Exploring the Economic Feasibility of Implementation of Sustainable Agrotourism Project in Bergerden Agropark to Attract Greenhouse Entrepreneurs for Investment

Research Project Submitted to Larenstein University of Applied Science in Partial Fulfillment of the Requirements for the Degree of Masters in Agricultural Production Chain Management, specialization Horticulture Chain Management

By:

Ehsan Kamalipour

September 2012

Wageningen

The Netherlands

Acknowledgment

First, I thank the omnipotent power over nature's forces for his grace and mercies in my life and the opportunity to pursue a Master degree in the Netherlands.

I wish to express my sincere thanks to my dissertation committee and my Supervisor, **Mr. Jan Hoekstra** who has patiently guided me through my degree programme and the dissertation process.

I place on record, my sense of gratitude to **Dr. Robert Baars,** as the Coordinate of Master Programme, **Mr. Marco Verschuur**, as the Coordinator of Professional Master Programme Agricultural Production Chain Management as well as **Dr. Tracey Campbell**, as the Coordinator of Agricultural Production Chain Management specialisation Horticulture Chains for their constant encouragement.

I would like express my deep gratitude to **Dr. Rik Eweg** who introduced Bergerden Agropark project to me and also linked me to the key persons. I also thank all interviewees, especially **Mr. Thijs Zee**, the project manager and **Mr. Stef Huisman**, an innovative greenhouse entrepreneur, in Bergerden Agropark for their patience and support.

I am grateful to my beloved friends and classmates especially **Dr. Aziz Hedayati, Mr. Kuan Hong U** and **Mr. Stijn van Gils** for their support and encouragement during thesis period.

Finally, I place on record, my sense of gratitude to one and all who directly or indirectly, have lent their helping hand in this venture.

Ehsan Kamalipour
Wageningen
The Netherlands

Dedication

This thesis is dedicated to my treasured parents and my only brother who have supported me all the way since the beginning of my studies.

Table of Contents

List of figures

List of Tables

List of Boxes

List of Annexes

List of Abbreviations

CBS	Centraal Bureau Voor de Statistiek (Dutch) The National Dutch statistical organisation (English)
STIDUG	Stimuleringsregeling inrichting duurzame glastuinbouwgebieden (Dutch) Government subsidy to stimulate sustainable greenhouse horticulture development (English)
SWOT	Strengths, Weaknesses, Opportunities, Threats
TOWS	Threats, Opportunity, Weaknesses, Strengths

Summery

Bergerden Agropark is a greenhouse zone area in province of Gelderland in the Netherlands. The local government, municipalities Nijmegen and Arnhem, is the owner of the land and it invested a lot on sustainable energy system in Begerden Agropark. The greenhouse entrepreneurs built new and modern greenhouses in about 50 percent of the whole land area and the rest has left vacant up to now. The global economic crisis and recession in horticulture sectors are the main reasons to stop folk of greenhouse entrepreneurs to the area. The government looks for an opportunity to motivate greenhouse owners to invest in the area. Locating in the neighbour of a large recreational park and also new trends in agribusiness sector leads to the idea of implementing agrotoutourism in Bergerden Agropark as a new income generator to motivate greenhouse entrepreneurs for investment in the area.

This research explores the economic possibility of implementing sustainable greenhouse tourism in Bergerden Agropark to attract greenhouse entrepreneurs for investment and try to answer how it can be feasible to implement greenhouse tourism in the area. This qualitative research follows desk study and field study for collecting data. Secondary data was collected via available hard and soft documents. The primary data was collected via survey in two approaches questionnaires (greenhouse owners and Bergerden Agropark nearby citizens) and interview. The grounded research method was applied for analysis the interviews and Porter creating shared value and sustainability was applied as concept of this research.

According to the greenhouse owners perspective towards implementing greenhouse tourism in the area, results shows that there are two groups one is really interested to invest in new projects and the other one are follower of the first group. They mostly asked for the financial support from government for implementing greenhouse tourism in the area on the other hand they prefer to have the proof such as benefit and loss and potentiality as well as the facilities that they should prepare as prerequisite of the project. Regards to the visitors' perspective, there are two groups as well. The first group did not visit the area and the second group visited the area and both of them mostly interested to greenhouse tourism and they prefer to buy fresh products from greenhouses. Government as the owner of lands is interested to support any kind of creative and profitable project in Bergerden Agropark to overcome this crisis.

