province of Gelderland. To judge whether or not the value the cases aim to create adheres to the economic, environmental and social criteria will be the core of this question

Partial questions:

- 1) What criteria define 'sustainable value creation' on the scale of business sites/locations?
- 2) Which criteria should be used to create a model for this research?
- 3) Can a model, which tests projected value creation of business cases, be developed?
- 4) Can the model be applied in order to test the value that business cases aim to create?

Regarding the third partial question it is important to note that certain problems may be expected. One problem relates to the criteria which will make up the model. Of course, the criteria should give a decent, clear measure of sustainability. All criteria combined should give a coherent verdict about the degree to which a plan for restructuring a business site/location is sustainable.

Furthermore, deducing criteria from the interviews with several experts might not be so easy as it seems in figure 1. The experts might not be able to give very detailed information about certain criteria and how to use them. Selecting criteria will most likely be done by combining information the experts gave with already existing model, such as Telos and DPL.

In addition to measuring sustainability, the criteria should also be measurable. That is, I should be able to collect the data that a criterion requires. An example could be having profit as a criterion. There are many arguments in favor of including the expected increase in profit (resulting from a restructuring of a business site). On the other hand, companies might see the increase of profit as strategic information they might not want to share. Therefore, practical issues such as the collection of data will also be considered when building the model.

1.5 Relevance

1.5.1 Societal relevance

As has been described on page 1, a major shift in how society is organized is occurring. Instead of government branches dictating their policies to society, they now attempt to create policies in cooperation with market and society actors. This shift is better known as the shift from government to governance (Driessen & Leroy, 2007). As this shift has major implications for how policies are made, the measuring of results of those policies will likely change as well. This research operates in the light of this paradigm change by attempting to create a model that measures results of a new policy, namely business cases for restructuring of business sites/locations in the province of Gelderland. By creating this model, and applying it, policy results in the light of this major paradigm shift can be measured. This will benefit society, because few measurement tools that measure policies in the light of the shift to governance exist yet.

There is an economic urgency to restructure business sites in an entrepreneurial directed approach. Part of the economic urgency is the sense that few funds are available for restructuring real estate at business locations and business sites in general (Liane van der Veen, personal communication, 2 December 2013). Municipalities do not have enough funds available to restructure all sites that need restructuring (Provincie Gelderland, 2013c). Part of this approach uses 'revolving funds', which means that the province takes on the role of banker by loaning funds to businesses at a business site in order to restructure those (Provincie Gelderland, 2013a). As the province of Gelderland focuses largely on entrepreneurs, the province uses a new way of restructuring business sites/locations. This makes it relevant to analyze the ways in which value is projected to be created with the use of the business cases. These insights could possibly be used as a handle in future restructuring processes that use the entrepreneurial directed approach. By expanding the existing theories on commercialization by developing a model that captures the creation of value, the province of Gelderland or other governmental institutions can have a standard approach for judging plans for restructuring business sites. Here, standard means that every plan for restructuring can be reviewed and judged for its sustainability. The provinces in the Netherlands could use this model to analyze the projected value of business cases for restructuring a business site. Regional development agencies could also use this model, for example in advising during the process of completing business cases.

Furthermore, local authorities could improve on finding sustainable solutions when restructuring business sites (Bugge, 2013). The Netherlands has slowed down in growing in multiple areas, such as population and, for now, the economy (CBS, 2013). Economic growth in general is projected to be sluggish in the future as well, since it has reached its boundaries (Allers, 2012). The Dutch Central Bank estimates that the growth of Dutch GDP will be 0.2% for 2014, and 1.6% for 2015 and 2016 (De Nederlandsche Bank, 2014). The Dutch Central Planning Bureau (CPB) calculated that 2017 will be the year that the Netherlands reaches its record GDP of 2008 again (CPB, 2012).

It would be logical to focus on sustainability when restructuring business areas. As the economic growth is small, many lots at business sites are vacant. The amount of unused space is massive, and the vacancy of lots at business sites is characterized as 'structural' by the Dutch association of brokers (NVM, 2010). In addition, an enormous amount of business sites, a total of

18.000 hectares, needs restructuring. This has as a consequence that many of the empty lots are degrading in terms of quality (NVM, 2010). Building new business sites is a 'passed stadium' according to the expert about business sites Kees Werkhoven (personal communication, 17 February 2014). Therefore, it would be logical to make sure that the existing ones are as sustainable as possible.

As has just been explained, there is a huge discrepancy between the supply of business sites and the demand for it. Therefore, it is unlikely that many new business sites will be realized in the near future. In the light of this discrepancy it would be very relevant to expand the theories around commercialization by developing a model that measures the degree to which plans for restructuring are sustainable.

Picture 5: Vacancy in Nijmegen, Gelderland, Netherlands ('Te huur' = For rent)



Therefore, it would seem sensible to focus on the sustainability in restructuring existing sites, since so many sites need restructuring. Here, a sustainable way of restructuring would take the economy, environment and social issues into account. Business sites that do not burden the environment too much, take social issues into account and are home to flourishing businesses would almost be a utopian idea. After all, not only economic factors such as profit are important, but happiness and health are considered to be crucial to many people as well. With this model I try to contribute to this idea. As sustainable business sites would benefit society in the way that was just described, these can be considered to be very relevant to society.

Another way in which this research is relevant for society has to do with the rising costs of environmental externalities, which are predicted to rise in the near future (PRI, 2010). By acknowledging these costs in the model, these externalities can be slightly mediated. If the full cost of ownership principle can be included in the model, the environmental costs could be made a little bit more insightful. As they will be noticed, they can be dealt with by society and reduced rather than increased. This way, the environment can improve, which will make society greener in the long run.

1.5.2 Scientific relevance

The shift from government to governance has implications for society as well as science. Since this shift is occurring in this time period, science has had little time to respond to this change. Furthermore, many organizations do not have access to knowledge about sustainable development of a business site/location (Driessen, De Gier, Giezen & Spit, 2013). The approach that is used by the province of Gelderland is relatively new. Therefore, few theories and models about how to analyze (projected)

results of this policy have been developed yet. There are models which take sustainability into account, for example by looking at materials used and waste generated. An example would be the BREEAM BPA tool for sustainability of a location. This tool looks at sustainable measures in the construction of real estate and maintenance. Here, the environmental dimension is represented to a large extent (Fieggen, 2013). This model distinguishes 9 separate factors in judging the design of a building, namely: management, health, energy, transport, water, materials, waste, land use and ecology, and pollution (RPS Group, 2013). The BREEAM tool can be used for judging buildings such as houses, factories and offices (Dutch Green Building Council, 2011). A model, which would incorporate sustainability and would be able to quantify the economic, social and environmental costs/gains would be very relevant in the light of the shift to governance. As few theories have been developed, new additions to the theory in the light of the shift to governance are scientifically relevant.

In order for restructuring to be sustainable three dimensions must be in balance, namely the economic, environmental and social dimension (Telos, 2010). These concepts will be explained further in chapter 2. This research attempts to create a reference framework which focuses on sustainable restructuring, meaning that all three dimensions will be taken into account. As this approach in restructuring business areas has been used partially by some reports, but not wholly with all three dimensions of sustainability being utilized, it would strengthen the theories around restructuring business sites in a sustainable way. By analyzing the merits of this policy and creating a model that captures the gains, new insights can be gathered about this approach. This would add to the theories revolving around the restructuring of business sites and would make the current theories about this topic more complete.

In addition, combining sustainability with full cost of ownership is a perspective that is relatively new to restructuring business sites. As the paradigm shift to governance has only started recently, there are few studies that have combined full cost of ownership with the notion of sustainability in developing theories around the restructuring of business sites. In construction, the full cost of ownership perspective is used more (CMAA, n.d.). Regarding the broader field of measuring the sustainability of project plans for restructuring a business site/location, a thorough, commonly accepted theory that incorporates FCO is necessary. The reason being, that it has not been incorporated in models for judging sustainability yet. Therefore, incorporating the notions of sustainability and full cost of ownership would benefit scientific relevance since it would add to the theories around restructuring a business site in a sustainable way.

Overview

In this chapter, the research subject, research goal and research question have been introduced. The research process was visualized in a research model. Furthermore, the research question was divided into 4 questions, which help to answer the main research question. The societal and scientific relevance of this research have also been illustrated. In the next chapter the theoretical framework, that will describe what sustainable development and full cost ownership, will be given. A conceptual model that has been derived from this framework will also be given. Finally, the conceptual model and partial questions will be operationalized.

2 Theoretical Framework

Introduction

This chapter will reveal the theoretical framework, which has been constructed for his research. Firstly, paragraph 2.1 will introduce and elaborate on the concept of sustainability by using the ecological modernization approach. The ecological modernization approach is used, because it is one of the most commonly accepted approaches that combine economic growth with environmental preservation. Paragraph 2.2 will describe a common way in which sustainability is understood, which revolves around three capitals that must be in accordance in order to call growth sustainable. Paragraph 2.3 portrays the concept of 'full cost of ownership' and incorporates it with the described notions of sustainability. In paragraph 2.4, the conceptual model will be given. The conceptual model will include an economic, a social and an environmental dimension. Finally, in paragraph 2.5 the operationalization of the conceptual model and the partial questions will be made clear.

2.1 Sustainability and ecological modernization

The UN Brundtland report 'Our common future', which revolves around the environment and development, describes the classic notion of sustainable development as follows: '*Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs*' (UN, 1987). Sustainability is a concept that focuses its attention on the long term. Furthermore, sustainable development is a long term strategy that requires stability and continuity (Pike, Rodríguez-Pose & Tomeney, 2006). Several philosophical streams which try to give an interpretation to these concepts have emerged. One framework, which has become part of the mainstream theories of sustainability, is the ecological modernization stream (Buttel, 2000). According to Buttel, ecological modernization has become the new and improved synonym for sustainable development (2000). In its core, ecological modernization revolves around combining economic growth with ecological growth. This means that growth of the economy does not necessarily have to be detrimental to the environment, but can go hand in hand with improvement of the environment (Driessen & Leroy, 2007). Instead of conflict between economic growth and environmental protection, the two may be mutually supportive (Murphy, 2000).

Combining economic growth and environmental improvement is admirable, but one should ask himself whether realizing this in practice is as easy as writing about it in theory. Many practical constraints that are not mentioned by Buttel may exist in real life. Here, one could think of the availability of funds to implement sustainable changes and the knowledge of small business owners about sustainable improvements to production processes for example. Bas van de Westerloo (consultant at the C2C ExpoLab) puts it as follows: '*any restructuring process should fit within the constraints of time, quality and costs*' (personal communication, 10 February). These practical constraints should be kept in mind when reading about the theoretical notion of combining economic growth with environmental improvement.

Hajer defines two variants of ecological modernization, namely techno-corporatist ecological modernization and reflexive ecological modernization (Mol & Jänicke, 2009). The techno-corporatist point of view revolves around the sense that ecological reform purely is a techno-administrative endeavor. Here, environmental problems can be addressed by applying more sophisticated and environmentally friendly technologies. The driving force here would be technological change (Murphy,

2000). The second variant incorporates the practices of social learning, cultural politics and new institutional arrangement (Mol & Jänicke, 2009). Buttel argues that political processes and practices are very important in 'enabling ecological phenomena into the modernization process' (2000). With political attention, ecological modernization can help in coupling economic growth with ecological growth. It is the second line of thought that will receive attention in this thesis, as the cooperation between actors and social learning takes a central place in this thesis. As was written in chapter 1, the new commercialization (=verzakelijking in Dutch) policy is targeted at individual entrepreneurs. A plan for restructuring a business site/location comes into being in cooperation with entrepreneurs, Oost NV, Buck Consultants International and the province of Gelderland. Therefore, the reflexive ecological modernization approach will receive attention in this thesis. Still, environmentally friendly technologies are also critical in making production more environmentally friendly. The rise in environmental costs may be diminished with the use of green technologies (PRI, 2010).

Ecological modernization was originally a response to radical environmentalism. With the rise of ecological modernization, the environmental movement moved from a commentator outside society, to participating inside society (Buttel, 2000). It made suggestions for environmental reform in cooperation with society, by incorporating ecological modernization in different policy environments (Murphy, 2009).

The roots of environmental problems are the culture and the structure of western business society according to Mol & Spaargaren (2000). Market actors were, for example, seen as disturbances to the environment for a long time (Mol & Jänicke, 2009). Companies are in fact responsible for a considerable amount of global environmental costs. These costs are already as large as 11% of global gross domestic product (GDP) and are rising (PRI, 2010). The ecological modernization theory assumes that a fundamentally different organization of the capitalist system is not necessary, even though this system causes environmental disasters. In fact, capitalism is necessary for environmentally sound production and needs governance models to replace hierarchic models (Mol & Spaargaren, 2000). Ecological modernization emphasizes reforming capitalism in such a way that it helps to develop society in a sustainable way (Mol & Jänicke, 2009). It is assumed that capitalism is flexible enough to permit a shift towards sustainable capitalism (Buttel, 2000). Ecological modernization opts for a 'redefinition of borders between societies and social and natural environments' (Mol & Spaargaren, 2000). The theory assumes that some changes ought to be made in the culture and structure of western society in order to couple economic growth with ecological growth. Basically, both state and market should take up new roles to better contribute to environmental protection (Mol & Jänicke).

Essentially, two innovations are made in the relation between the state and the market. Firstly, instead of seeing market actors as entities that disturb the environment, which was the opinion for a long time in the past, they should be seen as forces that can contribute to environmental reform (Mol & Jänicke, 2009). According to Hajer, ecological modernization is a discourse which analyses the social construction of environmental discourses (Hajer, 1995). This discourse is embedded in political issues hidden behind these discursive constructs. A discourse is a 'set of ideas, concepts and categories through which meaning is given to social and physical phenomena' (Hajer, 2005). Ecological

modernization, thus, opts for a discourse change. It deviates from the discourse that market actors disturb the environment in the sense that market actors can stimulate environmental advancement. Here, a transfer of responsibilities from state to market is made according to the ecological modernization theory (Buttel, 2000). By moving responsibility from the state to the market, the market will be made directly responsible for social and environmental issues. This way, market actors can be transformed from being detrimental to the environment to being a force that strengthens environmental reform. Thus, the culture and structure of western business society is changed from a contributor to environmental degradation to a source of environmental improvement.

Here, it may be argued that a focus is laid on 'identifying specific socio-political processes through which further modernization of liberal democracies leads to beneficial ecological outcomes' (Buttel, 2000). The reason for this is that the market is a very diverse field with many different actors. Different social-political processes play a role in this field. Applying the principles of ecological modernization to these different fields could result in ecological improvement. Secondly, the state is important in considering the environment, but requires restructuring into a 'flexible, decentralized and preventive institution that creates networks with other actors' (Mol & Jänicke, 2009). Murphy argues that environmental policy goals are integrated in all policy goals central to ecological modernization.

Furthermore, innovative approaches should be used to incorporate ecological modernization policies in other policy fields, for example by placing economic value on nature. This way, the environment is taken into consideration (Murphy, 2000).

As was noted before, there is a large difference between theory and practice. Placing economic value on nature sounds admirable indeed, but may be problematic in practice. How economic value can be placed on nature is a question truly worth asking. In addition, will business owners also put economic value on nature? Or are they busier with running their company and trying to survive the economic recession? Can such a notion be included in a legal framework? These are practical questions that nuance theoretical notions about placing economic value on nature.

2.2 People, Planet, Profit

As has been described, ecological modernization revolves around the sense that economic growth can be coupled with ecological growth. Several methods went further with this line of thought and incorporated three dimensions that can, and must, be coupled to achieve sustainable growth. Examples of such models are Telos, DPL, BREEAM and countless others. The Telos method, for example, divides sustainability in three dimensions, namely a social dimension (people), an environmental dimension (planet) and an economic dimension (profit). Telos refers to these dimensions as capitals (Telos, 2010). Especially the economic and the environmental dimension receive attention in ecological modernization, as has been described in the previous paragraph. The People, Planet, Profit framework measures the extent to which regional development is sustainable (Dagevos & Van Lamoen, 2009).

The social dimension, namely 'people', consists of characteristics that are required to uphold society. Examples of this dimension in regional development could be social capital and employment, although employment could also be related to the economic dimension (Smeltink-Mensen & Oevering, 2011). This illustrates that the dimensions are linked to one another and influence each another. The

growth in one dimension may lead to growth in another dimension, but may also influence a decline of some sort (Smeltink-Mensen & Oevering, 2011).

The second dimension that is distinguished is the environmental dimension (planet). This would revolve around the characteristics to keep environmental quality up to a desirable level (Smeltink-Mensen & Oevering, 2011). An example of environmental capital in regional development could be the emissions of carbon dioxide or the use of land. Again, this dimension may be influenced by other dimensions, since the other dimensions might put pressure on the natural environment with the use of land for example.

The third dimension that is distinguished in this model is the economic dimension (profit). This dimension includes the characteristics that are necessary for a flourishing economic base, and may include corporate life and gross domestic/regional product. Again, this dimension is dependent on other dimensions, for example of the social dimension, since people are needed to work at companies. Without the social dimension, there is no economic dimension (Smeltink-Mensen & Oevering, 2011).

All three dimensions can grow and shrink and all have an optimal size. Figure 3 visualizes all three dimensions in relation to each other. As can be seen in the figure, there can only be sustainable development when all three dimensions overlap.

Figure 3: Sustainable growth (Southmountain, 2013).



An optimal situation would mean that all dimensions grow equally. If a region wishes to grow, not a single dimension may shrink. Thus, dimensions must be in harmony with each other. No compensation between dimensions is possible, i.e. growth of the economic dimension cannot compensate for a decline of the environmental dimension (Telos, 2010). If one dimension declines, whereas the other two grow, the development cannot be called sustainable. In addition, the growth of dimensions may not cause a decline in another region. To put it in other words, positive development in the region that is measured may not cause negative development in another region or country (Telos, 2010). To measure sustainable growth, the dimensions have been operationalized into several

indicators. For instance, GDP could be used for the economic dimension, social capital for the social dimension and biodiversity for the environmental dimension (Telos, 2010). In order to calculate the growth, a weight is given to all three dimensions and to all indicators. Telos gives a weight to the dimensions and indicators usually in a participative way, meaning that it is in concurrence with people who live in the region where the measurements will take place (Gersie, personal communication, 27 September 2011). After the weighing, the region will be analyzed for those indicators. The indicators receive a score, after which the dimensions will receive a score based on the indicators. In theory, if no dimensions decline and at least one grows, the growth can be called sustainable (Telos, 2010).

As has been written these dimensions are operationalized further into indicators that capture regional development. The division of sustainability in three dimensions follows the thought of ecological modernization, which argues that economic growth can be coupled with ecological growth. Here, this line is taken further by adding a separate social dimension. In addition, it is argued that all dimensions are linked to each other and may have a profound influence on one another (Smeltink-Mensen & Oevering, 2011). To operate in sustainable way, organizations should take all three dimensions into account. If responsibility is taken for all three dimensions, growth may be called sustainable. Otherwise growth cannot be described as being sustainable. Thus, ecological modernization lingers in the background of the people planet, profit framework, since it couples economic growth with environmental protection and even adds a third dimension, which also plays a role in analyzing sustainable growth.

Many positive comments can be made about the people, planet, profit framework. However, some critical notes can also be made about this framework. The harmony between the people, planet and profit dimensions is commendable, but it is worth asking how easy it is to achieve this harmony in practice. In practice one always faces time, money and quality constraints which could hinder the harmony between the three dimensions in a restructuring plan. Lack of funds, time or knowledge could obstruct a restructuring plan's ambition concerning sustainability. Therefore, the harmony between the three dimensions might not always be attainable in practice.

Furthermore, many positive comments can be made about the Telos method. Again, some critical notes need to be placed to nuance the theoretical story. Telos tries to measure sustainability as much as possible by collecting data about many different indicators. However, a practical constraint such as the availability of data could be of influence on the judgment that Telos tries to make about a certain region. John Dagevos of the Telos institute admits that the availability of data plays a role in applying the Telos model. He argues that measuring the sustainability of a small municipality is more difficult than for a large municipality due to the availability of data (personal communication, 30 January 2014). In case there is no data available for a certain indicator, the Telos institute tries to replace it with another, similar criterion. In case no data can be found, the indicator will not be measured (John Dagevos, personal communication, 30 January 2014). This approach is similar to the approach used by the Brabantse Ontwikkelingsmaatschappij when using the DPL model (Jeroen Krijgsman, personal communication, 7 February 2014). Thus, the availability of data can influence the verdict of the model about sustainability.

2.3 Full cost of ownership

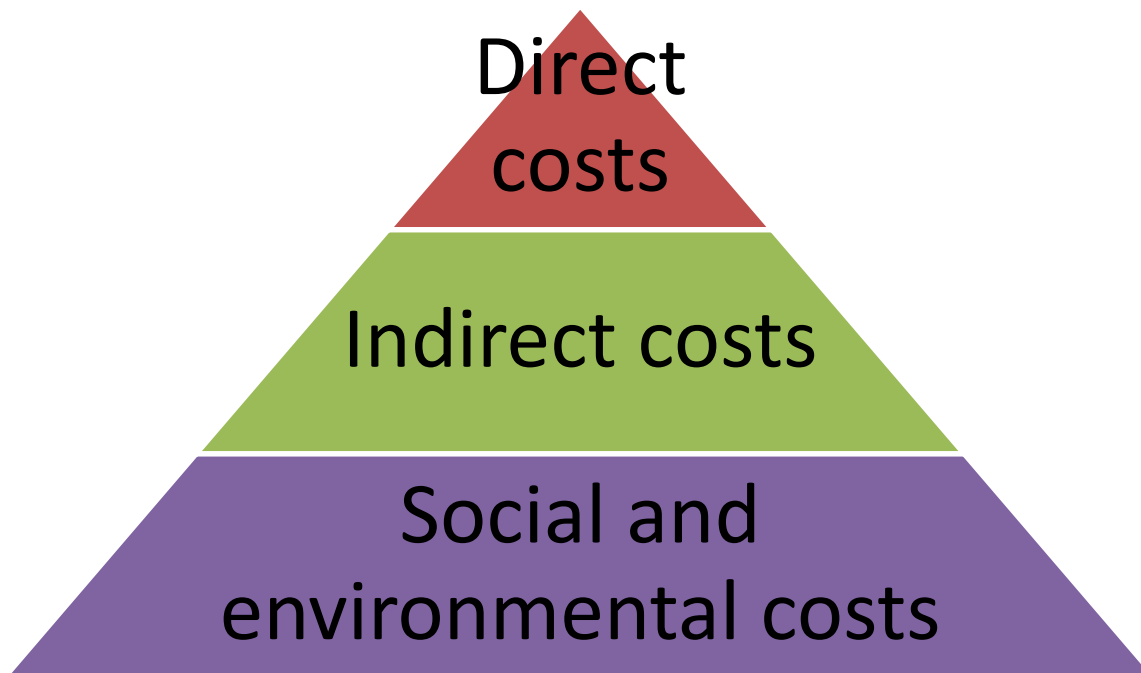
For consumers, it often is difficult to get an insight into the total cost of an purchase they make. These costs would impact the yield of the investment, but are often difficult to grasp. What lacks is an insight into the total costs of the investment, meaning the direct costs as well as the indirect costs (AFM, 2012). The AFM proposes the concept of Total Cost of Ownership (TCO) as a means of getting more insights into all the costs of an investment. The organization states that TCO is not limited to financial enterprises only (AFM, 2012).

Total cost of ownership can be described as a means of getting an insight into the total costs of doing an investment. It not only looks at the direct costs that are made by doing a purchase or an investment, but also at expenses incurred over a machine's or investment's lifetime. These operating and maintenance costs would be costs that are included in the TCO approach (Lyngstad, n.d.). Thus, the total cost of ownership can be described as the 'total cost of owning an asset over a period of time' (CMAA, n.d.). This would include the designing, constructing, operating and maintaining of an asset throughout its useful life. The TCO would give the owner of an asset all information concerning the costs of an asset during its lifetime (CMAA, n.d.). Again, a nuance regarding the availability of data must be placed. One can ask himself it is possible to calculate the design, construction, operating and maintenance costs over the entire lifetime of an asset. Calculating all information concerning the costs of an asset is commendable, but since this is a complex calculation it will require a lot of work.

As has been described, the total cost of ownership perspective is a method with which the total costs of owning an asset can be charted. This concept can be expanded to 'full cost of ownership', which incorporates more costs, namely costs borne by society. Environmental costs from human activities are rising and amounted to 11% of GDP in 2008. These costs are created by unsustainable use of natural resources, carbon dioxide emissions and more (PRI, 2010). In addition, the costs of addressing the effects of those environmental externalities are expected to rise as well (PRI, 2010). In order to evaluate the full costs of owning an asset or doing an investment, the social and environmental costs borne by society could be included to get an insight into the full costs of an investment. The concept of 'full cost of ownership', thus, goes further than total cost of ownership in the sense that environmental and social costs are also included (Reeve & Everdene, 2006). Reeve & Everdene describe this notion as follows: *'evaluating the full range of costs associated with the purchase of a given product or service over its lifetime from production to disposal'* (2006). This concept is used to quantify financial terms, which not only include the acquisition costs, but the full costs of an investment. The time horizon of the full costs of ownership is long term, meaning that it looks at the life cycle of an investment or purchase (Reeve & Everdene, 2006).

Figure 4 portrays different types of cost assessment tools and illustrates that the notion of 'full cost of ownership' goes furthest in considering costs. The pyramid shows the direct costs at the top. The indirect costs that might be incurred are less visible, but could still be significant. They are found one level below the direct costs in the pyramid. The full costs are the costs which include the social and environmental costs and are even less visible and can be found at the lowest level in figure 2. Thus, not only does TCO include the direct and indirect costs of the investment it also includes the external costs borne by society (Reeve & Everdene, 2006).

Figure 4: Types of costs



As has been described in the previous sections, sustainability consists of three dimensions, namely a social dimension, an environmental dimension and an economic dimension. Even though the economic dimension may have priority over the other two dimensions in many cases, the effects of the social and environmental dimensions should not be underestimated. The productivity of the workforce for example, may have large effects on the economic success of the organization as a whole (Hodges, 2009). The full cost of ownership approach attempts to bring social and environmental costs to the surface in order to get full awareness of all the costs of an investment. An important nuance to make here is that it might be impossible to get a grasp on social and environmental costs. How can one translate social and environmental costs to a euro price? A factory that releases a high level of fine dusts might reduce the life expectancy of nearby residents by several years. How would one translate this loss to a euro price?

It must be noted that any model is a simplification of reality (De Jong, Tuinenga & Kouwenhoven, 2008). A model, or theory, tries to explain reality with the use of certain concepts. Here, reality is reduced to these concepts (Vennix, 2010). In practice, unexpected situations or circumstances might be present and might cause different outcomes compared to what the theory described. When designing the model I will need to take this into account. As I continue with the research and build the model, some steps might not be taken as easily as described by the theory. It could mean that I, for instance, will need to gather more information to overcome certain difficulties. This relates to the iterative character of the research.

2.4 Conceptual model

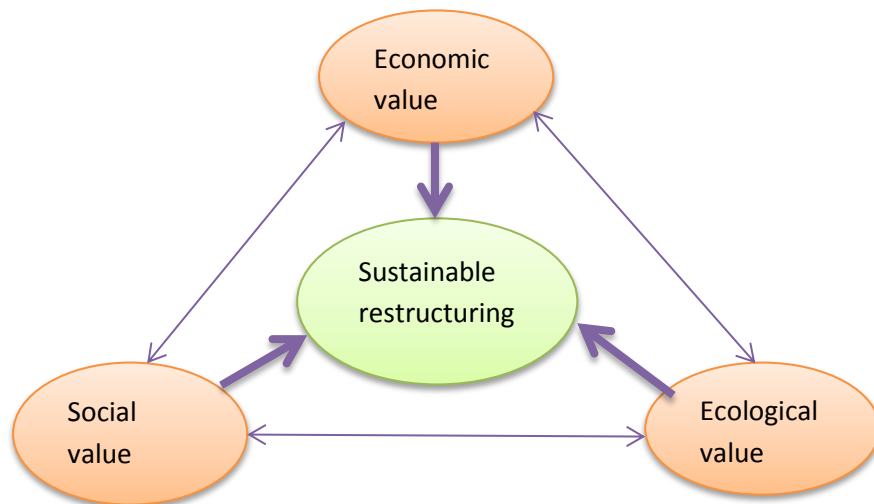
Having described sustainability and full cost of ownership, it now becomes necessary to demarcate a definition of sustainability for this research. This is necessary to make sure that the research can be

done within the specified amount of time. Therefore I have demarcated a way in which the concept of sustainability will be used in this research. Giving a clear definition of sustainability is difficult, since it is a broad, complex and dynamic concept. Therefore I have demarcated sustainability to a few basic features that I will focus on in this investigation. Sustainability at its core is related to meeting the needs of the present, without compromising the needs of the future (UN, 1987). In this research I consider *sustainability to be the harmony between the following dimensions: economic, social and environmental; all of these dimensions must at least remain at the same level as they used to in a business case*. A decrease of one of the dimensions during restructuring will be called unsustainable development. Here, full cost of ownership plays a central role, since the social and environmental costs are also included when deciding whether or not a business case is sustainable. The definition encompasses the core features of sustainability as they are described in mainstream scientific literature. This definition does not encompass all finesses of sustainability as would be found in some of the scientific literature, since it would be unfeasible to research sustainability in all its complexity due to time limitations.

From the theoretical framework, a conceptual model has been derived. Figure 5 shows this model and visualizes these features of sustainability, which have been described throughout this chapter. It must be noted that it is my intention to weave the full cost of ownership principles through the model. This means that some criteria of the model could measure this concept. I intend to find a way to make FCO measurable by interviewing experts and studying more literature. The FCO concept does not, therefore, show up as a separate balloon in figure 5.

Of course, economic value, social value and ecological value are different types of values. Placing them directly opposite on one another like in figure 5 might, therefore, raise questions. The model I intend to create will be inspired by these three values. Several criteria will be ranged under the each of these three dimensions. Basically, several criteria will measure economic value, others will measure social value and others will measure ecological value. These criteria and values will probably differ greatly, as they describe different things. Social value can, for example, be completely different from economic or environmental value. The most important thing to keep in mind is that the three dimensions together will measure sustainability. Together, these values, and criteria ranged under the values, will form a coherent whole that will judge whether or not a plan for restructuring a business site/location is sustainable. Since the values the criteria will describe will probable differ greatly it will become necessary to 'score' them in such a way that they can be compared. A scoring mechanism will be described in chapter 5.

Figure 5: Conceptual model



2.5 Operationalization

In order to research sustainable restructuring of business sites, the concept of ‘sustainability’ needs to be made measurable. In this research sustainability will consist of the three dimensions that have been described, namely the economic, social and environmental dimension. For each dimension, several criteria will be defined that will make up the model for testing value creation of business cases for restructuring a business site. First, criteria that define sustainability will be distinguished with the use of experts and literature. After this, choices will be made regarding the use of the criteria. These choices will be based on the information from the interviews and literature. Also, the model will be tested on business cases to see how it can be improved. The iterative character of the research comes forward especially in this part, since testing the model will probably be a process of testing, adjusting the model and testing it again.

It is the intention to incorporate the notion of full cost of ownership in the model. In order to make sure that the research stays feasible and manageable, and that the model becomes friendly to use, a set of criteria will be chosen that will make up the model. In addition, the model will operate on the level of the business cases. If the case revolves around restructuring a business location, the model will judge the value creation on that level. If the case revolves around restructuring several business locations or part of a business site, the model will judge the value creation on that level. The model will not be used for higher scales, such as a regional scale, since the topic of investigation is business locations/part of business sites. By researching and selecting the criteria that will be used to measure value, the concept of ‘value’ will be demarcated.

