BOM Impact Journey
Pilot 1: Impact of Spinderwind BV

September 2021

impactinstitute.com

IMPACT™ INSTITUTE

MANAGEMENT SUMMARY

This explorative pilot into Spinderwind is a key part of the first phase of BOM's impact journey

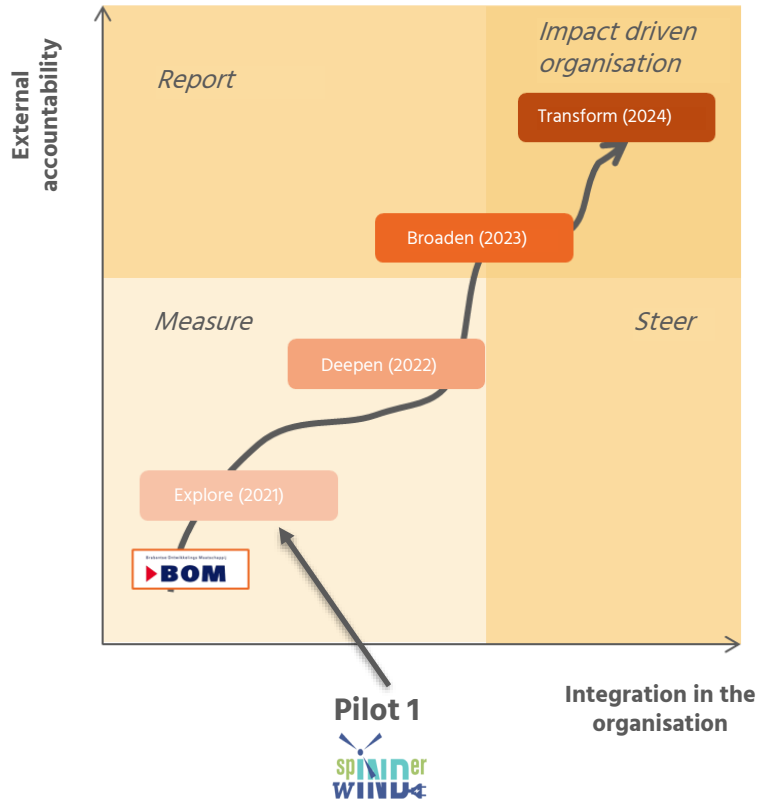
Spinderwind BV (referred to as Spinderwind in this report), is a part-citizen owned venture that generates wind energy. It is a sustainable energy investment by BOM and part of BOM's innovation ecosystem.

Spinderwind is the focus of Pilot 1, which is a key part of the explorative first phase of BOMs impact journey and their strategy to becoming an impact driven organisation.

The goal of the pilot was for BOM to learn about and explore impact measurement. The following key learnings were realized:

- Through active knowledge sharing BOM gained insight into the process and methodology followed in an impact assessment
- In the pilot, top-down impact measurement was demonstrated and provides a scalable solution for measuring environmental impact, with little company data required.
- BOM participated actively in scoping of the pilot, in a number steps which can be replicated for other projects
- The pilot project achieved robust results and the process, especially on data collection, was smooth indicating organisation readiness by BOM for impact measurement

The impact assessment of Spinderwind in particular, also provided meaningful insights for BOM. A key component of BOM's sustainability strategy is the theme of sustainable energy. The energy transition is a critical part of Brabant and the Netherlands' climate goals and is a transition in which BOM is important driver of positive change. Impact assessment gives insight to BOM on how best to do that. Key learnings from the Spinderwind project are covered on the following page.



MANAGEMENT SUMMARY

Spinderwind demonstrates how community engagement supports the energy transition go from plan to practice

Onshore wind energy is a key short-term policy component of the Netherlands' ambition to transition to 70% green electricity by 2030[1]. The transition plan that is in the process of being executed must balance the needs of all stakeholders involved. In the case of wind energy projects, despite the overwhelmingly positive environmental impacts, wind turbines are often placed in the backyards of communities, leading to spoilt views, inconveniences and decreasing house values.

To help ensure a fair energy transition, cooperative models can address these negative impacts by improving community engagement and sharing the positive financial impact with local residents.

This pilot project is evidence of the contribution of cooperative wind energy projects to a fair energy transition.