Results show Bergerden Agropark does not present a positive image in economic and social aspects of sustainability in compare with the environmental aspect. According to the porters theory, meeting the need of society from any kind of business can elaborate the economic aspect of the business. The author concludes Greenhouse tourism can be an answer to the social needs in the area that is definitely leads to the new income generator in the area. Moreover it elaborate the social and economic image of the project which can be a motivator for greenhouse entrepreneurs to folk to the area.

The available facilities in the area such transportation system, closeness to the tourist spots along with the positive perspective of greenhouse owners, nearby citizens and also government toward greenhouse tourism can make it possible to implement greenhouse tourism in the area

Keywords: Bergerden Agropark, Agrotourism, Greenhouse tourism,

Chapter 1: Introduction

1.1 Background and history

The Dutch government allocates some locations in the Netherlands exclusively for horticulture business specially building greenhouses. These projects are following the innovative national projects of food clusters and Agroparks inside the country. Bergerden Agropark is one of those locations in Huissen, the province of Gelderland.

The project aimed to collect greenhouse owners from Eastern part of the Netherlands and make a modern horticulture cluster in this area. The local government supposed the area to be constructed by 40 greenhouses in medium and large size.

Two famous cities Arnhem and Nijmegen as capital of the province and the oldest city in the Netherlands, respectively surround the area (Figure 1). Moreover, Park Lingezegen, a large green buffer, is a neighbour of Bergerden Agropark. The Park is designed for recreational activities for the citizens of Arnhem and Nijmegen as well as the nearby villages and towns. Crystal Palace as a developing concept of a theme park will be lay down in the junction of Bergerden Agropark and Park Lingezegen.

Figure 1: Bergerden Agropark Source: Google map, (27.06.2012)

Municipalities of Lingewaard and Nijmegen, as join ownership, invested in Energy system infrastructure as the first commercial collective energy system in the world as well as closed water system of Bergerden Agropark. The sustainable energy system reduces the greenhouse energy consumption cost up to 10 percent as well as the energy system installation cost. These features along with smart design of project in terms of location and land size make the area much more appropriate and attractive for the greenhouse entrepreneurs for investment. Energy System, Water System, appropriate land size and closeness to the logistic companies are the prominent attributes of the Bergerden Agropark.

The project owners made a plan on capital payback cost yearly by selling the land plots to the greenhouse entrepreneurs, but, unfortunately, they have not met the project schedule on selling land plots and they just succeeded to sell around 50 percent of the whole land plots. Hence, they could not reach the anticipated level of on capital payback cost in each year.

Closeness of Bergerden Agropark to the tourist spots brings the idea of implementing agrotourism project in Bergerden Agrpark. Agrotourism project as a new income generator may motivate greenhouse entrepreneurs for investment in the area. The owner of the project

has a plan to overcome the annual loss on vacant lands by implementing new income generator projects. Among all available options, agrotourism activities is one of choices for them to make the area interesting along with other prominent feature of the area for the greenhouse entrepreneurs for investment.

1.2 Problem owner

Municipalities of Lingewaard and Nijmegen

1.3 Problem Statement

The local government allocate Bergerden Agropark for implementing a modern greenhouse area. Up to now, greenhouse entrepreneurs invest on 50% of the whole area. High cost of greenhouse operation, low price of greenhouse products in the market[1] and bankruptcy of the energy system, which was supposed to reduce 10% of greenhouse energy cost, lead to stop folk of entrepreneurs to the area, **the Bergerden Agropark is no longer attractive for the outside greenhouse owners to move to the location**. The government could not reach the project schedule on returning the loan, which invested on energy system. The Municipalities, as the owner of the lands, should pay the interest of loan to the bank especially for unused lands, and it increases the government expenses. The government considers Agrotourism activities especially greenhouse activities as an option to make the area attractive and profitable for investors.

1.3.1 Research Justification

Lingezegen recreational park is nearby to the Bergerden Agropark and monthly many visitors go there. Government realizes the implementation of agrotourism may generate more income for the greenhouse owners and area, which consequently increase the attraction of the area for the greenhouse entrepreneurs. Undoubtedly, Lingezegen recreational park play a significant role in making the area more appealing and attractive for the visitors (Figure 2).

Figure 2: Park Lingezegen Source: (Shen and Haoran,2010)

[1] Interviews were taken by author on 29 May 2012 and 05 June 2012

1.3.2 Hypothesis

It is feasible to implement sustainable greenhouse tourism in terms of environmental, social and economic dimensions as a part of agrotourism project in Bergerden Agropark to attract greenhouse entrepreneurs for investment.

