Evaluation of sustainability performance of Transforum projects - Green Care – Care as a product -

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June 2010

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giving shape to sustainability

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Contents

1. Introduction

1.1 Sustainability mapping approach

This document evaluates the sustainability performance of the Transforum project "Green Care Amsterdam" (also referred as: the initiative) according to the approach that is described by Blonk et al. (2010).

A full description of the approach that is used to evaluate the sustainability performance of TransForum projects can be found in the methodology report by Blonk et al. (2010). A short introduction to the applied methodology is described in chapter 2.

Paragraph 1.2 gives a short description of the Transforum project "Green Care Amsterdam". Chapter 3 describes which baseline scenario is used to determine the sustainability performance of Green Care Amsterdam. Chapter 4 evaluates the total sustainability performance of Green Care Amsterdam and describes in paragraphs 4.1 to 4.5 in detail all considerations of each sustainability indicator. Chapter 5 closes with the discussion and conclusions.

1.2 The project: Green Care Amsterdam

The project Green Care Amsterdam is organized around three themes (Regeer, 2008):

- Professionalizing care farming
- Connecting care farming and education
- Expanding care farming towards a healthy lifestyle.

In this evaluation the focus lies on the product 'care' and providing professional care in a green environment. The underlying idea is to use the potential of agriculture and the landscape around cities to enhance the well-being of urban citizens.

The Transforum project Green Care Amsterdam brings together all kinds of participants (e.g. care farmers, insurers, health institutes, government authorities and research institutes) and initiatives in care-farming in the Amsterdam area in a single professional organization: Landzijde. Landzijde is a recognized AWBZ (Exceptional Medical Expenses Act)care institution that intermediates between (local) governments, health insurers and the care farmers. It assists care farmers administratively and with all kinds of practical issues.

Landzijde has several focus points:

- Guarantee the quality of care.
- Bringing together clients and farmers.
- Spreading of knowledge about all the different aspects of care farming.

The product 'care' is sold by Landzijde. Care on care farms is provided mostly in the form of day care. Clients of Landzijde are people with mental problems, with (chronic) psychiatric demands, with addiction problems, elderly, children with behavioral and/or psychological problems and long term unemployment.

At the moment 110 farms in the province of North-Holland are linked to Landzijde of which about 30 are in the Amsterdam area and part of the project Green Care Amsterdam. The area around Amsterdam is peat land with mostly dairy farming. According to Jaap Hoek Spaans of Landzijde (Personal communication March 2010) Green Care Amsterdam farms can be divided into: 70% dairy farming; 10%

cultivation of fruits, grapes and other horticulture; 5% arable farming; and 15% cattle farming. Ten percent of the farms are organic farms. Figure 1 gives an overview of the different farms part of Green Care Amsterdam in 2003 and 2007.

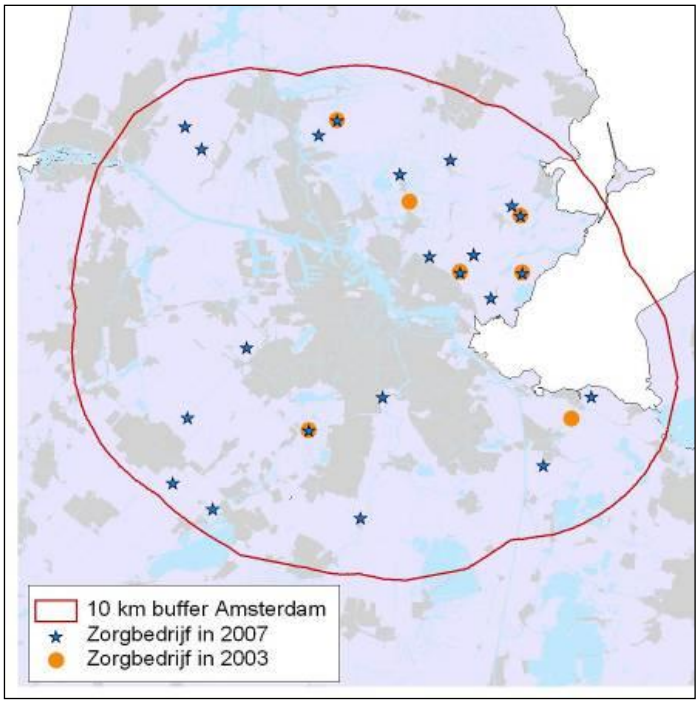


Figure 1.1. Overview of the Green Care Amsterdam farms in 2003 and 2007. (Source: Hassink et al., 2009)

1.3 System definition

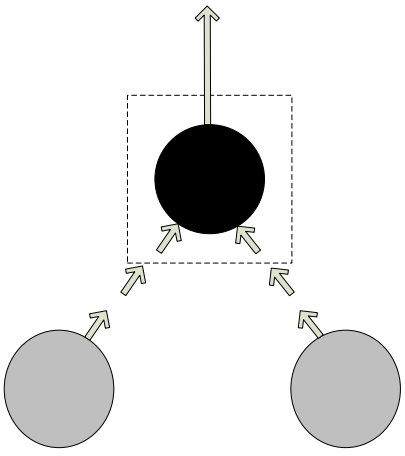


Figure 1.2. System definition Transforum project Green Care Amsterdam.

The project Green Care Amsterdam can be defined as a product concept developed with exchangeable suppliers (Figure 1.2). The initiator, Landzijde, performs the innovation himself by defining the innovative product concept, professional care on a farm. In order to do so it needs multiple suppliers that meet its demands for the product that he wants to make available. In this case Landzijde does not only make a selection of suppliers but also brings together the customers (clients) with a specific supplier (care farmer) based on the preferences of the different parties. The link between initiator and supplier is not necessarily continuous, which means the suppliers are exchangeable.

The black colored circle in figure 1.2 is in this case Landzijde, the initiative. This is the organization that sells the product care on the farm to clients.