Of course, deciding to select certain criteria also means that certain criteria are left out. For every criterion that is selected to be in the model there will be arguments to leave it out. At the same time, for every criterion that is not selected to be in the model there will be arguments to include it in the model. It must be stressed that the model is a simplification of reality and that it is based on the information gathered from the interviews and the literature. The criteria that are selected to be in the model should measure a part of the economic, social or environmental value. Furthermore, data collection may not take too long. Otherwise the model will not be of use to Oost NV. Therefore, the criteria should also be feasible in the sense that collecting all data required to make a judgment about

the sustainability of a plan for restructuring a business site/location should take no more than approximately 2 weeks. Doing the actual analysis should take no more than 1 or 2 days. Some criteria could therefore make an excellent contribution to the model, but might be left out, because data collection is too labor intensive. Thus, selecting several criteria will inevitably lead to arguments for excluding certain criteria or including certain criteria. However, in chapter 5 I have tried to make the best selection of criteria possible based on the interviews and literature.

Many models that judge the sustainability of business sites already exist in different forms. Some of them also use the People, Planet, Profit framework. Even though the functioning of the model I intend to create is inspired by the Telos model, my model intends to improve some of the workings of the Telos model. One addition that will distinguish the model derived in this thesis from the other models (for example Telos and DPL), is that I intend to incorporate the notion of full cost of ownership in the model. The full cost of ownership thought has not been incorporated in sustainability models yet. Weaving this notion through the model will add value to it. Furthermore, the model I intend to create will not require a lot of data and time to make a verdict (in contrast to other models). That will also add value to the final product of this thesis (i.e. the model).

Overview

In this chapter the theoretical framework, conceptual model and the operationalization of the conceptual model and partial questions have been outlined. A framework that explains sustainability and full cost of ownership has been given. Having done this, the next chapter will consist of the methods that were used to carry out the research. Here, the research strategy and choice of qualitative methods will be discussed.

3 Methods

Introduction

This chapter will outline the methods that were used to research how a framework/model, that tests projected sustainable value creation of business cases for restructuring a business site/location, can be created. Firstly, in paragraph 3.1, the research strategy will be described. Among other things, it will be argued that the research is of a qualitative nature. This will be motivated in the same paragraph. Secondly, in paragraph 3.2, the choice of qualitative methods will be outlined. This will be clarified further by visualizing it in a model. Thirdly, in paragraph 3.3, the analysis process will be portrayed.

3.1 Research strategy

From the research goal and research question it becomes clear that it is the aim of this research to devise a model that captures projected sustainable value creation of business cases for restructuring a business location/part of a business site. In order to do so, several aspects were investigated in depth in order to develop this model. The model consists of an economic, a social and an environmental dimension. As has been illustrated in chapter 2, development can only be called sustainable if these dimensions are in balance with each other. To construct this model, criteria that can be used to measure these different dimensions had to be found.

As I aim to obtain detailed results for a model that captures sustainable restructuring of business sites in all its finesses, I decided to make this research a qualitative research. I needed to dig deep into the minds of experts to retrieve information about criteria that can measure sustainable restructuring and about the way the model could function. In addition I wanted to get to know more about the experts' experiences about sustainable restructuring projects. The exact details of the interviews are given in tables 1 until 5. The type of research most suitable for obtaining the kind of information that has just been described is a research of a qualitative nature. The reason being that it allowed me to get very detailed and specific information by probing them for answers, meaning that I ask them 'why' and 'how' (North Eastern University, n.d.). Semi-structured interviews, for example, helped me to dig deep into the minds of experts in ways a quantitative research could not. It also gave me freedom to get insights from experts that I had not anticipated (Vennix, 2010). Secondly, the model was applied to two business cases and judged to what extent the restructuring plan of a business site/location is sustainable. With these cases I could test the model and calibrate it until I had a working model. The business cases are situated in the province of Gelderland and were developed in the period 2013 – 2014. It was developed by entrepreneurs and municipalities with the cooperation of the province of Gelderland, Buck Consultants International and Ontwikkelingsmaatschappij Oost Nederland NV.

To construct a model I have chosen to combine two research strategies, namely a well-grounded theoretical approach and a study of literature with a desk research. With a theoretical approach I could use empirical data together with theoretical concepts to come up with a model (Creswell, 2010). Basically, the model was developed by building on existing theories and by using empirical data and theoretical concepts. Secondly, a desk research has been done to find out to what extent criteria for measuring sustainable restructuring of a business site/location already exist. In addition, existing models, such as the Telos model and the DPL model, were studied in detail. This data was also used when creating the model. The DPL model was developed by IVAM and 4D (IVAM,

n.d.).

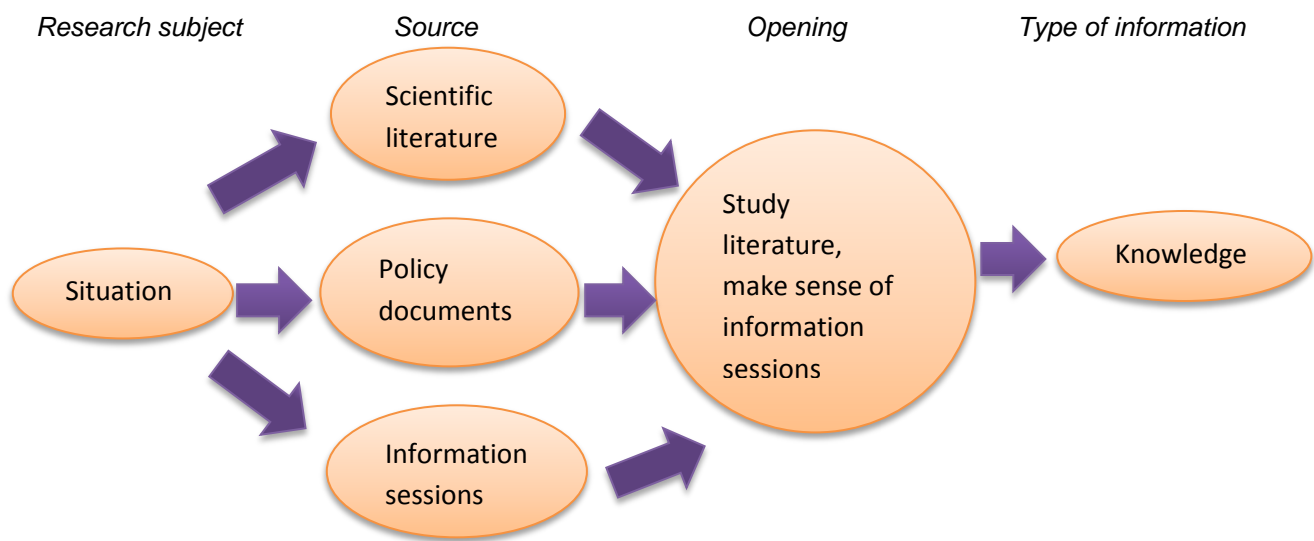
The Telos approach served as an inspiration for the model I decided to create. As the model made by Telos is a well-functioning model, I will use useful parts of their model and incorporate it in mine. My addition to the Telos framework is the fact that the Full Cost of Ownership (FCO) principle is included in the model. Furthermore, my model can be used on the scale of business sites/locations. The Telos institute does not include FCO in its model and does not have a model that works on the scale of business locations. Also, my model needs less data and time to make a verdict.

3.2 Choice of qualitative methods

To develop a model that captures value creation of business cases for restructuring business sites/location I have used several kinds of qualitative methods. Different methods were used to get an in depth image of different criteria of sustainable restructuring of business sites/locations. Using different methods to generate data, i.e. triangulation, has a positive influence on the level of the research (Vennix, 2010). With the use of different methods I hoped to get the most insights and information, which has created a complete body of knowledge with which I constructed the model.

In the first phase of the research, a study of literature was the most important way of gathering information. Literature on business sites and the restructuring of business sites/locations was studied extensively. By studying literature on this topic I got a better picture of the process of restructuring business sites and I created a project frame for this research. Furthermore, literature on sustainability and ecological modernization and literature on full cost of ownership was studied in this phase. With these insights I have devised a theoretical framework with which I can make sense of what sustainability can actually mean. This framework helped me to understand the data that was acquired in a later stage of this investigation and helped me create a model for capturing value creation. In addition to performing a literature study, I have visited information sessions for entrepreneurs and municipalities for creating business cases for restructuring a business location/part of a business site. Via my work at Oost NV I had access to the process of making the business cases, since Oost NV plays an advisory role in creating the business cases. During these information sessions entrepreneurs, municipalities, the province of Gelderland, Oost NV and Buck Consultants International exchanged information to try to create these business cases which adhere to the criteria set by the province of Gelderland. By observing how these business cases came into being I developed a good understanding of the entire situation. With a birds-eye view on the situation around the business cases I was able in applying the model onto several business cases in a later stage of the research. The research process is visualized in figure 6.

Figure 6: Collecting research material in phase A



The second phase of the research was phase B. Here, the most important ways of gathering data were interviews and the study of literature. I interviewed experts in the field of sustainability, people who worked on projects that revolved around restructuring a business site in a sustainable way, an expert on sustainability models and the manager of a very sustainable distribution center. By interviewing people from many different backgrounds I found information from different perspectives. This has resulted in a broad and balanced mix of experts who vented their wisdom on their specific fields of expertise on me. Tables 1 until 5 show organizations and people I have interviewed for my thesis.

Essentially I asked questions about multiple themes, namely the sustainability criteria that will eventually make up the model, experiences with restructuring business sites/urban areas, experiences with implementing sustainability and the way a model functions. Asking for criteria gave me direct information about which criteria or themes could be used to form the model. The experiences of organizations about restructuring business sites or urban areas and implementing sustainability principles taught me valuable lessons about how restructuring takes place and how it can be improved. Furthermore, with the information about model functioning I could tailor the model to fit the right scale and to function properly in analyzing business cases for their value creation.

Table 1: Interviews

Sustainability criteria	
Why: To obtain information about sustainability criteria for model.	
Organization	Name of person
C2C ExpoLab	Bas van de Westerlo
Brabantse Ontwikkelingsmaatschappij	Jeroen Krijgsman

Table 2: Interviews

Model functioning/sustainability criteria	
Why: To obtain information the functioning of a model and about sustainability criteria.	
Organization	Name of person
Telos Institute	John Dagevos

Table 3: Interviews

Full cost of ownership/sustainability criteria	
Why: To obtain information about sustainability and total cost of ownership criteria for model.	
Organization	Name of person
Saxion University of applied sciences	Gerard Salemink

Table 4: Interviews

Experiences with restructuring business sites and urban areas/sustainability criteria	
Why: To learn about experiences and possible improvements in restructuring business sites.	
Organization	Name of person
Royal Haskoning	Jacques van Dinteren
Parkstad Limburg	Kees Werkhoven
Programmabureau 'De Mars' in Zutphen	Lies Hoogerwerf
Ontwikkelingsmaatschappij Oost Nederland NV	Wils Kloos

Table 5: Interviews

Sustainable company location	
Why: To obtain first-hand information from a company with a very sustainable distribution center.	
Organization	Name of person
Hitachi Data Systems	Dick Lunenberg

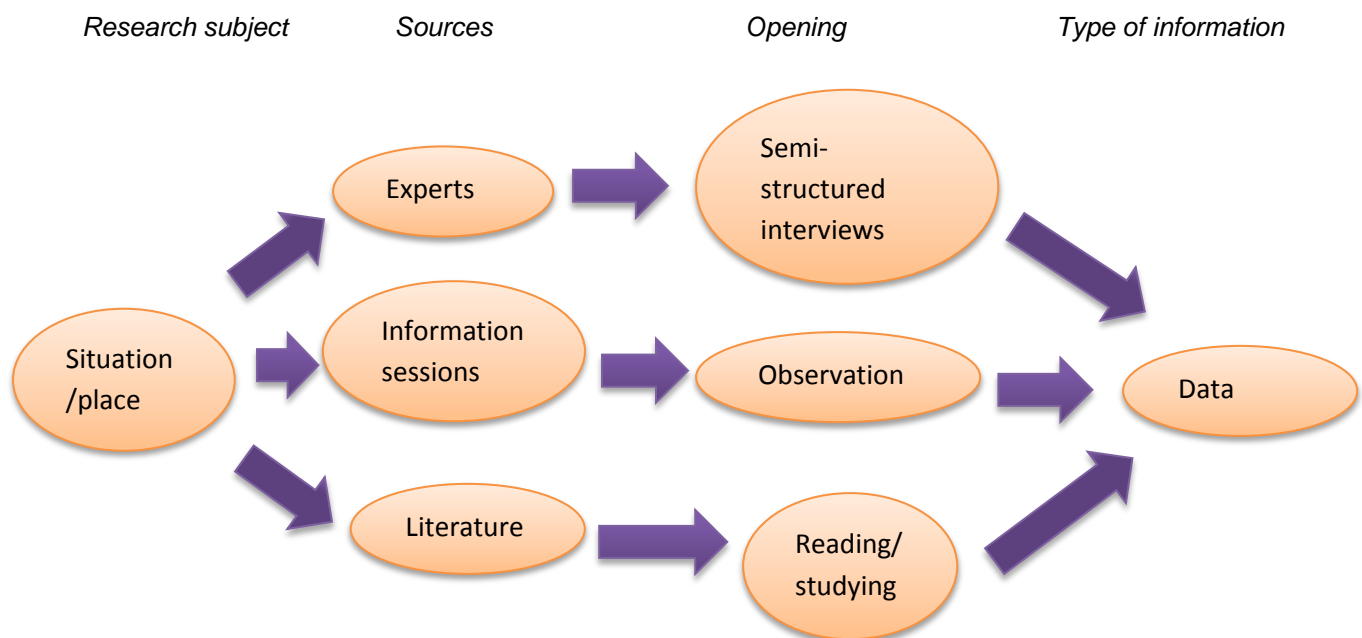
The interviews were semi-structured, which means that I had predetermined topics about which I asked the respondent (Bradley & Harrel, 2009). The interview questions I asked were fine-tuned to the situation that I asked questions about. These kinds of interviews were the type of interview of choice, since they gave me the necessary structuring to address certain topics (Bradley & Harrel, 2009).

Simultaneously, they offered the necessary liberty for the respondent to talk about his/her experiences freely (Vennix, 2010). This way, some respondents brought in information that I had not expected, which was of value to the research. By doing semi-structured interviews the validity of the research will rise. The interview guides can be found in appendix 1.

An additional method for gathering data in phase B was the study of literature. Some criteria for capturing value of restructuring of business sites have already been defined in previous researches. Investigating these criteria could serve as an inspiration for this research and could help me in creating the model. The Telos model and the DPL model were investigated in detail. Another example is the BREAAAM report, which is an environmental assessment system for buildings. This tool assesses the environmental friendliness of buildings (Breeam, 2013). Important information was found in reports such as these, which helped me to create and fine-tune the model. Additional literature that focuses on criteria for assessing business cases for the three dimensions (economic, social and environmental) was investigated as well.

Additionally, I attended more information sessions with entrepreneurs and municipalities in order to get more insights about the context of those business cases. As has been argued, getting a birds-eye-view on the situation surrounding the business cases helped me apply the model to the cases in the best way I can. These meetings proved to be interesting, but were of minor direct use to developing the model. The meetings helped me to realize practical limitations to theoretical notions about sustainability (regarding time and costs). Phase B is visualized in figure 7.

Figure 7: Data collection in phase B.



The research perspective most suitable for this research was grounded theory. The purpose of grounded theory research is to generate or discover a theory, or a unified theoretical explanation (Creswell, 2012). Central to this perspective is that this theory is not generated randomly, but 'is grounded in data from participants who have experienced the process' (Creswell, 2012). Creating a

model on the basis of qualitative information is exactly what I did. This model builds on existing theories and is grounded in the data gained from the experts I interviewed and the literature I read. The theory is specific in the sense that it tests the value created by business cases for restructuring a business site/location. Here, sustainability plays a key role. Additionally, the researcher focuses on 'a process or action that has distinct steps or phases that occur over time' when researching from a grounded theory perspective (Creswell, 2012). The model has been applied to two business cases. In addition, the different steps in which the business cases were developed have been monitored in order to have a profound understanding of the context of the business case. As has been argued, the model created by the Telos institute has served as an inspiration for creating my model. The model I created mirrors the workings of the Telos model to some extent.

Since the research revolved around developing and applying a model that test value creation of previously described business cases, I asked questions that brought up data that could help me develop a model. These questions aimed at recovering criteria that could be used to measure economic, social and environmental development.

After the model had been developed in phase C, phase D revolved around applying the model to two business cases. Furthermore, the model showed to what extent the development it aims to achieve is sustainable. The cases will first be described in detail in appendix 1, after which the model will judge the projected value creation. The prime goal here was not to test the business cases with the model, but to test the model with the business cases. By applying the model onto the business case its strengths and weaknesses became apparent. This way I could fine tune the model until it was fully calibrated to successfully test business cases for their value.

3.3 Analysis

Several different experts from different organizations were interviewed. In addition, literature was studied thoroughly to discover criteria that could be part of the model. Regarding the interviews, I asked questions and the expert responded with answers. The interviews were recorded, so that I was able to transcribe them. After doing the interviews it became necessary to analyze them. The first step was to convert the audio material into written word, by transcribing the interviews literally. After transcribing the interviews, I analyzed them. This was done digitally by using the computer program of 'Atlas.ti'. All the transcripts were loaded into 'Atlas.ti', after which I coded them. All useful information in the research was coded, which means that useful bits of data were highlighted and given a certain label. From these codes several common themes/criteria emerged, which were labeled as 'code families'. All codes with a similar theme, or similar criteria, were ranged under the same code family. From this, criteria were deduced that make up the model. The literature was studied carefully and was also used to find criteria which constitute the model.

Doing the interviews has given me many new insights that could be used in the model. These insights were often on a higher abstraction level than the more practical level on which the model operates. An example would be the sense that context and the local situation have a large influence on the degree to which a site can be restructured sustainably. The degree of organization, or parkmanagement, is another example of this. I needed to find a way to incorporate this into the model. More about this matter can be read in chapter 4. All in all the interviews yielded many new insights

that, in cooperation with the literature, have led to a model for judging the degree to which plans for restructuring a business site are sustainable.

This model was used to test the projected value of two business cases. The value they aim to create will be described in detail in appendix 1 after which it will be tested by the model. A verdict will be given regarding the sustainability of the projected value creation. Here, the harmony between the economic, social and environmental dimensions is crucial. The interview guides I used for the interviews can be found in appendix 3.

A critical note I would like to make is that this research is grounded in a certain perspective (people, planet, profit). This means that no universal truths will be generated with this research. A research grounded in a different perspective may lead to very different results. The definition of the research methods depends on the research perspective taken at the beginning of the research. So a research with a different perspective might have different research methods. Someone who argues that the concept of sustainability revolves solely around the planet dimension will get very different results.

Overview

In this chapter the methods to research how to create a model, which tests value creation of business cases for restructuring a business location/part of a business site, have been outlined. After having given the research strategy, the choice of qualitative methods has been described. Chapter 4 will show the results of the interviews and literature study. Here, the codes and code families that were found will be outlined together with relevant information from the literature.

4 Results

Introduction

Having described the methods that were used for the research it is vital to report the results that were discovered after having transcribed and analyzed all interviews that were done with the experts. This chapter will portray the results from the interviews. Here, the literature will play a minor role. The reason for this is that the literature already exists and can be read separately following the references. The data gathered with the interviews is entirely new and deserves to be outlined in detail. Thus, the data gathered in the interviews will be central in this chapter. As was described in chapter 3, the data was structured using the computer program Atlas.TI. The codes and code families that were found serve as the structure of this chapter.

4.1 Sustainability

Many general comments about sustainability were made by the experts. Although these comments were very diverse, one common theme can be deduced. Namely that sustainability is a very broad notion; one could call it an 'umbrella notion', since sustainability can mean many different things. It can have different meanings and can be applied in different stages in the production process (Wils Kloos, personal communication, 14 January 2014). Bas van de Westerlo also acknowledges that sustainability is a very broad understanding. Therefore it is necessary to focus on certain topics when restructuring a business site in order to make sure that the sustainable measures are implemented effectively (personal communication, 10 February 2014). Without focus it is extremely difficult to successfully implement sustainable measures. As sustainability is such a broad concept, the local context has a large influence on how sustainability is implemented in practice. The next subparagraph will focus on just that.

Picture 6: What is sustainability? (From: Fischer, 2013).



4.2 Context dependency

Many of the respondents argued that implementing sustainability largely depends on the context. Each business site is different and unique, which means that sustainability will be implemented in a different way at different business sites. The possibilities for implementing sustainability might be larger for one site than for another. When speaking with Jeroen Krijgsman from the Brabantse Ontwikkelingsmaatschappij about the DPL model, he argued that: *'on the one hand one aims to*

compare, but on the other hand: one business site is simply not the same as another business site' (personal communication, 7 February 2014). He also argued that some business sites have more potential to become sustainable than others: *'One site might only be able to score a 6 [scored with the DPL model] ... when it does score a 6, it reaches its maximum potential'* (personal communication, 7 February 2014).

A factor that is part of the context specificity is the sense that in the real world several actors play a role, meaning that compromises need to be made to accomplish things. A municipality with a council that favors sustainability will most likely facilitate the implementation of more sustainable measures than a municipality which does not have a sustainability oriented council (Jacques van Dinteren, personal communication, 11 March 2014). John Dagevos from the Telos Institute for sustainable development admitted that implementing sustainable measures in practice requires a debate with local actors. To restructure business sites in a sustainable way the Telos Institute organizes debates with local actors. This has 2 goals, namely: *'to get an idea of where the site wants to go, what the local actors want the site to look like in the future, and to probe what the local actors find important'* and *'to establish a common vision, a common agenda of by the local government(s), companies and environmental institutions'* (personal communication, 30 January 2014). Essentially it comes down to discussing the maximum that can be achieved (Jacques van Dinteren, personal communication, 11 March 2014). Local circumstances can differ from place to place, meaning that a sustainable restructuring can be different in different places as well. Another example that stresses the context specificity of sustainable measures has to do with the horticultural sector, or greenhouses to be more precise. Using geothermal energy is a sustainable way of consuming energy, which is applied more and more in greenhouses. However, as Wils Kloos from the Ontwikkelingsmaatschappij Oost Nederland NV admitted: *'it [geothermal energy] is not economically viable everywhere'*. Thus, local circumstances may differ greatly and can largely influence the type of sustainable measures in restructuring a business site/location. These local circumstances also determine the extent to which a business site/location can be restructured in a sustainable way.

4.3 Mindset

A difficulty concerning restructuring business sites/locations in an sustainable way that some experts encountered has to do with the mindset of people. Bas van de Westerlo of the C2CEXpoLab argued that the current line of sustainability thinking focusses on reducing negative effects, whereas one should attempt to leave a positive footprint rather than a less negative one. He said: *'less bad does not make it good... Cradle to Cradle attempts to leave a positive footprint instead of a less negative one'* (personal communication, 10 February 2014). Jacques van Dinteren said that people often relate the notion of sustainability to environmental aspects, rather than social or financial ones (personal communication, 11 March 2014). This is in contrast to the People, Planet, Profit framework which has inspired the Telos model, DPL model and this research. Only when these dimension are in harmony can sustainable development be achieved (Telos, 2010).

Picture 7: Leaving a positive footprint (From: Angrick, 2014).



4.4 Parkmanagement

One 'container' understanding is parkmanagement. Parkmanagement is used at some business sites to maintain the quality of these sites over a longer period of time (Wolbers, Schaap & Oosters, 2006). As one may recall, I aim to develop a model that judges the degree to which plans for restructuring business sites/locations are sustainable. Since parkmanagement is used to uphold the quality of business sites, it might be a good idea to include it in the model. I asked the experts to vent their opinion on this matter.

The topic of parkmanagement sparked different opinions among the experts. Some see it as a large contribution to sustainability. John Dagevos of the Telos Institute described it colorfully, seeing it as a '*conditio sine qua non*' (personal communication, 30 January 2014). Lies Hoogerwerf of Programmabureau De Mars also sees it as being beneficial to the sustainability of a business site, although she noted that it is difficult to implement at existing business sites (personal communication, 23 January 2014). Kees Werkhoven also said that parkmanagement can be of great help in maintaining and monitoring the value of a business site (personal communication, 17 February 2014). Furthermore, the DPL model includes the degree of organization (IVAM, n.d.). Jeroen Krijgsman described this as the degree to which companies cooperate to achieve results at a business site (personal communication, 7 February 2014). Jacques van Dinteren added an interesting note, namely that parkmanagement at existing business sites, with many different owners, is extremely difficult to organize. He sees parkmanagement as public-private cooperation as '*nonsense*' (personal communication, 11 March 2014). He said that it is very important to look at what is done concretely. Bas van de Westerlo sees parkmanagement as a means to improve sustainability at a business site, not as a goal in itself. He added that one can gather many understandings under 'parkmanagement' (personal communication, 10 February 2014). One could call parkmanagement a container/umbrella notion.

Thus, it seems that parkmanagement as such should not be a goal in itself. Parkmanagement can be used as a means to improve sustainability and the value of a business site in the long term. Here, it is very important to look at what is done in practice. Having parkmanagement does not automatically make a site sustainable; this depends on what organizational measures are taken in practice. Furthermore, several experts also added that the amount of companies that contribute to parkmanagement at a business site is imperative to the success of it. Basically, the more companies that contribute to parkmanagement at a business site, the larger the budget will be (Hoogerwerf, personal communication, 23 January 2014).

So basically, what came forward was that the experts agreed that parkmanagement, when organized properly, is beneficial to upholding the quality of a business site. The DPL model already includes something similar, as it includes the degree of organization at a business site. Therefore, incorporating it in the model would be a good idea. More about the inclusion of parkmanagement in the model can be read in chapter 5.

Picture 8: Working together to improve sustainability at business sites/locations (From: KPU, 2014).



4.5 Process and organization

First I should note that I did not ask about the process and organization specifically, but the topic came forward in many of the interviews. Many experts agreed that the way in which the process and organization is organized is crucial to the success of restructuring business sites/locations in a sustainable way. To be more precise, the choices made at the beginning of such a process are imperative to a successful implementation. This includes proclaiming an intention and certain goals and making agreements regarding sustainability at a certain business site/location (Bas van de Westerlo, personal communication, 10 February 2014). The purpose of this is to create a basis among politicians and government officials and to challenge the market to come up with new, innovative solutions (Bas van de Westerlo, personal communication, 10 February 2014). In addition, by agreeing on certain plans and goals in the beginning of the process, parties commit to carrying out these agreements (John Dagevos, personal communication, 30 January 2014). When they sign a legally binding contract they are obliged to cooperate and cannot leave the process (unless there are special, exceptional conditions).

In developing a model to judge the sustainability of restructuring plans for business sites/locations, this paragraph might not be of direct use. Still, the findings gave me insights in the process around restructuring a business site/location. They also gave me insights in how a decent organization can create certain organization advantages. These will be described below.



Picture 9: Direction to process (From: Conquaestor, n.d.).

Apart from planning the restructuring process optimally at the beginning of the process, a decent organization can also benefit existing business sites. By exchanging information with other companies at the business sites, certain organizational advantages can be created. An example that Kees Werkhoven gave is the creation of a mini-energy company that, for example, generates power using solar panels on the roofs of companies at the business sites (personal communication, 17 February 2014). An example that Jeroen Krijgsman gave is related to local entrepreneur associations at business sites that might decide to increase security (Jeroen Krijgsman, personal communication, 7 February 2014). One could argue that with a better security level, the monthly insurance premium decreases (Kees Werkhoven, personal communication, 17 February 2014). A better safety level and lower costs would improve the People and Profit pillars in this example, thus augmenting the local level of sustainability. Thus, an improved level of organization can lead to increases in the level of sustainability.

Basically, an improved level of organization can lead to an improved level of sustainability.

This is similar to what has been written in paragraph 4.4 about parkmanagement. It is a good example of rather abstract notions (i.e. process and organization) that I needed to mold into concrete criteria. This has also been hinted at in paragraph 3.3.

4.6 Economic gain and sustainability

As has been argued in the theoretical framework, the People, Planet, Profit pillars should be in harmony with each other. The economic dimension is often overlooked, to the benefit of the Planet dimension (Jacques van Dinteren, personal communication, 11 March 2014). Therefore, I have asked the experts whether or not sustainable measures should bring economic benefits. Wils Kloos argues that sustainable improvements in the horticultural sector '*should lead to lower costs*' (personal communication, 14 January 2014). Hitachi also intends to achieve lower costs with sustainable measures, such as solar panels, a geothermic installation and low energy lighting, which makes Hitachi's building carbon-neutral (Dick Lunenberg, personal communication, 5 February 2014).

High ambitions regarding sustainable restructuring projects might be constrained by costs, since any project that will not break-even in the end will be very unattractive. This often causes ambitions to be reduced, since the project cannot be done otherwise (Jacques van Dinteren, personal communication, 11 March 2014).

Picture 10: Sustainable economic gain (From: One in a billion, n.d.).



4.7 Entrepreneur and sustainability

This paragraph is a reminder that implementing sustainability is often difficult in practice and requires knowledge of the local circumstances. Some experts, for example, argued many businesses are busy with surviving and simply do not have a lot of attention for sustainable (longer term) improvements (Salemink, personal communication, 17 January 2014). In addition, many small entrepreneurs often do not have the knowledge and expertise about possible sustainable improvements to their business. On the other hand, one should not be tempted to think that this goes for all entrepreneurs, because there are many who are involved with sustainability (Hoogerwerf, personal communication, 23 January 2014). Kees Werkhoven states that '*there are different speeds at existing sites, which makes it difficult to coordinate*'. Since the local context is so influential in restructuring business sites/locations in a sustainable way, the constraints of time, quality and costs will differ from place to place. Some entrepreneurs will care a lot about sustainability, whereas others do not.

4.8 Chances for sustainability

4.8.1 Important aspects

Since I try to create a model that judges the degree to which plans for restructuring business sites are sustainable, I asked the experts what dimensions of sustainability are important. Several aspects were deemed to be important features of sustainability. These included accessibility via public transport,

waste materials, energy use and energy production, raw materials and more. An important note came from Bas van de Westerlo from the C2C ExpoLab, who argued that it is important to bring focus to implementing sustainable measures. Since sustainability is a broad concept, which can mean a lot of things it is wise to focus on a few aspects to make sure that these are implemented properly (personal communication, 10 February 2014). When the Telos institute organizes a process to discuss where a region would like to stand in the future regarding sustainability, they invite all the relevant stakeholders and discuss where they would like to stand (John Dagevos, personal communication, 30 January 2014). Thus, one could argue that one theme is not more important than the other. Depending on the context one may give one theme more value than the other.

Picture 11: Business could improve on energy generation/use (From: EU, 2012).



4.8.2 Chances for sustainability

The experts mentioned several chances for improvement when restructuring business sites/locations sustainably. One has already been discussed in paragraph 4.2. Many people still think in a more traditional way, namely in terms of leaving a less bad footprint, whereas one could also try to leave a positive footprint (Bas van de Westerlo, personal communication, 10 February 2014). Another aspect that could use improvement is the sense that small entrepreneurs often have little knowledge about improving their business' sustainability. These developments go so fast that '*small business owners lose track of them*' (Jeroen Krijgsman, personal communication, 7 February 2014).