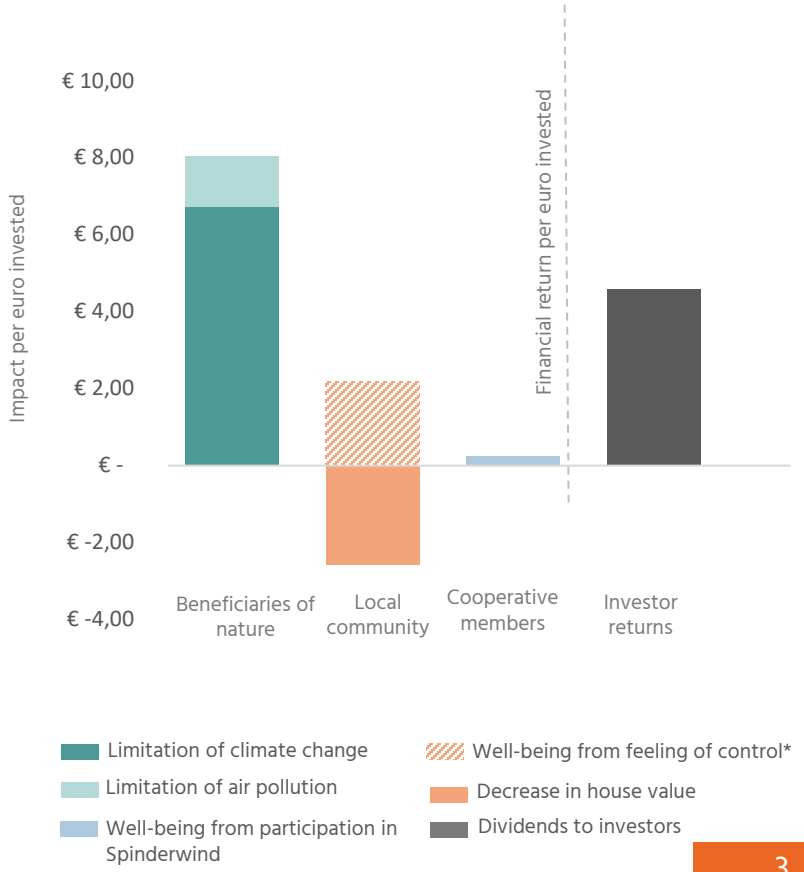
By contributing to a greener energy grid, through its knowledge and investment, BOM creates a large amount of environmental impact, through the limitation of climate change and air pollution.

Spinderwind provides, through their cooperative model, an opportunity for locals to participate in the process thus empowering the community and generating well-being. Additionally, members can buy shares ('Spinderdelen') in Spinderwind, thus earning financial returns. These benefits help to balance the negative social impacts that communities face and ensure an energy transition which considers the needs of local communities.

[1] CBS Klimaat en Energieverkenning 2020.

* This result is a mix of qualitative and quantitative information and so is less certain than the other results

Spinderwind's impact per stakeholder over lifetime of wind turbine



NOTE TO READER

This is a limited scope pilot focusing on the marginal impact of Spinderwind

The goal of this pilot was to help BOM explore and learn more about impact measurement rather than to perform a detailed and complete impact assessment of Spinderwind.

The reader should keep a few things in mind when reading this report:

1) This is a pilot project for BOM with a limited scope. Therefore, a small selection of impacts have been assessed. There are many other impacts relevant in this context. Impacts in scope have been selected based on their materiality but also on feasibility, given the time constraints, and the strategic focus of BOM and Spinderwind
2) The entire value chain and the life cycle of wind turbines have been included in the assessment.
3) Marginal impact is the focus of this assessment. This means that all impacts are measured against an alternate reference scenario. In this case the reference was the energy mix in the Netherlands.
4) The assessment of financial impact has a limited scope, financial flows such as taxes and subsidies have not been included in the assessment. The non-financial impacts that have been calculated in this pilot will complement financial impacts calculated by BOM to provide a more holistic view of the project. In order to give context to the results, we have included financial returns for investors. These returns are based on projections made by Spinderwind.[1]

INTRODUCTION

The goal of this pilot is to perform an exploratory impact assessment of Spinderwind, a citizen-owned windfarm in Brabant

BOM (Brabantse Ontwikkelings Maatschappij) is a development organisation that invests in a variety of ventures that contribute to the development of a future-proof and sustainable Brabant economy. BOM provides financial investment, facilitates knowledge sharing and provides these ventures with networks and an innovation ecosystem in which to thrive.

Spinderwind BV, a citizen owned venture that manages the Burgerwindpark De Spinderwind farm, is one of BOM's sustainable energy investments.

Spinderwind generates wind energy which it sells to the grid to be used by people and businesses. The project is managed by eleven energy cooperatives from the municipality of Tilburg and the Hart van Brabant region. The business is part funded by these cooperatives and part funded by BOM. The project is therefore 50% citizen owned.