In the sustainability evaluation all the activities of Landzijde are scored in the initiative column of the sustainability map. The grey colored circles are the different care farms, the supply chain of Landzijde. In this project there are no parties downstream in the chain.

2. Methodology

This chapter gives a brief overview of the methodology used to evaluate the sustainability performance of initiatives. More information about this methodology can be found in Blonk et al. (2010).

2.1 Evaluating initiatives on sustainable performance

Sustainability is a very broad concept dealing with ecological, social and economic consequences of our actions. Absolute sustainability doesn't exist or at least very hard to define. A more workable concept is sustainable development which implies that we are able to define more sustainable directions and thus be able to measure a more sustainable performance. Sustainable development includes nature and environmental aspects (planet), social aspects (people) and economic aspects (profit). It refers to a an ongoing process of finding balance between these aspects.

It is often not easy to evaluate the performance at a glance because the implications of an initiative do often not result in an improvement on all different sustainability aspects. Moreover there are many effects and actors involved on different locations and with different timeframes.

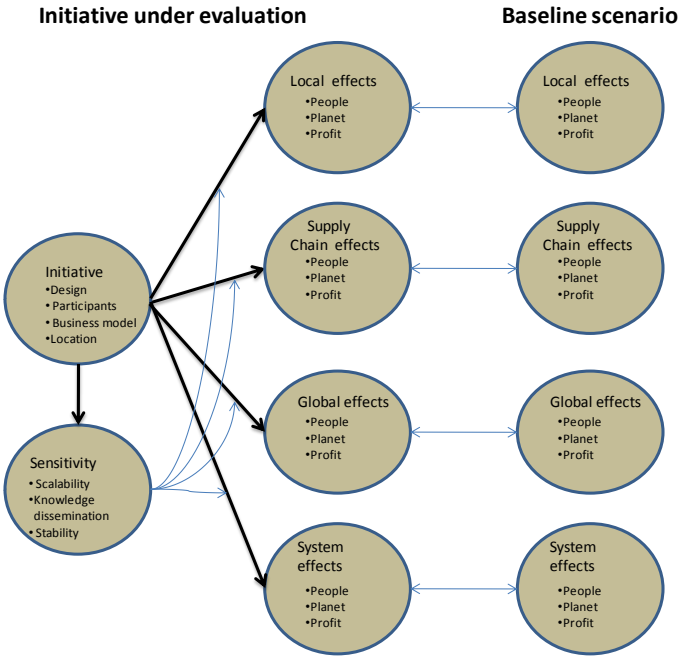


Figure 2.1. Outline of applied evaluation methodology

For evaluating the TransForum initiatives a specific evaluation methodology needed to be developed because existing methods do not cover the total spectrum of effects related to a new initiative. Each initiative generates people, planet and profit effects for different actors and different scales These effects are divided in this methodology in local effects at the initiative, local effects in the supply chain, global effects, and system effects. The ultimate impact of an initiative is also the result of the resilience of the deigns, the potential for upscaling and the knowledge spreading mechanisms involved. Scoring the sustainability performance is only possible in relation to a baseline scenario (figure 2.1).

Our method for measuring sustainable development performance of initiatives is based on a combination of three existing approaches of :

- Lifecycle assessment (Guinee, 2002)(ISO14040, 2006)(ISO 14044, 2006) (ILCD 2010) (SLCA guide 2009)
- Environmental Impact Assessment *(a.o. EU directive 85/337/EEC amended in 1997)*
- Supply chain and company Reporting of Sustainability (Global Reporting Initiative)(ISO 14064, 2006) (Poverty footprint of Oxfam Novib draft 2010)

LCA methodology gives the framework for making a sound evaluation of environmental and (partly) societal impacts over a production chain of products and gives directions how to evaluate the consequences of changes or improvements in lifecycles. EIA methodology is primarily involved with local effects and provides different working methods for evaluating a combination of qualitative and

quantitative information. Furthermore a sound definition of the baseline and alternative scenario's is one of the most important aspects of EIA. A third approach can be qualified as reporting sustainable performance of companies and their supply chain. The Global Reporting Initiative and the poverty footprint methodology of Oxfam Novib set the framework. All these basic methodologies are under continuous development which means that our sustainability mapping methodology is also

The evaluation is preferable carried out in a iterative and interactive way, using a sequence of five steps per round:

1. Define the initiative.
2. Define the baseline scenario.
3. Score local, supply chain, global and system effects.
4. Visualize the scores within the sustainability map *(for an example see figure 4.1)*.
5. Evaluate the results of the evaluation with the main stakeholders.

These steps are explained in the next paragraphs.

2.2 Defining the initiative

Before an initiative can be evaluated on sustainability a clear understanding of the initiative is needed. Which parties are involved? What are the boundaries of the initiative? What are the sustainability propositions (aims)? What's the location of the initiative? Some initiatives must be defined further to come to a business case that can be evaluated. This can be the case when an initiative is still in a preliminary stage of design.

2.3 Defining the baseline scenario

To evaluate the sustainability of an initiative it is necessary to define a baseline scenario. The baseline scenario differs for each initiative and is based on the business as usual for the initiative and the participants. Leading question is what would have been the situation, in a couple of years, if the initiative does not take place?

There are several types of developments relevant for defining the baseline scenario:

- What would the entrepreneurs do if the initiative does not take place?
- What would happen at the location if the initiative does not take place?
- What happens to other locations because of the initiative?
- How would the (environmental) performance of the product autonomous develop if the initiative does not take place?

Which developments are important to include and to what extent depends on the initiative. Sometimes the local aspects are very important and sometimes it is a minor issue.

2.4 Definition of effect categories

This paragraph briefly describes the different sustainability aspects (3P's) with the corresponding sustainability indicators of local, supply chain, global and system effects. A description of all sustainability indicators, and how these indicators are scored, can be found in Blonk et al. (2010).

2.4.1 Local effects of the initiative

Local effects are divided into scales: The first scale is the initiative. The second scale is a regional scale, referring to the surroundings of the initiative. Sometimes a third scale is involved, for instance a national scale when specific themes are interrelated with national governance. Regional and national scales are relative terms and depends on the type and extension of each specific initiative. These scales have to be defined for each individual initiative.