4.9 Existing and new business sites

The model for judging the sustainability of business sites focuses on existing business sites. However, since restructuring existing business sites may be more difficult than planning new ones, I asked the experts to shed light on this matter. A common theme that sprang out was the sense that there is a large difference in handling existing business sites and planning new ones. Essentially, when dealing with existing lots, ownership is divided among many business owners, which makes it more difficult to implement parkmanagement for example (Kees Werkhoven, personal communication, 17 February 2014). Jacques van Dinteren jokingly argued that if one 'would like to lose his mind, he should try to get to 2 business owners to agree with each other, let alone 200 or 800' (personal communication, 11 March 2014). When planning a new business site one does not have this problem. Bas van de Westerlo adds that "*It [restructuring project] should be realistic and should fit within the constraints of time quality and costs. We cannot do everything, but communicate what is being done and try to inspire other to go further*" (personal communication, 10 February 2014). Thus, trying to get the maximum results within the constraints seems to be vital.

4.10 Full cost of ownership

Full cost of ownership (FCO) is the theme that I try to weave in a model for testing/judging plans for restructuring business sites/locations in a sustainable way. Since this has never been done before, it would be challenging, but worth a try.

An important note that Gerard Salemink from the Saxion University of applied sciences made is that *'total cost of ownership is a calculating model to get an insight into costs'* (personal communication, 17 January 2014). It comes down to looking at the costs of owning a building for example. Not only the initial investment/acquisition costs are considered, but all costs that are incurred during the lifetime of the building. Then, the net cash value is calculated to see what the total cost of that building is in today's money (Gerard Salemink, personal communication, 17 January 2014). Gerard Salemink made several remarks concerning TCO and sustainability in general. Part of it is the sense that one should not use waste materials or energy when it is not necessary. So before laying solar panels on roofs, it is wise to reduce energy use as much as possible with efficiency gains. If one, for example, replaces his old refrigerator with a new, energy efficient one, he might save himself one solar panel (personal communication, 17 January 2014). Thus, looking at the entire lifetime of an asset and improving efficiency before switching to sustainable forms of energy are key topics.

As has been said TCO is a calculating model to get an insights into costs. This sounds great in theory, but I am not sure if I can get an insight into these costs myself. It will be very difficult for entrepreneurs to estimate costs they might incur in the future. Furthermore, I am not sure if I can do the math myself, since I do not have a degree in engineering or economics. More on this will follow in chapter 5.

Picture 12: Sustainability (From: Consultancy.nl, 2013).

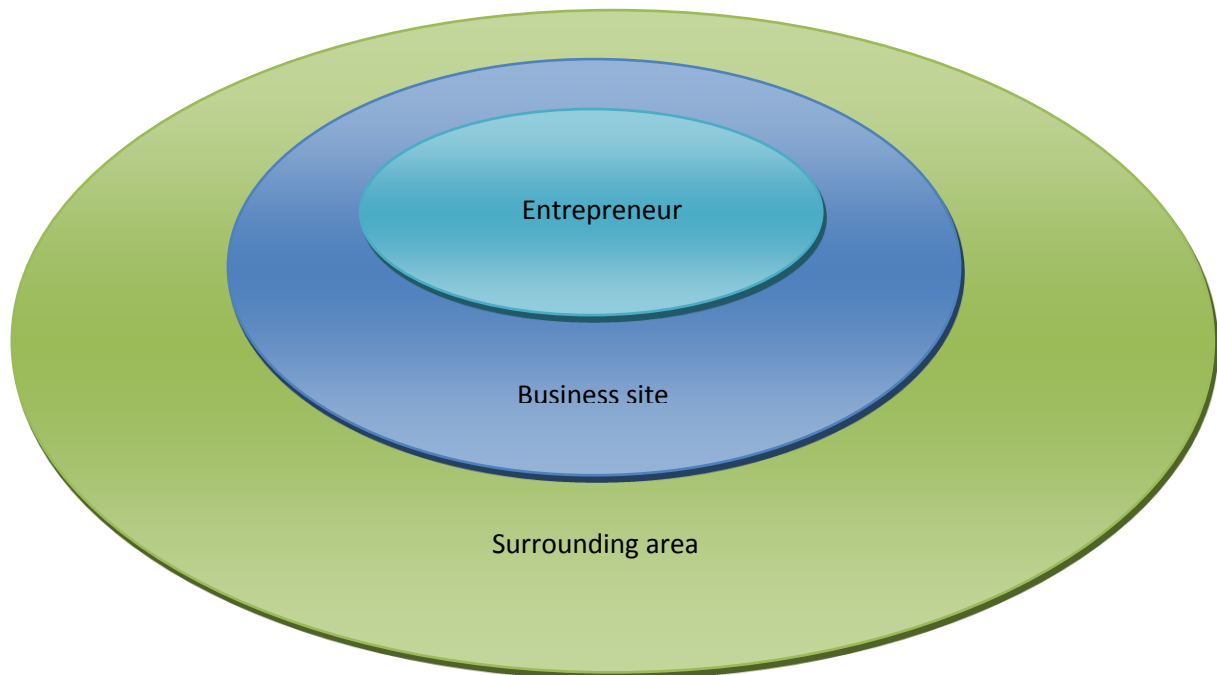


4.11 Model workings

Since I try to build a model for judging sustainability, I asked a few experts about the functioning of such a model. They made recommendations regarding the model I intend to build. The most important note has already been made throughout this chapter, namely that the context has a large influence on the restructuring process. Especially on the implementation of sustainable measures. Jeroen Krijgsman, whom I interviewed about his experiences with the DPL model, said that it is important to look further than just numbers and calculations due to the context. He said that 'there will always be a little bit of subjectivity in the data' (personal communication, 7 February, 2014). Jacques van Dinteren warned me that quantifying everything is very difficult for the type of model I intend to create (personal communication, 11 March 2014). He advised me to include qualitative data as well. As has been argued in chapter 2, the model I intend to create will partially mirror the workings of the Telos model and DPL models in the sense that it is based on People, Planet, Profit. John Dagevos said that it

would be wise to consider multiple perspectives when building the model, namely the perspective of the business owner, the perspective of the business site and the perspective of the surrounding area (see figure 8). The entrepreneur is directly responsible for his own actions, but his business also has an effect on the business site and on the surrounding area (personal communication, 30 January 2014).

Figure 8: 3 perspectives to consider



4.12 Model: things to consider

Several important issues regarding the creation of a model were identified by the experts. Local context and circumstances were seen as vital influences on the success of a sustainable restructuring process. Some sites have more potential to be sustainable than others, which needs to be kept in mind when making and applying the model. Furthermore, entrepreneurs might think differently about sustainability in general, which is also of influence on the success of sustainable restructuring processes. Some entrepreneurs might know more about sustainability in general and might have a positive attitude about it, whereas others can have a more negative attitude about the matter. This can also greatly influence a sustainable restructuring process.

Another aspect was the sense that the interviews yielded broad notions about sustainability, rather than concrete criteria. The criteria will be deduced from these broader notions and literature and existing models in the next chapter. Here, time will be of great influence on building the model. Oost NV would like to spend one day on reviewing a business case. Thus, all the necessary data should be collected, reviewed and judged in one day. As has been argued before, this is very optimistic. The day that Oost NV refers to will be split up over multiple weeks, so that organizations that I ask for data have time to find the data and send it to me. Since a business case should be reviewed in a short time, it will be wise to collect data from existing data sources as much as possible. Here, I need to make sure that I do not simplify reality too much in the model. The model should still honor the real

situation and should academically sound. In order to retrieve the necessary data to measure sustainability I will need to ask the entrepreneur about the restructuring plans and the business case. Asking the entrepreneur will take time, but it will help me judge the business case in a better manner than with just data that is readily available. So, the criteria devised in chapter 5 will need to measure the sustainability of business cases for restructuring business sites/locations and will try also need to meet the time constraints as good as possible.

Overview

In this chapter the most important findings were described. What remains is to ground these findings in the theoretical framework, which was created in chapter 2. In chapter 5 the gathered data will be molded into a model using the theoretical framework. This was a time consuming, iterative process. Some criteria, and the necessary data collection, sounded nice in theory, but were not suitable to be in the model in practice. This will be elaborated in the next chapter. The literature will play a larger role than in chapter 4, since the Telos and DPL models served as an inspiration for this model. Then, finally, the first part of the main research question can be answered and a model for capturing value in terms of People, Planet, Profit will be created.

5 Sustainable Business Area Model

Introduction

Having created a theoretical framework in chapter 2 and having outlined the results of the interviews in chapter 4, it becomes necessary to ground the gathered data in the theory. This chapter will feature the first great milestone of this thesis: the creation of the prototype model that has been referred to time and time again in this thesis. It may be regarded as the first great milestone, since the first part of the main research question will be answered. This will be done by answering the first three partial questions.

First, the prototype model and its workings will be described below. Second, the results will be grounded in the theory and the different criteria that make up the model will be described in detail. The literature will play a larger role in this chapter and will be used together with the data gathered using the interviews. The test of the prototype model onto the business case can be found in appendix 1. Then, after reflecting on the test and improving the model, a final working model will be presented.

5.1 Model

As has been described throughout this thesis, some of the workings of this model were inspired by the Telos model. Essentially, there are three dimensions (pillars), namely People, Planet and Profit. All three pillars must be in harmony, meaning that none of the pillars may decrease in value. If, for example, the People pillar declines in value, even though the Profit pillar improves, the development cannot be called sustainable. The People, Planet, Profit (PPP) notion and the sense that these pillars should be in harmony has been 'borrowed' from the Telos institute. The PPP framework will serve as the basis of the model. These three pillars are subdivided into capitals. The details of those capitals will follow in paragraphs 5.2, 5.3 and 5.4. In these paragraphs it will become clear what capitals there are, why they were chosen and how they will be measured.

It is the goal of this model to judge plans for restructuring business sites. The verdicts may then be compared by Oost NV after which it will decide which plans will receive a positive recommendation. The cases with the best verdict will ideally receive funding, but this decision will ultimately be made by the province of Gelderland. Oost NV gives recommendations after which the province of Gelderland decides which plans receive funding.

It must be noted that context is important and that one works within certain constraints. In some cases there might be more room for sustainable measures than in other cases, because of a certain context. Another note that must be made in advance is that the model is not a 'closed' model. Since sustainability is such a broad concept it is difficult to grasp in a single model. Therefore the model's verdict will serve as a guideline. As has been pointed out in chapter 4, the local context is very important when restructuring a business site/location sustainably. A business case might include measures that cannot be grasped by the model. One could think of a relocation to a quayside, causing the business to transport more via water than via road or railway. This would be an example of a sustainable measure that is not common and is therefore not incorporated under one of the three pillars. Such a measure just described is, however, very sustainable and will be reviewed when making the final verdict. Thus, even though local context is not made concrete through criteria in the model it does play a large role. The light purple halo around the model in model 2 symbolizes the local context.

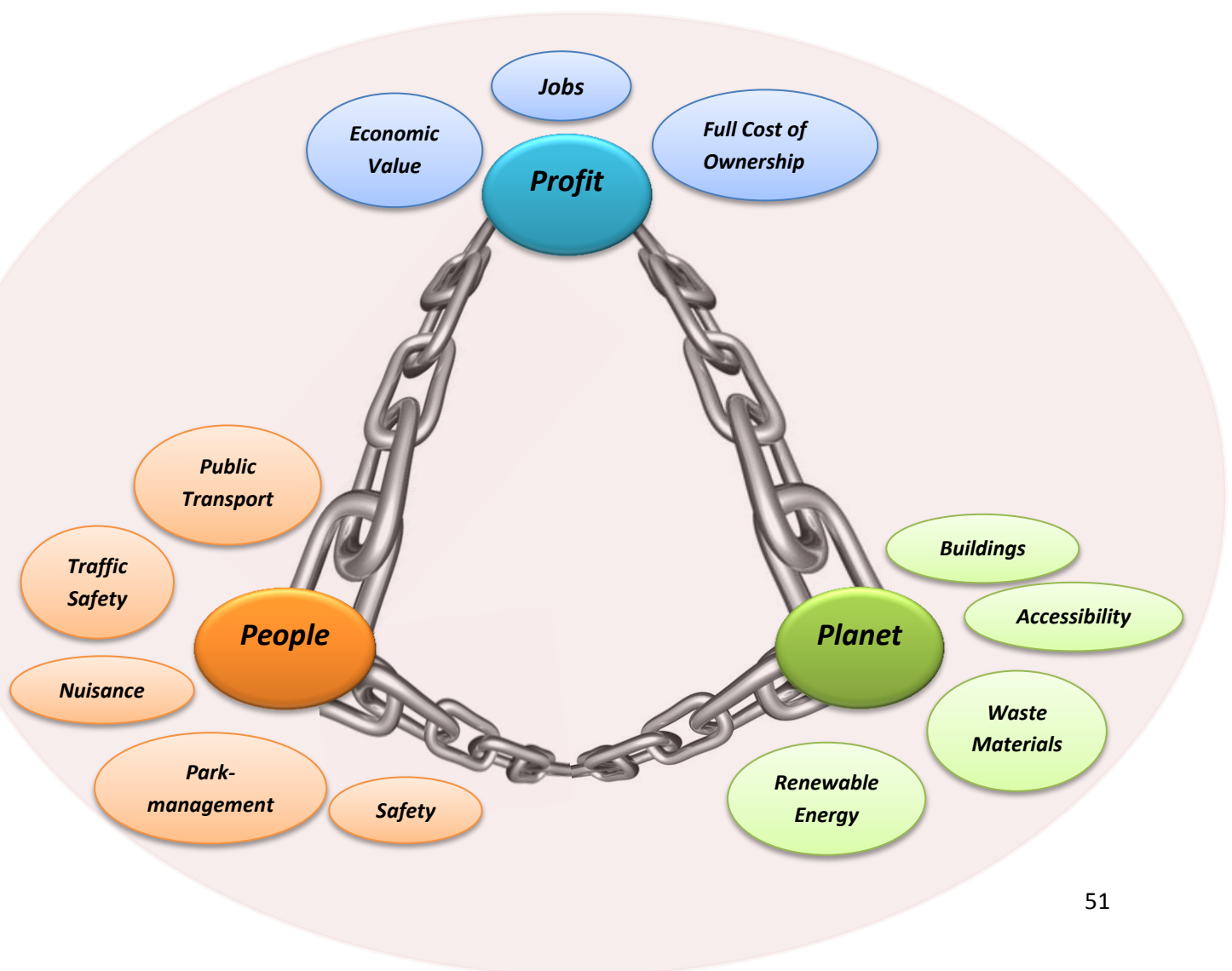
Another factor relating to the context has to do with the potential of a business site/location to improve on sustainability. As was pointed out in chapter 4, a site could, for example, score a '4' on a scale of 1 to 10. If improved, the maximum score it could attain would only be a '6' for example. A business site with offices could, for instance, have much more potential to be sustainable than a site with heavy industry. Therefore, it is important to consider what the potential for the business site might be and how this potential is exploited. This also has to do with local circumstances/context.

Another final note that must be made is that the model will (partially) measure figures and numbers at a certain moment before the plan for restructuring is executed. The plan, if executed, will be of positive influence on the things that are measured, but the exact quantity of those positive effects could be difficult to measure. The amount of jobs that might be created in a certain business case, for example, is an estimation; a prediction for the future. Other figures might be more difficult to predict. Therefore, the positive effects on the numbers will also be included in the final verdict of the model.

The model will be christened as the:

Sustainable Business Area Model (SBAM)

Model 2: Sustainable Business Area Model (Chains in model from: Dixon, 2011).



The three pillars of the prototype Sustainable Business Area Model are divided into several capitals. The Profit pillar consists of: Economic value, Jobs and Full Cost of Ownership. The People pillar consists of: Public Transport, Traffic safety, Safety, Parkmanagement and Nuisance. The final pillar is the Planet pillar, which consists of: Buildings, Renewable Energy, Accessibility and Waste Materials.

Several choices were made in determining which criteria should make up the model. First of all it needs to be pointed out that all criteria were selected to measure sustainability at a business site/location. Parkmanagement, for example, only applies to business sites. Arguably, some criteria can also be used to in sustainability models for residential areas. Safety and traffic safety would be good examples of this. Still, the model as a whole is specifically tailored to measure sustainability at business sites/locations.

Since the experts made clear that context is of vital influence when restructuring business sites, local circumstances have also been incorporated in the model. In paragraph 4.2 it became clear that the local circumstances can benefit or obstruct the degree to which a business site may be sustainable. Some sites might have more possibilities (or potential) to become sustainable than others. Therefore it is important to include this aspect in the Sustainable Business Area Model as well. The light purple aura that surrounds, overshadows and engulfs the model symbolizes the local context. The model is not 'closed' and the local context must always be viewed in detail when studying a business case.

The second aspect has been hinted at in paragraph 4.12 and relates to the feasibility 'constraint' that Oost NV has given. Essentially, Oost NV would like to be able to judge a business case in one day. Taking more time is not possible due to time/personnel limits. Therefore, the data necessary to measure the criteria should be easy to gather. Using existing data sources that can easily be accessed is key here, since this will take the least amount of time. Thus, apart from studying the interviews and literature, pragmatism has also been vital in determining the criteria. Pragmatism in the sense that data should be readily available for the most part. This means that some criteria were theoretically sound and good enough to be part of the model, but were still left out. The reason being, that collecting that data would take too long. Biodiversity is a good example here. Biodiversity is part of many sustainably models and could have been part of this one as well. However, since measuring biodiversity at a business site will most likely consume a lot of time, it has been left out. **Thus, only criteria that measure sustainability and meet the feasibility requirements have been selected to be part of the Sustainable Business Area Model.** These were giving on pages 12 and 13.

This may be seen as a weakness, since certain good criteria (biodiversity, profit) might be excluded from the model for being too hard to collect. Making a detailed calculation for the FCO criterion would have been great, for example. Unfortunately, I lack the time and expertise to make such a calculation. The feasibility constraint can be seen as a strength as well, since I can judge a restructuring plan for its sustainability in a relatively short time. So, a crude picture regarding its sustainability can be made with only a few man-hours. This is a great asset compared to other models, which may take dozens or even hundreds of man-hours to come to a verdict.

Regarding data collection it has been decided to include both qualitative and quantitative data. The reason being, that some criteria can be measured better qualitatively, whereas other ones can be

measured better quantitatively. Renewable energy, for example, can be expressed in a number (renewable energy produced as a share of total energy consumed). Parkmanagement, for instance, is a different matter. As has been described in paragraph 4.4, just having parkmanagement at a business site does not say that much. What is done concretely under the 'umbrella' of parkmanagement is important here and the best option to go for when evaluating this criterion.

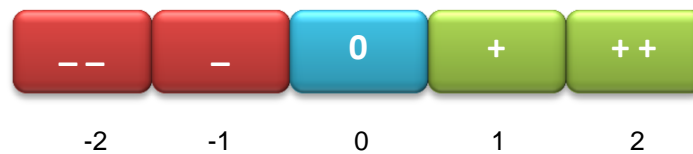
Finally, the way the judgments will be made needs to be elaborated further. Basically, the Sustainable Business Area Model consists of 13 criteria. When reviewing a certain case, information for all the criteria will be dug up. Then, the findings will be reviewed closely and analyzed. The harmony between the pillars plays an important role here. As in Telos, the three pillars should be in harmony with each other. If one pillar decreases whereas others grow, the development cannot be called sustainable. Two cases will be analyzed. Then, the results from studying those cases will be compared with each other. Finally, recommendations will be made for the most sustainable cases. It may, of course, be possible that no case can be called sustainable according to the People, Planet, Profit framework. It might happen for instance, that there is no harmony between the pillars for all cases (because 1 pillar shrinks in every case for instance). In this case, the most sustainable of the evaluated cases will be recommended anyway, even though it may not be called sustainably according to the PPP framework.

I would like to let the reader know that defining the criteria, and developing a scoring scale per criterion, was not without problems. A lack of available data was a large problem for some criteria. Here, some organizations possessed the data I required, but were unwilling to share it. As some information was confidential and, therefore, unobtainable, some criteria do not function in the way I would have liked them to function. I have done the utmost to obtain the necessary information to construct the model. After the initial interviews, I have contacted more experts from more organizations and consulted more literature. For one criterion I constructed my own database that serves as input for that criterion. Furthermore, I organized a feedback session with all my colleagues from the department of Bedrijfsomgeving at Oost NV. Limitations will be elaborated per criterion. All criteria will be described further below.

5.1.1 Describing results

Having described how the Sustainable Business Area Model works it becomes necessary to outline how the results will be documented. How the data will be collected will be described per criterion further below. What will be described now is how the eventual outcome will be 'scored' on a scale. Capitals will be scored with pluses or minuses, which can be translated into a number. The reason being that the data collected will be very different from business site to business site. Putting those in a more detailed score will most likely be very difficult and time consuming. Therefore, only a crude scale with pluses and minuses will be used. This way results can easily be compared. Following the reasoning of Telos, development can be called sustainable when no pillars decrease in value. If one pillar increases in value and the other two remain the same, the development can be called sustainable. This scale which will be used to score criteria looks as follows (see figure 9).

Figure 9: Scoring scale



Basically, **all criteria will be scored with this scale**. So, per criterion a decision will be made to see if it scores a double minus, a single minus, a zero, a plus or a double plus. Here, the future situation (as described by the business case) will be compared with the current situation. A double minus means that the development for a certain criterion is very negative. A single minus means that the development is negative; a zero means that there is no change; a single plus refers to a positive development and a double plus means that there will be a very positive development in the future. In paragraph 5.2, a more detailed description about how the scoring takes place will follow for every criterion. So, for each criterion a description about when it receives a minus or plus will be given. Some criteria will be scored with a 3 point scale. Specific reasons for this will be given in the description of those criteria.

Of course, deciding when a development will be characterized as 'positive' or very 'positive' is vital for the end score of a business case. Since local context plays a large role per business case, it is difficult, and tricky, to come up with a common comparable framework for each criterion. The increase in amount of jobs created, for example, can be different from case to case. If a company with 8 employees can hire 2 more in the future, it will be a large expansion for the company, but only a little one for the region. If a company employing 200 people can hire 20 more, the effects for the region will be larger. But the percentage increase of the number of employees for the company itself will be smaller. Parkmanagement is another example. When should the criterion parkmanagement deserve a plus and when a double plus? This was difficult to underpin, especially since parkmanagement itself may be regarded as an umbrella understanding; i.e. it can mean many different things. Taking these kinds of difficulties into consideration, the situation will be closely monitored per business case. When doing the scoring, the potential will also be reviewed. If a company has many possibilities of contributing to parkmanagement and seizes those possibilities, it will likely receive a very positive scoring. Conversely, if a company only has a limited number of possibilities to contribute to parkmanagement, but takes all opportunities it receives, it could still have a positive influence on the final verdict. So, the potential of the company and local context will be included.

After all criteria have been scored, a verdict concerning the sustainability of the case will be given. As one can see, the plusses and minuses are coupled with numbers. These numbers are used to make the final verdict. The verdict will start with a summary of the scores. To make the final verdict clear, the plusses and minuses will be translated into a number. These numbers will be added up and represented in a table to give a clear overview of the judgment. Then, they will be weighed and added up to come to the score for the pillar. Finally, the three pillar scores will be added up to come to the final, overall score for the business case.

In the 'Bedrijventerreinenagenda 2020' policy, the province of Gelderland stated a few central criteria which a business case should meet. These were mentioned on page 5. Two of those were

incorporated in the Sustainable Business Area Model: Jobs and Buildings. The other criteria that the province mentioned were not included, because they do not concern sustainability. They are eligibility criteria the province has set to frame its policy (the use of revolving funds for example). The province argues that business cases should create employment and that space should be used optimally. Therefore these criteria count **double** in the final making the final verdict. They will receive a weight of '2' when adding up the final scores.

So after the scores have been given, they will be weighed. Then, the scores will be added up to provide the final score for the pillar. Finally, the scores of the three pillars will be added up to give an overall score for the business case. After this, a description of why the case is sustainable (or not) will be given. Finally, recommendations will be made about how the case can be made more sustainable. So, the verdict will also have a steering function for the business case concerning the recommendations for sustainability.

It must be noted that a case can receive a minimum of -22 and a maximum of 22 points. A score of 12-points, for example, might look meager at first glance, but still resembles approximately 75% of the points that could have been collected. As a final step in determining the score, the amount of points will be translated into a number between 1 and 10. This is done because of practical considerations. When presented with the score, entrepreneurs and civil servants should immediately be able to understand it. A scoring domain between -22 and 22 is quite unusual, but a scale between 1 and 10 should be clear to civil servants and entrepreneurs. Thus, this final step does not benefit the model. It is an extra step to make sure that the outcome of the model is easy to understand.

To make everything clear, a short example for the planet pillar is given below.

Example 1: Scoring

Capitals	Score	Points	Weight	Final points
Buildings	++	2	2	4
Renewable Energy	-	-1	1	-1
Accessibility	0	0	1	0
Waste materials	+	1	1	1
Overall score				<u>4</u>

In the above example, the Buildings capital has been awarded with a double plus (=2 points). Renewable Energy has a minus (= -1 point), Accessibility a 0 (=0 points) and Waste Materials has a plus (= 1 point). Since the Buildings capital has a weight of 2, its amount of points will be multiplied by 2. So it will receive 4 points in total. The final score for the Planet pillar is the sum of the scores of the four capitals. So: $4 - 1 + 0 + 1 = 4$. Thus, the final score for the Planet Pillar in this example is 4. This way, business cases can easily be compared to each other.

5.2 Profit

With the insights gained from the interviews and background literature, the first three partial questions

can be answered. To refresh one's memory, the first three partial questions shall be stated below.

Partial questions:

- 1) What criteria define 'sustainable value creation' on the scale of business sites/locations?
- 2) Which criteria should be used to create a model for this research?
- 3) Can a model, which tests projected value creation of business cases, be developed?

Question 1 will not receive much attention. The reason being that the initial criteria that might be put in the model were subjected to two requirements (they should measure sustainability and they should be feasible). These requirements have been explained extensively in paragraph 5.1. Therefore, this question is used to guide the research process into the right direction, rather than spawning a heap of criteria that might or might not be used in the research. The criteria discovered with question 2 are far more interesting and relevant, since these criteria will be part of the prototype Sustainable Business Area Model.

The third partial question revolves around the criteria that meet the two requirements and are good enough to be part of the model. These criteria will be outlined below. When partial question 2 is answered, it is only a small effort to answer partial question 3. The model has already been visualized in model 2.

5.2.1 Economic value

The expected increase in economic value will also be part of the Sustainable Business Area Model. Economic value, or WOZ (Wet waardering onroerende zaken), indicates the value of real estate (WOZ-informatiepunt, 2014). The onroerende zaak belasting (OZB), or the property tax in English, is based on the economic value. The municipality determines the amount of property tax based on the economic value (Rijksoverheid, n.d.). One could argue that a high economic value is beneficial to the business owner, because one of his key assets (property) is valuable. The more valuable the assets are, the higher his debts may be (Short, Libby & Libby, 2007). Furthermore, if the economic value is larger than the mortgage value, one could ask the bank to scale his mortgage in a lower risk class. A lower risk class would lower the interest rate on the mortgage (Huibrecht Lagerwerd Financiële Raadgeving, 2012). The municipality would also benefit from a high economic value, since it would be able to collect more taxes. Thus, a high economic value will be beneficial for both the entrepreneur and the municipality. This means that 2 out of 3 perspectives in figure 8 benefit. All in all, an increase in economic value can also be seen as economic gain, which ought to be combined with sustainability (see paragraph 4.6).

The test on the business case of building A at the Novio Tech Campus in Nijmegen will reveal that the WOZ value cannot be used. Furthermore, the book value and taxation value also come with severe problems. Apart from these values, one can also use the 'capitalization factor'. This is the outcome of the price/value of a building divided by the rent (Melchior, 2005). This also leads to problems concerning the availability of data. Furthermore, in case the developed property will not be rented to a third party, the capitalization factor cannot be used. The economic value, too, has its problems when one uses the absolute figure for comparison (with other cases). The economic value is

the total value of the building(s) plus the value of all activities that take place there. A major issue with using the economic value is that it is merely an estimate, a rough prediction for the future. Still, the economic value is the best option to go for, since it measures the total amount of value added for the area.

To overcome the problem that the economic value cannot be predicted accurately, I have decided to use a statistical interval. Rather than comparing absolute numbers directly with one another I will see if the change in economic value is significant or not. Even though the economic value is a prediction, the entrepreneur or person making the business case can indicate whether or not there will be a significant change. This way I can still assign a score and compare cases. The value after the investment costs have been subtracted will be measured. This way, the net value creation can be measured.

In case there is no significant increase or decrease in the value, a '0' will be awarded (Nieuwenhuis, 2009). No increase or decrease will be seen as a neutral development, since the value will be maintained. A significant decrease (more than 10%) is seen as negative and will be awarded with a minus. If the change is more than 10%, it can be seen as very significant. So if the value decreases more than 10%, it will be seen as a very significant change and a double minus will be awarded. Conversely, if the value increases more than 10% a double plus will be awarded. Of course, predicting the economic value comes with much uncertainty. So, even if a predicted increase in economic value is very high, the uncertainty might be so great that only a plus is awarded.

One may argue that an investor will never invest in a project if the expected return is negative. Still, the projects discussed in this thesis need to adhere to a number of criteria set by the province. One of these criteria concerns co-financing by companies, municipalities and the province (see criteria 8 and 9 on page 5). This means that the province invests in these business cases as well (together with municipalities and local companies). One can imagine that a business case might lead to a decrease in economic value, but still creates many jobs and many benefits for the people and planet criteria. In that case, the province might still decide to invest in the project due to societal and environmental benefits. Therefore, a decrease in economic value needs to be considered in this case. Table 6 shows the scoring scale for 'Economic Value'.

Table 6: Economic value

Score	Description
- -	Very significant decrease in economic value (>-10%)
0	No significant change in economic value (-10% < 0% < 10%)
+ +	Very significant increase in economic value (>10%)

5.2.2 Jobs

A prime goal of Oost NV is to create jobs. Therefore, the amount of jobs that is created via the restructuring project will be an integral part of the Sustainable Business Area Model. It is important to make a critical note here. A business case may potentially lead to a larger efficiency and/or

mechanization of production processes. This could lead to the disappearance of jobs. That will not be seen as a negative effect, because a more efficient production process is beneficial to the business. Thus, the effect on the amount of jobs will be studied closely. The data will be collecting by asking the entrepreneur(s) how many jobs will be created with the realization of the business case.

Developing a scoring mechanism for 'Jobs' was not easy. For instance: one case might generate 20 jobs, which might be very beneficial to, for example, the small village where the case is situated. Another case might generate 100 jobs in a large city. But one can ask himself whether the latter figure truly is 'better' than the former. Those 20 jobs in a village might, hypothetically, be more beneficial for the livelihood of the village than the 100 jobs are for the livelihood of the city. This matter is open to debate.

A suggestion I received from colleagues was to relate the number of jobs created to the size of the investment done and see how large the investment is per job. This might also give an insight in the job creation, since a relatively small investment generating a relatively large amount of jobs might be better than a relatively large investment generating a relatively small amount of jobs. Still, this measure also has its problems. A small investment per job might be seen as positive, but what if the jobs created with this investment are jobs that do not add a lot of value to the region (foreign greenhouse workers for example). Conversely, a large investment per job might seem negative, but what if that investment creates high skilled, knowledge based jobs, adding a lot of value to the region (researchers creating new technological innovations for example). Therefore, investment per job does not say much about the kinds of jobs created. Furthermore, how many jobs a business case will create is an educated guess, so using absolute numbers is out of the question. Because of these reasons I have decided to see if there will be a significant increase in the amount of jobs or not.

For this capital a significance interval will be used again. Since the amount of jobs that is to be created with a business cases is an estimate, I have decided to use a statistical interval. One demand of the province is that a business case will contribute to employment in the region. It would like the amount of jobs to be increased or at least maintained (Provincie Gelderland, 2013b).