1.4 Research Objective

This research explores the economic feasibility of implementing sustainable greenhouse tourism in Bergerden Agropark to attract greenhouse entrepreneurs for investment.

1.5 Research Questions

1.5.1 Main Question

1.5.1.1 How is it feasible to implement sustainable greenhouse tourism in Bergerden Agropark to attract greenhouse entrepreneurs for investment?

1.5.2 Sub questions

1.5.2.1. What is the current situation in the area?
1.5.2.2. What are the critical factors to make greenhouse tourism successful in Bergerden Agropark?
1.5.2.3. What is the government's perspective towards implementing greenhouse tourism in the area?
1.5.2.4. What is the perspective of visitors in Bergerden Agropark towards implementing greenhouse tourism in the area?
1.5.2.5. What is the greenhouse owners' perspective towards implementing greenhouse tourism in the area?

1.6 Reading Guide

As understood, **Chapter one** is the overall introduction of the thesis, and it covers background and history of project, problem statement, and problem justification as well as problem justification and research questions.

Chapter two with the title of literature review brings more details about the Bergerden Agropark as a greenhouse business area along with figures and facts about Dutch anthropology in terms of leisure activities, age and income. Apart from that, the author presents a number of researchers' findings and results on agrotourism concept and its pros and cons.

Chapter three provide the details of collecting and analysing data as well as research scope and research frame work under cover of Methodology and Conceptual frameworks.
The author presents his findings from field study in **Chapter four**. It comprises Interviews, questionnaires and author's observation results that cover the whole primary data in this research

Follow to the previous chapters, **Chapter five** discuses about finding in chapter four and making link between findings and secondary data which presents in chapter two.

The author in **Chapter six** reach the conclusion from all his finding in desk study and field study. The conclusion leads to some recommendation for problem owner towards implementing agrotourism in the area.

Chapter 2: Literature Review

The literature review is conducted on three pillar approaches; First pillar is Dutch greenhouse industry and Bergerden Agroparks, Second pillar is Tourism and specifically agrotourism, third pillar is the prerequisite factors in implementing greenhouse tourism as well as greenhouse business.

2.1 Dutch greenhouse industry and Bergerden Agroparks

2.1.1 Dutch Greenhouse Industry

The Netherlands is one of the well-known countries in Agriculture sector and 56% landmass is dedicated to the Agriculture sector (Sukkel & Hommes, 2009). Climate situation in the Netherlands like most of the north European countries is not favourable for agricultural practices. Consequently, the production rate is relatively lower than the other parts of the EU. But the use of greenhouse helps growers to increase the production rate even in the harsh climate condition (Anon., 2007).

The Dutch greenhouse horticulture industry is famous for the technological innovation (Schout & Harkema, n.d.). The greenhouse sector generated by roughly 8600 greenhouses on 10500 hectare land area(Ziemba, 2007; Ghianni, 2011). The Netherlands has relatively high rank among greenhouse production countries in the world and European Union, 10 and 4, respectively (Anon., 2012).

According to the new statistics released by the National Dutch statistical organisation (CBS) on 2011, tomatoes, sweet peppers, cucumbers, strawberries and aubergines are top five vegetables grown in greenhouses. Moreover, pot plants, chrysanthemum, roses, garden plants and orchids are top five flowers grown in greenhouses (Ghianni, 2011).

2.1.2 Bergerden Agropark Project

The Dutch government allocated specific areas for developing greenhouses in 2002 (figure 3). These development areas combine a sort of goals, such as regional economic development, improved economic viability of horticulture, and collective generation of energy (Vellema, 2011)

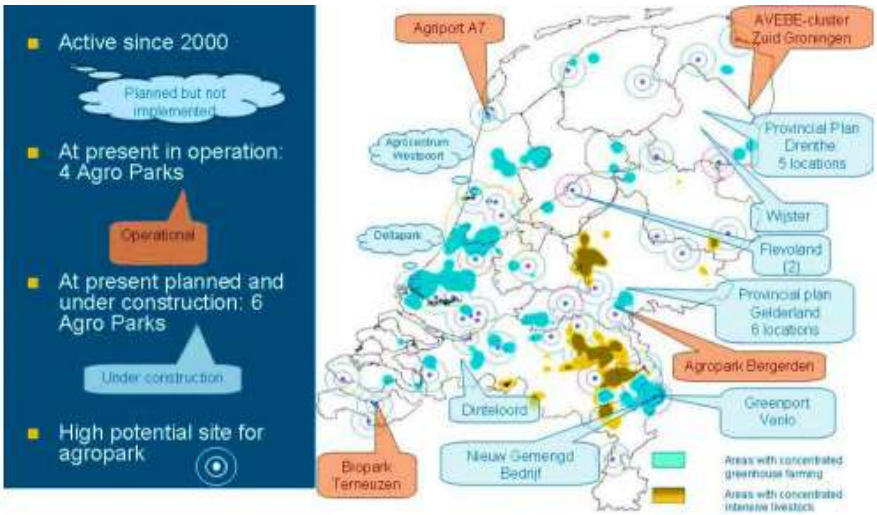


Figure 3: Agricultural development area Source: Smeets (2010)