Initiative

A part of the effects of the initiative are located within the physical borders of the initiative. On the initiative scale there are people, planet and profit effects defined:

- People effects for employees, entrepreneurs and animals (e.g. work conditions and animal welfare).
- Planet effects at the initiative site (e.g. landscape, physical environmental quality and biodiversity)
- Profit effects of the initiative (e.g. balance, investment costs and value creation).

Regional

An initiative also influences the direct surroundings and can have people, planet and profit effects on a regional scale. It can affect residents, companies or employees nearby the initiative. People effects are for example changes in opportunities for recreation and community involvement towards the initiative. Planet effects are related to physical or chemical emissions to the surroundings and changes in landscape and biodiversity. Profit effects on a regional scale are considered as a positive contribution to the community.

National (when appropriate)

For some of the local effects it is necessary to take the national perspective into account. On national scale planet effects are important because they have a strong national dimension based on regulations (e.g. regulations on eutrophication). People and profit effects are not evaluated on a national scale because of difficulties in making these effects operational unambiguously.

2.4.2 Local supply chain effects

Besides local effects at the site of the initiative an initiative can also have comparable local effects at the supplying companies. This can be initiated by selective sourcing, setting sustainability criteria for suppliers, developing sustainability improvements with suppliers, etc. The same thematic framework is used as a starting point for evaluating local effects in the supply chain.

In some cases local effects of downstream business (customers) need to be included in the evaluation, for instance in case of forwarded chain integrations.

2.4.3 Global effects of the product(s) of the initiative

A specific category of effects are those effects not depending on the location of operation and/or emissions. These effects include some specific planet effects and major environmental themes like global warming and land use.

The global effects which are scored are:

- Land use. This indicator is related to land conversion, loss of biodiversity, increasing greenhouse gas emissions, increasing competition between agro functions such as food, bio-based materials and biofuels.
- Climate change.

- Depletion of fossil resources, such as use of fossil fuels and phosphate rock.

These global effects are determined on product level so upstream and downstream processes are also included in the calculations. It must be noted that changes in quality or quantity of land do also have an impact on social or economic viability. The effects on local changes in land quality are evaluated under local people effects of the initiative or the supply chain

2.4.4 System effects

An initiative ultimately generates products or services that may have an impact on other systems related to the usage of the product. For instance the usage of LED lamps reduces costs of energy of the consumer while at the same time it will reduce the environmental impact per unit light and per unit money.

A change in environmental impact (planet effect) per expended unit money (eco-efficiency) is relevant from a sustainable consumption perspective. A consumer can only use its money once and it is assumed that a lower impact per euro is better. A change in the amount of money expended per function is relevant for determining rebound effects related to the change in costs and behavioural adaptations. System effects of products related to health and improving knowledge of agricultural and/or sustainable production are also scored.

2.4.5 Potential of the initiative

The potential of an initiative refers to the scalability, stability and spreading of knowledge of an initiative. A first question to be answered is whether it is possible for an initiative to be copied at other locations and by other entrepreneurs or is it a one time operation or a specific niche market? The main question to be answered for evaluating "*Spreading of knowledge*" is whether the initiative aims to spread knowledge and/or includes mechanisms to do so?

2.4.6 Critical success factors

Finally, the evaluation gives information on specific parameters in the design or the surroundings of the initiative which are determinant for the realization and up scaling potential. These critical success factors give the actor(s) involved with the initiative essential information on risks and opportunities and can be used for strengthening the design or defining the conditions for (further) investments and making the initiative operational.

2.5 Visualizing the effect scores: "mapping of sustainability performance"

To make interpretation of the results easier we developed two visualizations.

1. A dashboard where the effects are categorized along the following qualification:
    - positive in relation to the baseline scenario
    - neutral in relation to the baseline scenario
    - negative in relation to the baseline scenario
    - not relevant for this initiative
    - relevant, but lack of data

A circle diagram which shows the relative amount of scoring positive, neutral, negative or relevant but lack of data.

3. Description of the baseline scenario

In this evaluation care is defined the product. Landzijde sells care, care farms provide the care and clients are the users of the care. What is the effect of care on the people, planet, profit sustainability of these different participants compared to the baseline.

Initiative
As discussed in the previous section, Landzijde is defined as the initiative in this sustainability evaluation. Landzijde creates the product and sells it to clients or intermediaries of clients. The baseline of Landzijde concerns care provided by regular care institutions.

Supply chain
The Green Care Amsterdam care farmers are defined as the supply chain. The baseline for the supply chain is based on the farmer. Does a Green Care Amsterdam care farm differ from a regular farm? What would a farmer have done if it wasn't part of Green Care Amsterdam? How does a care farm develop compared to a regular farm? We assume that most farms would have increased in size to remain economically resilient. In this section the influence of care farming on the balance, the biodiversity, the emissions, et cetera of the entire farm is analyzed and compared with regular farms.

Chain downstream
In this evaluation no downstream effects are scored.

Clients
The effects of receiving care on a farm is analyzed and compared with receiving care in regular care institutions in the city of Amsterdam.