Spinderwind creates impact through the provision of sustainable energy to the citizens of Brabant and the cooperative model of the business seeks to increase support for and acceptance of sustainable energy.

In this pilot, through a limited scope impact assessment of Spinderwind, we seek to explore how impact measurement can help BOM towards becoming an impact driven organization, a key goal of its new strategy. The results of the pilot will support further decision making on next steps in the impact journey.

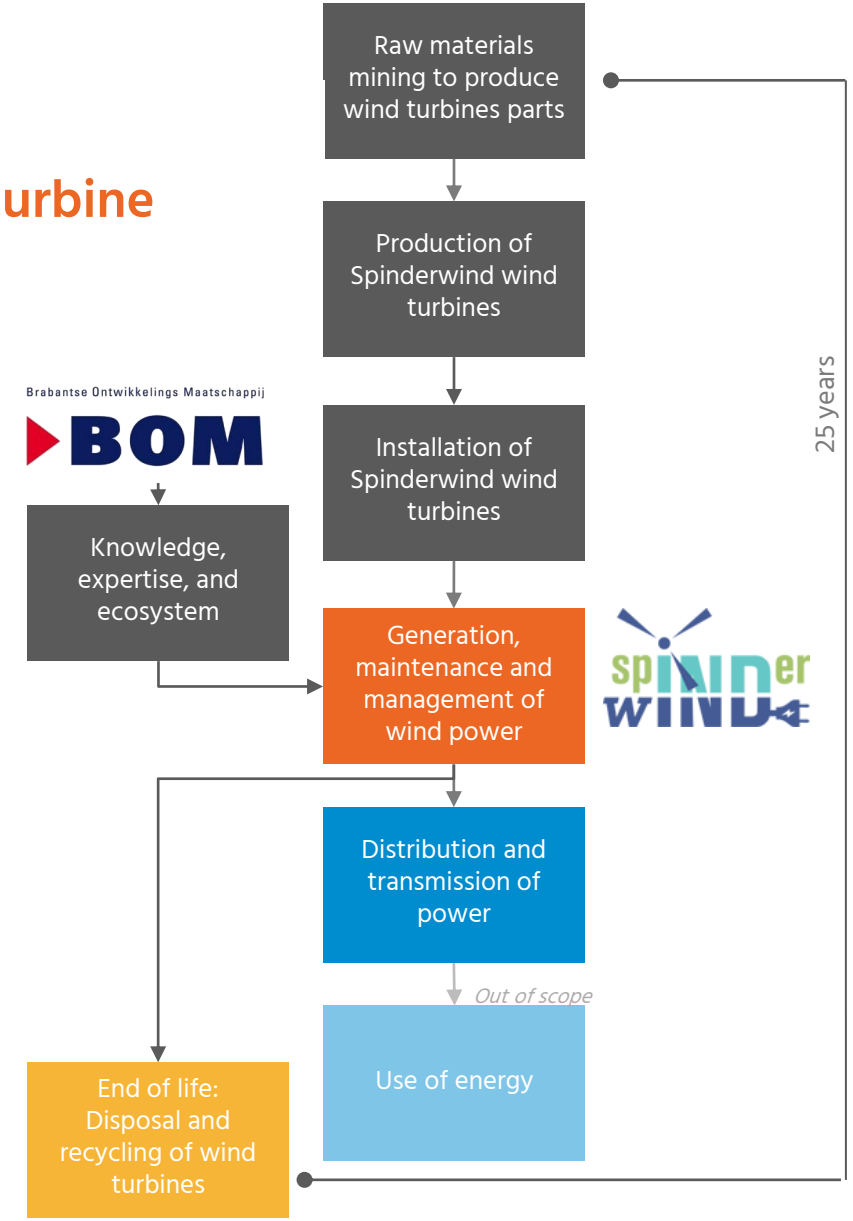
VALUE CHAIN SCOPE

This impact measurement covered a 25 year lifecycle of a wind turbine

In this pilot project, we measured the impact of Spinderwind, part of BOM's portfolio of investments. A multi-year assessment of the impact of Spinderwind was conducted to understand the impact of the company and its activities across its entire lifecycle. A period of 25 years, the average lifecycle of a wind turbine, was chosen as the time period[1]. The results are discounted to produce net present value (NPV) estimates for the impacts. They are then divided by the total investment by both BOM and the Cooperative to get results per euro invested.

Due to BOM's significant role in the development and growth of the company, a proportion of the impact of the company will be assigned to BOM. While most of the figures in this report show the results for the project in its entirety impact is allocated to BOM and the result is therefore BOM's impact through Spinderwind

The aim of this pilot was to allow BOM to explore impact measurement and learn to apply impact thinking. Due to the exploratory nature of this pilot, a limited number of impacts was chosen. For these impacts in scope, this pilot aimed to demonstrate the scalability of impact measurement and how measurement of a select number of material impacts can provide important insight into BOM's investment. The impacts in scope are explored further on the next page.