The same intervals will be used for 'Jobs' as for 'Economic Value'. In case there is no significant increase or decrease in the value, a '0' will be awarded. A change between 5% and 10% is a significant change; less than 5% is not significant (Nieuwenhuis, 2009). A significant decrease (between 5% and 10%) is negative and will be awarded with a minus. If the change is more than 10%, it will be seen as very significant. So if the value decreases more than 10%, it will be seen as a very significant change and a double minus will be awarded. Conversely, if the value increases between 5% and 10% a plus will be awarded, and if the value increases more than 10% a double plus will be awarded. Table 7 shows the scoring scale for 'Jobs'.

Table 7: Jobs

Score	Description
--	Very significant decrease in jobs (>-10%)
-	Significant decrease in jobs (-5% – -10%)
0	No significant change in jobs (-5% < 0% < 5%)
+	Significant increase in jobs (5% – 10%)
++	Very significant increase in jobs (>10%)

5.2.3 Full Cost of Ownership

The final capital under the Profit pillar is Full Cost of Ownership. With this capital I have tried to incorporate the full cost of ownership principle in the Sustainable Business Area Model. Essentially, total cost of ownership is a calculating method where the costs over the entire life span of a property are made clear by calculating the net cash value. So not only the initial investment costs are included, but also the costs that are made for, for example, maintenance (Gerard Salemink, personal communication, 17 January 2014). By making the external social and environmental costs internal, the total cost of ownership principle is transformed in the full cost of ownership principle (Reeve & Everdene, 2006). Making the external social and environmental costs internal can for example be done by investing in sustainable measures to reduce environmental burdens. Investing in large windows that would reduce the amount of electricity used for lighting a building could be an example of 'full cost of ownership' measure.

An example will shed more light on the matter. One could, for example, use light bulbs to lighten the company. The purchasing price of one light bulb is lower than that of, for example, a LED light. LED light is, however, much more electricity efficient and the LED bulbs themselves last far longer than normal light bulbs. This would make LED bulbs cheaper over the entire life span when compared with normal light bulbs. But, since normal light bulbs require a lower initial investment companies might be inclined to buy normal light bulbs even if they are more expensive in the long run. One could think of many examples where TCO could be used to increase efficiency and lower costs, such as a privately owned piece of road/asphalt or an expansion of the building.

Personally, I do not have the knowledge or skills to calculate the net cash value for a building, a road or a large machine. Therefore, I cannot make the costs over the entire life span of an asset clear. Instead, the decisions of the owner of the business case to invest in the sustainability of the assets will be reviewed. Will a building, for example, be designed specifically to last long and cause little burden on the environment (even though it might have larger investment costs)?

Thus, the decisions that the entrepreneur makes regarding the design of the building is the

Picture 13: LED light bulb
(From: Shop je groen, 2014)



central focus of the criterion. Based on the entrepreneur's decisions, a score will be given. The data will be collected by studying the business case and, when necessary interviewing the owner of the business case.

What is left is to decide is how the scoring takes place. Since the decisions of the owner will be evaluated, it is difficult to create a detailed scoring range with clear boundaries. Therefore, three (instead of 5) scoring categories will be used: double minus, neutral and double plus. In case there is no consideration for sustainability or the maintenance of the building in the design phase, a double minus will be given. When standard sustainability measures are taken, such as double glass, and maintenance is not considered, a neutral '0' will be awarded. A double plus will be awarded when sustainability is an integral part of the building. Here, maintenance costs for the entire lifetime of the building have also been made insightful. The scoring scale for 'Full Cost of Ownership can be found in table 8.

Table 8: Full Cost of Ownership

Score	Description
- -	No consideration for sustainability measures. Maintenance of building not considered in design phase.
0	Standard sustainability measures are taken (for example double glass). Maintenance of building not considered in design phase.
+ +	Much consideration for sustainability measures. Sustainability is integral part of building. Maintenance costs (for building during for its entire lifetime) have been made insightful.

5.3 People

5.3.1 Public Transport

When asked to describe the ideal sustainable business location, Dick Lunenberg argued that accessibility is very important (personal communication, 5 February 2014). Not only accessibility by car, but also accessibility via public transport. Some people do not have a access to a car and are dependent of public transport. Here one could think of people who do not own a car, but also guests from abroad who do not have a car in the Netherlands. *'Image having to pay for a taxi'*[from the airport to the company location, when they could come by train] (Dick Lunenberg, personal communication, 5 February 2014). He also said that good access to public transport limits the amount of parking spaces that one needs (Dick Lunenberg, personal communication, 5 February 2014). It must be noted that both Telos and IVAM include public transport in their models for sustainability. Furthermore, the more that public transport is used, the less cars are used, the less the environment suffers (assuming that cars burden the environment more than trains or buses). Thus, accessibility by public transport seems to be an important factor regarding sustainability at business sites/locations. This capital will be measured by looking at the amount of modes of public transportation that can be accessed from the business site and the distance to those modes. The data will be collected by using websites such as

Google Maps, NS travel planner and 9292OV.

This capital will be scored based on the distance of the business site/location to the nearest bus stop and/or train station. The division for train stations has been based on circle theory. In this theory, train stations are surrounded by concentric circles. The inner most circle has a radius of 500 meters, the second one 1 km, the third one 1,5 km and so on. Here, the division is based on a policy document of the province of Gelderland. In that document, the province plans railway stations based on circle theory (Provincie Gelderland, 2001).

For bus stops, circle theory is used as well. For bus stops a closer distance has been taken, since buses are more of a regional/local mode of transportations than trains. Having a railway station at 1 kilometer distance from the business site might be considered as quite close. Having a bus stop at 1 kilometers distance may be seen as quite far away. Especially, since it is not hard to image that one first travels by train and then switches to a bus when travelling to a business site via public transport. Since bus stops ask for a closer distance, the inner circle has a diameter of 250 meters, the second circle 500 meters, the third circle 750 meters and so on. The scoring scale for 'Public Transport' can be found in table 9.

Table 9: Public Transport

Score	Description
--	Public transport connections are far away. Closest bus stop is more than 1 km away and closest train station is more than 2 km away.
-	Far away from bus stop (750 m – 999 m) or train station (1500 m – 1999 m). There are one or more bus lines.
0	Medium proximity to bus stop (500 m– 749 m) or train station (1 km – 1499 m). There are one or more bus lines.
+	Fairly close proximity to bus stop (250 m - 499 m) or train station (500 m 999 m). There are one or more bus lines.
++	Close proximity to bus stops (<250m). There are multiple bus lines. Close proximity to train station (<500m).

5.3.2 Traffic Safety

Originally, I decided to include the 'Traffic Safety' criterion. Both Telos and IVAM include traffic safety in their sustainability models. Telos measures the amount of serious traffic accidents per 100.000 people (Telos, 2010). IVAM measures the amount of traffic incidents per year (IVAM, n.d.). Traffic safety is extremely important and every person deserves to take part in traffic with the least amount of risk of an accident. Therefore 'Traffic Safety' was a part of the model. Here, the amount of traffic accidents at the business site where the business case focuses on was the central focus.

Data, however, could only be measured on a municipal scale. In that case one can ask himself

Picture 14: Traffic safety
(From: San Dimas, 2014)



how valuable the data are for the determining the traffic safety for a local restructuring project (building A at Novio Tech Campus for example). Furthermore, small municipalities might not measure/own traffic safety data. Therefore I have decided to remove this criterion from the model.

5.3.3 Safety

Originally, 'Safety' was also included in the Sustainable Business Area Model. Again, both Telos and the DPL model include to safety in their models. Telos divides safety into several aspects, such as the chance of becoming a victim to a crime or the degree to which one feels safe (Telos, 2010). DPL measures their capital of 'safety and crime' as the amount of burglaries and crimes (in Dutch: misdrijven) per year (IVAM, n.d.). As the DPL model is more tuned to business sites I followed their approach in designing this capital. The 'Safety' capital originally measured the amount of burglaries and crimes at the business site. The reason being that the owner, personnel and other people at the business site/location should be safe from crime. In addition, the companies' property should also be safe from burglars. Another advantage that could stem from a small amount of burglaries is a smaller insurance premium. The data will be collected by asking the local municipality (by phone, e-mail or in person) and/or by checking websites such as fund.nl and the atlas of municipalities.

Unfortunately, data could only be retrieved on a municipal level. Just like the 'Traffic Safety' criterion, it is questionable how important these data are for a local restructuring project. Furthermore, small municipalities might not measure/own these data.

5.3.4 Parkmanagement

One question the experts sunk their teeth in revolved around parkmanagement. Many experts said that parkmanagement is very important to upholding the quality of business sites over the years. John Dagevos declared that parkmanagement as a contribution to sustainability at a business site is '*conditio sine qua non*' (personal communication, 30 January 2014). Some added a critical note and said that it really depends on what is done concretely. Contributing to parkmanagement alone does not make a business site sustainable. It depends on what is done in practice. Bas van de Westerlo described parkmanagement as a means to improve the degree of sustainability at a business site (personal communication, 10 February 2014). The DPL model includes 'cooperation and facilities', which Jeroen Krijgsman described as the degree to which companies cooperate to achieve results at a business site (personal communication, 7 February 2014). Since it is important to look at what is done in practice regarding parkmanagement, the capital 'parkmanagement' will describe just that. By interviewing the entrepreneur or local organization it will become clear exactly what activities are labeled as parkmanagement at a business site/location.

This capital will measure the amount of different parkmanagement themes handled by the local parkmanagement organization. These themes were distinguished by Oost NV (Oost NV, n.d.). Of course, the concrete parkmanagement projects will be studied closely.

Some of these themes have a planet vibe (sustainable energy), some a profit vibe (telecommunications) and some a people vibe (security). I have decided to range 'Parkmanagement' under the People pillar, because parkmanagement mainly concerns upholding the quality of a business site via organization. Businesses at the site cooperate with each other and make agreements

in order to maintain the quality of the business sites. The degree of organization thus is a form of human capital, since it is beneficial to the quality of the business site. This way, the second 'ring' of figure 8 (the perspective of the business site) is integrated in the model. Still, it is safe to say that parkmanagement is an umbrella notion that includes different themes. Therefore, some parkmanagement projects might benefit the profit dimension and other projects might benefit the planet or people dimensions in a business case.

Developing a scoring scale for 'Parkmanagement' was exceptionally difficult. Here, little scientific literature, that could help me in devising a scoring scale, was available. I would like to remind the reader that merely having parkmanagement at a business site does not say much about upholding the quality of the site. According to the experts, the concrete activities done to uphold the quality of the site are important. This contradicts with the way the DPL model measures 'organization and facilities', since that merely includes 1) the presence of a local business organization, 2) the percentage of member entrepreneurs of this organization and 3) a list of shared facilities (Jaap Kortman, personal communication, 29 September 2014). That criterion, thus, does not describe the concrete activities pursued at a local site. Following the experts' reasoning I will attempt to measure the concrete activities done at a business site. I also studied a sustainability scan made by Royal Haskoning, but that did not yield useful results. Since scientific literature and knowledge of existing sustainability models yielded little knowledge about creating a scoring scale for 'Parkmanagement', I had to create my 'Parkmanagement' scoring scale from scratch.

Oost NV has made a parkmanagement manual which describes the different forms of parkmanagement. 9 themes that can be addressed with parkmanagement, namely: waste, energy, security, internet (broadband), sustainable energy, maintenance of green space, environment, mobility and telecommunications (Oost NV, n.d.). I will try to measure this criterion by measuring the amount of themes that parkmanagement at local business site covers. A theme will only be counted if concrete activities are pursued in its name.

Basically, the scoring range consists of 3 categories in this case. This has resulted in the following scoring range. In case there is no parkmanagement and no parkmanagement organization, a double minus will be awarded. If no organization is present, the possibilities of exploring parkmanagement in the future are slim. In case there is an parkmanagement/entrepreneur organization, but no or few activities (0, 1 or 2 themes) are done, a neutral '0' will be given. It will be seen as neutral, since there is potential to develop parkmanagement because of the organizational framework at the local site. A double plus will be given when an effort is made to ensure the quality of the business site (i.e. more than 1 theme addressed). The scoring scale for 'Parkmanagement' can be found in table 10. Data will be collected via an interview with someone who worked on the business case.

Table 10: Parkmanagement

Score	Description
- -	No parkmanagement, no parkmanagement/entrepreneur organization at site.
0	No or some parkmanagement: 0 - 2 parkmanagement themes addressed. Parkmanagement/entrepreneur organization is present.
+ +	More than 2 parkmanagement themes addressed. A local parkmanagement/entrepreneur organization is present at the site.

5.3.5 Nuisance

Figure 8 describes the different perspectives one should acknowledge when dealing with issues regarding sustainability. These perspectives are:

- The perspective of the entrepreneur
- The perspective of the business site
- The perspective of the surrounding area (John Dagevos, personal communication, 30 January 2014).

The first two perspectives come forward in several criteria in the Sustainable Business Area Model. The perspective of the surrounding area, however, seems to be somewhat underrated until now. By including this perspective as well, the model would achieve a broader look on sustainability. The area that surrounds the business site should also be considered. To be more precise, the amount of nuisance that people who live directly adjacent to the business site experience will be the topic of interest. The way this will be measured is inspired by the DPL model. It needs to be mentioned that this capital also has a 'Planet' vibe to it. The is that nuisance experienced by people will most likely also be experience by plants and animals. It will be measured by predicting the effect of the business case on the current amount of complaints. First, data will be collected via someone who worked on the business case. He/she will be asked about how the business case will influence the amount of complaints. If necessary, the amount of complaints (about noise, stink, air) of the people who live next to the business site will be counted. The amount of complaints will be collected by asking the local municipality about complaints of residents of the surrounding area (by phone or e-mail). So, collecting data via someone who worked on the business case is central here.

I will use a 3-point scoring scale, because this scale fits this capital best. I is difficult to forecast the future amount of complaints. Therefore, I will see if an increase or decrease can be expected. For this reason I will use a more crude 3-point scoring scale.

A decrease in the amount of complaints is a positive development and will be awarded with a double plus. If the amount of complaints is likely to stay the same a zero will be given. A predicted increase of the amount of complaints will be seen as a negative development. In that case a double negative will be given. In case there are no complaints and the future amount of complaints stays the same, a double plus will be awarded. The reason for this is that the best possible situation has already been reached. Table 11 shows the scoring scale for 'Nuisance'. Data will be collected via an interview with someone who worked on the business case

Table 11: Nuisance

Score	Description
--	Increase in amount of complaints
0	Same amount of complains
++	Decrease in amount of complaints

5.4 Planet

5.4.1 Buildings

Several experts spoke of the way land is used by the company. Dick Lunenberg said that *'industry should use, or abuse, as little land as possible, because you take this land away from nature'* (personal communication, 5 February 2014). Hitachi Data Systems in Zaltbommel, for example, has parking spaces on its roof to minimize the amount of space that is taken from nature (Dick Lunenberg, personal communication, 5 February 2014). Jacques van Dinteren has a similar opinion, since he said that one *'should respect existing shapes ... If there is, for example, a structure of creeks and trees, will one adapt his plan to that?'* (personal communication, 11 March 2014). He held that there are many examples of projects where landscaping is taken very serious. This is done to give local plant- and animal life a better chance to survive at a business site (Jacques van Dinteren, personal communication, 11 March 2014). This would be in concurrence with the broader theme that has been brought forward in this thesis: context dependency of sustainability. Every plan for restructuring a business site/location will be grounded in a certain context. Since the interviews revealed that the way in which land is used is an important part of sustainability, it will be included in the model. By including the way the land is used in the model, the local context of the business case will be respected. Furthermore, the way the building is used is also part of this capital. Demolishing a building and replacing it with a new one will lead to many waste materials. Furthermore, building a new building requires many new raw materials that need to be taken from the earth. Redeveloping an existing building requires less materials and is, therefore, better for the environment. Also, the way in which space is used is also of great importance here (for example natural structures that could be integrated in the design).

When applying the Sustainable Business Area Model, this capital cannot be made measurable in terms of numbers. A description of the way in which the land is used will be given. The data will be acquired via the business case and/or a talk with the entrepreneur(s) who play(s) a central role in the business case.

For this capital a 3-point scale has been made. The reason for this is that the scoring takes place based on a description. It is not possible to make a detailed division here, because one works with a description that might have a large margin for error. Therefore, only a rougher scoring mechanism can be used. A building that is demolished and replaced by a new one will be seen as unsustainable. Especially if the existing (natural) structures on the land are not respected (for example if old trees or creeks are removed). In case a building is partially re-used or improved and partially rebuilt and if existing (natural) structures on land are partially respected, a '0' will be given. In case the

building is completely re-used and existing (natural) structures are respected, a double plus will be given. The scoring scale for 'Buildings' is shown in table 12.

Table 12: Buildings

Score	Description
--	Building is completely demolished, new building built. If applicable: existing structures on land are not respected.
0	Partial re-use/improvement of building. If applicable: existing (natural) structures on land are partially respected.
++	Re-use/improvement of existing building. If applicable: existing (natural) structures on land are respected.

Picture 15: Roof of Hitachi Data Systems Zaltbommel, filled with a parking lot and 17.000 m2 of solar panels (From: Yoshida, 2013).



5.4.2 Renewable Energy

Renewable energy is a theme that comes forward in both the DPL model and the Telos model. DPL measures the amount of GJ, kWh or number of installations (IVAM, n.d.). Telos includes renewable forms of energy, such as wind energy, solar energy and biomass (Telos, 2010). Some experts also indicated that energy is an important factor concerning sustainability. Especially the agricultural sector is a notorious energy user and is trying to find ways of generating renewable energy (Wils Kloos, personal communication, 14 January 2014). Generating sustainable forms of energy locally is good for the environment, but can also significantly lower the electricity bill (Dick Lunenberg, personal communication, 5 February 2014). Thus, generating renewable clean forms of energy locally is not only beneficial to the environment, it also benefits the owner.

Therefore the amount of renewable energy that will be generated at the business site/location as a percentage of the total amount of energy that will be used will be included in the Sustainable Business Area Model. The data will be acquired by studying the business case or by asking the

entrepreneur(s) who play(s) a central role in the business case.

For 2020, the province of Gelderland would like to see the share of renewable energy (of the total amount of energy produced) increase to 14% (Provincie Gelderland, 2013c). This will be taken as point of reference for the 5-point scale. If 10% - 15% of the total energy used is renewable, and generated at the site, the business case will receive a neutral '0'. The other scoring thresholds have been based on the thresholds that Telos uses to score sustainable electricity production with compared to total energy production (Telos, 2010). The reason for this is that both capitals are fairly similar. The scoring scale for 'Renewable Energy' can be found in table 13.

Table 13: Renewable Energy

Score	Description
- -	<5%
-	5% - 10%
0	10% - 15%
+	15% - 20%
++	>20%

5.4.3 Accessibility

Being accessible via road is key for any business. Therefore the distance (in km) to the closest high way exit will be measured. With a close proximity to the high way transport can be done swiftly and smoothly. In addition, the quicker cars and/or trucks can enter a high way, the less they burden the surrounding area/region. Of course, context is a very important theme in sustainability; the implementation of sustainable measures depends on the region and on the wishes of local stakeholders (John Dagevos, personal communication, 30 January 2014). A business could, for example, transport his goods via water or railway. It would be folly to measure the distance from the nearest high way exit if that distance is irrelevant to the company. If the local circumstances are such that the distance to another mode of transportation is more relevant, than that other mode of transportation will be included. Thus, the accessibility will be measured based on the most relevant transport mode(s). This criterion has been ranged under the planet pillar, because the less the surrounding area is burdened with transport movements, the better it is. The distance will be measured with a computer.

Deciding how the scoring should take place was, again, not without problems. To determine when a plus and when a minus should be awarded was difficult to underpin. This has to do with the lack of data. I contacted Jaap Kortman of IVAM (the organization that developed the DPL model). Unfortunately, he could not share how the scoring scale for 'accessibility' in the DPL model works, because that is confidential. After this I contacted Karel Martens, who is an expert on mobility and transport planning and works for the Radboud University in Nijmegen, Netherlands. Via Mr. Martens I got into contact with Jasper Beekmans, researcher at Radboud University. He has access to a database that could help me devise a scoring scale for 'accessibility'. Unfortunately, that database was could not be shared with external parties (Oost NV). Unable to build on the existing body of knowledge,

I have created a scoring mechanism based on the average distance of business sites in Gelderland from the nearest high way exit. Using Google Maps, I measured the distance to the nearest high way exit for 93 random business sites in Gelderland. From that data I calculated the average distance from a business site to the nearest high way exit.

As has been written, the verdict of the Sustainable Business Area Model will be used for 2 purposes: 1) to advise the province of Gelderland on investing in plans for restructuring (business cases. 2) to improve the degree to which a restructuring project is sustainable. Since a group of companies cannot improve the distance of their business site to the nearest exit, the score of this criterion can only be used to serve the first purpose. Therefore, the maximum amount of points that can be awarded for this criterion has been reduced compared to the other criteria. The maximum score this criterion can receive is a plus; the minimum is a minus.

The scoring scale for 'Accessibility' can be found in table 14.

Table 14: Accessibility

Score	Description
-	Significantly further away from high way exit (>5% farther than average)
0	5,70 km from high way exit (5% deviation allowed)
+	Significantly closer to high way exit (>5% closer than average)

5.4.4 Waste Materials

Originally, 'Waste Materials' was included in the Sustainable Business Area Model. One of the basic principles of the Cradle to Cradle philosophy is that *'waste is food'*. Recycling products would stimulate the emergence of the circular economy and will benefit the environment (personal communication, 10 February 2014). If wastes are not dumped or combusted, but used again the pressure on the environment can be decreased. Furthermore, switching to a circular economy (i.e. recycling materials) in the Netherlands could translate into €7,3 billion of extra growth per year (Bas van de Westerlo, personal communication, 10 February 2014). Therefore, the amount of waste materials that is recycled as a percentage of the total amount of waste materials was part of the model.

Measuring this capital was quite a different matter. Some waste (paper, plastic) is nicely separated and is probably re-used. Other kinds of wastes might be picked up by a waste company and might be used again by another company. Since the analysis should be done in a limited amount of time, I cannot find out which materials are re-used. Determining the amount of re-used materials is too time consuming, so the 'Waste Materials' criterion has been removed from the model.

Overview

Based on the theory and the interviews a prototype model, for judging the degree to which restructuring plans for business sites/locations are sustainable, has been developed. The model can be seen in model 2. Since Oost NV specifically requested me to develop a **working** model, this research deserves another final step. In order to transform this prototype into a working model, I need to test it onto several business cases. This will help me discover which parts of the model function well

and which ones do not. Some criteria might, for example, be great to include in the model in theory, but might be difficult to use in practice.

As has been explained before, determining how the scoring mechanism was problematic for some criteria. Since some necessary data was confidential I could not build on the existing body of knowledge when devising a scoring mechanism. In order to still develop an academically sound scoring mechanism I have gone beyond length to find more data. I have contacted an expert I already interviewed (John Dagevos) and I contacted new experts (Jaap Kortman of IVAM, Karel Martens of Radboud University and Jasper Beekmans of Radboud University). In addition, I have studied much literature on diverse topics in order to build a scoring mechanism. Furthermore, I created my own database on distances between business sites and highway exits. In some cases, the results were satisfactory. In other cases, my search for knowledge did not yield the necessary information. For that reason, some criteria have been simplified. One can ask critical questions regarding the decreased validity of the model. Still, I can argue that I have done the utmost to make sure the model would be as academically sound as possible.

In appendix 1 two cases will be analyzed. To create a tested, working model, I will reflect on the workings of the model and improve it. One could image that data collection, for instance, does not go as planned for some criteria. If this happens I can reflect on it and change the model in such a way that data collection goes easier.

At the end of appendix 1 the reader will find the final version of the model, tested and completed. The final version of the model is also portrayed in chapter 6. Having completed the second part of the main research question, the second and final milestone is reached.

6 Conclusion, Reflection and Recommendations

Introduction

This chapter will be the closing chapter of this master thesis. In the previous chapter, the second part of the main research question was answered. The prototype model from chapter 5 has been tested on two business cases to create a working model for judging plans for restructuring business sites/locations for their sustainability. This test can be found in appendix 1. All that remains is to come to a conclusion regarding the main research question. In chapter 6.1 this question will be answered. Secondly, in chapter 6.2, I will reflect critically on the research process and make recommendations for further research.

6.1 Conclusion

This research tried to expand the existing body of theory around the notion of sustainability. It has been the goal of this investigation to create a model that captures the different ways in which value can be created and quantified by using a business case for restructuring a business site/location. Much has been written about the concept of sustainability and many models to capture sustainability in measurable terms have been created over the past years. Aspects of sustainability and sustainability models that were described in the literature have been used to devise a theoretical framework. With this framework the conceptual People, Planet, Profit model was created. The next part had to do with filling in the criteria that were going to make up the People, Planet, Profit model. 9 experts on sustainability were interviewed to get an idea of how to create the model. The interview guides can be found in appendix 1.

To refresh one's memory I will state the main research question once more:

How can value in terms of People, Planet, Profit be captured in a reference framework/model and be tested on business cases for restructuring a business location/part of a business site?

In order to frame the research question it is necessary to refer to value as *value which is projected to be created by business cases for improving a business site/location, that are created in the province of Gelderland during the period 2013-2014 and adhere to the criteria set by the province of Gelderland.*

As can be seen, the main research question is divided in two parts: 1) how to develop a model and 2) how to test this model onto business cases for restructuring a business location/part of a business site.

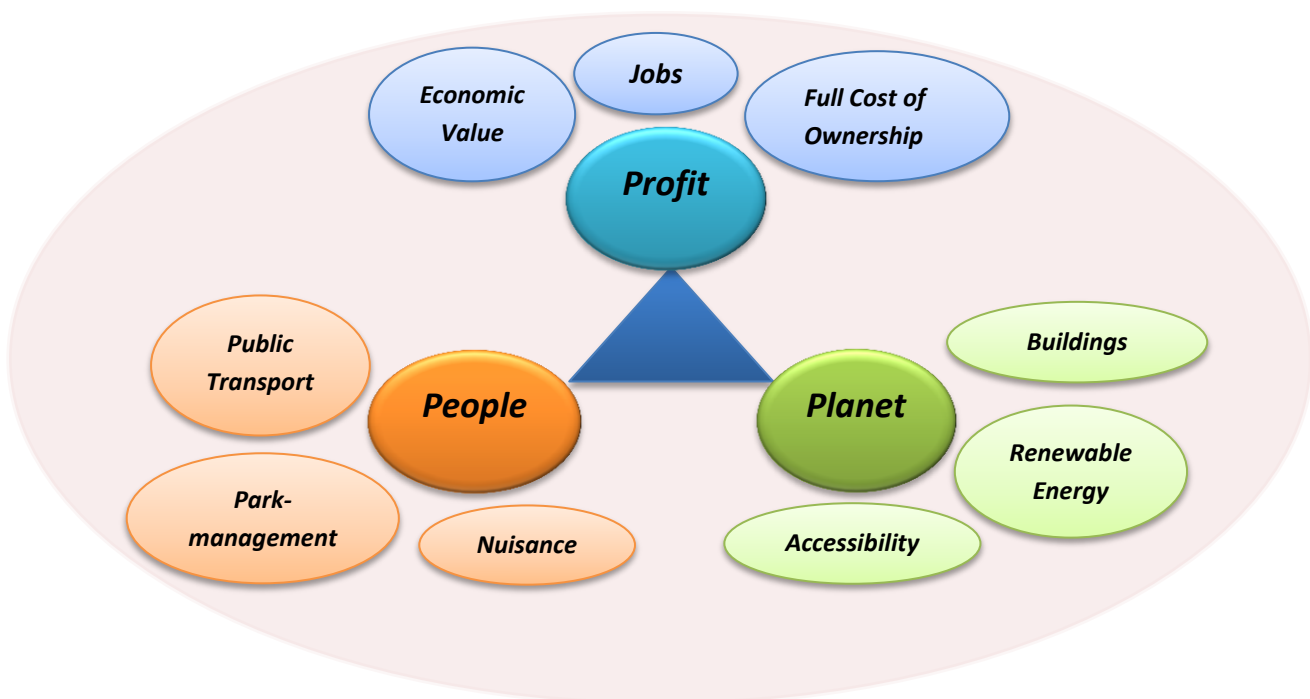
Furthermore, in paragraph 1.4, 4 partial questions were created to help answering the main research question and to guide the research process. These questions have been answered in chapter 5 and 6. Partial questions:

- 1) What criteria define 'sustainable value creation' on the scale of business sites/locations?
- 2) Which criteria should be used to create a model for this research?
- 3) Can a model, which tests projected value creation of business cases, be developed?
- 4) Can the model be applied in order to test the value that business cases aim to create?

With the insights gained in this research it is now possible to answer the main research question. The first part of this question refers to developing a prototype model for judging the sustainability of plans for restructuring a business site/location. Having analyzed the interviews and background literature, a prototype model for judging the sustainability of plans for restructuring business sites/locations was developed. This model can be seen in 'model 2'. Initially, 12 criteria were founded, ranged under 3 pillars. The profit pillar was to be made insightful by measuring Jobs, Economic Value and Full Cost of Ownership. The people pillar was defined by Public Transport, Traffic Safety, Safety, Parkmanagement and Nuisance. The planet pillar was defined by Buildings, Waste Materials, Renewable Energy and Accessibility.

The second part of the research question is the more interesting part, since that part culminates into the final working model. The final chapter revolved around testing the prototype model onto a business case in order to find and overcome flaws in the prototype model. This way, a working model could be created. A business case, which revolved around a renovation of building A at the Novio Tech Campus, was used. These tests revealed many new insights that helped to improve the prototype model. To freshen up one's memory the final version of the Sustainable Business Area Model will be depicted below in model 3. The criteria 'Traffic Safety', 'Safety' and 'Waste Materials' were removed from the prototype Sustainable Business Area Model. 'Traffic Safety' and 'Safety' could only be measured on a municipal level, which does not say much about the safety at a specific business site. 'Waste Materials' could not be measured, since both cases proved that it was impossible to find out to what degree waste materials were re-used.

Model 3: Sustainable Business Area Model



Four important conclusions can be drawn regarding the great advantages of this model:

- the ability to make an analysis and a verdict of a business case in approximately 1 or 2 days. This analysis can be done by 1 person;
- the model's transparency. Each criterion (and allocation of the scores) is well-underpinned, which makes it easy for the reader/user to find out why certain choices were made;
- the practical character of the model. The model is easy to use and does not contain complex mathematics;
- some of the criteria stated by the province of Gelderland (see p.6) are included in the model.

These four characteristics set the model apart from many other sustainability models. Criteria such as 'Full Cost of Ownership' and 'Economic value' can be improved if one lets the 'time constraint' go (i.e. one day to make a verdict with the model). If one lets this constraint go, more time can be put in data collection and analysis, meaning that a better picture can be painted about the sustainability of a business case. However, if one lets this constraint go, one loses one of the unique features that distinguish this model from all the other sustainability models: the ability to make a verdict on the sustainability of a business case in a very short time with minimal effort. Therefore, if one were to improve this model, one should decide whether he honors this constraint or not. Whether one adheres to this constraint or not determines what the model will look like.

If one chooses to operate within the 'one day' frame, one should consider the practical limitations of data collection in such a short time. This inevitably reduces the validity of the model compared to other more elaborate sustainability models. Still, one does have the unique advantage of making a judgment on sustainability in one day with minimal effort, which is far, far less than other sustainability models require.

Another conclusion that can be made is that this research has expanded the existing body of theory around restructuring business sites. With the creation of the Sustainable Business Area Model, demand oriented approaches in restructuring business sites can spawn sustainable business cases for restructuring business locations/parts of business sites. Since People, Planet and Profit pillars were combined, future restructuring plans may become sustainable in a broad sense (rather than the narrow sense, which focuses solely on the Planet pillar). This way, future restructuring plans can contribute to a better world in terms of People, Planet and Profit.