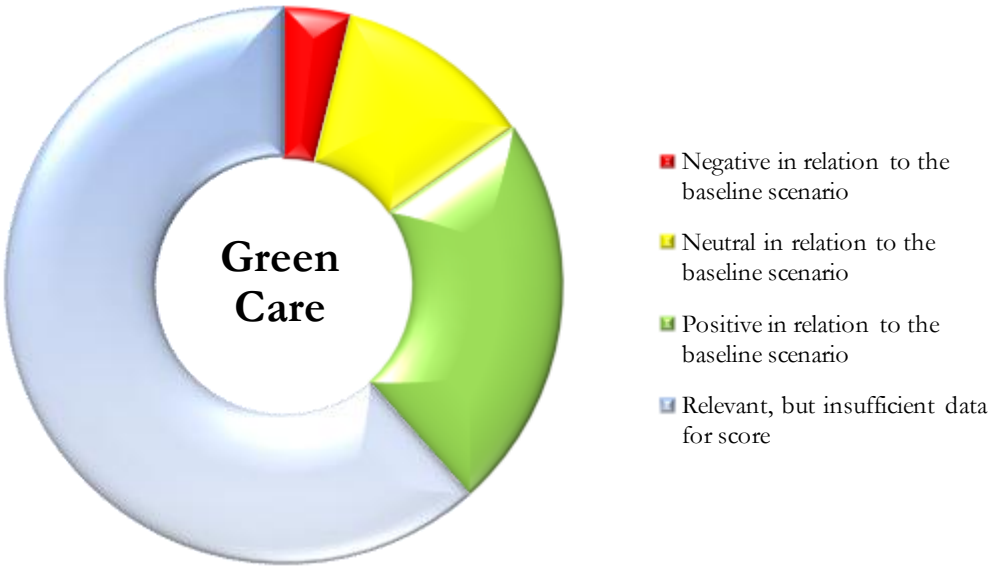
Global aspects
The global aspects such as greenhouse gas effect and land use are analyzed for the entire chain involved in care farming.

4. Sustainability of Green Care

In this chapter the sustainability of Green Care is evaluated through a top-down design. In paragraph 4.1 an overall figure, the sustainability map, is shown which is assembled out of a more comprehensive table, the sustainability table, from paragraph 4.2. This sustainability table contains 50 scored sustainability indicators and the critical success factors. The arguing of the scored sustainability indicators is described in paragraphs 4.3 till 4.7. The critical success factors are described in paragraph 4.8.

4.1 Sustainability map

Figure 4.1 shows the sustainability map and figure 4.2 shows the sustainability profile of Green Care compared to the baseline scenario as described in chapter 3. A comprehensive description of all scored sustainability indicators can be found in the following paragraph of this chapter.



Critical succes factors
- Prices for care are under influence of the government
- Increase occurrence of animal diseases

Figure 4.1. Sustainability map of Green Care

Figure 4.1 is assembled out of the relevant sustainability indicators from table 4.1. A weighting of importance of each indicator has not been applied.

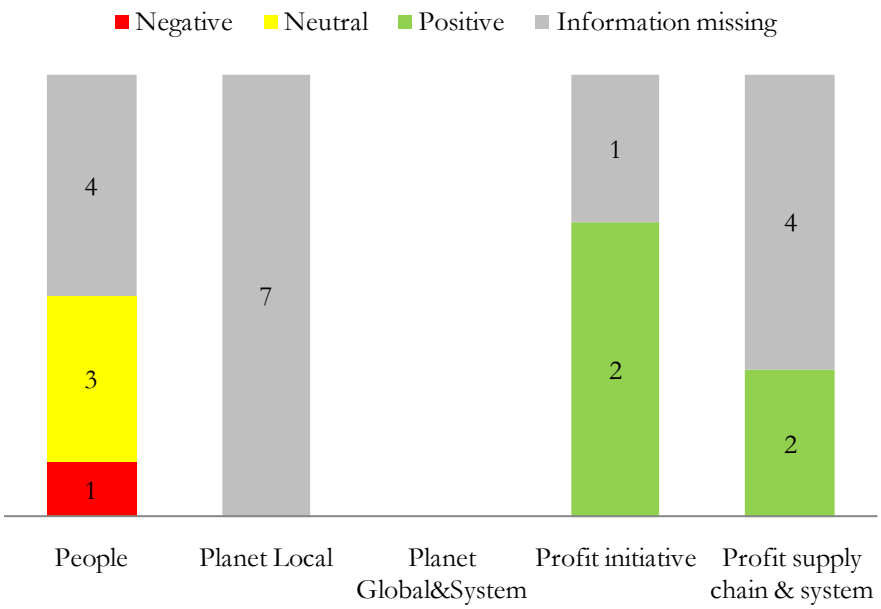


Figure 4.2. Sustainability profile of Green Care.

Figure 4.2 is assembled out of the relevant sustainability indicators from table 4.1. A weighting of importance of each indicator has not been applied.

A red score can refer to many different situations of which three are of special importance:

- Red (negative) for economic indicators of the initiative (column 4)
- Red for global planet indicators (column 3)
- Red for system effects (column 3)

If the green scored area in the donut is relatively low, one may wonder if the initiative must be qualified as a sustainability initiative. It depends, however, greatly on what the relative weight of the green area is. A well thought initiative is aware of these hot spots of sensitive sustainability issues. The relative contribution of the "grey area" (relevant, but not enough information) gives information about the extent of issues that could not be evaluated. In this area there may be possible threats as well as opportunities. (For further explanation see Blonk et al. 2010)

4.2 Sustainability table

A detailed explanation about this format and why these sustainability indicators were chosen can be found in the methodology report (Blonk et al., 2010). In the following paragraphs the scores of the sustainability indicators are argued.

Table 4.1. Sustainability table of Green Care

1 .Local impacts of the production system			
	Indicator	Initiative	Supply chain
People	In Company	1.01 Human rights		
		1.02 Labour conditions		
		1.03 Animal welfare & health		
	Community negative	1.04 Human health (other than emissions)		
		1.05 Animal disease risks		
	Community positive	1.06 Development		
		1.07 Involvement		
Planet	In Company	1.08 Environmental quality		
		1.09 Biodiversity		
		1.10 Landscape		
	Surroundings	1.11 Emissions affecting ecosystems and human health		
		1.12 Environmental quality		
		1.13 Biodiversity		
		1.14 Landscape		
Profit	In Company	1.15 Balance sheet		
		1.16 Investment		
		1.17 Value creation		

2. Global (non local) impacts of the product per functional unit			
Planet	2.01 Land use		
	2.02 Greenhouse gas effect		
	2.03 Depletion: fossil energy use		
	2.04 Depletion: phosphate rock		