[1] Sun et al., 2017. Study on offshore wind farm layout optimization based on decommissioning strategy.

IMPACTS IN SCOPE

A limited number of impacts were analysed because of the explorative nature of this pilot

The scoping phase of the pilot began with the mapping of all the activities, inputs, outputs and resultant outcomes of Spinderwind. This exercise culminated in a long list of environmental, social and financial impacts that Spinderwind has on various stakeholders[1]. Based on materiality, feasibility and strategic importance of impacts, the long list of impacts was shortened to a total 5 impacts that have been measured in this pilot. These impacts are explored further below.

Spinderwind is a producer of sustainable wind energy. Therefore, the environmental benefits of its activities were considered to be important and material. Initial life cycle assessment data indicated that greenhouse gas (GHG) emissions (climate change) and air pollution were the most material impacts and hence, these were chosen for the pilot.

Spinderwind's citizen owned business model differentiates it from other wind projects. It's activities and administration is managed by volunteers who are part of the eleven cooperatives. Additionally, the cooperative model allows local residents to feel a sense of control over the process. Hence, to understand the impact of the cooperative model, the well-being that this model offers to locals and members were chosen.

Noise and shadow are some of the complaints against wind projects from citizens living in its surroundings. To understand the impact this has on the local community, the decrease in house prices[2] in this area was chosen as a relevant impact, acting as an estimate of the negative impacts of wind energy projects described above.

The financial returns are also provided for BOM, Spinderdeelhouders and cooperatives to provide a holistic understanding of the value of the project.

Limitation of climate change

Limitation of air pollution

Well-being from feeling of control

Decrease in house value

Well-being from participation in Spinderwind

Dividends BOM

Returns for Spinderdeelhouders

Returns for cooperative

[1] For the long list of impacts see the annex.

[2] Dröes, M., & Koster, H. (2019). (rep.). Windturbines, zonneparken en woningprijzen. In opdracht van het Ministerie van Economische Zaken en Klimaat

BOM'S IMPACT THROUGH SPINDERWIND

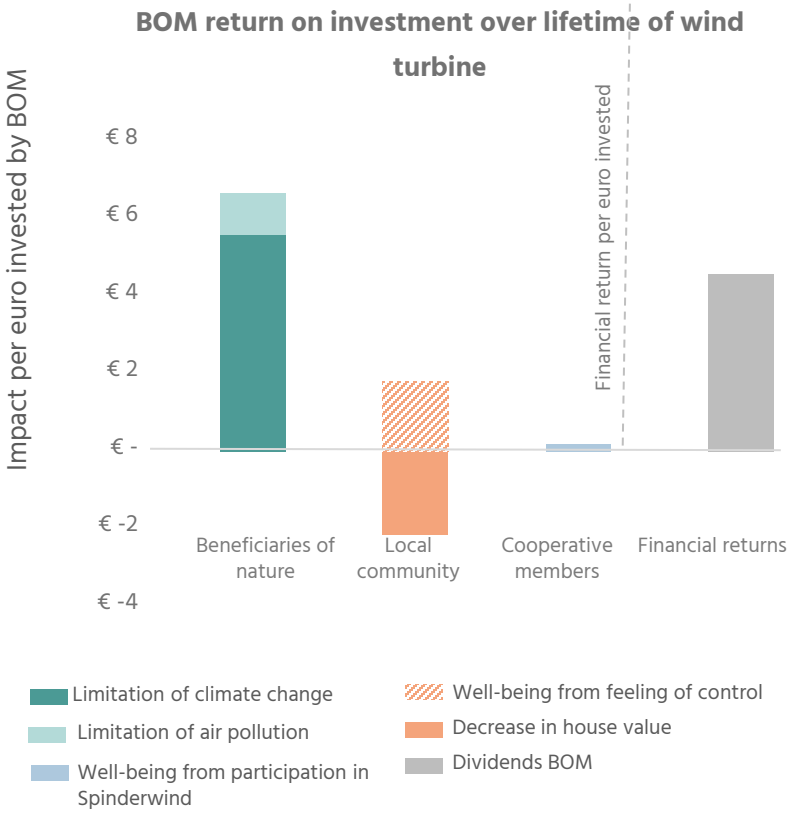
As an equity holder BOM shares responsibility for Spinderwind's impact

As mentioned previously, BOM's financial investment, knowledge sharing and innovation ecosystem contributes significantly to the development and growth of sustainable projects. This, in turn, makes them responsible for a portion of the impact of these companies. BOM can be allocated impact based on the added value of the project and the amount invested by BOM. BOM is allocated approximately 41% of the impact of Spinderwind.