To provide a more complete answer to the second part of the main research question I will describe the different criteria from the final working model. The final criteria are the end results of the prototype model test on the business case.



Economic Value measures the economic value created with the realization of the business case. The economic value is the value of the increase in value of the building(s) and the value of all activities taking place inside the building(s).



The Jobs criterion measures the amount of jobs the business case aims to create.



The Full Cost of Ownership criterion evaluates the decisions the owner of the business case makes regarding the integration sustainability in the design and structure of the building(s).



The Public Transport criterion measures the amount of public transport connections (train, bus or tram) near the business site.



Parkmanagement describes the activities taken at the business site described as parkmanagement. Local cooperation between companies to ensure the maintenance/improvement of the quality of the business site also counts.



The Nuisance capital is about the amount of complaints about noise, stink, air and safety from people who live adjacent to the site.



The Buildings criterion describes the way the land will be used with the realization of the business case.



The Renewable Energy capital measures the percentage of renewable energy generated in relation to the total amount of energy used (with the realization of the business case).



Accessibility describes the way in which the business site can be reached by car.

Here, again, it is very important to make a critical remark. As has been argued time and time again, this model should be applicable within a limited amount of time. The original time Oost NV set me for analyzing a business case was one day. Based on the analysis of the first business case (building A at NTC) I concluded that this was not possible. The analysis of the second case (Nizo-Vika), however, consumed less time and effort, because the model was improved based on the first case. Based on these findings I conclude that it is possible to analyze a business case in one day, given that all data are easy to gather. Some data (like the amount of jobs) may be easy to predict for one case, but might be difficult to predict for another. Therefore, an analysis may take one day, but may also take two days

depending on the availability of data.

Still, the criteria in the model were chosen partly because the necessary data is easy to collect. Existing sources are used as most as possible to make sure that the time constraint can be met. This might, obviously, lead to a poorer quality of the outcome of the model. The reason being, that some criteria were not included due to time constraints; data collection for these criteria would have taken too much time. Therefore, only criteria where data collection goes fast have been chosen to be part of the model.

I would like to stress that the model built in this thesis is one of many ways with which one can measure sustainability. Furthermore, this model is not a 'closed' model. When studying a business case, there may be local circumstances that are not grasped by the model. These may be of great influence on the final outcome of the model.

6.2 Reflection and recommendations

In this closing paragraph I will reflect on the research process. With the creation of the Sustainable Business Area Model, this research has opened a new research agenda. Therefore, I will also give recommendations for further research.

6.2.1 Reflection

With this research I have attempted to expand the existing body of theory on the concept of sustainability. All in all, the research process had a strong iterative character, since I had to return to earlier research stages on several occasions to gather new information. When devising a scoring scale for the criteria, I had to draw on new literature and a new interview. In addition, I had contact with several other experts to supply me with new information. This also led to new insights that were helpful in devising a scoring scale.

Writing the research plan went smooth, especially since I could draw upon the knowledge, experience and contacts of Oost NV. My colleagues helped me to become knowledgeable on the subject in a short time. Since developing a research plan went smooth, I had ample time for the research. Data collection via interviews was the first step after finishing the research plan. Most of the experts I contacted were willing to give me an interview, which meant that the research proceeded apace. Processing the interviews was a labor intensive task, but helped to give me a solid bedrock from which I could proceed to the next part: transforming the rough data from the interviews into information I could use as input for the model.

Chapter 4 describes the results that were found via the interviews. Until then the research proceeded apace, but the difficult task (and first milestone of the research) of creating the prototype model dawned at that stage. It was in this stage that the iterative character of the research revealed itself, as the criteria that were to make up the model needed to be defined. These criteria needed to be academically underpinned, but should also be able to be used in a short amount of time. Here, I needed to consult new literature to underpin the criteria. This stage took time and I needed to consult my university supervisor (Frans Boekema) and Oost NV supervisors (Liane van der Veen & Dion Sluijsmans) regularly. They helped me find and correct weaknesses in the model. Creating a scoring mechanism was exceptionally difficult and their support helped me tremendously.

With the finishing of the prototype Sustainable Business Area Model I completed the first milestone of the research. But, the research was far from over since the prototype model needed to be transformed into a working, tested model. In appendix 1 the prototype Sustainable Business Area Model was tested on the business case of Building A at the Novio Tech Campus in Nijmegen, Netherlands and on the case of Nizo – Vika in Ede, Netherlands. These tests were absolutely vital for the research, since they revealed several weaknesses in the model that required improvement. These were weaknesses regarding the scoring of criteria, the data collection for some criteria and relevance of certain criteria. It was in this stage that I contacted John Dagevos (again), Jaap Kortman, Karel Martens and Jasper Beekmans for extra information that could help me overcome those weaknesses.

Even though they were all most kind and willing to help me, I did not retrieve the necessary information. As a consequence I constructed my own database for the 'Accessibility' criterion in order to find out what the average distance of business sites from the nearest high way exit in Gelderland is. I measured this for 93 business sites in Gelderland and calculated the average distance, which I used as input for the scoring mechanism of 'Accessibility'. For other criteria I could not find the necessary information. This caused me to simplify the 'Parkmanagement' criterion for example'. 'Waste Materials' was too difficult to measure in practice, therefore, this criterion was removed. 'Traffic Safety' and 'Safety' could also not be measured as detailed as I hoped and were deleted as a result. The reason was that the data I could (sometimes) find did not say anything about the specific area of the business case.

The tests on the business cases of Building A at the Novio Tech Campus in Nijmegen and Nizo - Vika in Ede were satisfactory, as they helped to improve the Sustainable Business Area Model severely.

The result of this thesis is a working, tested, model that measures the degree to which business cases for restructuring a business location/part of a business site aim to create sustainable value. The research question was, thus, successfully answered. With the model the theories around demand oriented approaches in restructuring business sites have been strengthened. Still, some criteria do not function in the way I initially envisaged. This has opened a new research agenda to find a way to improve those criteria.

6.2 Recommendations

Regarding this new research agenda I would like to make a few recommendations for further research. The first recommendation I would like to make concerns the literature about sustainability. Literature on sustainability and ecological modernization does not consider practical limitations in general. Sure, in theory economic development and ecological improvement may go hand in hand, but one has to operate within the constraints of 'time, quality and costs' (Bas van de Westerlo, personal communication, 10 February 2014). From my study of literature I found out that these limitations are often excluded in literature on sustainability and related concepts. Businesses might be busy trying to survive the economic recession and might be disinclined to invest in sustainable measures (such as solar panels) even if this leads to lower costs in the future. Also, legal frameworks may hamper with or stimulate the implementation of sustainable measures. Therefore, future literature on sustainability

should give more attention to the practical constraints of combining economic growth with ecological improvement.

Secondly, this research was set in the Netherlands, meaning that the model was influenced by the Dutch context. An example would be the inclusion of public transport in the Sustainable Business Area Model. Other countries might attach far less value to public transport than the Netherlands. Conversely, other countries might attach more value to other kinds of characteristics. Therefore I would recommend that sustainability models from different countries are compared to see the differences and similarities. From these differences and similarities, lessons may be learned that may lead to further improvements of (Dutch) sustainability models in general.

Additionally I would like to recommend Oost NV, that the future user of the Sustainable Business Area Model is someone who (co)developed the business case. This will ensure a thorough and fast analysis of future business cases, since he/she knows a lot about the case. I, as a researcher, needed to interview my supervisors for information about both business cases. Not having to do such an interview will save time.

A final recommendation for Oost NV is that business cases should be analyzed in their finishing stages. On the one hand, enough information should be available to perform a proper analysis. On the other hand, the case should not be completely finished, since the insights gained from analyzing a case lead to recommendations for improving the case. Therefore, the best moment when business cases should be analyzed is when they are nearly finished.

Overview

This has been the closing chapter of my master thesis. A conclusion has been given and the final research question has been answered. In addition, I reflected on the research process and gave several recommendations for further research. Writing this master thesis has been an extensive, but rewarding undertaking.

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Appendix 1

Analysis case Building A – Novio Tech Campus and case Nizo – Vika

Introduction

Up until now this thesis has had a theoretical character. A literature study was done, a theoretical framework was constructed and several experts were interviewed for data about constructing a model to measure sustainability. After this, a prototype model for judging the degree to which plans for restructuring business sites/locations are sustainable was developed. Of course, a prototype model is only the first step in developing a **working** model. The bridge between a prototype model and a working model will be crossed in this chapter. This is the second part of the main research question. As the second and final part of the main research question will be answered in this chapter, the second and final great milestone of this research will be reached.

In order to transform the prototype Sustainable Business Area Model into a working model, it will be tested onto two business case for restructuring a business site/location: the case of building A at the Novio Tech Campus in Nijmegen and the case of Nizo – Vika in Ede.

By putting the prototype model into practice I hoped to discover and overcome initial flaws. Reflecting on the test on the business cases has spawned new insights that will lead to a working model which is ready to be used. Based on the score and other findings of the model, recommendations will be made on how the business cases can improve on its sustainability. Here, suggestions about how the cases can receive a higher score will be made.

The prototype model seems to be theoretically sound, but whether or not it works in practice will be discovered in this chapter. When judging the business cases, I will be completely dependent on the availability of data. Here, one can image that some municipalities do not measure data that serves as input for the model to the extent that is satisfactory for making a judgment. This may cause problems for the reliability of the model. Furthermore, one can image that small municipalities lack the capacity to measure data concerning safety or traffic safety for example. It is only a modest leap in assuming that some data which is available at large municipalities, is unavailable at small municipalities. Thus, the availability of data will be crucial to testing and using the model in practice. In case data are scarcely available, transforming the prototype model into a working one will be problematic.

First, the Sustainable Business Area Model will be tested on a case about the Novio Tech Campus in Nijmegen. This paragraph will start with a description of the case itself. Then, the model will be put into practice starting with a description for every criterion for the Novio Tech Campus. Basically, the situation revolving around the economic value, jobs, etc will be given. Then, each criterion will be scored. The final part of the test involves a reflection on how the data collection and scoring went. This reflection will also involve recommendations of how the case can be made more sustainable.

Secondly, the model will be tested on a case about the companies Nizo and Vika in Ede. The process of testing the model will be the same as in the case about the Novio Tech Campus

Thirdly, the final part of the chapter will suggest improvements to the Sustainable Business

Area Model based on the reflections in on the two cases.

Case: Building A Novio Tech Campus

Case description

This case was set up by Kadans Biofacilities, Novio Tech Campus and Ontwikkelingsmaatschappij Oost Nederland NV. The project plan was written by Chiel van Dijen of Kadans Biofacilities (2014). All information in this paragraph comes from the business case.

In 2012 a new location for high tech companies was erected in Nijmegen, Netherlands: The Novio Tech Campus (NTC). Ontwikkelingsmaatschappij Oost Nederland NV, the municipality of Nijmegen, the province of Gelderland, NXP Semiconductors and Kadans Biofacilities acted as the founding fathers of the Novio Tech Campus. The NTC is located in the heart of Nijmegen, close to the NXP site and the office building 52 Degrees. The campus was opened officially in 2012 and offers accommodation for companies specialized in high tech, life science and health sectors. The first development at this campus was the restructuring of Building M. Building M is characterized by modern laboratory- and cleanrooms in combination with offices.

With the growth of the campus and several (acquisition) conversations between the stakeholders, the demand wishes for accommodation of companies became clearer. Basically, not all companies need the high tech facilities of Building M; some are satisfied with less high-end facilities. As a consequence, these companies find accommodation elsewhere in Nijmegen.

In addition, the Radboud University Nijmegen and the Radboud University Medical Center see the Novio Tech Campus as a place for education, research and business to meet. The Radboud University has signed a letter of intent to settle at the NTC together with students and starting businesses. Unfortunately, these students, or spin-offs, seek different facilities than those that are currently offered at Building M. Building M offers high tech facilities, whereas students generally require more low tech facilities.

Furthermore, the companies settled in Building M desire more supporting facilities such as a supermarket, day-care, copy shop and more.

To answer these questions Kadans Biofacilities and the Novio Tech Campus have decided to renovate Building A and make it appropriate for the previously mentioned functions (i.e. less high end facilities and more supporting facilities). After consulting financial institutions it became clear that the necessary funding could not be attained. Therefore, the Novio Tech Campus and Kadans Biofacilities have asked the province of Gelderland to help them with financing this business case.

Building A will be suitable for parties that do not need a high end location, but would be more than satisfied with office/working spaces at the Novio Tech Campus. These spaces can, for instance, facilitate R&D work that does not require state of the art facilities. In case there is demand for them, building A can also support functions such as a café/restaurant, copy shop, day care and more. Plans for a café/restaurant are concrete; the plans for a copy shop and day care are ideas that might be realized in case there is a demand for them. Building A can also function as a hub for the Hogeschool

Arnhem Nijmegen (HAN) and the Radboud University Nijmegen. It can function as a location for classes and lectures about entrepreneurship in the Health, Life Science and High Tech sectors.

Picture 16: Logo Novio Tech Campus (Novio Tech Campus, 2014).



Application

To find data to judge this case I have consulted with Dion Sluijsmans. He works as a project leader for Oost NV and helped to establish this business case. Apart from the data Dion supplied me with, I drew upon literature and internet sources (Google Maps, websites of public transport companies for example).

Profit

a) Economic value

Dion Sluijsmans indicated that there are different kinds of economic value, namely WOZ value, taxation value, economic value and book value (personal communication, 10 July 2014). The WOZ value is the most objective value, since it is measured for every building by the same organization. Still, one should note the fact that the WOZ value is, essentially, an estimate. Municipality determine the WOZ value for buildings by using a sample of several buildings. The WOZ value for other, surrounding, similar buildings is calculated with the use of a computer program (Rijksoverheid, 2014). The problem with building A is that the WOZ value can only be measured, not predicted. The WOZ value is, essentially, an ex-post measurement of the value of a building (Dion Sluijsmans, personal communication, 10 July 2014). To make a prediction for the increase in WOZ value would, therefore, be impossible.

There is no current or future taxation value available, so nothing can be said about the taxation value.

According to Dion Sluijsmans, the economic value is the total value of building A coupled with the value of all economic activities generated in/by building A (personal communication, 10 July 2014). He estimates the current economic value of building A to lie between €1 and €2 million. Kadans Biofacilities intends to invest €4 million in building A. The goal is to turn the Novio Tech Campus (so including building A) into a flourishing campus. If the NTC does indeed flourish in the future, the economic value of building A will probably increase to approximately €30 million. Dion Sluijsmans stresses that this is a rough estimation, with a large margin for error (personal communication, 10 July 2014). What is certain is that building A's value will increase once the Novio Tech Campus becomes a

flourishing campus (Dion Sluijsmans, personal communication, 10 July 2014).

Building A's current book value is €0,-. NXP declared that the Novio Tech Campus can buy building A for the symbolic price of €1,- (Van Dijen, 2014). To estimate what the future book value will be, once the NTC becomes a thriving campus, is impossible (Dion Sluijsmans, personal communication, 10 July 2014).

Estimating the increase in economic value was harder than it seemed at first glance. Since, the WOZ value cannot be predicted, I cannot score this criterion by using the WOZ value. As the economic value was easiest to describe, I will use this criterion to score this case with. Unfortunately, the economic value is an understanding with a huge margin for error. Will the value really increase to €30,- million? If so, when? These are critical questions that need to be asked when using the economic value score building A's economic value.

Apart from the values that Dion mentioned, one can also use the 'capitalization factor'. This is the outcome of the price/value of a building divided by the rent (Melchior, 2005). So by using the intended rent and capitalization factor used by Kadans and the NTC, the economic value can be calculated.

The economic value could increase from approximately €2,- million to approximately €30,- million. It is not at all clear what the true future value will be nor is it clear when this value will be attained. Dion Sluijsmans did, however, indicate that it is the goal to have a significant value increase. Using the statistical interval introduced in chapter 5, I conclude that it is the goal to have a significant increase in economic value. Even though there is a lot of uncertainty it is clear that there will be a very significant increase. Therefore, a double plus will be awarded.



An advantage of using this criterion is that it measures the total economic value. By measuring the economic value, the total value for the area/region will become clear. This is beneficial, because it shows how the business case will create value for the entire area/region instead of just the value of the asset itself.

b) Jobs

How many knowledge workers will find their workplace at Building A will be calculated next. According to Dion Sluijsmans the amount of rented floor space is 4000 m². He estimates the average amount of office space a person needs at 25 m². Dividing building A's total amount of rented floor space by the amount of office space a person needs leads to the number of jobs building A can facilitate, namely 160. However, since there are lab facilities, education spaces and café/restaurant spaces as well, this number must be reduced. The reason being, that lab facilities and café/restaurant space do not directly add many jobs. Therefore, Dion Sluijsmans estimates the amount of jobs created at building to lie between 100 and 125. He adds that it is difficult to forecast which companies will settle at building A. Therefore, the amount of jobs can only be estimated (personal communication, 10 July 2014).

Based on the calculation made above, the number of jobs that is estimated to be created is quite high (100-125). Furthermore, it seems that the relation between the amount of workers and the

amount of floor space is quite optimal. Lab, education and restaurant amenities cannot facilitate many workers. Therefore the 100-125 jobs cannot be increased by much without decreasing the amount of office space per person. However, this number is an estimate; a prediction for the future. It is not 100% certain whether this number will actually be attained. Still, since building A is not used and no people are currently working there, the increase in jobs may be categorized as 'very significant'. So, a double plus will be given.



c) Full Cost of Ownership

Part of the interview with Dion Sluijsmans involved full cost of ownership. He argued that no extra measures are taken to make the building more sustainable. Only standard adjustments such as double glass are taken. No large scale sustainable measures, like in the Hitachi building mentioned earlier (see picture 15), are taken (personal communication, 10 July 2014). Dion does stress that redeveloping a building is always sustainable, since one does not demolish and rebuild a building. This way, one saves a lot of resources (personal communication, 10 July 2014).

As one might recall, this criterion receives a score based on the decisions the business owner makes regarding full cost of ownership. Since only standard sustainable adjustments (and no extra, Hitachi-like measures) are taken, this criterion will be scored with a neutral '0'.



If the structure is tailored to fit more sustainable measures, this criterion could receive a higher score. An example would be to create a roof strong enough to hold solar panels. Such a measure could increase the score on full cost of ownership. Dion's note about the sustainable character of re-using building A will be considered when discussing the buildings further below, because that note is more useful to include in the judgment of that criterion.

People

a) Public Transport

The Novio Tech Campus is well accessible via bus and, in the future, via rail as well. The Goffert railway station, directly adjacent to the campus, is being built and will be finished in December 2014 (Prorail, 2014). Bus lines 2, 8, 11 and 99 in Nijmegen stop at or near (in this case <250 m) the Novio Tech Campus. Line 2 goes between East Nijmegen and West Nijmegen (Breng 2014). Line 8 goes between the Hatert neighborhood and the village of Berg en Dal via Nijmegen central station (Breng, 2014). Line 11 goes between Beuningen and Nijmegen Central station via the Radboud University and the neighborhood of Dukenburg (Breng 2014). Line 99 goes between Uden and Nijmegen (Connexxion, 2014). It is safe to say that the Novio Tech Campus can easily be reached via public transport.

Since the NTC can be reached perfectly via multiple bus lines and, in the future, by train, the public transport criterion will receive a double plus.



b) Traffic Safety

Even though this capital was deleted from the model I would like to show the data collection process. This way the reader can see why this capital does not fit the scale of a local restructuring process.

In the city and neighborhood monitor of January 2014, made by the research and statistics department of the municipality of Nijmegen, traffic safety receives attention. The amount of traffic accidents in Nijmegen has been decreasing for several years now. In 2010 there were 89 accidents with injuries that involved hospitalization. This number decreased to 40 in 2012. According to the research and statistics department of the municipality of Nijmegen, the decrease in traffic accidents is a nationwide trend (Gemeente Nijmegen, 2014).

From the city and neighborhood monitor it became clear that the amount of traffic accidents is steadily decreasing. However, according to the statistics, the decrease in Nijmegen is comparable to the decrease in other cities of comparable size. These municipal statistics do not necessarily argue that the traffic situation around the Novio Tech Campus is safe. Therefore, this capital has been deleted.



c) Safety

Even though this capital was deleted from the model as well, I would like to show the data collection process. Again, the reader can see why this capital does not fit the scale of a local restructuring process.

The previously mentioned city and neighborhood monitor divides the concepts of burglaries and crimes into several indicators. Here, it must be noted that the number involve **notifications** of burglaries and crimes. A crime that was not reported to the police is not included in the numbers. The amount of company burglaries remained stable between 2010 (335 burglaries in companies) and 2012 (324 burglaries in companies). Not only does Nijmegen has a relatively high amount of burglaries, southern Gelderland in general faces a relatively high amount of burglaries (Gemeente Nijmegen, 2014).

The concept of crimes (in Dutch: misdrijven) is divided into several indicators. First of all, the amount of robberies decreased from 56 in 2010 (record high in the history of Nijmegen) to 33 in 2012. The number of abuse remained constant; 599 in 2010 and 607 in 2012. Destruction and vandalism also decreased between 2010 (2082 reported incidents) and 2012 (1698 reported incidents). The amount of sexual abuse decreased from 54 to 45 between 2010 and 2012. The amount of threats increased from 321 to 378 in this time period.

Of those indicators, the amount of burglaries into companies could be an asset to the model. However, since these data are on a municipal level, they do not say much the situation at the Novio

Tech Campus. One can expect that different neighborhoods have different crime levels. Hence, this capital has been deleted from the model.

No Score

d) Parkmanagement

The Novio Tech Campus is involved in parkmanagement and dedicated a lot of effort to realize a maintenance plan for the shared spaces. This includes the maintenance of the shared infrastructure (roads etc.) and the green spaces at the campus. In addition, the partners organize regular meetings to discuss pressing issues at the campus related to parkmanagement (the need for a security plan for example) (Rikus Wolbers, personal communication, 10 July 2014).

As can be read above, basic parkmanagement measures are taken. There are, however, opportunities to expand it, for example by hiring a security company to monitor the NTC at night or by generating sustainable forms of energy (i.e. solar panels on the roof). Security is a topic that Rikus Wolbers, CEO of the Novio Tech Campus, would like to include in parkmanagement at the NTC (personal communication, 10 July 2014).

Basic parkmanagement measures are taken. Still, there are ample opportunities at hand to expand parkmanagement at the NTC (for example security cameras, generating renewable energy). Since only two concrete themes are addressed with parkmanagement, this capital will be scored with a zero.

0

e) Nuisance

There are no people who live directly adjacent to the Novio Tech Campus. Building A is surrounded by the office building 52 Degrees to the east, a factory of NXP and a road and parking lot to the north, and the Novio Tech Campus to the west and south.

According to Dion Sluijsmans, there will not be any nuisance for people or business near the Novio Tech Campus. The NTC has systems to get rid of toxic materials used at the lab facilities, without any burden to the environment or people (Dion Sluijsmans, personal communication, 10 July 2014). The only nuisance that will be generated concerns car traffic of the employees travelling to and from building A.

No people live directly adjacent to the business site, so there are no complaints. Therefore, this criterion will receive a double plus.

++

Planet

a) Buildings

When interviewing Dion Sluijsmans about the business case for restructuring building A, he argued that re-using a building is much more sustainable than demolishing it and rebuilding it. In the case of building A, the building will be upgraded and improved (personal communication, 10 July 2014). As the

building will not be demolished, there will not be many waste materials. Also, not many new materials will need to be used (compared to demolishing and rebuilding). This will save raw materials and will thus be beneficial to the environment. This is in line with Gerard Salemink's line of reasoning regarding total cost of ownership. He said that one should not use waste materials or energy when it is not necessary (Salemink, personal communication, 17 January 2014).

Since the building and land are re-used entirely, this criterion will receive a double plus.



b) Renewable Energy

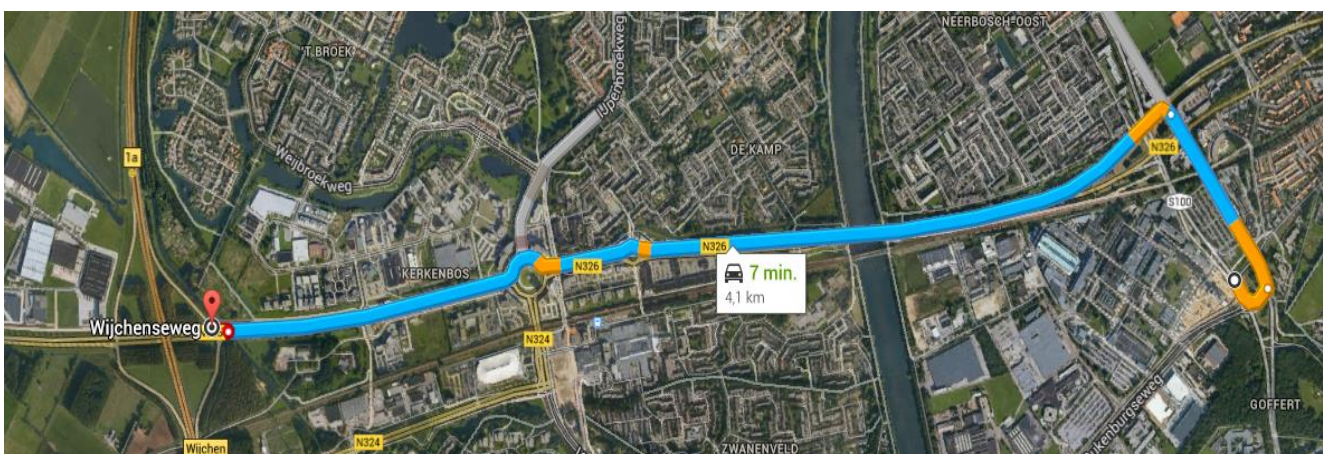
Renewable energy is a topic that has not been given any attention building A, or the Novio Tech Campus in general. No renewable energy is generated at building A (Dion Sluijsmans, personal communication, 10 July 2014). Therefore this criterion will receive a double minus. Placing solar panels on the roof of building A, for example, would greatly enhance its sustainability.



c) Accessibility

Building A, and the NTC in general, is a campus with R&D and office spaces. Therefore, the kind of transport done the most is the travelling of the employees to and from work. Cars and trucks do not have to drive through residential areas to reach the high way. The nearest high way exit is 4.1 kilometers away (Google maps, 2014a). Therefore, the amount of hinder for the surrounding area is kept low. Picture 17 shows the route from the NTC to the nearest high way by car.

Picture 17: Route from NTC to high way (Google maps, 2014a).



Since part of the start-up firms will be run by students or recently graduated students, bicycles will probably be of importance as well. From personal travels to the NTC by bicycle I can conclude that

building A can easily be reached by bicycle. There are bicycle lanes adjacent to building A; these are well connected to the rest of the bicycle lane network in Nijmegen.

Since building A is located significantly closer to a highway than average in Gelderland (4.1 km), a '+' will be given.



d) Waste Materials

This is the third and final capital that was removed from the prototype model. The data collection process is described below.

Basically, standard measures, such as separating plastic, paper and glass, will be taken at building A. Dion Sluijsmans argued that the companies who will settle in building A are small companies, generating only small amounts of waste materials. The amount of waste generated will probably be too small for other companies to use. He states that it is not clear whether toxic wastes can be recycled or re-used, since it is not clear which companies will settle in building A (Dion Sluijsmans, personal communication, 10 July 2014).

The waste that is produced is nicely separated and the environmental burden is minimized. But it is not clear how much waste there will be, nor is it clear what the percentage of recyclable waste will be. Due to the availability of data, this capital has been deleted.

Case specific information

According to the business case, building A will be home to a café/restaurant and maybe to a copy shop, day care and more (Van Dijen, 2014). These functions would be helpful to small firms that do not have the capacity to realize them on their own. Sharing these functions would make these facilities available to small, start-up businesses as well. Especially the social pillar can benefit from these functions, since these facilities can help to alleviate stress and make life easier for the employees at the NTC. Here, it must be noted that only the café/restaurant is a concrete plan. The other functions are ideas that could be realized if there is a demand for them (Dion Sluijsmans, personal communication, 10 July 2014). In case there is no demand for them, they will not be realized.

This facet of the business case is an example of a dimension that is hard to grasp in a single criterion. Therefore, these measures will be of positive influence on the scoring of the overall business case.

Tables 15-18 show how this case scored.

Table 15: Profit Pillar

Capitals	Score	Points	Weight	Final points
Economic value	++	2	1	2
Jobs	++	1	2	4
Full Cost of Ownership	0	0	1	0
<u>Overall score</u>				<u>6</u>

Table 16: People Pillar

Capitals	Score	Points	Weight	Final points
Public Transport	++	2	1	2
Safety	XXX	XXX	1	XXX
Traffic Safety	XXX	XXX	1	XXX
Parkmanagement	0	0	1	0
Nuisance	++	2	1	2
<u>Overall score</u>				<u>4</u>

Table 17: Planet Pillar

Capitals	Score	Points	Weight	Final points
Buildings	++	2	2	4
Renewable Energy	- -	-2	1	-2
Accessibility	+	1	1	1
Waste Materials	XXX	XXX	1	XXX
<u>Overall score</u>				<u>3</u>

Table 18: Overall score

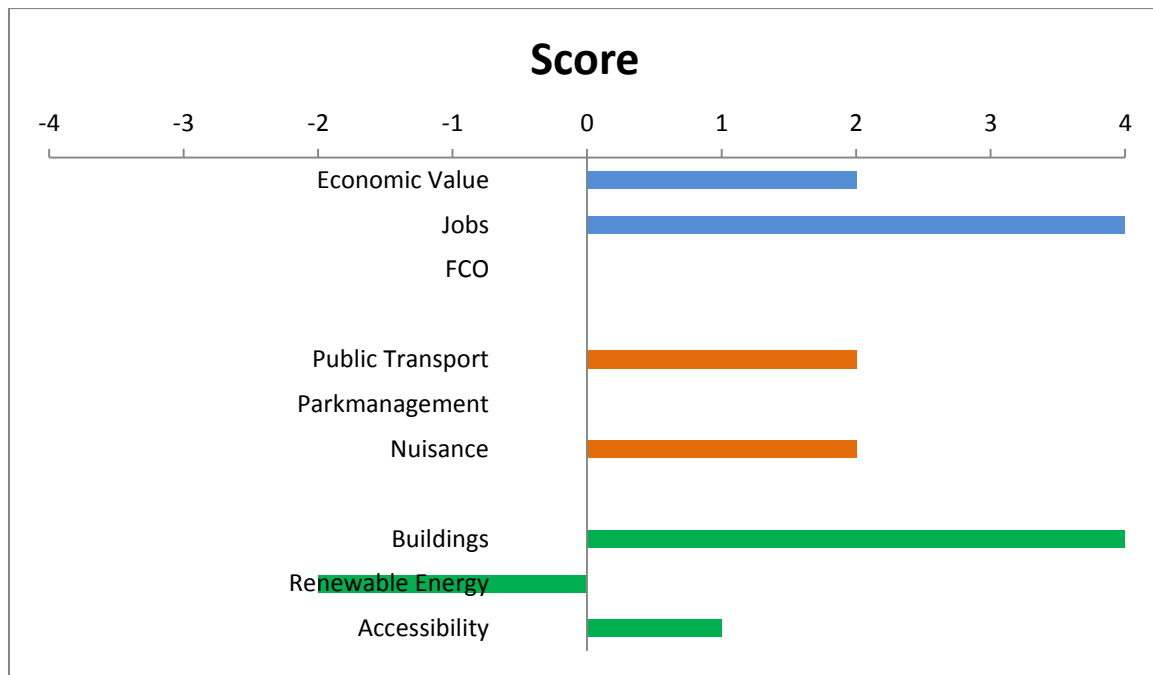
Pillars	Points
Profit Pillar	6
People Pillar	4
Planet Pillar	3
<u>Overall score</u>	<u>13</u>

This case scored 13 points (on a scale of -21 to 21 points). This means that the case received 81% of the total amount of points. The final score, as presented to civil servants of the province of Gelderland, will thus be an 8,1.