3. Functional (system) effects related to product consumption and use			
People	3.01 Health		
	3.02 Other welfare aspects (individual)		
	3.03 Welfare of the community		
Planet	3.04 Land use		
	3.05 Greenhouse gas effect		
	3.06 Depletion: fossil energy use		
	3.07 Depletion: phosphate rock		
Profit	3.08 Money budget		
	3.09 Time budget		
	3.10 Prosperity community		

Legend
Positive in relation to the baseline scenario
Neutral in relation to the baseline scenario
Negative in relation to the baseline scenario
Not relevant to the initiative
Relevant, but **insufficient data** to score

4. Potential of initiative	
Upscaling potential	
Knowledge dissemination	

5. Critical succes factors
1. Prices for care are under influence of the government
2. Increase occurrence of animal diseases

4.3 Local impacts of production chain - Initiative

Landzijde is a small foundation located in Purmerend in the province of North-Holland. The turnover was 1.1 million euro in 2006 and the workforce was 2.4 fulltime-equivalent (fte). In 2008 the turnover increased to almost 4 million Euros and the workforce to 7 fte. Landzijde has no specific focus on people and planet aspects and will not be scored on these aspects. Landzijde will be scored on local profit effects.

1.01-1.14 are scored not relevant because the initiator Landzijde is an office situated in a building somewhere in Amsterdam. The core of the initiative is the organization of multiple care farms and this is where sustainability will be evaluated.

1.15 Balance sheet

Landzijde is a foundation not intending to make profit. All the money that Landzijde earns is spent on staff and housing, maintaining and improving the quality of care and in the creation of new products. Landzijde charges a price for care that is 7% lower than the price charged by regular care institutions. This can be done because it has no focus on making a profit. Farmers receive about 80% of the price charged by Landzijde which is on average 55 euro per client per day (Jaap Hoek Spaans, Landzijde, personal communication, March 2010). The other 20% are costs made by Landzijde of which 12% are direct costs related to the care such as intake meetings and evaluations, and 8% are costs not directly related to care. According to Jaap Hoek Spaans the overhead costs (costs not directly related to care) of other care institutions can be up to 30% (Jaap Hoek Spaans, Landzijde, personal communication, March 2010). Landzijde has proven in recent years that their balance is positive, even though they charge a 7% lower rate.

1.16 Investment

Not enough information was available to evaluate the investment costs of Landzijde.

1.17 Value creation

Landzijde creates added value because of the organization of care farming for 110 different farms in the province of North Holland 30 of which are part of the project Green Care Amsterdam. Moreover Landzijde is an AWBZ recognized care institution since 2003 whereas individual farmers cannot become an AWBZ recognized care institution. Health insurers and (local) governments prefer to cooperate with larger organization who are AWBZ recognized compared to individual farmers.

Quality control is another important and constant focus of Landzijde. Farmers linked to Landzijde have to meet quality standards set by the Stichting Verenigde Zorgboeren in its label "kwaliteit laat je zien" (http://www.landbouwzorg.nl). The quality control creates a brand for care farms associated with high quality care. Quality control is also important for health insurers and local governments and this makes Landzijde an important partner.

4.4 Local impacts of production chain - Supply chain

This paragraph describes the local sustainability indicators 1.01 till 1.17 of the supply chain which are scored in table 4.1. Sustainability indicators which are not relevant (blanc in table 4.1) are not addressed.

1.02 Labour conditions

Not enough information was available to score labour conditions.

Care farming has an effect on the working hours of the farmer. Clients are on the farm mostly from 10:00 to 16:00 hours. During this time care farmers need to spend part of their time at supervising clients. Clients are picked up and brought back home by the farmer or his wife. During taking care for the clients the farmer cannot perform the regular farm activities. This work has to be done before the clients arrive or after the clients have left. Care farming also has an extra workload on administration. Unlike regular care farmers, Green Care farmers can get support by Green Care Amsterdam in doing administrative work.

Green Care farmers have to work long days but it is unclear if this is really different compared to regular farms or regular care farms. No scientific reports were found to score the labor conditions on care farms different from regular farms.

Organic or less intensive farming
10% of the Green Care Amsterdam farms are organic farms (personal communication Jaap Hoek Spaans of Landzijde, March 2010). It is unclear if care farming directly stimulates farmers to become organic farmers. Landzijde itself doesn't use selection criteria to stimulate organic farming or less intensive farming.

A positive labor condition aspect of organic farming is the use of natural pesticides, but there are also negative impacts such as an increase in physical load and more uncertainty in the yield (Spruijt-Verkerke et al., 2004). Whether there is a difference in working conditions caused by organic farming is difficult to quantify (Spruijt-Verkerke et al., 2004).

1.03 Animal welfare and health
Not enough data on stress or health indicators was available and no scientific reports to score the animal welfare on Green Care care farms different from the baseline.

Animal welfare is affected by different aspects of care farming. We estimate that on care farms more time is spent on taking care of the animals compared to the baseline. This is done by both the farmer as well as by clients. An increase in time spent with the animals does not necessarily result in improved animal welfare. Clients may not have a background of taking care of animals and their input is not always productive. On the other hand clients are more thorough in the tasks such as feeding the animals and cleaning the stables (personal communication Jaap Hoek Spaans of Landzijde, March 2010).

Care farming creates a more open type of farming where clients and other people address the farmer directly if they feel that the animal welfare is not good enough. This improves the welfare of the animals, but on the other hand a more open kind of farming, with an increased number of people working and visiting the farm, will increase the risk of spreading of animal diseases, such as zoonosis. This is especially the case when there is contact between different farms. At Green Care Amsterdam farms clients work almost always on just one farm but there are activities where clients go to other farms to experience specific activities on those farms, such as protecting meadow birds.

Overall the impact of care farming on the animal welfare is not measured on Green Care Amsterdam farms and there is not enough information available to compare animal welfare on Green Care Amsterdam care farms to the baseline.

1.04 Human health (other than emissions)
The human health other than emissions of the community is scored worse compared to the baseline.