Results shown in the figure on the right, show this allocated impact, divided by the total amount invested by BOM in the project.

Results are slightly lower than in the figure on page 8, because BOM is allocated less than half of the impact despite investing 50% of the equity.

Results for the cooperative are shown on the following page. The impact results are slightly higher for the cooperative as they are allocated more impact based on their additional human capital investment.

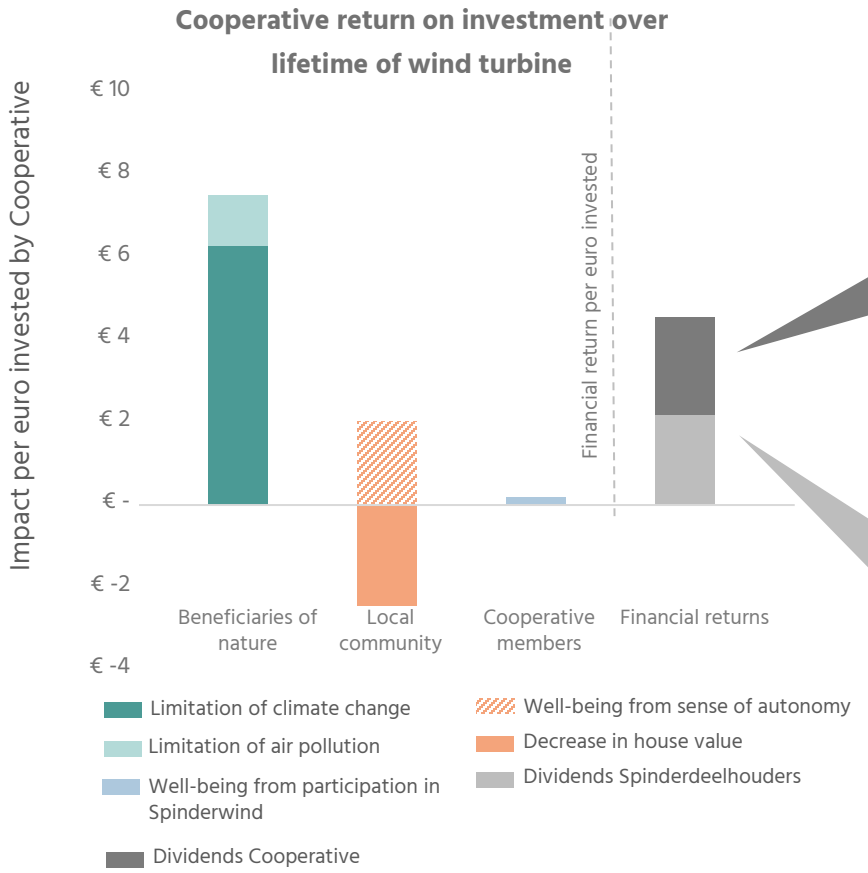


COOPERATIVE IMPACT THROUGH SPINDERWIND

Cooperatives invest financial and human capital resources in Spinderwind

Spinderwind is 50% citizen owned by members of eleven energy cooperatives from Brabant. They are partly responsible for the successful development of Spinderwind and so they are responsible for the impact. Some cooperative members also donate their time to the project. Because of their financial and human capital contribution, the cooperative can therefore be assigned a portion of the impacts.

From the project, both the cooperatives and the spinderdeelhouders earn dividends. The returns to the cooperatives are redirected into other developments in the region, leading to further positive impact. This underscores one of the largest benefits for Brabant of the cooperative model. All profits stay in Brabant and continue to serve the community.



Returns earned by cooperatives are reinvested into other Brabant based energy projects. This stimulates the local community and in the future this will likely result in further natural and social capital impact for the community and beneficiaries of nature.

Spinderdeelhouders earn regular payments from the project. While the local community experiences inconveniences from the wind turbines, and losses in house value, the cooperative model gives the community the opportunity to financially benefit from the profits earned through energy production.

THEORY | SPINDERWIND'S STAKEHOLDER GROUPS

Spinderwind's main stakeholders are not distinct groups

Spinderwind engages with and creates value for a number of different stakeholder groups:

Beneficiaries of nature are all persons, communities and organisations that use or enjoy natural resources.

Local community refers to people who live in the vicinity of the wind turbines and are thus affected by the actions of the organisation.