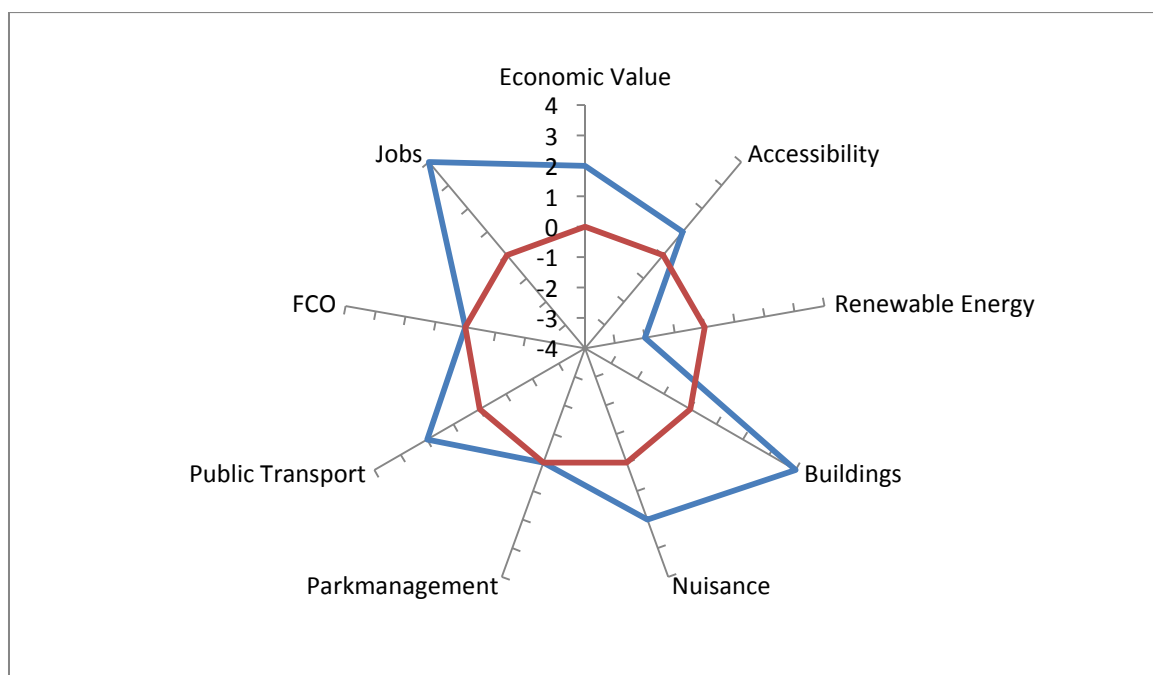
Final Score:

8,1

Graph 1: Score building A NTC



Graph 2: Score building A NTC vs minimum requirements



Verdict and recommendations

Having scored the criteria it becomes necessary to come to a verdict concerning the sustainability of the business case of building A. First of all, it must be noted that parts of the data are a prediction rather than an accurate measurement. It is not clear if the predicted amount of jobs, for example, will really be attained. And if so, when.

In tables 15-17 the scores for the different capitals are given. Finally, in table 18 the final score for the entire case will be given. Graph 1 gives an overview of the scores. Graph 2 compares the scores of the case of building A with the '**sustainability baseline**'. This line depicts a '0' score for all criteria, meaning that none of the variables neither grow nor shrink. Criteria that score below this line score unsustainable and need improvement. This way, one can directly see which criteria score sufficient and which score insufficient. Still, the overall case of building A can still be called sustainable, because each of the three pillars score positively overall.

The case for building A scores quite well on the Profit pillar. The economic value will increase, together with the amount of jobs. The full cost of ownership criterion received a neutral '0', since no extra 'Hitachi-like' measures are taken to make the building more sustainable. A recommendation to make the building more sustainable is to create a roof strong enough to hold solar panels. This would improve the score on the full cost of ownership and the renewable energy criteria tremendously. Another recommendation I would like to make concerns the economic value. The project plan for building A speaks of certain supporting facilities that might be realized in the future. Realizing these facilities will most likely have a positive effect on the economic value. All in all, the profit pillar receives 5 points.

The People pillar also receives a fairly positive score. Since the site can easily be accessed via public transport, that criterion receives a '++'. Parkmanagement receives a zero, because only two parkmanagement themes are addressed. There are, however, other measures that can be taken to improve the score on this criterion. I would recommend that safety at the Novio Tech Campus is also considered in parkmanagement. The NTC could, for example, hire a security company for surveillance at night. Placing camera's at the NTC would also be a measure that can be arranged in cooperation with the companies at the NTC. This would improve the score on the parkmanagement criterion. The nuisance criterion scores positively. This is mainly due to the fact that there the NTC more or less forms an 'island' in Nijmegen, with no people or businesses living directly adjacent to the campus. Overall, the people pillar receives 4 points

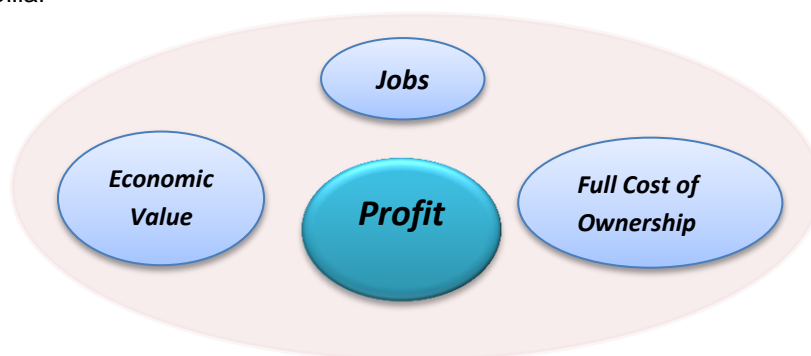
The case for building A receives the lowest score with the Planet pillar. There are no worries about the buildings, since building A is re-used. As a result the case receives a positive score for this criterion. Renewable energy is an object of worry for this business case. According to the business case, no renewable energy will be generated at building A. The case could easily improve its score on this criterion by generating renewable energy at/near building A. As was mentioned earlier, placing solar panels on the roof would greatly enhance the sustainability of the case of building A. It would be beneficial for this criterion and for the full cost of ownership criterion. Accessibility receives a '+'. Since the distance from the nearest high way exit cannot be reduced, no recommendations can be made for improvement of the score. All in all, the planet pillar receives 2 points.

All in all the case about building A receives 11 points. All pillars received a positive score, which means that the plan for restructuring building A is sustainable.

Reflection

Gathering the input data for this case went relatively easy for most criteria. In addition, most criteria were useful and gatherable for this case. A critical note that must be made is that I, alone, was not able to gather the necessary data from the business case. Instead, Dion Sluijsmans was kind enough to give me an interview to provide me with data about several criteria. Dion Sluijsmans works as a project leader at Oost NV and has worked with the Novio Tech Campus and Kadans Biofacilities to develop this case. His information was vital for scoring many criteria. Still, since he works for the NTC and is not an independent researcher, his opinion should be viewed critically. In addition, the data collection for some criteria revealed weaknesses in certain criteria. Collecting data was problematic for these criteria. They will receive a thorough reflection to see if there is a way to improve them. First, the criteria of the profit pillar will be subjected to a profound reflection. The first criterion that requires a deep reflection is 'economic value'. When including this criterion in the model it seemed easy and obvious to go for the WOZ-value as input for this criterion. When analyzing the case of building A, however, it became clear that the WOZ-value is an ex-post measurement that cannot be predicted. It is measured once per year by the municipality. Even then, one can ask questions regarding its reliability. The value is valid until the next measurement, one year later (Rijksoverheid, 2014). Predicting it for building A is, therefore, impossible. Since predicting this value is impossible, it is necessary to look for other sources of data that indicate the economic value. Dion Sluijsmans mentioned the book value, taxation value and the economic value (personal communication, 10 July 2014).

Figure 10: Profit pillar



Using the book value probably poses the same problem as using the WOZ value, namely that it cannot be predicted for when a restructuring process is finished. The value at a balance sheet is determined for a certain point in time. Using the depreciation costs the future value can be predicted. This future value is, however, based on the current value of the asset. This method only works if one buys, for example, a new building and intends to use it for 20 years. Using the predicted final value of the asset, the yearly depreciation costs can be calculated (Short, Libby & Libby, 2007). So, using the book value, one needs to know the current value and the final value. By using the depreciation costs one can predict the value for any point in the future. With the case of the Novio Tech Campus, and any

case reviewed by the model for that matter, the new future value after the restructuring process is done is unclear. Therefore, using the book value in the model is not possible, since the current value cannot be used and the future value is not at all clear.

Using the taxation value gives problems as well. Predicting the taxation value would most likely require a series of conversation with a real estate agency. In theory, the taxation value could be very useful. A real estate agency could most likely determine the value of building A. But, as one recalls, the model should consume only a few man-hours, due to capacity constraints at Oost NV. Determining the economic value with a taxation report would cost too much time and money to be viable. Using the taxation value is, therefore, out of the question.

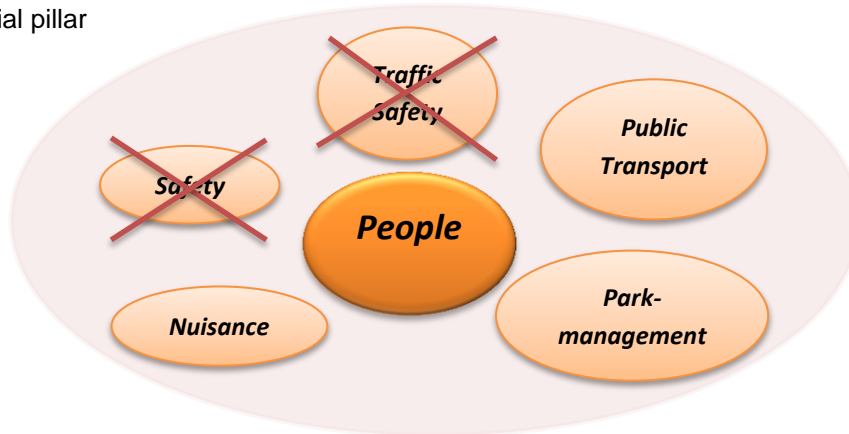
The final value that Dion Sluijsmans distinguished is the economic value. The advantage of this type of value is that it can be predicted, although this is a very gross estimate. Another advantage is that it measures the value created for the entire area/region rather than the value of the building itself. Basically, the economic value measures the value of the building and all activities inside it. The critical reader will already have noticed a large disadvantage, namely that the predicted value is a rough estimate. How high the true future value will be and when this value will be attained are very difficult questions to answer, even for experts working with a certain case. Still, since a prediction that indicates the value for the entire area/region can be given, the economic value still is the best option to go for. To get more reliable results I have decided to use a statistical interval. This way, I can measure whether or not the increase in economic value is significant or not. Rather than measuring absolute numbers, I will measure the degree to which an increase in economic value is significant. In the final reflection the implications of the reflections on the two cases will be discussed. There, a final decision about whether or not the economic value will be used to measure the economic value will be made.

Forecasting the amount of jobs that building A will create was fairly easy for Dion Sluijsmans. He managed to estimate the amount of jobs created in the future with a modest certainty. Of course, one should remember that it is a forecast, a prediction, therefore the true amount of jobs created might be different from the estimate. To get more reliable measurements I have decided to use a statistical interval for this capital as well. Again, I will measure the degree to which the increase of jobs is significant.

A more fuzzy indicator was 'full cost of ownership'. Since a description, instead of numbers, is asked, this criterion leads to more unclear results than the previous one. As one might recall, this criterion receives a score based on the decisions the business owner makes regarding full cost of ownership. In the building A case, only standard adjustments such as double glass were taken. Since these measures are considered to be standard nowadays, I have scored the criterion with a neutral '0'. This has caused me to think about when to score positively and when negatively for the FCO criterion. If a case does not include any sustainable measures, it will be scored negatively. When extra measures (on top of standard measures) are taken, the case will be scored positively. Standard measures will be scored with a neutral '0', since it does include sustainable, FCO adjustments, but does not go beyond what is standard.

The next pillar that was evaluated was the social one. For the first criterion of this pillar (public transport) data collection went smooth. Data was dug up via the internet, using websites such as 9292OV.nl and the websites of the bus- and railway companies. This led to a complete picture of the accessibility of building A via public transport.

Figure 11: Social pillar



For 'traffic safety' and 'safety' the numbers were dug up via reports written by the research and statistics department of the municipality of Nijmegen. Since no data on a neighborhood level could be found, they were measured on a municipal level. Still, it is questionable how these data are relevant for a small scale area development such as building A. Furthermore, it is not clear to what extent this data can be retrieved in smaller municipalities. For a smaller municipality I also tried to find data concerning safety and traffic safety, but failed. Since these criteria were problematic even for Nijmegen, I wanted to find out how data collection would go for a smaller municipality. I tried to find (traffic) safety numbers for the municipality of Epe. To be more specific, I wanted to get data for the village of Vaassen (located in the municipality of Epe). Unfortunately, I failed to get any number for Vaassen or Epe. Based on these two reasons I have decided to remove the two capitals from the model. They will not be included in the final version of the model.

The fourth criterion under the People pillar was 'parkmanagement'. Here, a description of the degree of organization was given. Rikus Wolbers managed to give a clear description of what is done and what is not done with parkmanagement at the Novio Tech Campus. I, myself, have worked with Rikus on the topic of parkmanagement, meaning that finding out what the degree of organization is went relatively fast. This criterion does need alterations at the moment.

Finally, the fifth criterion under the People pillar was 'Nuisance' for other entrepreneurs and/or people living around the business site/location. For building A, Dion managed to give a clear answer. Since there are few businesses or people near the Novio Tech Campus, this criterion was less important for this case. Still, at this point there is no need to change the criterion.

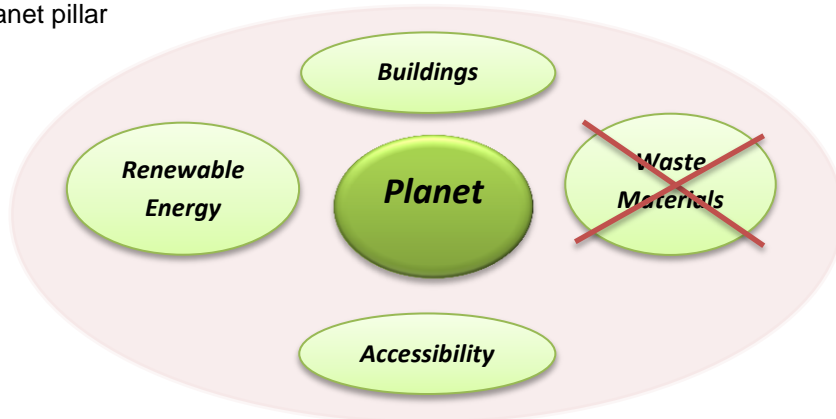
Thirdly, the four indicators ranged under the planet pillar will be reflected on. Concerning 'Buildings', the answer was clear. An existing building is to be re-used and renovated. The data could easily be collected via Dion Sluijsmans. Therefore, there is no need to change this criterion at this point.

Data regarding the generation of sustainable forms of power at building A was also easily collected via Dion Sluijsmans. Again, no changes to this criterion are proposed at this stage.

Thirdly, building A's accessibility could smoothly be mapped via Google Maps. With this program I could map the distance from building A to the nearest high way exit. In addition, since part of the start-up firms will be run by (recently graduated) students, I decided to make a note about the accessibility via bicycle as well. This also went effortlessly. Hence, this criterion does not need alterations at this point.

The fourth criterion was 'waste materials'. Here, it was not possible to measure the extent to which materials were re-used, so the capital has been removed from the model.

Figure 12: Planet pillar



Finally, the time requirement mentioned in chapter 1 has not been satisfied. Basically, Oost NV asked me to spend no more than one day on reviewing a business case. All in all, I have spent two days spread out over about two weeks to judge the case. Even though Oost NV asked me to spend only one day on reviewing a business case, I can argue that two days spread out over two weeks is more than satisfactory. Collecting and, especially, processing the data from my colleague Dion Sluijsmans and the municipality took some time. In addition, gathering and processing data from the business case and internet sources took some time as well. Since collecting and processing the data went quite well for the case of building A, two days of intense work is the minimal amount of work necessary to judge a case. One can image that, for example, not every municipality measures crime to the extent that the municipality of Nijmegen measures it. Data collection might also be more problematic for other indicators as well. All in all, using two days spread out over two weeks to come to a verdict for a case seems to be the least amount of effort possible.

Case Nizo - Vika

Case description

Both Nizo and Vika are companies active in the food sector. Vika produces broth and dairy products (mainly cheese products) and Nizo carries out research activities in the fields of proteins and bacteria (Liane van de Veen, personal communication 1 December 2014; Nizo, 2014; Vika, 2014). Both companies are located next to each other at the Nizolaan in Ede (Netherlands). They both have plans to develop parts of their real estate and both companies will build new buildings as well.

Vika intends to expand its business in Ede by relocating activities to Ede that were previously outsourced. The production of broth (currently located in Venlo, Netherlands) and the cold storage

(currently located in Den Bosch, Netherlands) will be relocated to Ede. The storage of finished products (currently located in Tiel, Netherlands) will also be moved to Ede. This will lead to a great expansion of business in Ede, for which (re)development of real estate is necessary. Also, some of Vika's current real estate is old and outdated. It would like to redevelop some its existing real estate to make it more energy efficient and modern.

Apart from redeveloping a building and building a new building, Vika plans to build a power plant that runs on biomass. This sustainable power plant should meet Vika's energy demands. Furthermore, other companies near Vika (including Nizo) can buy Vika's sustainable energy.

Since business is going well for Nizo, it would like to expand in the near future. Its situation is the most poignant since that company will relocate to the province of Brabant in case it is unable to expand at its current location. This would be a great blow to the region, since 170 jobs, 30 jobs of Nizo's customers at its location and 30 internship positions would disappear. Nizo intends to redevelop a building and build new real estate. The existing real estate will be stripped and modernized, for example by removing all asbestos from the building.

Picture 18: Logo Nizo (Nizo, 2014).



Picture 19: Logo Vika (Vika, 2014).



Application

For this case I interviewed my thesis supervisor and colleague Liane van der Veen. She is a project leader at Oost NV and helped to establish this business case. Apart from the data Liane supplied me with, I drew upon literature and internet sources (Google Maps, websites of public transport companies for example).

Profit

a) Economic value

The economic value will increase significantly with this business case. Activities that are currently outsourced will be re-included at the companies' location in Ede. Furthermore, since existing buildings (with a low current value) will be redeveloped, their value will increase as well. Unfortunately I cannot give any numbers for this criterion. The reason being, that negotiations concerning the financing of the case are still underway. Therefore, all financial numbers are confidential and cannot be included in this thesis (Liane van der Veen, personal communication, 1 December 2014).

Nizo and Vika both intend to redevelop buildings and build new building to expand their business. The relocation of outsourced activities to Ede will further augment the economic value of the buildings there. Therefore, a very significant increase of the economic value at Nizo and Vika is expected. Hence, a double plus is awarded.

b) Jobs

Vika expects to create a total of 32 fulltime jobs in the region (Liane van der Veen, personal communication, 1 December 2014):

- Production of broth: 5 fte;
- Cold storage: 1 fte;
- Storage and order picking: 2 fte;
- Extra revenue cheese powder: 12 fte;
- Extra revenue new generation broth: 12 fte.

Vika has 107 fte jobs and had 6 interns in 2014. Nizo currently has 170 fte jobs (not including 30 internships) and intends to create 25 jobs for its customers at its location. With the creation of 32 full time jobs for Vika and 25 for Nizo, it is safe to say that there is a very significant increase (>10%) in the amount of jobs. Therefore, a double plus will be awarded.

++

c) Full Cost of Ownership

Vika intends to develop an power plant that runs on biomass. The sustainable power generated by this plant can also be used by surrounding companies (Nizo included). It is expected that this power plant will generate a very significant amount of the power needed by Vika (Liane van der Veen, personal communication).

Currently, Nizo is unhappy with the energy use of its accommodation. It intends to improve the insulation of its real estate in order to reduce energy costs. Its new real estate will also have a decent insulation to make sure that as little energy is wasted as possible.

This capital measures the decisions regarding sustainability made in the design phase. With the creation of the biomass power plant, it is safe to say that there is a lot of consideration for sustainability in the design phase of the buildings. Nizo wishes to reduce its energy use by improving the insulation of the real estate it intends to (re)develop. Since sustainable measures have been considered in the design phase, a double plus has been awarded.

++

People

a) Public Transport

As one recalls this criterion measures the distance to bus stops and railway stations. The closest railway station is located 1,2 kilometers away and the closest bus stop is 700 meters away. Therefore, this case falls into the '0' category of table 9. Hence, a neutral '0' will be awarded.

0

The accessibility via bus and train is not great, yet, it is not bad either. Still, it would be beneficial for

the business site if it could be reached more easily via public transport. A bus stop at the business site would make the site much easier to reach for those who are unable to come by car.

b) Traffic Safety

This criterion has been removed from the model (based on the analysis of the case of building A).

c) Safety

This criterion has been removed from the model (based on the analysis of the case of building A).

d) Parkmanagement

There is no local entrepreneur or parkmanagement organization of any kind at the business site. There is some cooperation between companies though. This concerns the generation of energy with the use of biomass. The power plant (owned by Vika) will supply power to Vika and other companies willing to buy energy from Vika (Liane van der Veen, personal communication, 1 December 2014). So, one could say that one parkmanagement theme is addressed at the site, namely sustainable energy. Still, since only one theme is addressed and there is no entrepreneur or parkmanagement organization at the site, a double minus will be awarded.



e) Nuisance

As both companies will increase the economic activities at the business sites, the amount of transport movements is expected to increase. It is not at all certain though, whether the amount of complaints of people living near the business site will increase as well. Both companies operate under strict legal conditions concerning nuisance for the surrounding area. Furthermore, both companies have a strong incentive to limit the amount of complaints as much as possible in order to create a good image. Vika especially, has gone beyond lengths to reduce the amount of complaints during the last years in order to improve its image. The amount of complaints has, consequently, dwindled greatly during the last years and has now been reduced to '0'. Especially Vika is determined to keep it that way, since it does not want to be known as a 'polluting company' anymore (Liane van der Veen, personal communication, 1 December 2014). Therefore, it is expected that the amount of complaints will stay the same. Since the number of complaints will probably remain at '0', a double plus has been awarded.



Planet

a) Buildings

Both Vika and Nizo intend to redevelop existing buildings and build new ones to expand their activities. Vika will strip an existing building, remove all of the asbestos and redevelop it. Next to the existing buildings, Vika will build a new building. The company will connect this building to the existing

buildings via a corridor.

Nizo also intends to re-develop an existing building and build a new one. As has been said, no numbers can be given due to confidentiality reasons. As some buildings are redeveloped and other buildings are built new, a neutral '0' will be given.

0

b) Renewable Energy

Vika invests heavily in a biomass power plant. With it, sustainable energy can be generated locally. It is not clear as to how many Kwh will be generated, but it is safe to say that Vika intends to meet its energy need as much as possible. It might be possible that it generates more energy than it needs. Other companies can buy the energy from the power plant. Vika will inevitably generate more than 25% of the energy it uses. Therefore, a double plus will be awarded.

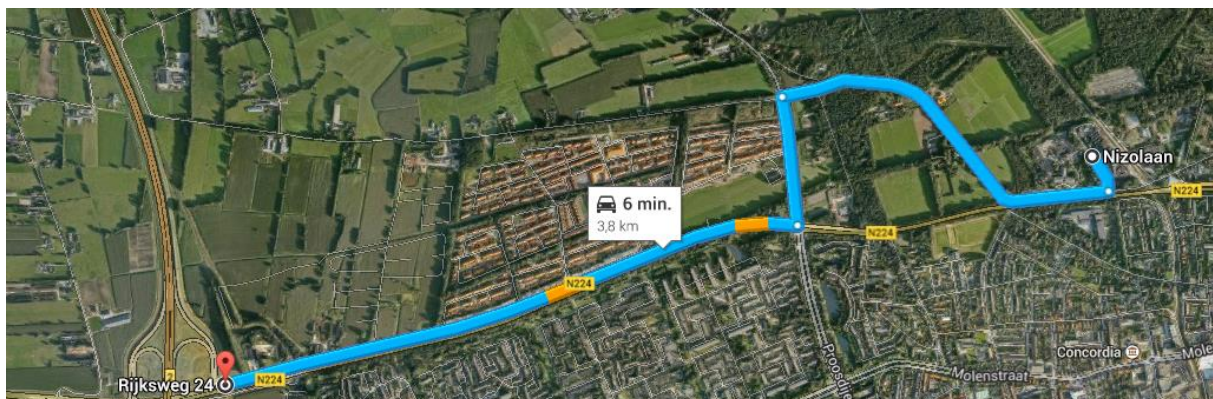
++

c) Accessibility

The final criterion is the accessibility criterion. Here, we will see how far the business site is located from the nearest high way exit. In this case, Nizo and Vika are located approximately 3,8 km from the nearest high way exit (Google Maps, 2014b). As this is significantly closer than the average in Gelderland (5,70 km), a plus will be given. Picture 20 shows the distance to the nearest high way exit.

+

Picture 20: Accessibility Nizo – Vika (Google Maps, 2014b).



Below, tables 19 - 22 summarize the results. Graphs 3 and 4 give a visual representation of the scores.

Table 19: Profit Pillar

Capitals	Score	Points	Weight	Final points
Economic value	++	2	1	2
Jobs	++	2	2	4
Full Cost of Ownership	++	2	1	2
<u>Overall score</u>				<u>8</u>

Table 20: People Pillar

Capitals	Score	Points	Weight	Final points
Public Transport	0	0	1	0
Parkmanagement	--	-2	1	-2
Nuisance	++	0	1	2
<u>Overall score</u>				<u>0</u>

Table 21: Planet Pillar

Capitals	Score	Points	Weight	Final points
Buildings	0	0	2	0
Renewable Energy	++	2	1	2
Accessibility	+	1	1	1
<u>Overall score</u>				<u>3</u>

Table 22: Overall score

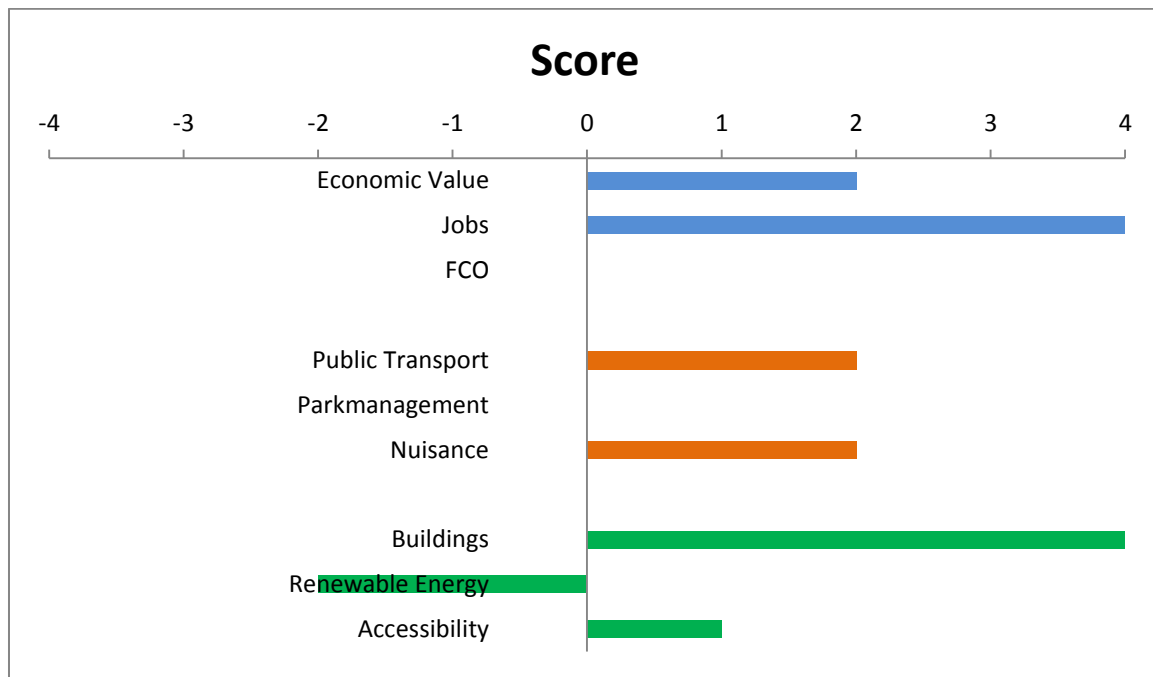
Pillars	Points
Profit Pillar	8
People Pillar	0
Planet Pillar	3
<u>Overall score</u>	<u>11</u>

This case scored 11 points (on a scale of -21 to 21 points). This means that the case received 76% of the total amount of points. The final score, as presented to civil servants of the province of Gelderland, will thus be a 7,6.

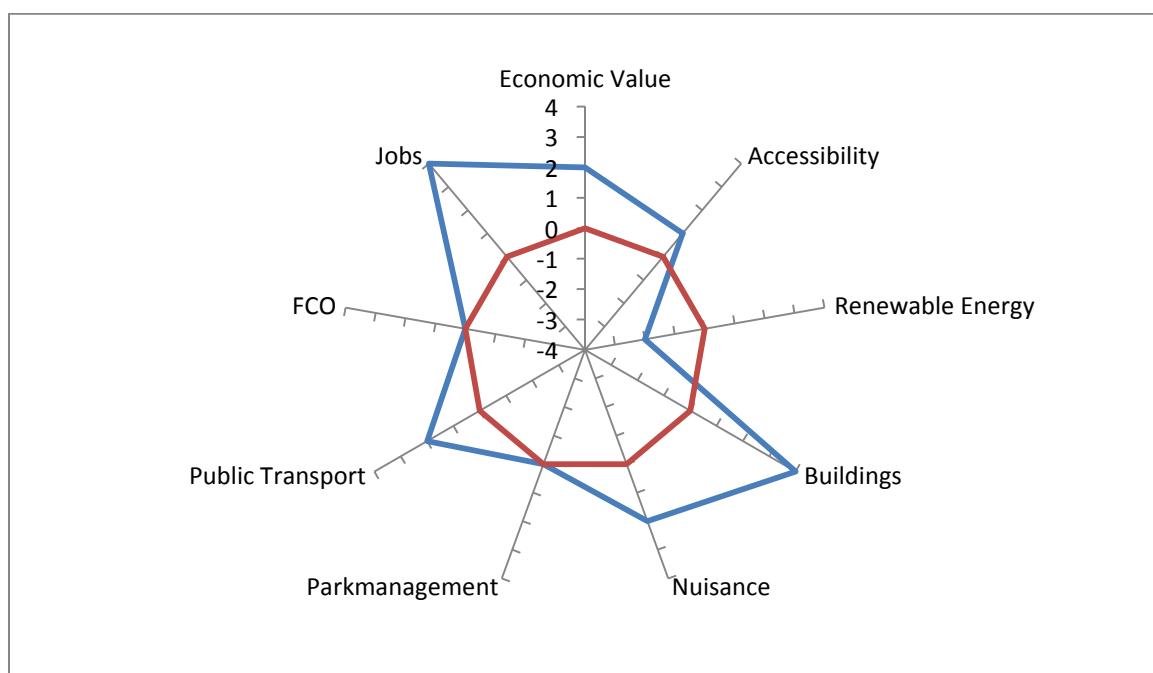
Final Score:

7,6

Graph 3: Score Nizo- Vika



Graph 4: Score Nizo – Vika vs minimum requirements



Case specific information

In case Nizo is unable to expand at the current location due to financing issues, it will relocate to another location (most likely in the province of Brabant). This would lead to a large loss of jobs, internship positions and business for the region. The province, therefore, finds it prudent to reach an agreement on the financing question.