Two aspects in this case affect human health in the surrounding community. First care farming increases traffic in the area, caused by clients going to and from the farm, which might increase traffic risks. This is seen as minor and not scored as different compared to the baseline. Second and more important the more open type of farming increases the risk of spreading of animal diseases (e.g. Q-fever) to humans in the surrounding area compared to the baseline. Green Care Amsterdam increases the contact between farms and the surrounding community via clients.

1.05 Animal disease risk

The animal disease risk in the community increases when an initiative increases the contact between different farms and groups of animals in that area. In the case of Green Care Amsterdam clients mostly work on just one farm. There are activities where clients go to other farms to experience specific activities on those farms, such as protecting meadow birds. This has the potential to increase the risk of spreading of animal diseases. We assume that activities will be cancelled if these increase the risk of spreading of animal diseases.

Green Care Amsterdam might increase the interaction between different farmers because they meet each other in small groups several times a year to discuss different theme's related to care farming.

1.06 Development

Care farmers of Green Care do not have a different effect on development of the community than baseline farmers. There is no extra effort in order to do so. Green care could for instance strive for extra bus stops in the rural area. Their clients would be able to go to the care farm by bus and locals would be able to use the bus to Amsterdam or tourists would be able to visit the rural area.

1.07 Involvement

Care farmers organize public days for the community to visit the farm and learn about daily practice at care farms. Baseline farmers also organize public days, so care farmers are scored equally to the baseline.

1.07 Environmental quality

Not enough information was available to compare Green Care Amsterdam care farms to the farm baseline.

Not enough information was available to determine if care farming directly or indirectly leads to less intensive farming or organic farming. Organic or less intensive farming might have a positive impact on the environmental quality.

1.09 Biodiversity

Not enough information was available to compare Green Care Amsterdam care farms to the farm baseline.

Not enough information was available to determine if care farming directly or indirectly leads to less intensive farming or organic farming. Organic or less intensive farming might have a positive impact on the biodiversity.

1.10 Landscape

Not enough information was available to compare the effect of Green Care Amsterdam on landscape compared to the baseline.

It is difficult to determine the impact of a project on the landscape. In this evaluation the effect on landscape is scored based on whether a farm gets paid for nature conservation. Nature conservation are activities that can easily be done by clients. The question is does the increase in care farms in general and in this case Green Care Amsterdam care farms have a positive effect on the nature conservation. Hassink et al. (2007b) give for the reference year 2005 some characteristics of conventional farms with extended activities based on Voskuilen et al. (2006). This data shows that in the period between 2003 and 2005 the number of care farms in the Netherlands increased about 70% while the number of farms that do nature conservation decreases slightly. Even though the number of farms in the Netherlands that participate in nature conservation is still much higher (9311 in 2005) compared to the number of care farms (488 in 2005) this does suggest that the increase in care farming does not have a positive effect on the number of farms participating in nature conservation. Green Care might have a positive effect on landscape because the balance of care farmers is positive, which enables them to remain in the rural area while producing relatively extensive compared to the baseline. Due to lack of knowledge it is not possible to be certain about the effect of Green Care on landscape and the effect of extensive farming on landscape.

1.11 Emissions affecting ecosystems and human health

Not enough information was available to compare Green Care Amsterdam care farms to the farm baseline

1.12 Environmental quality

Not enough information was available to compare Green Care Amsterdam care farms to the farm baseline.

Not enough information was available to determine if care farming directly or indirectly leads to less intensive farming or organic farming. Organic or less intensive farming might have a positive impact on the environmental quality.

1.13 Biodiversity

Not enough information was available to compare Green Care Amsterdam care farms to the farm baseline.

Not enough information was available to determine if care farming directly or indirectly leads to less intensive farming or organic farming. Organic or less intensive farming might have a positive impact on the biodiversity.

1.14 Landscape

Not enough information was available to compare the effect of Green Care Amsterdam on landscape compared to the baseline.

1.15 Balance sheet

Not enough specific information was available to determine if the balance of Green Care Amsterdam farms is different compared to regular farms. The balance depends on many different factors such as the type of care farm, the size of the farm, the type and number of clients, the level of investments done by the farmer, the number of employees, et cetera.

Income farmer related to care

Green Care Amsterdam farmers receive on average 55 euro (gross figure) per client per day. This is about 70.000 euro a year (gross figure). This varies a lot because some farms have a lot of clients and others only a few. It is still a substantial part of the income of a farm. Clients also have an impact on the agricultural

production of the farm. It was not possible to determine in general if clients have a positive or a negative impact on the income from agricultural production of the Green Care Amsterdam farms. This depends on several aspects such as the type of clients and the type of care farm.

Costs farmer related to care
The farmer also has extra costs related to care. Care farms in general have more employees compared to regular farms. Often the farmers wife is responsible for most of the activities related to the care on the farm. These women often have a background in care or education and care farming creates a possibility to combine the farming of the husband and the care of the wife. Other extra costs related to care farming are:

- The farm needs to be adapted for clients.
- Food and drinks needs to be provided during the day.
- Extra employees need to be paid.
- Farmers need to pay for education related to care farming (for instance vocational education).
- Green Care Amsterdam farms need to be evaluated regularly.
- Costs for client activities on the farm.
- Costs for the administration of care activities.

The overhead costs of Landzijde are not included in the price mentioned earlier. The overhead costs of Landzijde are 20%. Some of the extra costs for farmers, such as cost for evaluations, are paid from this money by Landzijde.

1.16 Investment
Not enough information is available to determine the total investment costs of the entire farm and compare this to the baseline. The investment costs for care farmers are very diverse. It depends mainly on the size of the care part of the farm. For small scale care farmers the investment costs are very small. A stable can often easily be adopted to use in care farming. The investment costs increase with an increase in size of the care on the farm. In the case of Green Care Amsterdam where on average 6 to 7 clients work on the farms daily the investment costs are considered to be relatively small. The investment costs of care are not expected to be an important factor in this situation. With an increase in size this will change. The assumption has been made that baseline farmers will have to invest in order to upscale and be financially resilient. For this evaluation is was not possible to determine the height of investment costs for the care farmers and the baseline farmers.