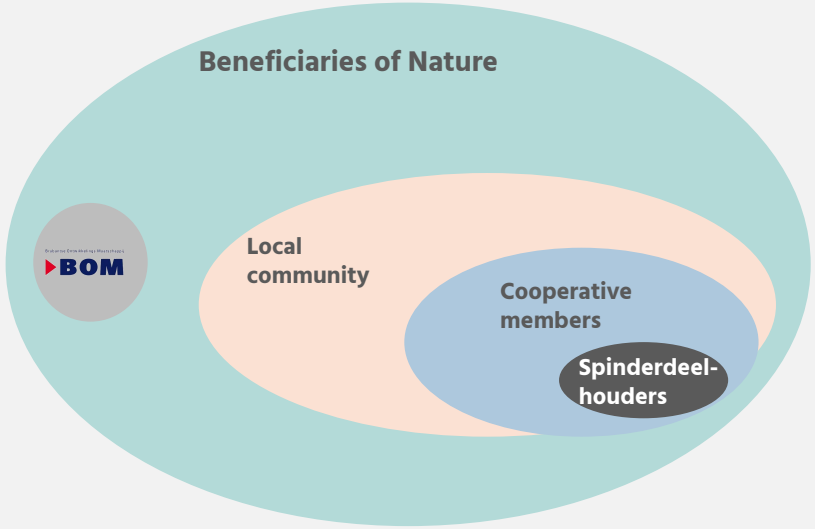
In addition, eleven energy cooperatives from the municipality of Tilburg and the Hart van Brabant jointly own the windfarm. **Cooperative members** are the people who make up the cooperatives. A small number of the cooperative members volunteer at Spinderwind.

691 members of the cooperatives own Spinderdelen. The money raised from the **Spinderdeelhouders** accounts for 50% of the equity share of Spinderwind. The other 50% is owned by the **Brabant Energy Fund**

The Cooperative, the Spinderdeelhouders and Brabant energy fund receive financial returns from their investment in the project

These stakeholders are not distinct groups. Therefore, the same stakeholder might be part of different stakeholder groups and thereby experience more than one impact.

Many of the cooperative members may live in the vicinity of the wind turbines and can also be considered part of the local community. In addition, all stakeholder groups form part of the group 'beneficiaries of nature' as they all use or enjoy natural resources and are impacted by effects such as climate change. However, while all members of the local community are also part of the beneficiaries of nature group, impacts which effect cooperative members do not affect all groups.



THEORY | REFERENCE SCENARIOS AND MARGINAL IMPACT

This pilot measures the marginal impact of Spinderwind when compared to the Netherlands energy mix

To better understand how Spinderwind makes a difference, we compared the impact of its activities to a reference scenario. The reference scenario is the alternative activity that occurs when Spinderwind is not operational. In this case, the reference scenario considered describes a situation where Spinderwind is not operational, and their energy supply is replaced by the energy supply from the grid (The Netherlands electricity mix is shown in the image on the right).

When the impact of Spinderwind is compared to the reference scenario, it gives rise to marginal impact which is the difference in impact between the two scenarios. This concept is illustrated in the figure on the right.

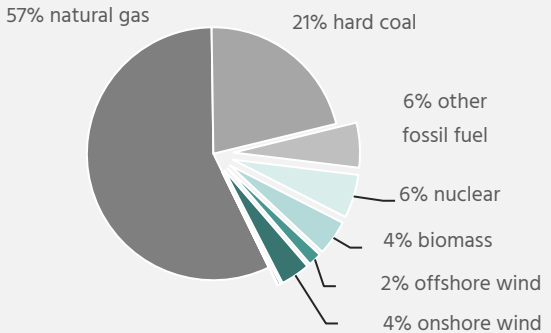
For the environmental impacts, the difference in emissions from energy produced by Spinderwind and that of energy produced under the reference circumstance, provides insight into the limitation of environmental impact by Spinderwind.

The energy mix of the Netherlands is expected to rapidly change over the next 25 years (the average lifespan of the wind turbine). In 2030, 70% of all electricity in the Netherlands is expected to come from renewable sources and by 2050, the country aims to be climate neutral[3]. The reference scenario therefore changes over time, producing less negative environmental impact. As a result, the marginal impact of Spinderwind decreases over the lifetime[4].