The situation for Vika is somewhat similar. In case no agreement on financing is reached, Vika will remain at its current locations, but will not expand its business. Furthermore, without provincial financing it will not invest in a biomass power plant. All three parties (Nizo, Vika and the province of Gelderland) would like to reach an agreement on financing.

Verdict

Having scored all criteria, it becomes necessary to come to a final verdict for the Nizo-Vika case. First, it must be noted that all numbers used in the case are predictions; estimates for the future. It is not at all certain whether these predictions will come true. There is, however, ample ground to believe that 'reality' will move in the direction of the predictions.

The Nizo – Vika case scored impeccable for the profit pillar. The economic value will most likely significantly increase, which caused me to award a double plus. If the case becomes reality, 57 jobs will be created in Ede, which is a very significant increase. This also led to a double plus. Thirdly, Vika's biomass power plant is an excellent example of a full cost of ownership measure: a sustainable measure included in the design phase of the entire business case. This means that FCO received a double plus as well.

The People pillar requires attention, as it does not receive a positive score at all. Even though both companies' accessibility via public transport received a neutral '0', the situation could be a lot better. People who are dependent on public transport have a hard time reaching the business site. A bus stop at the business site would greatly enhance the site's accessibility via public transport and would make the case more sustainable. Parkmanagement also is an area of worry. There is no local organization at the site, meaning that possible common interests might be left unresolved. The only form of cooperation is the fact that other companies can buy Vika's locally generated energy. Themes such as the maintenance of infrastructure, green spaces and security are currently left unattended. Attending these themes could improve or maintain the quality of the business site on the long term.. Thus, I recommend that the companies at the business site review if they want to set up an entrepreneur organization, which can address parkmanagement themes. 'Safety' and 'Traffic Safety' have been removed from the model. Especially Vika has invested to reduce the amount of complaints to zero. It intends to keep it that way and is willing to take action to make sure that there will be no complaints in the future.

The score of the Planet pillar causes less worries, since the score is largely positive. The Buildings capital receives a neutral '0'. Here, it must be noted that a new building is vital for the desired expansion of both Vika and Nizo. Re-developing existing buildings alone will not lead to the desired expansion. So, one can argue that it is impossible for this case to score more than a '0'. It was to be expected that 'Renewable Energy' would receive a double plus. With the biomass power plant Vika hopes to generate all of its energy (or a lion's share at least) sustainably. Other companies at the

business site (including Nizo) have the opportunity to buy Vika's energy. In terms of accessibility by car, this case scores a plus. Since this capital cannot be improved, no recommendations will be made. 'Waste Materials' has been removed from the model.

Reflection

Reflecting on the second test will require much less effort than reflecting on the first test. All in all, the test went smooth and all criteria functioned well. I will briefly discuss each criterion below. The model was improved using the experience from the analysis of the NTC case. Analyzing the Nizo-Vika case took less than one day, so it fell within Oost NV's one day time constraint. The analysis went faster, because the model functioned better than before and because I had some experience in retrieving the data.

'Economic Value' remains one of the weaker criteria, since it is difficult to measure and forecast the economic value of a business case. All that can be done is to give an indication whether the economic value will significantly increase or not. This judgment is made by someone who developed the business case (in this case Liane van der Veen). Still, the economic value does give an indication of the value that is to be created for the company, the business site and the surrounding region. Therefore, based on this case, this criterion does not require changes. Measuring the job creation went flawlessly. Based on this test, this criterion does not require changes. The fact that Full Cost of Ownership is difficult to measure was pointed out on multiple occasions in the previous paragraphs. This capital functions well with the crude 3-point scale, since a crude judgment on the decisions of the owner regarding sustainability can be made. So no alterations are necessary based on this analysis.

'Safety' and 'Traffic Safety' were not measured during this test, since they were removed from the model. 'Public Transport' was easy to measure and needs no alterations. The third capital, 'parkmanagement', proved to be a strong capital in this analysis as it pointed out one of the few flaws in this business case: the lack of parkmanagement. As has been written, parkmanagement is important in upholding or improving the quality of business sites. The 3-point scoring scale functions well for measuring 'Parkmanagement'. Measuring this capital went smooth, so this capital needs no changes at this point.

The 'Buildings' capital functioned well. Based on Liane's information I was able to score 'Buildings'. 'Renewable Energy' could also be scored easily, so this capital needs no changes. Finally, scoring 'Accessibility' also went smooth, so this capital will remain unchanged.

Implications for model

Analyzing the business cases revealed that the prototype model constructed in chapter 5 needs some alterations. Using the model in practice brought about critical insights necessary to make the last step from a prototype model to a working model. In this paragraph the original prototype model will be changed and improved based on the newly gained insights of this chapter. The reflections on the test of the model onto the business cases will be leading in this paragraph.

I would like to note that the transformation from prototype model to working model was by no means an easy one. In order to transform the prototype criteria to working criteria I first of all needed

to consult extra literature. Furthermore, I held a feedback sessions with all of my colleagues from the department of Bedrijfsomgeving at Oost NV. This also resulted in welcome information I used to improve the model. Finally, because I had a deficiency in knowledge for some criteria, I contacted experts in the fields of sustainability and model making. John Dagevos was kind enough to send me some additional information about how they (Telos-institute) measure certain criteria. I also consulted a new expert: Jaap Kortman (the director of IVAM). IVAM produced the DPL model together with 4D City Development. He gave me valuable new insights as well concerning the measurability of certain criteria. Even after these steps, I did not have sufficient information to build a working model. Hence, I contacted Karel Martens, who is an expert on mobility and transport planning and works for the Radboud University in Nijmegen, Netherlands. Via associate professor Martens I got into contact with Jasper Beekmans, researcher at Radboud University. Via him I received some more, very welcome, insights about the measurability of certain criteria. Finally, I constructed my own database for the 'Accessibility' criterion.

First of all, several more general implications will be made in below. Secondly, several criteria sounded all right in theory, but were problematic to use in practice. Therefore, several criteria will be altered or removed based on the previous reflections. In the final paragraph of this chapter the final model will be presented coupled with instruction for use for each criterion.

General implications

As was noted before, I alone was not able to judge a business case for its sustainability based solely on the information provided by the case. Liane van der Veen and Dion Sluijsmans provided crucial information for judging the business cases. Without their help, I would not have been able to make the verdict about the sustainability of both cases. It is safe to say that the business cases alone did not give me all the necessary data to make the judgment. Some of the necessary data is 'inside' information, known only by people who developed the case. Therefore I would recommend that when Oost NV uses the model in practice it appoints someone who (co) developed the case to analyze it. This will ensure a fast and thorough analysis.

A second implication for the model has to do with the fact that many criteria ask for a prediction of a future situation (jobs for example). Since any prediction is an estimate, one should interpret those predictions with caution. All sorts of factors, such as economic tide and technological innovations may influence the business cases. Therefore, any predictions done for the future are estimates which have a margin for error.

A third implication concerns the exact moment when Oost NV would like to analyze cases. On one hand, enough information should be available to make a proper analysis. On the other hand, the case should not be completely finished, since the insights gained from analyzing a case lead to recommendations for improving it. Therefore, I recommend that Oost NV analyses cases when they are nearly finished. This way, Oost NV can find enough information to judge a case. Furthermore, the recommendations from the model can still be used to improve the business case (in case certain criteria receive a low score).

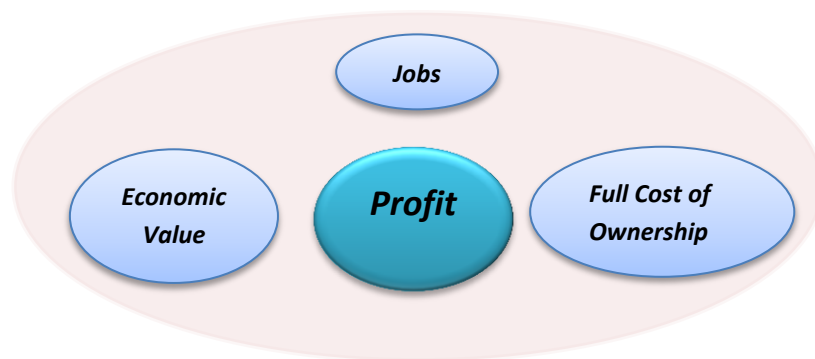
Implications for criteria

Several flaws sprang out when analyzing the business cases. These flaws will be overcome in this paragraph by discussing them and suggesting improvements. Finally, the newly gained insights will be molded into a final working model. It is in this paragraph that the fourth and final partial question will be answered by discussing the test results. Fourth and final partial question:

- 4) Can the model be applied in order to test the value that business cases aim to create?

First, the criteria ranged under the profit pillar will be discussed. Figure 13 illustrates the Profit pillar.

Figure 13: Profit pillar



When using the 'Economic Value' criterion it immediately became clear that this criterion had not been operationalized properly. Here, the intended indicator to measure economic value with was the WOZ-value. From the interview with Dion Sluijsmans it became clear that the WOZ-value is an ex-post measurement, which cannot be used to make a prediction. Therefore, I had to resort to another means of measuring the economic value. The best way of measuring the future economic value is to measure the economic value by using a confidence interval. The reason being, that this value can be predicted for the future, contrary to the WOZ-value, book value and taxation value. Furthermore, this value not only indicates the value of the building itself, but also the economic value of all activities which might take place in the building. Even though using this problems poses problems (described in paragraph 6.1.2.1), this capital will be measured with a confidence interval.

Collecting data for jobs went well. Therefore this criterion will remain unchanged and will continue to measure the amount of jobs created with the business case for restructuring a business site/location with a confidence interval. Still, one critical note will be repeated. This note was already made in paragraph 5.2.2 and revolves around the sense that an improvement of production processes might actually lead to the disappearance of jobs. If a business case leads to an increased efficiency or mechanization of production processes, jobs might vanish. Still, this company might generate more profit and might be better able to withstand competition for example. Therefore, the creation or disappearance of jobs needs to be evaluated carefully.

Using the full cost of ownership criterion went quite well in practice, although it was difficult to score this criterion. When, for example, does a case receive a neutral '0' and when a '-' or a '+'. To remind the reader: this criterion judges the decisions the entrepreneurs make regarding the implementation sustainable measures in their building(s). The way this criterion will be scored will

remain the same as described in paragraph 5.2.3.

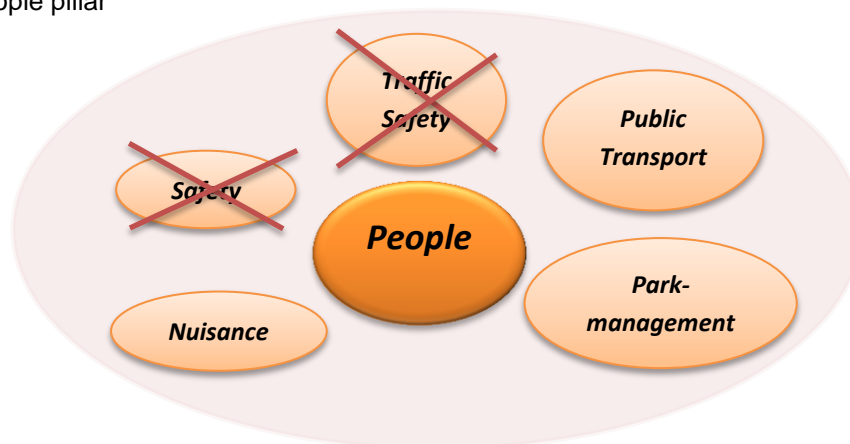
Next, the criteria ranged under the People pillar will be discussed. Collecting data for the 'public transport' criterion went smooth. Using programs such as Google Maps, 9292OV and the websites of local public transport companies led to a complete picture of the public transport situation. This criterion does not need any alterations.

For 'Traffic Safety' and 'Safety' no data on a neighborhood level could be found; only on a municipal level. As was discussed already, it is questionable how important these data are for a small scale restructuring process. If Nijmegen, for example, has only small amount of traffic accidents it does not automatically mean that the situation around the Novio Tech Campus is safe as well. For 'Safety' (measuring crimes and burglaries), the same can be said. Furthermore, I tried finding this kind of data for smaller municipalities, but failed. This has been explained in paragraph 6.1.3. Based on these two reasons I have decided to remove the two criteria from the model.

Parkmanagement is the fourth criterion of the People pillar. Asking for the degree of organization at the business site went smooth. Rikus Wolbers, CEO of the Novio Tech Campus, informed me about the parkmanagement activities at the NTC. Since Rikus Wolbers is a colleague of mine, asking him about parkmanagement at the NTC was easy. If I had to ask someone I did not know, it would probably have taken more time to arrange an interview. Therefore, one should be aware that scoring this criterion might take some time because of the time it takes to arrange an interview. This criterion functioned well and pointed out one of the few flaws and points of improvement in the Nizo – Vika case. So, no alteration are needed and this criterion will continue to measure the degree of parkmanagement at an business site.

Finally, 'nuisance' was the fifth criterion of the people pillar. The NTC does not have residential areas or businesses directly adjacent to its campus, so it scored a double plus. Measuring nuisance for the Nizo – Vika case also went quite smooth, so alterations are needed. Figure 15 portrays the People pillar

Figure 14: People pillar



Lastly, the implications for the criterion of the planet pillar will be outlined. The data necessary for measuring 'Buildings' were easily collected and judged. Hence, this criterion does not need to be

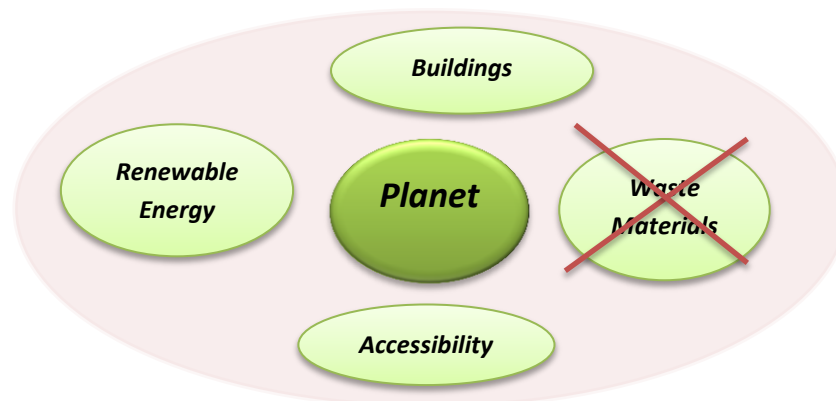
changed and will judge how the land is used.

The second criterion under the planet pillar is 'renewable energy'. Generating green, renewable energy is key in reducing pressure on the environment. Data collection went quite smooth. The case of Nizo - Vika was easy to measure though, because the lion's share of energy used will be generated locally with the biomass power plant. For the case of Building A, no renewable energy will be generated. It could be the case that 'the middle way' is harder to measure. With 'middle way' I mean the possibility that a company has a few solar panels on its roof, but is not sure as to how much energy these panels generate compared to the company's total energy usage. I did not come across this situation when analyzing the cases, but one can imagine that this can happen with other cases. Still, based on the analysis of the two cases no changes are necessary.

Thirdly, the implications for the accessibility of the business site/location will be made clear. The necessary data was dug up via Google Maps and went flawlessly. Therefore, this criterion shall not be altered and will describe the accessibility via road.

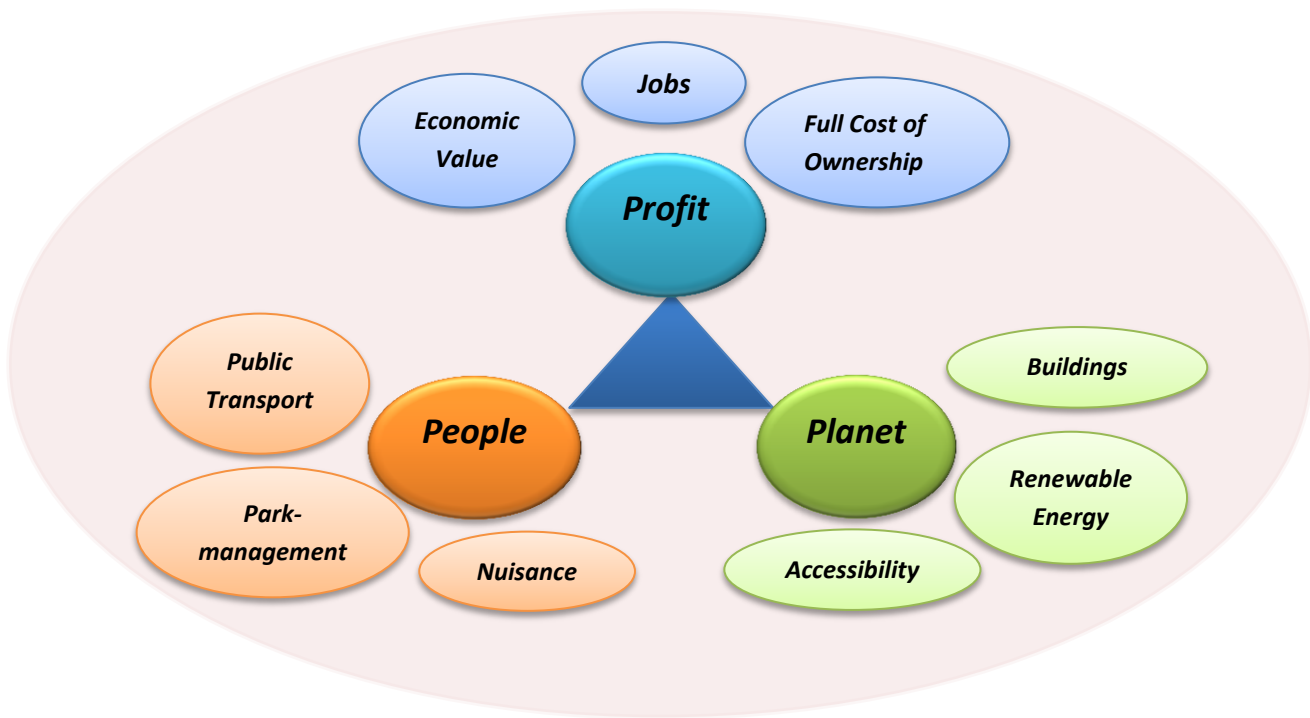
Fourthly and lastly, the way in which waste materials are used was evaluated. I intended to measure the amount of waste materials that is recycled as a percentage of the total amount of waste. These figures were impossible to estimate for Dion Sluijsmans when I analyzed the case of building A.. Furthermore, these figures were not included in the business case. Hence, I have decided to remove this criterion from the model. Figure 16 visualizes the Planet pillar.

Figure 15: Planet pillar



From the above it becomes clear that some criteria needed to be changed and three criteria were deleted. Furthermore, no criteria were added. The final visual representation of the Sustainable Business Area Model can be seen in model 4.

Model 4: Sustainable Business Area Model



Overview

In this chapter two cases have been analyzed with the Sustainable Business Area Model. The prototype model devised in chapter 5 has been tested in order to transform into a working model. The testing of the model has revealed several flaws which have been improved. A final working model to judge the sustainability of plans for restructuring business sites/locations has been created.

Appendix 2

Nederlandse samenvatting

Aanleiding

Duurzame herstructurering staat hoog op de politieke agenda van de provincie Gelderland. Ruimtelijk-economische ontwikkelingen (grote leegstand op bedrijventerreinen) en nieuwe vormen van beleid (revoluerende middelen) hebben geleid tot het schrijven van deze master thesis.

De laatste jaren is de aanpak van het herstructureren van bedrijventerreinen in Nederland veranderd. In plaats van een doel stellen over een bepaald aantal hectaren dat geherstructureerd dient te worden, sturen overheden nu op locaties waar herstructurering kansen biedt voor ondernemers. Het betreft hier dus een verschuiving van aanbod gericht herstructureren naar meer vraaggericht herstructureren. Dit proces wordt ook wel verzakelijking genoemd. Vanwege de grote leegstand op bedrijventerreinen is het onwaarschijnlijk dat er veel nieuwe terreinen ontwikkeld worden in de nabije toekomst. Daarom is het belangrijk om te zorgen dat de kwaliteit van de bestaande terreinen gehandhaafd of verbeterd wordt.

Doel

Doel van deze scriptie is om een model te ontwikkelen om plannen voor herstructurering van (delen van) bedrijventerreinen te beoordelen op duurzaamheid. Deze plannen worden in de rest van deze scriptie ook wel business cases genoemd. Het model wordt enerzijds ontworpen om de theoretische inzichten over het duurzaam herstructureren van bedrijventerreinen/-locaties uit te breiden en anderzijds om Oost NV een handvat te geven waarmee ze plannen voor herstructurering kan analyseren.

Het doel van deze scriptie is: *Versterken van vraaggerichte herstructureringstheorieën door een duurzaamheidsmodel te ontwikkelen dat de verschillende manieren van duurzame waarde creatie toetst aan de hand van verschillende business cases.*

Dit doel leidt tot de volgende onderzoeksvraag: *Hoe kan waarde in termen van People, Planet, Profit gevat worden in een model en getest worden op business cases voor het herstructureren van een bedrijfslocatie/deel van een bedrijventerrein?*

Om de onderzoeksvraag beter af te bakenen is het belangrijk om waarde te zien als *waarde die gecreëerd gaat worden door business cases voor het herstructureren van (deel van) een bedrijventerrein, welke gemaakt zijn in de provincie Gelderland in 2013-2014 en aan de criteria van de provincie Gelderland voldoen.*

Daarnaast is een viertal praktische randvoorwaarden gesteld door Oost NV. Het duurzaamheidsmodel dient:

- **transparant te zijn;**
- **snel te gebruiken zijn;**
- **praktisch toepasbaar te zijn;**
- de **criteria** voor herstructurering van de provincie in acht te nemen.

Theoretisch kader

Volgens het VN Brundtland rapport 'Our Common Future' is duurzame ontwikkeling '*ontwikkeling die in de behoeften van nu voorziet zonder de mogelijkheden van toekomstige generaties om in hun behoeften te voorzien in gevaar te brengen*' (UN, 1987). Duurzaamheid is een concept dat zich op de lange termijn focust. Daarnaast is duurzame ontwikkeling een lange termijn strategie die stabiliteit en continuïteit behoeft (Pike, Rodríguez-Pose & Tomeney, 2006). Een raamwerk dat onderdeel is geworden van de mainstream theorieën over duurzaamheid is ecologische modernisering. Deze stroming stelt dat economische vooruitgang hand in hand kan gaan met ecologische verbetering (Buttel, 2000).

Verschillende methoden zijn verder gegaan met deze gedachtegang en hebben drie dimensies onderscheiden die aan elkaar gekoppeld moeten worden om duurzame ontwikkeling te bereiken. Deze methoden zijn ontwikkeld om duurzaamheid in regionale ontwikkeling te meten en worden onder andere gebruikt door het Telos instituut (=Brabants centrum voor duurzame ontwikkeling). Deze methoden zijn ruwweg gelijk aan elkaar in de zin dat ze duurzaamheid verdelen in drie dimensies, namelijk een sociale dimensie (People), een milieu dimensie (Planet) en een economische dimensie (Profit). Het People, Planet, Profit raamwerk meet in hoeverre regionale ontwikkeling duurzaam is (Dagevos & Van Lamoen, 2009).

Mijn onderzoek, daarentegen, gebruikt de economische, sociale en milieu dimensies en past ze toe op de schaal van bedrijfslocaties en delen van bedrijventerreinen. Dit is een toevoeging aan het bestaande scala van theorieën, omdat een model dat op dit schaalniveau (bedrijfslocaties/delen van bedrijventerreinen) nieuw is. Verder is het 'full cost of ownership' (FCO) principe nog nooit geïntegreerd in een model dat duurzaamheid toetst. FCO stelt dat externe kosten zoals sociale en milieukosten ook meegenomen dienen te worden bij het doen van een investering. Dit concept integreren in een model zou een grote toevoeging zijn aan de theorieën rondom de meer vraaggestuurde aanpak bij het herstructurering van bedrijventerreinen.

Aanpak en werkwijze

Om een model te bouwen dat de toekomstige waarde creatie van business cases meet zijn aanvankelijk 9 experts geïnterviewd om informatie te verschaffen over: criteria van duurzaamheid, ervaringen met het herstructurering van bedrijventerreinen, full cost of ownership, duurzame bedrijfslocaties en de werking van duurzaamheidsmodellen. Om meer informatie te vinden over bepaalde onderwerpen is in een later stadium een extra expert geïnterviewd en is er contact met andere experts geweest om extra informatie te verkrijgen. Behalve het houden van interviews is er een gedegen literatuurstudie gedaan. Het onderzoeksperspectief is 'grounded theory', wat betekent

dat bestaande theoretische inzichten uitgebreid worden (bouwend op bestaande theorie). In dit geval zal het People, Planet, Profit raamwerk herschikt worden om toegepast te kunnen worden op de schaal van bedrijfslocaties/delen van bedrijventerreinen. Op basis van literatuuronderzoek en de data die via de experts zijn verkregen is een set aan criteria samengesteld die samen de basis voor het model vormen. Daarna is het model getest op twee business cases. Met deze cases is het prototype model veranderd in een getest, werkend model.

Resultaten

De interviews met de experts zijn uiterst waardevol gebleken. Veel gemeenschappelijke thema's kwamen naar voren, die verwerkt zijn in het model. De experts zeiden onder andere dat de mate waarin duurzame maatregelen geïmplementeerd kunnen worden op bedrijventerreinen grotendeels afhangt van de specifieke context. Iedere locatie is anders, wat betekent dat men altijd de lokale omstandigheden in acht moet nemen.

Een moeilijkheid die sommige experts tegenkwamen had te maken met de mindset van mensen. Sommige experts beargumenteerden dat een nieuwe manier van denken noodzakelijk is. Een manier van denken die focust op het maken van een positieve afdruk in plaats van een minder negatieve afdruk.

Betreffende parkmanagement is het zeer belangrijk om te kijken wat concreet gedaan wordt in termen van organisatie op bedrijventerreinen. Alleen kijken of er aan parkmanagement gedaan wordt op een bedrijventerrein is niet genoeg. Wat belangrijk is, is wat er in de praktijk gedaan wordt.

Model valideren met business cases

Nadat het eerste prototype model ontwikkeld was, was de volgende stap het testen van dit prototype op twee business cases. Doel was om een werkend, getest model te creëren. Door het model te testen op een business case werden bepaalde zwakheden duidelijk. Hier kon vervolgens op gereflecteerd worden, waarna het verbeterd is. De cases die gebruikt zijn om het model te verbeteren gingen over de herontwikkeling van een gebouw (Gebouw A) op de Novio Tech Campus in Nijmegen en uitbreiding van de bedrijven Nizo en Vika in Ede. De Novio Tech Campus biedt ruimte aan bedrijven die gespecialiseerd zijn in de high tech, life science en health sectoren. Gebouw A zal herontwikkeld worden en zal kantoorruimte, enkele onderzoeksfaciliteiten en ondersteuningsfuncties zoals een café/restaurant herbergen. De bedrijfslocaties van Nizo en Vika zullen uitgebreid worden, o.a. om uitbestede activiteiten op de locaties in Ede onder te brengen. De test van het model op deze cases bleek een zeer zinvolle onderzoekstap te zijn, vooral omdat enkele zwakheden ontdekt en verbeterd werden.

De toets op de casus toonde enkele fouten in het model die verbeterd zijn. Enkele criteria zijn veranderd en andere criteria zijn verwijderd. Ook de wijze van meten is voor elke criteria aangepast. Daarnaast zijn er lessen geleerd die van belang zijn bij het gebruiken van het model. De belangrijkste les was dat ik alleen (als afstudeerder zijnde) niet in staat was om een oordeel over de case te vellen. Ik had informatie nodig van collega's die meegewerkt hebben aan de case. Iemand van Oost NV die toekomstige cases toetst, zal naar verwachting wel in staat zijn om een oordeel te vellen zonder extra informatie bij collega's op te hoeven halen.

Een ander punt is dat dit model een oordeel velt op basis van voorspellingen voor de toekomst. Dit soort voorspellingen hebben altijd een 'margin for error' en kunnen afwijken van de daadwerkelijke ontwikkeling.

Een kritische noot die geplaatst dient te worden, heeft te maken met de beschikbaarheid van data. Vanwege een gebrek aan beschikbaarheid van data functioneren enkele criteria niet op de manier die ik aanvankelijk voor ogen had. Deze criteria zijn ofwel simpeler gemaakt ofwel geheel verwijderd. Dit om een academisch verantwoord én praktisch toepasbaar model te bouwen. Ik heb alle mogelijkheden verkend om het model zoveel als mogelijk te perfectioneren, maar voor enkele criteria was dit niet mogelijk vanwege een gebrek aan data. Daarnaast dient een analyse en oordeel van het model bij voorkeur in 1 dag plaats te vinden. Sommige criteria konden niet gebruikt worden, omdat dataverzameling te lang zou duren.

Sustainable Business Area Model

Het model, gedoopt als het Sustainable Business Area Model (SBAM), bestaat uit 3 pilaren, namelijk People, Planet en Profit. Deze pilaren zijn verdeeld in criteria.

People pilaar:

- **Openbaar Vervoer** meet de bus en trein verbindingen in de omgeving van het bedrijventerrein/de bedrijfslocatie.
- **Parkmanagement** meet de mate van organisatie en samenwerking op het bedrijventerrein.
- Als derde gaat het '**Hinder**' criterium over de hoeveelheid hinder voor directe omwonenden van de bedrijfslocatie/deel van bedrijventerrein.

Planet pilaar:

- **Bebouwing** beschrijft de manier waarop land gebruikt zal gaan worden na de herstructurering.
- **Hernieuwbare Energie** gaat over de hoeveelheid energie die hernieuwbaar op de locatie wordt opgewekt in verhouding met het totale energieverbruik op de locatie.
- De **Bereikbaarheid** gaat over de bereikbaarheid via de auto/vrachtwagen.

Profit pilaar:

- **Economische Waarde** meet de waarde van het vastgoed en de waarde van alle activiteiten die plaatsvinden in dat vastgoed.
- **Banen** meet het aantal banen dat gecreëerd wordt met de business case.
- Ten derde gaat **Full Cost of Ownership** over de beslissingen die de ondernemer neemt ten aanzien van het toepassen van dit principe. Hier gaat het erom in hoeverre duurzaamheidsmaatregelen en onderhoud gedurende de levensduur van het vastgoed meegenomen zijn in de ontwerpfase.