1.17 Value creation
The value creation is scored positive compared to the baseline.

The number of care farms has increased drastically in recent years. This is a strong indication that care farming has a positive value for farmers. Care farming was first solely focused on social responsibility by people who wanted to improve the situation of clients and promote the countryside. In recent years the choice to become a care farmer also became more economically motivated. Even though no scientific information was found that underlines a possible higher profitability of care farming compared to regular farming this aspect is at the moment scored positive because care farming gives farmers a substantial way to expand in other farming activities. Green Care provides farmers that want to implement care farming with the right knowledge and the network to start their activities. Baseline farmers do not have this network and will have to put in more effort in order to widen their activities.

4.5 Global Effects

This paragraph describes the global sustainability indicators 2.01 till 2.04 which are scored in table 4.1.
It is unclear if care farming directly stimulates farmers to use less intensive methods or even become organic farmers, or if organic farmers are the type of farmers that more easily expand to other activities such as providing care, recreation and nature conservation. At this moment the farming activities on care farms cannot certainly be characterized as different from farming on regular farms.

2.01 Land use
Care on a care farm is a service and not a tangible product produced on a farm. Land use therefore is not relevant. If the product would have been the products that are produced on the farm by the clients that work on the care farm the score would have been equal to the baseline. If a positive link can be established between care farming and organic or less intensive farming, land use will have to be scored negative compared to the baseline (Garnett, 2010). The yield per hectare for organic and less intensive farms is lower compared to regular farms. From statistics of LEI, it is derived that the land use of organic dairy farms compared to regular farms is per ton of milk about 70% higher (organic cows produce about 20% less milk per cow) (LEI, 2010).

2.02 Greenhouse gas effect
Care on a care farm is a service and not a tangible product produced on a farm. Greenhouse gas effect therefore is not relevant. If the product would have been the products that are produced on the farm by the clients that work on the care farm the score would have been equal to the baseline. There might be a small effect of transport distances to and from the farm compared to regular care. Clients have to travel to and from the farm. The travel distance compared to the regular care baseline might be shorter based on the assumption that all the regular care takes place in the city and that some is provided in the institution itself. In the case of Green Care Amsterdam where all the farms are relatively close to the city of Amsterdam (within 10 km) this effect has been assumed negligible.

If a positive link can be established between care farming and organic or less intensive farming, the greenhouse gas emissions do not clearly differ from regular farms. There is a limited number of studies that compared greenhouse gas emissions from regular and less intensive or organic farms. The conclusions are not clear. Garnet (2010) mentioned that extensive systems are usually found to have a lower per-area footprint than intensive grain-fed systems but a higher footprint expressed in terms of kg/product. Bos et al. (2007) shows slightly lower greenhouse gas emissions (between 10% and 20%) for organic dairy farms (both per hectare and per kg milk) but mixed results in greenhouse gas emissions per kg product in arable crops. Broekema and Blonk (2010) showed slightly lower greenhouse gas emissions (around 20% lower) for organic dairy farms. An general conclusion about the impact of less intensive or organic farming on greenhouse gas emissions can not be established based on the different studies.

2.03 Depletion: fossil energy use
Care on a care farm is a service and not a tangible product produced on a farm. Depletion of fossil energy therefore is not relevant. If the product would have been the products that are produced on the farm by the clients that work on the care farm the score would have been equal to the baseline. If a positive link can be established between care farming and organic or less intensive farming the fossil energy use cannot be scored compared to the baseline. At the moment there is no agreement about the effect of organic farming on fossil energy use. The energy use is 10% higher for organic farming production methods according to Briene et al. (2008) and 25% higher for organic dairy farms according to Bos et al. (2007). The impact of less intensive or organic farming compared to regular farming based cannot be determined based on current studies.

2.04 Depletion: phosphate rock

Care on a care farm is a service and not a tangible product produced on a farm. Depletion of phosphate rock therefore is not relevant. If the product would have been the products that are produced on the farm by the clients that work on the care farm the score would have been equal to the baseline. If a positive link can be established between care farming and organic or less intensive farming the aspect of phosphate rock depletion has to be scored better compared to the baseline. Broekema and Blonk (2010) showed a decrease in phosphate use per ton milk.

4.6 System effects

This paragraph describes the sustainability indicators (the system effects) 3.04 till 3.07 which are scored in table 4.1. Sustainability indicators which are not relevant (blanc in table 4.1)are not addressed.

3.01 Health

The impact on the health of clients is an important criteria that cannot be scored at this time. Systematic reviews of client satisfaction and the effectiveness of programs offered by care farms are still missing. Generally, experiences of clients on care farms are very positive (Ketelaars et al., 2001; Van Erp, 2004; Elings et al., 2005; Berget 2006; Elings and Hassink, 2008; Hine ea 2008).

Clients appreciate working on farm because of several reasons (Haubenhofer et al. 2008):

- Clients become part of a community of many different persons.
- Clients spend their time doing things they like to do.
- Activities on a farm mostly have a meaningful purpose.
- Clients get certain responsibilities, but work pressure and competitive pressure never become too much.
- Every client can work with his/her own speed and potential.
- There is a general notion that clients should not be seen as patients with disabilities, but rather as individuals with much potential.
- Daily activities on a farm help to bring back rhythm and structure into the clients' lives.

Another aspect impacting health is the risk of injuries on care farms. These health risks are probably higher on care farms compared to the baseline because of the use of many different types of machines and equipment that clients are not familiar with. Green Care Amsterdam Care farmers are aware of this and to meet quality standards have to make adjustments to the farm to make it as safe as possible for the clients. Still because of the unfamiliarity of clients accidents do happen. No studies were found that analyze health risks on care farms and compare this to health risks in regular care.