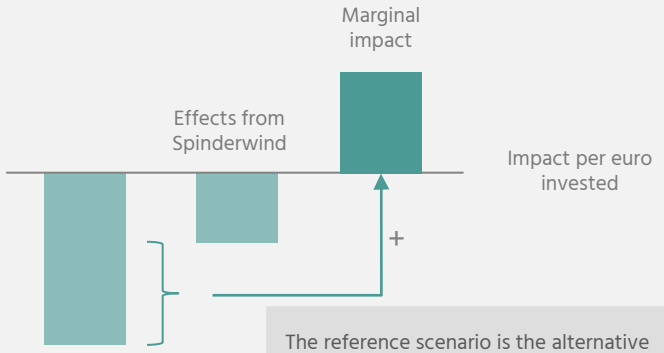
In the case of the social impacts, the absolute impact is calculated since in the reference scenario, we assume that citizens would not have any well-being (or lack thereof) from participation in a cooperative business or any inconvenience from wind turbines.

Financial returns are provided in absolute terms, to reflect the real returns earned by investors in the Spinderwind project.

Netherlands electricity mix 2019[1]



Illustrative example[2] of marginal impact



[1] CBS Klimaat en Energieverkenning 2020

[2] This visual is for illustrative purposes only, the size of the bars is not representative of actual results

[3] Netherlands Klimaatakkoord, 2021.

[4] For more information see page 38, in the annex.

THEORY | VALUE CHAIN SCOPE

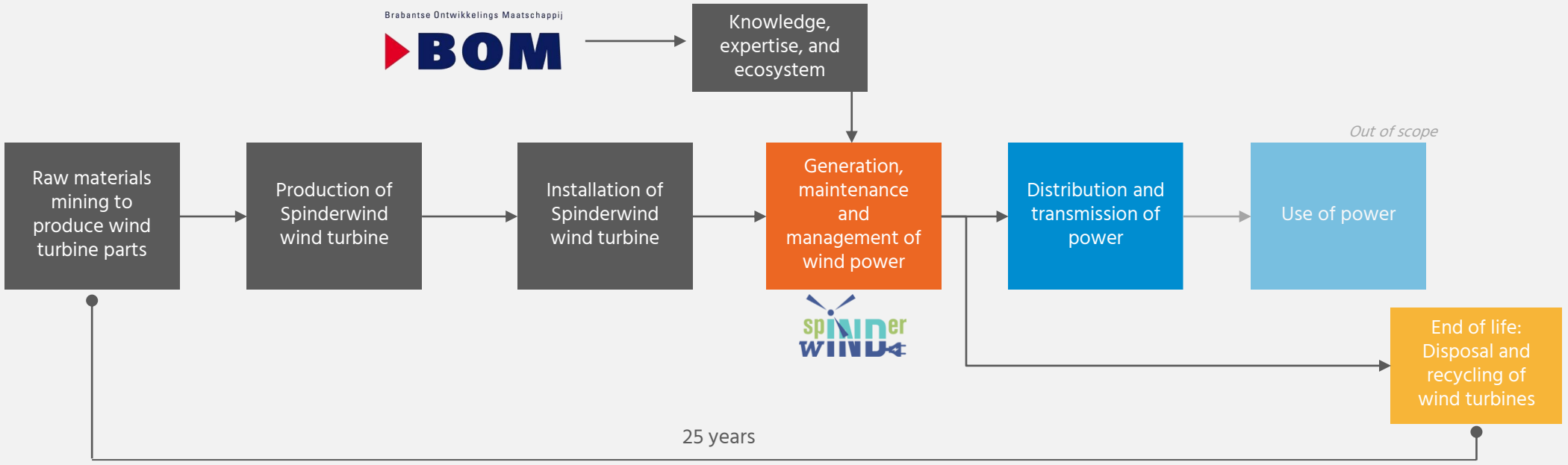
The value chain is split into three distinct phases: upstream, own operations and downstream

The value chain of Spinderwind wind turbines starts at the mining of raw materials. This, up to the point where the wind turbines are operational, is what we refer to as upstream.

Spinderwind's own operations refer to the direct activities of Spinderwind, including the operation and maintenance of the wind turbines.

Downstream of Spinderwind is the distribution, transmission and use of the electricity. The use of electricity is out of scope of this assessment.

Additionally, the assessment includes the entire lifecycle of the wind turbine and so the disposal and recycling of the wind turbine is also included. The lifetime of the wind turbine is taken to be 25 years.



THEORY | ALLOCATION TO BOM AND COOPERATIVES

BOM shares responsibility for the impact with other parties who provide input to the project, namely the cooperative and its spinderdeelhouders and to a lesser degree, the local government which gives the project license to operate.

BOM provides investment capital. The cooperative provides an equal amount, through the sale of spinderdelen to its spinderdeelhouders. The cooperative also provides human capital input, as a number of the members volunteer their time and expertise to the project.