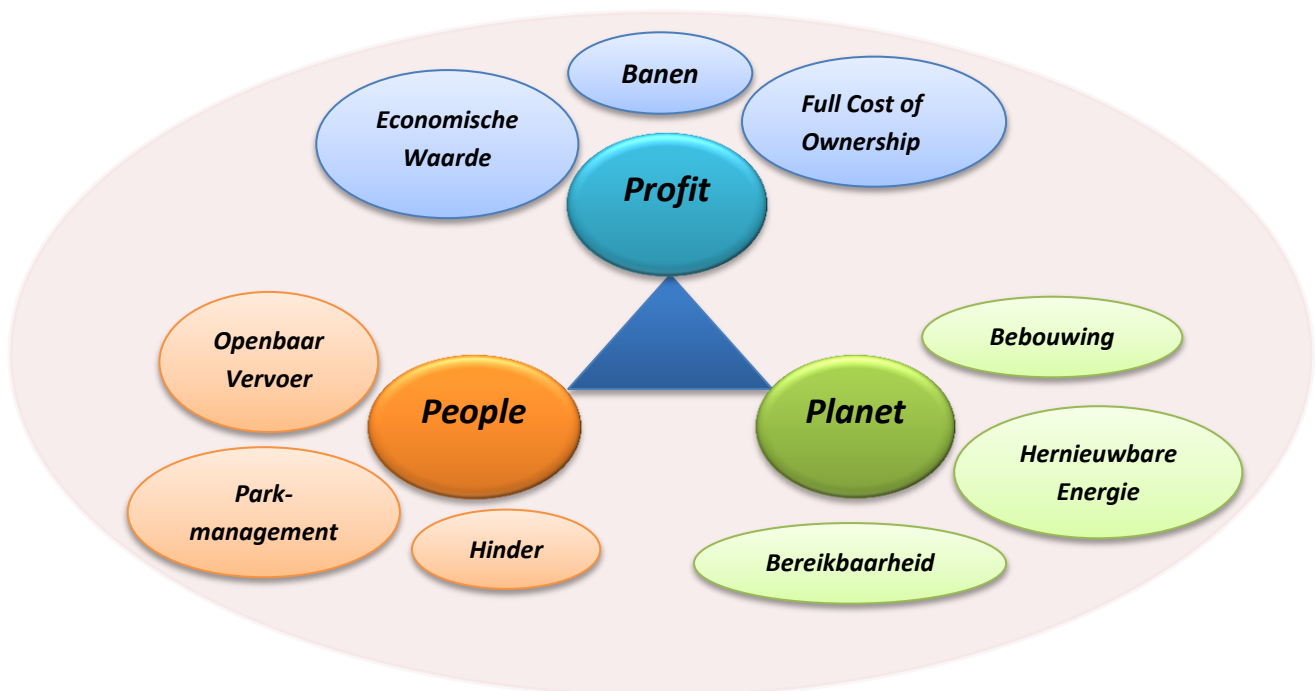
Het is belangrijk om nogmaals te benadrukken dat de plannen voor herstructurering over een toekomstige situatie spreken. De verzamelde informatie (als input voor de analyse) betreft dan ook een inschatting/voorspelling over de toekomst.

Het model dient twee doelen:

- Ten eerste velt het een oordeel over de mate van duurzaamheid van business cases voor herstructurering van een deel van een bedrijventerrein (1 of meerdere bedrijfslocaties). Op deze manier kunnen cases met elkaar vergeleken worden.
- Ten tweede geeft het model een inzicht in de People, Planet, Profit aspecten waar de case goed scoort en waar niet. Op deze manier wordt het model ook gebruikt om aanbevelingen te geven over waar en hoe de duurzaamheid van de business case verbeterd kan worden.

Model 5 toont het Sustainable Business Area Model.

Model 5: Sustainable Business Area Model.



Conclusie

Met de ontwikkeling van een werkend, getest Sustainable Business Area Model is de onderzoeksvraag beantwoord en is het onderzoeksdoel bereikt. Een belangrijke conclusie is dat het model voldoet aan de vooraf gedefinieerde uitgangspunten van snel, transparant, praktisch en geënt op de Gelderse situatie:

- Het maken van een analyse en het vellen van een oordeel kan in 1 a 2 dagen gedaan worden. Deze analyse kan gedaan worden door 1 persoon;
- Ieder criterium (en toekenning van de scoring) is onderbouwd, waardoor de lezer/gebruiker makkelijk terug kan vinden waarom bepaalde keuzes gemaakt zijn;

- Het model kan gemakkelijk gebruikt worden en kent geen ingewikkelde berekeningen;
- Relevante criteria van de provincie voor herstructurering zijn meegenomen in het model.

Indien de tijdsbeperking losgelaten wordt zou een duidelijker beeld over de duurzaamheid van business cases geschetst kunnen worden (door meer criteria en meer data te gebruiken bijvoorbeeld). Tegelijkertijd zou het unieke voordeel van het kunnen maken van een analyse in een zeer korte tijd verloren gaan. Dit model geeft dus een ruw beeld over de mate van duurzaamheid van plannen voor herstructurering van een bedrijfslocatie/deel van een bedrijventerrein in een zeer korte tijd. Andere duurzaamheidsmodellen hebben veel meer tijd nodig om tot een oordeel te komen.

Een andere conclusie is dat dit onderzoek de bestaande theorieën rondom de herstructurering van bedrijventerreinen uitgebreid heeft. Met de creatie van het Sustainable Business Area Model kunnen vraaggestuurde aanpakken bij het herstructureren van bedrijventerreinen beter zorgen voor duurzame business cases voor het herstructureren van bedrijfslocaties/delen van bedrijventerreinen. Op deze manier kunnen toekomstige herstructureringsplannen zorgen voor een betere wereld op basis van People, Planet en Profit.

Aanbevelingen

Op basis van dit onderzoek kunnen enkele aanbevelingen gegeven worden. De eerste aanbeveling is van theoretische aard. Bestaande literatuur over duurzaamheid en ecologische modernisering houdt weinig rekening met de praktische beperkingen van het combineren van economische groei met ecologische verbetering. Ondernemers zijn bijvoorbeeld vaak bezig met het runnen van hun bedrijf en hun bedrijf staande houden. Duurzaamheidsmaatregelen die niet direct geld opleveren worden daarom vaak niet ingevoerd. Daarmee kan het combineren van economische groei met ecologische verbetering in de praktijk beperkt zijn. Om deze reden zou toekomstige literatuur over duurzaamheid en gerelateerde concepten praktische beperkingen op moeten nemen om een realistischer beeld van de economische groei en ecologische verbetering te schetsen.

Ten tweede vond dit onderzoek plaats in een Nederlandse context, wat het onderzoek beïnvloed heeft. Het criterium 'Openbaar Vervoer' is bijvoorbeeld meegenomen in het model, omdat het een belangrijke vorm van vervoer is in Nederland. Het is denkbaar dat openbaar vervoer in andere landen veel minder belangrijk is. Daarom zouden duurzaamheidsmodellen uit verschillende landen vergeleken moeten worden. De lessen die uit een dergelijke studie geleerd worden kunnen gebruikt worden om duurzaamheidsmodellen te verbeteren.

Ten derde wil ik Oost NV aanbevelen dat het model gebruikt zou moeten worden door iemand die aan de te analyseren case gewerkt heeft. Doordat deze persoon veel kennis over de case heeft kan er een snelle en degelijke analyse plaatsvinden.

Als laatste raad ik Oost NV aan om het model in te zetten voordat de business case formeel 'af' is. Hiermee kan de uitslag van het model gebruikt worden om de business case duurzamer te maken. Tegelijkertijd is het belangrijk dat er genoeg informatie voorhanden is om een gedegen analyse te maken. Om deze reden wil ik aanbevelen dat het model gebruikt wordt wanneer de business case bijna 'af' is.

Appendix 3

Interview guides

Thema: Ervaringen duurzaam herstructureren bedrijventerreinen/sustainability criteria

Organisatie: Oost NV

Respondent: Wils Kloos.

Op welke manieren is de Betuwse Bloem duurzaam?

-People, planet, profit? → MVO, het gebruik van duurzame productiemiddelen, energiebesparing, Arbo, het verminderen van gewasbeschermingsmiddelengebruik, slimme logistieke concepten, valorisatie van reststromen uit de tuinbouw, goed werkgeverschap en daardoor ook een goed personeelsbeleid.

- Welke dimensies kregen de meeste nadruk?
- Hoe in de praktijk gebracht?
- Welke maatregelen genomen om duurzaamheid te stimuleren?
- Hoe is het meetbaar gemaakt?
- Welke moeilijkheden kwam u tegen bij op uw terrein m.b.t. duurzaamheid?

Hoe zou een duurzaam (agro)bedrijventerrein omschrijven? Aan welke criteria moet een duurzaam (agro)bedrijventerrein voldoen?

Hoe komt de sociale dimensie naar voren?

Veel planet maatregelen, ook sociale maatregelen? Veiligheid, bereikbaarheid OV, voorzieningen etc?

- Hoe wordt sociale duurzaamheid gemeten?
- Hoe dragen individuele bedrijfslocaties bij aan de sociale dimensie?

Hoe komt de milieudimensie naar voren?

- (geluid, externe veiligheid, luchtkwaliteit, bodem en natuurwaarden)? → zie boven
- Hoe dragen individuele bedrijfslocaties bij aan de genoemde criteria?
- Hoe wordt energiebesparing concreet in de praktijk gebracht?

Hoe komt de economische dimensie naar voren?

- Hoe dragen individuele bedrijfslocaties daar aan bij?

Waarom was de duurzame herstructurering succesvol?

Waar zijn er verbeterpunten?

- Hoe zou het duurzaamheidsconcept beter geïmplementeerd kunnen worden op de Betuwse Bloem?

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

- Wat wordt er op uw terrein aan parkmanagement gedaan?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagementkwantificeren?
- Total cost of ownership betrekken via parkmanagement?

Hoe kan parkmanagement op uw terrein uitgebreid worden?

Kunnen alle bedrijventerreinen duurzaam geherstructureerd worden?

Hoe kunnen duurzaamheidsmaatregelen, die toegepast zijn in Betuwse Bloem, toegepast worden bij bedrijfslocaties/delen van bedrijventerreinen?

- Hoe kunnen mogelijke verbeteringen m.b.t. duurzaamheid toegepast worden op andere projecten, zoals het herstructureren van bedrijventerreinen/locaties?

Thema: Total cost of ownership/sustainability criteria
Organisatie: Saxion
Respondent: Gerard Salemink

Intro geven over scriptie, inhoud interview

Zou u in 5 minuten de essentie van totalcost of ownership (TCO) kunnen omschrijven?

Hoe zou u het begrip duurzaamheid meten bij het herstructureren van een bedrijfslocatie/deel van bedrijventerrein (vanuit TCO bekeken)? Welke criteria zijn belangrijk? Hoe kan TCO daar in verwerkt worden?

Hoe kan TCO verwerkt worden in criteria om duurzaamheid van een bedrijfslocatie/deel van bedrijventerrein te meten?

Hoe zouden zulke criteria geoperationaliseerd kunnen worden?

Welke verbeteringen zijn er mogelijk? Hoe indirecte kosten (opgelopen tijdens levensduur) kwantificeren (ook milieukosten, sociale kosten)?

Welke moeilijkheden komt u tegen bij de toepassing van duurzaamheid m.b.t. de vorige vraag?

Op welke manieren kan TCO in de toekomst meer toegepast worden in de bouw? Ziet u kansen om TCO meer toe te passen?

Welke verbeterpunten ziet u m.b.t. totalcost of ownership bij het toepassen op duurzaamheid in de bouw? Kunnen sociale/milieukosten ook intern gemaakt worden? Parkmanagement?

Vragen of respondent bekend is met parkmanagement, zo niet: even uitleggen wat parkmanagement is

Kan parkmanagement ook gezien worden als een vorm van totalcost of ownership? Hoe?

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein/locatie? Hoe?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagement kwantificeren?
- Total cost of ownership betrekken via parkmanagement?
- Hoe kan totalcost of ownership op een andere manier verwerkt worden in meetbare duurzaamheidscriteria?

Thema: Ervaringen duurzaam herstructureren bedrijventerreinen/sustainability criteria

Organisatie: 'De Mars' in Zutphen

Respondent: Lies Hoogerwerf.

Zelf intro geven over de Mars--> (Slim ruimtegebruik, aandacht voor OV, gescheiden rioolstelsel, energiebesparing, gezond en prettig leefmilieu, natuur en ecologie, sociale duurzaamheid)

Hoe komt de sociale dimensie naar voren?

- Op welke criteria worden individuele bedrijfslocaties afgerekend m.b.t. sociale duurzaamheid?
- sociale duurzaamheid is wonen? Waarom? Waarom is wonen sociale duurzaamheid? Hoe kan het deel van het terrein met bedrijven sociaal duurzaam worden? Nog andere vormen van sociale duurzaamheid? Waarom niet meer toegepast?
- Hoe is het meetbaar gemaakt?

Hoe komt de milieudimensie naar voren?

- (geluid, externe veiligheid, luchtkwaliteit, bodem en natuurwaarden)?
- Op welke criteria worden individuele bedrijfslocaties afgerekend m.b.t. milieu duurzaamheid?
- Hoe is het meetbaar gemaakt?
- Hoe wordt er op uw park met energie omgegaan? Hoe energiebesparen?
- Welke ingrepen zijn er mogelijk om uw terrein nog duurzamer te maken (milieukundig gezien)?
- Leidt duurzaamheid tot lagere kosten? Hoe?

Waarom was de duurzame herstructurering succesvol? Welke moeilijkheden kwam u tegen?

Waar zijn er verbeterpunten?

- Hoe zou het duurzaamheidsconcept beter geïmplementeerd kunnen worden op uw terrein?
- Welke moeilijkheden kwam u tegen bij op uw terrein m.b.t. duurzaamheid?

Hoe kan een bedrijventerrein nog meer inspelen op duurzaamheid?

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

- Wat wordt er op uw terrein aan parkmanagement gedaan?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagement kwantificeren?
- Total cost of ownership betrekken via parkmanagement?

Hoe kan parkmanagement op uw terrein uitgebreid worden?

Kunnen alle bedrijventerreinen duurzaam geherstructureerd worden?

Hoe kunnen duurzaamheidsmaatregelen, die toegepast zijn op De Mars, toegepast worden bij bedrijfslocaties/delen van bedrijventerreinen?

- Hoe kunnen mogelijke verbeteringen m.b.t. duurzaamheid toegepast worden op andere projecten, zoals het herstructureren van bedrijventerreinen/locaties?

Thema: Ervaringen duurzaam herstructureren bedrijventerreinen/sustainability criteria
Organisatie: Hitachi
Respondent: Dick Lunenberg.

Kunt u in 5 minuten een duurzame bedrijfslocatie omschrijven?

Intro geven: Op welke manieren is uw bedrijfslocatie duurzaam?

-Vooral de planet dimensie: Veel natuurlijk licht, warmte + koude opslag, zonnepanelen, beton, ketel op biobrandstof, dubbel grondgebruik (200 parkeerplaatsen op het dak).

→ Goede natuurlijke dimensie

- Hoe wordt met afval en reststoffen omgegaan?

-Waarborgt Hitachi een goede bodemkwaliteit?

- Hoe is het meetbaar gemaakt?

-Hoe dragen de genomen maatregelen bij aan een reducering van kosten? Grote investeringskosten

→ Werkt dit voor ieder bedrijf?

-Welke verdere verbeteringen zouden mogelijk zijn?

-Is er nagedacht over maatregelen die naderhand toch niet geïmplementeerd zijn?

-Waarom niet geïmplementeerd?

-Welke moeilijkheden kwam u tegen bij het implementeren van uw duurzaamheidsmaatregelen?

- Welke maatregelen zouden in toekomstige, andere bedrijfslocaties nog meer toegepast kunnen worden?

Hoe komt de sociale dimensie naar voren?

- Sociale dimensie?

→ Hoe is de sociale dimensie geïmplementeerd?

→ Waar zijn verbeteringen mogelijk?

-Hoe dragen individuele bedrijfslocatie bij aan de sociale dimensie?

-Hoe is het meetbaar gemaakt? Hoe sociale criteria meetbaar maken?

Hoe komt de economische dimensie naar voren?

- Leiden de duurzame ingrepen tot een hogere winst/lagere kosten?

-Welke kosten dalen?

-Welke kosten zouden met toekomstige ingrepen meer kunnen dalen?

- In hoeverre dragen de genomen maatregelen bij aan een hogere grondwaarde?

-Kan uw bedrijfslocatie in de toekomst nog duurzamer worden? Hoe?

-Hoe is het meetbaar gemaakt?

Vragen of respondent bekend is met parkmanagement, zo niet: even uitleggen wat parkmanagement is

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

- Wat wordt er op uw terrein aan parkmanagement gedaan?
- Draagt u bij aan parkmanagement?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagement kwantificeren?
- Total cost of ownership betrekken via parkmanagement?

Hoe kan parkmanagement op uw terrein uitgebreid worden?

- Hoe kunnen uw activiteiten m.b.t. parkmanagement uitgebreid worden?

Kunnen alle bedrijfslocaties duurzaam geherstructureerd worden?

Hoe kunnen duurzaamheidsmaatregelen, die toegepast zijn in uw bedrijfslocatie, toegepast worden bij bedrijfslocaties?

- Hoe kunnen mogelijke verbeteringen m.b.t. duurzaamheid toegepast worden op andere projecten, zoals het herstructureren van bedrijfslocaties?

Thema: Sustainability criteria
Organisatie: C2C-LAB
Respondent: Bas van de Westerlo.

Intro geven over circulaire economie, C2C

Hoe zou een duurzaam bedrijventerrein omschrijven? Aan welke criteria moet een duurzaam bedrijventerrein voldoen? → Ook aandacht voor de sociale dimensie?

Innovatoren en omliggend gebied, erg duurzaam (planet), maar geen OV verbinding. Mensen die erheen ga moeten met de auto komen (of fiets, waarschijnlijk komt 99% met de auto). De auto vervuult het milieu, niet duurzaam! Verder is het hebben van een auto duur (profit) → ook niet duurzaam! Hoe denkt u hierover?

- Welke verbeteringen zijn er mogelijk? Op welke aspecten kan het C2C principe bij bedrijfslocaties beter toegepast worden?
- Op welke criteria worden bedrijfslocaties afgerekend bij het meten van C2C? Hoe wordt het meetbaar gemaakt?

Welke moeilijkheden komt u tegen bij de toepassing van duurzaamheid tijdens uw werk?

- Het vertalen van duurzaamheidsconcept in concrete maatregelen? (vb. lager energieverbruik) Hoe wordt dit aangepakt?

Leidt C2C tot lagere kosten? Hoe?

Hoe zou u het begrip duurzaamheid meten bij het herstructureren van een bedrijfslocatie/deel van bedrijventerrein? Welke criteria zijn belangrijk?

Wat zouden economische criteria kunnen zijn?

- Waarde terrein/vastgoed (Grondprijzen/huurprijzen)
- Bruto omzet/winst
- Bereikbaarheid locatie → Hoe meten?
- Ontsluiting goederenvervoer
- Groei werkgelegenheid
- (-Ontwikkelpotentie bedrijfslocatie)

-Hoe deze voorbeelden van criteria **operationaliseren**?

Wat zouden sociale criteria kunnen zijn?

- Veiligheid (gevoel)
- voorzieningen (groen, beheer ruimte) Tevredenheid voorzieningen
- bereikbaarheid OV/fiets
- Tevredenheid werkomgeving
- Mogelijkheid tot scholing/cursussen
- Betrokkenheid bedrijf
- Verbondenheid met collega's/discriminatie op werkvloer

- Hoe deze voorbeelden van criteria **operationaliseren**?

Wat zouden milieu criteria kunnen zijn?

- Energiegebruik
- Ruimtegebruik →hoe kwantificeren?
- Afval en reststoffen
- Bodemkwaliteit
- Grondwater
- Luchtkwaliteit
- Hinder
- Landschap(vervuiling)

-Hoe deze voorbeelden van criteria **operationaliseren**?

Vragen of respondent bekend is met parkmanagement, zo niet: even uitleggen wat parkmanagement is

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagementkwantificeren?
- Total cost of ownership betrekken via parkmanagement?

Welke verbeterpunten ziet u m.b.t. duurzaamheid op bedrijventerreinen?

- tijdens herstructureringsprojecten?

Thema: Werking model/sustainability criteria

Organisatie: Telos instituut

Respondent: John Dagevos

Hoe worden normen in het Telos model bepaald?

-Hoe wordt een waarde gegeven aan een indicator? Hoe wordt bepaald wat de streefwaarde is en wat de grenswaarde is? Normatief, maar hoe? Waarom?

Hoe wordt het aantal te behalen punten per categorie/indicator bepaald? Waarom participatief?

Hoe wordt het behaalde aantal punten per categorie/indicator bepaald? Waarom participatief?

Wanneer is een waarde voldoende en wanneer niet? BV. Onveiligheidsgevoel in Telos methode, waarom zit de gouden norm op <15% van mensen dat zich wel eens onveilig voelt? Waarom niet <20%?

Hoe wordt de weging bepaald?

-Participatief? Hoe?

-Waarom de weging? → vergelijkbaarheid

-Wat zijn argumenten om geen weging te doen? (Ruwe data laten spreken, bv aantal gecreëerde banen).

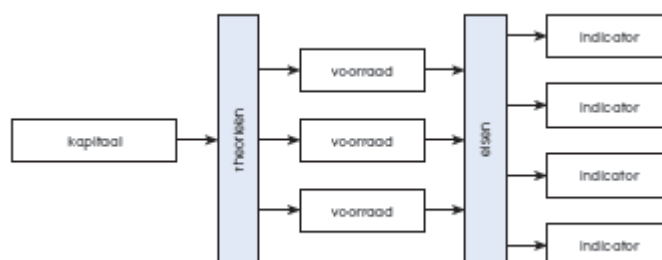
Hoe wordt bepaald welke indicatoren een voorraad vormen? Hoe wordt bepaald welke voorraden een kapitaal vormen? Waarom niet meer of minder?

Welke problemen loopt u tegenaan bij het maken van een model?

Hoe zouden bedrijventerreinen in de toekomst duurzamer geherstructureerd kunnen worden?

-In hoeverre kan de manier waarop het Telos model in elkaar steekt (voorraden – indicatoren, weging) vertaald worden naar de schaal van bedrijfslocaties?

Vergelijkbaarheid (belangrijk bij regio's)? Veel verschillen tussen onderlinge bedrijfslocaties? Wellicht ruwe data laten spreken? Waarom wel/niet?



Welke indicatoren uit het Telos model zouden toepasbaar zijn op de schaal van bedrijfslocaties?

-In hoeverre kunnen indicatoren van de Telos methode vertaald worden naar de schaal van bedrijfslocaties?

-Welke gevolgen heeft dit voor het model?

Hoe zou u het begrip duurzaamheid meten bij het herstructureren van een bedrijfslocatie/deel van bedrijventerrein? Welke criteria zijn belangrijk?

Vragen of respondent bekend is met parkmanagement, zo niet: even uitleggen wat parkmanagement is

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein/locatie?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagement kwantificeren? (hoogte bijdrage aan parkmanagement?)
- Total cost of ownership betrekken via parkmanagement?
- Hoe kan totalcost of ownership op een andere manier verwerkt worden in meetbare duurzaamheidscriteria?

Heeft u nog aanbevelingen/tips?

Thema: Sustainability criteria/ervaringen met duurzaam herstructureren van bedrijventerreinen/locaties.

Organisatie: BOM

Respondent: Jeroen Krijgsman

Hoe zou u een duurzaam bedrijventerrein omschrijven? → People, planet, profit

Hoe worden de criteria meetbaar gemaakt?

Hoe de volgende criteria meetbaar maken?

DPL model: → Hoe zijn uw ervaringen daarmee? Waar schiet het tekort?

Worden plannen voor herstructurering op basis van het DPL model beoordeeld, ook anders?

Op welke dimensies ligt de nadruk?

Hoe worden criteria meetbaar gemaakt/geoperationaliseerd in het DPL model?



Op wat voor manier speelt het concept duurzaamheid een rol in de bebouwde omgeving?

- Op welke aspecten van duurzaamheid ligt de nadruk voor de BOM?
- Welke verbeteringen zijn er mogelijk?

Welke moeilijkheden komt u tegen bij de toepassing van duurzaamheid tijdens uw werk?

- Het vertalen van duurzaamheidsconcept in concrete maatregelen? (vb. lager energieverbruik) Hoe wordt dit aangepakt?

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagementkwantificeren?
- Total cost of ownership betrekken via parkmanagement?

Welke verbeterpunten ziet u m.b.t. duurzaamheid op bedrijventerreinen?

- tijdens herstructureringsprojecten?
- Hoe kunnen duurzaamheidscriteria beter geïmplementeerd worden bij herstructureringsprojecten op bedrijventerreinen?
- -Hoe kan totalcost of ownership op een andere manier verwerkt worden in meetbare duurzaamheidscriteria?

Thema: Total cost of ownership/sustainability criteria
Organisatie: Parkstad Limburg
Respondent: Kees Werkhoven

Hoe zou u duurzame bedrijventerreinen omschrijven?

Hoe kijkt u aan tegen duurzaamheidsvraagstukken bij herstructurering van bedrijventerreinen?

- Welke dimensies krijgen de meeste nadruk?

Kunt u voorbeelden noemen van succesvolle herstructureringsprojecten op een bedrijventerreinen met een duurzame inslag?

- Waarom was het succesvol?
- Waarom heeft het een duurzame inslag?

Hoe verweeft uw organisatie concrete duurzaamheidsmaatregelen bij de herstructurering van bedrijventerreinen/locaties?

- Op welke manier is het succesvol?
- Waar zijn er verbeterpunten?

Hoe zou u het begrip duurzaamheid meten bij het herstructureren van een bedrijfslocatie/deel van bedrijventerrein? Welke criteria zijn belangrijk?

Welke moeilijkheden komt u tegen bij de toepassing van duurzaamheid tijdens uw werk?

- Het vertalen van duurzaamheidsconcept in concrete maatregelen? (vb. lager energieverbruik) Hoe wordt dit aangepakt?

Welke verbeterpunten ziet u m.b.t. duurzaamheid op bedrijventerreinen?

- tijdens herstructureringsprojecten?
- Hoe kunnen duurzaamheidscriteria beter geïmplementeerd worden bij herstructureringsprojecten op bedrijventerreinen?
- Hoe kan totalcost of ownership op een andere manier verwerkt worden in meetbare duurzaamheidscriteria? Parkmanagement?

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

Hoe kan parkmanagement in model betrokken worden?

- Hoe parkmanagementkwantificeren?
- Total cost of ownership betrekken via parkmanagement?

Gids voor het duurzaam herstructureren van bedrijventerreinen voor ontwikkelaars?

Found: Eén van de concrete resultaten van het project is een schriftelijke handleiding voor ontwikkelaars en beheerders van bedrijventerreinen. Deze dient als waardevol hulpmiddel bij een duurzame ontwikkeling of herstructurering.

Thema: Sustainability criteria

Organisatie: Royal Haskoning

Respondent: Jacques van Dinteren

Hoe zou u het begrip duurzaamheid/sustainability omschrijven? → Planet en profit (Zie curacaogreentown, Helmond Automotice Campus

Hoe wordt, bijvoorbeeld in curacaogreentown, Helmond Automotive Campus, duurzaamheid gemeten?

→ schone energie (wind, zon, water, aardwarmte)

Sociaal → homes in allprice ranges, veel banen

Hoe nog meer de sociale component meten? Meetbaar maken? people, planet ,profit.

Op wat voor manier speelt het concept duurzaamheid een rol in de bebouwde omgeving?

- Op welke aspecten van duurzaamheid ligt de nadruk? Hoe de sociale component meetbaar maken?

- Welke verbeteringen zijn er mogelijk?

Welke moeilijkheden komt u tegen bij de toepassing van duurzaamheid tijdens uw werk?

- Het vertalen van duurzaamheidsconcept in concrete maatregelen? (vb. lager energieverbruik) Hoe wordt dit aangepakt?

Hoe zou een duurzaam bedrijventerrein omschrijven?

- Hoe kan de sociale component verwezenlijkt/meetbaar gemaakt worden?

- Hoe de milieu component meetbaar maken?

- Leidt duurzaamheid tot lagere kosten? Hoe?

Hoe zou u het begrip duurzaamheid meten bij het herstructureren van een bedrijfslocatie/deel van bedrijventerrein? Welke criteria zijn belangrijk?

Ziet u parkmanagement als bijdrage voor de duurzaamheid op een bedrijventerrein?

Hoe kan parkmanagement in model betrokken worden?

-Hoe parkmanagement kwantificeren? (hoogte bijdrage parkmanagement?)

-Total cost of ownership betrekken via parkmanagement?

Welke verbeterpunten ziet u m.b.t. duurzaamheid op bedrijventerreinen?

-tijdens herstructureringsprojecten?

- Hoe kunnen duurzaamheidscriteria beter geïmplementeerd worden bij herstructureringsprojecten op bedrijventerreinen?

-Hoe kan totalcost of ownership op een andere manier verwerkt worden in meetbare duurzaamheidscriteria?

Thema: Case NTC

Organisatie: Oost NV

Respondent: Dion Sluijsmans

- 1) Wat is de huidige waarde van gebouw A? Wat wordt de waarde van gebouw A indien de business case gerealiseerd wordt?
- 2) Hoeveel banen worden er in/met gebouw A gerealiseerd?
Hele NTC: 500-750 tot 2018
Gebouw A:?
- 3) Op welke manier is duurzaamheid meegenomen in het ontwerp van het gebouw? Welke maatregelen zijn bijvoorbeeld genomen om te zorgen dat het gebouw, bijvoorbeeld, een lange levensduur heeft o.i.d? Dus op welke manier is er aan de voorkant (op de tekentafel) rekening gehouden met duurzaamheid? Op welke manier is dit in het gebouw verwerkt?
- 4) Er worden geen specifieke maatregelen genomen. Wel standaard zaken zoals dubbel glas etc. In principe is de herontwikkeling van een gebouw per definitie duurzaam dan. Dan hoeft je niet te slopen en opnieuw op te bouwen, maar wordt een gebouw hergebruikt.
- 5) Deze vraag gaat over hinder voor de omgeving. Is dit criterium relevant voor de NTC? Er zijn geen directe omwonenden. Alleen NXP en 52 Degrees. Wat voor soort hinder zou er kunnen zijn?
- 6) In de business case las ik over mogelijke plannen voor extra functies: 'Gebouw A kan tevens als een soort 'strip' dienen (vergelijkbaar met de Strip op de High Tech Campus) met functies als horeca, copyshop, kinderopvang etc'
In hoeverre zijn deze plannen concreet? Welke functies worden hoogstwaarschijnlijk gerealiseerd?
- 7) In hoeverre wordt er hernieuwbare energie opgewekt op/door gebouw A (bijvoorbeeld met zonnepanelen)?
- 8) Hoe wordt er met reststoffen omgegaan? In hoeverre zijn die te recycleren? In hoeverre worden ze gerecycled?

Thema: Case Nizo-Vika

Organisatie: Oost NV

Respondent: Liane van der Veen

1) Kun je de business case Nizo-Vika omschrijven?

Profit

2) Hoe beïnvloedt de case de economische waarde (vastgoed + activiteiten die plaatsvinden in het vastgoed)?

→ Is er een significante verandering?

3) Hoe beïnvloedt de case het aantal banen? Is er een significante verandering in het aantal banen?

→ Hoeveel banen worden er gecreëerd?

4) Welke beslissingen t.a.v. Full Cost of Ownership zijn er genomen?

→ Zijn er duurzame maatregelen in de ontwerpfase meegenomen (bijvoorbeeld grote ramen voor veel natuurlijk licht)?

→ Is het onderhoud (gedurende de levensduur) meegenomen in de ontwerpfase?

People

5) Is er een lokale organisatie/bedrijvenvereniging?

- Welke parkmanagement activiteiten worden ondernomen?

6) Denk je dat er een significante verandering in het aantal klachten zal zijn? (Stank, Geluid, Zicht).

Planet

7) Hoe wordt de grond gebruikt?

→ Wat is de inrichting?

→ Zijn er natuurlijke/historische structuren waar rekening mee gehouden kan worden?

→ Wordt hier rekening mee gehouden?

8) Hoeveel hernieuwbare energie wordt opgewekt t.a.v. het totale energiegebruik?