According to Hassink et al. (2007a) care farms have many different important qualities such as space, quietness, useful work, diverse activities, caring activities, working with plants and animals, and the protective and caring environment of the farmer's family and the social community. These characteristics are not only very important for clients but also create a pleasant work environment.

3.02 Other welfare aspects (individual)

Not enough information was available to determine a difference in individual welfare aspects based on the relevant literature compared to the baseline. Clients do seem to appreciate working on the different farms

and the work makes them happy (see section 3.01 about health of the client) but it is unclear if the individual welfare of the client improves.

3.08 Money budget

Landzijde charges a price that is 7% lower compared to the regular price (Jaap Hoek Spaans, Landzijde, personal communication, March 2010). Care via Landzijde is cheaper for clients compared to regular care. Landzijde doesn't aim to maximize profits but to increase the number of clients that it can provide with care. This has a positive impact on the budget of the client.

3.09 Time budget

It is unclear if care on Green Care Amsterdam farms has an impact on the time budget of the client compared to regular care.

3.10 Prosperity community

It is difficult to determine if care on Green Care Amsterdam farms has a positive impact on the prosperity of the community. Clients do seem to appreciate working on the different farms and the work makes them happy. In section 3.01 different aspects of care farming are described that clients appreciate. At the moment there is no information was found to determine if the health of the clients actually improves so much that it will reduce the health costs for the society in general.

4.7 Potential

Upscaling potential

The number of farms part of Green Care Amsterdam has increased in the years from 7 in 2005 to about 30 at the moment. Green Care Amsterdam represents only the Landzijde farms in close proximity to Amsterdam. At the moment there are 110 Landzijde farms. The number of farms participating in this concept has shown a constant increase in recent years. Together with the number of farms participating also the number of clients has increased.

The Green Care concept has also been copied in other areas in the Netherlands. Landzijde actively helps organizations in other areas in the Netherlands with question about how to organize care farming.

Knowledge dissemination

Landzijde tries to actively spread knowledge about news, regulations and questions about care farming. Farmers receive regular newsletters, specific e-mails with information about news facts, such as regulations about the Q-fever. During the year farmers meet several colleagues in study groups several times a year to discuss different aspects of care farming.

For farms Landzijde is a service desk that provides answers to questions about for instance rules and regulation concerning care farming. Farmers can also follow the official vocational education (in Dutch: MBO opleiding "Bedrijfsleider Agrarisch Zorgbedrijf") is created by the Groenhorst College in cooperation with Landzijde.

Care farmers themselves also try to exchange knowledge via public days for people in the neighborhood and for family and friends of clients. This stimulates knowledge and understanding about agriculture and the countryside.

Care farmers have a much more open business compared to regular farm (the baseline) which stimulates the spreading of knowledge and countryside experiences. This might create a situation where farmers are appreciated more as an essential part of our society.

4.8 Critical succes actors

Prices for care are under influence of the government

The Exceptional Medical Expenses Act (EMEA or AWBZ) is a national insurance scheme for long-term care. This scheme is intended to provide the insured with chronic and continuous care which involves considerable financial consequences, such as care for disabled people with congenital physical or mental disorders. A lot of care for clients at the moment is paid via the EMEA. Prices for care are determined by the government. At the moment the Dutch government has to reduce its spending drastically to cope with the economic crises. This will probably result in budget cuts in the area of health care. What will the effects be on Green Care Amsterdam if prices for care will drop? Because of its size Landzijde will remain an important partner for governments. Farmers that have invested a lot of money in care farming facilities are more susceptible to changes in prices. Green Care Amsterdam is expected to be quite resilient to changes in prices for care.

Increase occurrence of animal diseases

Occurrence of animal diseases in the region of Amsterdam. If occurrence of animal diseases will turn out to be frequent, care on care farms will not be able to be carried out because of risk of infecting humans and spreading through humans from farm to farm.

5. Discussion and Conclusions

To interpret the conclusions on the sustainability performance of Green Care in this study the following has to be taken into account. This study evaluates the sustainability performance of the initiative Green Care divided in four effects (local, global, supply chain, system), based on the methodology that is described in Blonk et al. (2010). Within this differentiation different sustainability indicators, which are ordered in the three categories people planet and profit, are evaluated. The total evaluation of the sustainability performance depends on each sustainability indicator and the importance (relative weight) of each indicator. A weighting of importance of each indicator has not been applied in this study.

The results of this study are based on the actual performances of Green Care. If new ideas are implemented, this could have consequences for the sustainability performance evaluation. This can have either positive or negative effects on the final evaluation. If such deviations from the original plan and intentions occur, this needs to be evaluated before conclusions can be drawn about sustainability.

Strengths

From the sustainability evaluation the conclusions can be drawn that the sustainability indicators in which Green Care can distinguish itself in a positive way, in comparison to baseline farmers, are:

- Value creation of a new product, namely outdoor care.
- A positive effect on the money budget of clients because of the 7% lower charge.

The potential of Green Care is seen as positive because of the scalability of the project and the fact that knowledge and experiences are spread among care farmers and potential care farmers.

Weaknesses

It can be concluded from the sustainability evaluation that the weak sustainability indicators of Green Care, in comparison to baseline farmers, are:

- Possible risks for human health in the community because of increased traffic and spreading of animal diseases to humans in case of an outbreak.

Opportunities

Some opportunities for Green Care to develop more sustainability are:

- Stimulating care farmers to switch to organic farming.
- Stimulating care farmers to engage in meadow bird conservation, more frequent crop rotation and other nature conservation aspects.
- Enrolling school programs, for instance for students of primary schools to visit and learn about farming and care farming.
- Engaging in development of the rural area, for instance by opting for more bus lines and bus stops for their clients to get to the farm.
- Initiating research on the effects of care farming on human health.

Threats

There are two main threats for Green Care:

- The Exceptional Medical Expenses Act (EMEA or AWBZ) is a national insurance scheme for long-term care. Prices for care are determined by the government.
- The possibility of an outbreak of animal diseases. Care farming will (temporarily) have to be shut down.

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