These stakeholders are allocated impact based on their share of the added value of the project. BOM is allocated approximately 41% of Spinderwinds impact.

The cooperatives are allocated a slightly larger share as they also contribute human capital. The government is allocated a smaller share, based on the taxes Spinderwind pays.

Cooperatives

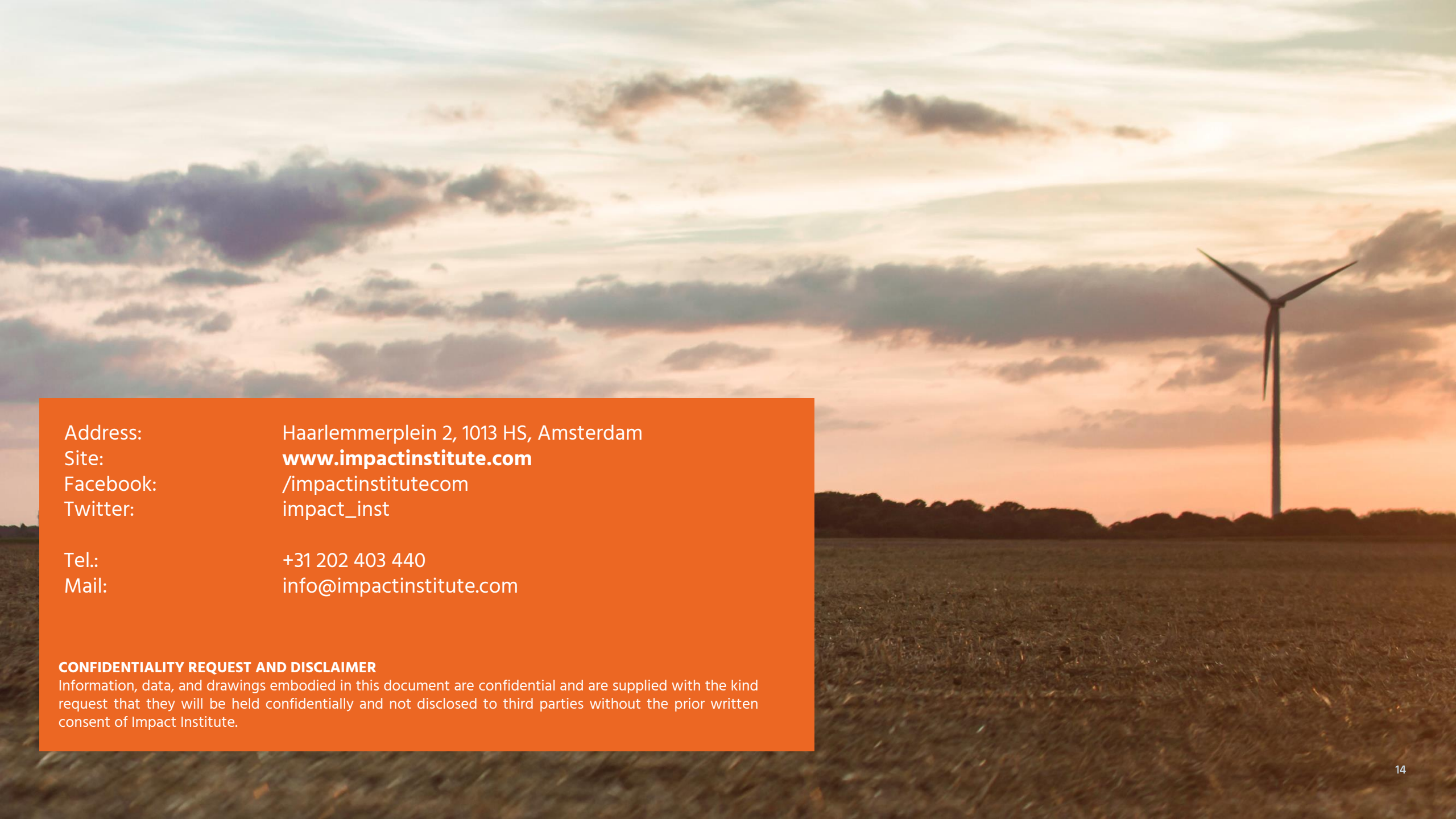
Provide finances as 50% equity shareholder and provides human capital resources

Brabantse Ontwikkelings Maatschappij

BOM

Provide finances as a 50% equity shareholder

spinder WIND



Address:	Haarlemmerplein 2, 1013 HS, Amsterdam
Site:	**www.impactinstitute.com**
Facebook:	/impactinstitutecom
Twitter:	impact_inst
Tel.:	+31 202 403 440
Mail:	info@impactinstitute.com