Bergerden Agropark is a government-supported project, and it is located in the largest province by land area in the Netherlands[2], in the territory of the Municipality of Lingewaard[3]. The government allocates 340 hectare for constructing medium and large-scale (3-15 ha) greenhouse and it has the aim to attract growers from inside the province as well as the western parts of the Netherlands to relocate in this area. (Vellema, 2011).

2.1.2.1 History of Project

In 2002, the Bergerden Agropark received 10.3 million STIDUG funds (government subsidy to stimulate sustainable greenhouse horticulture development). The government use subsidy for energy and water system infrastructure, location design and landscape quality. At that moment, growers paid low price (35€/m^2) for the greenhouse land.

Heretofore, 15 greenhouse owners constructed the greenhouses in 50% of the whole area of Bergerden Agropark. Since the implementation of the project, the project management team has faced with different challenges, which briefly depicted in the figure 4. (Buurma & Ruijs, 2011.; Kunst, 2011).

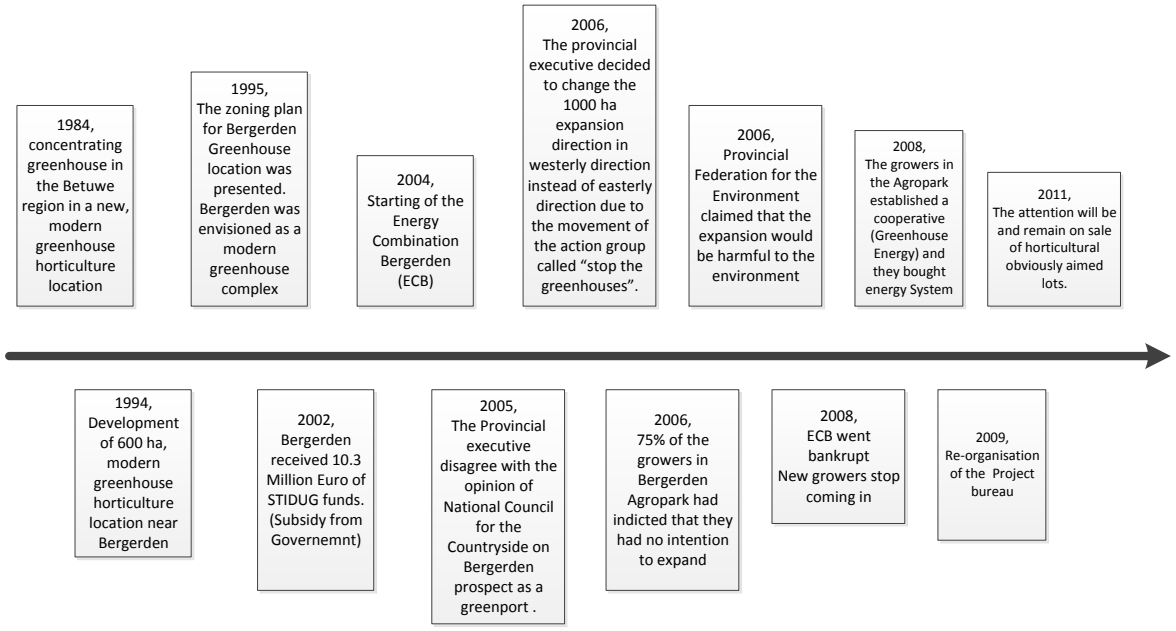


Figure 4: History timeline of Bergerden Agropark. Source: Buurma & Ruijs,(2011)-Illustrated by Author

In 2008, due to the global economic crisis, the Dutch government's public finances declined suddenly, from a surplus in 2008 to a deficit of 5.4% in 2010 that relatively increase the risk of investment especially in the agriculture sector (Anon, 2012).

According to the National Dutch statistical organisation (CBS) (2012), there has been a dramatic decrease in received construction orders from greenhouse entrepreneurs after the economic recession in the European Union on 2008 (Figure 5).

[2] The province of Gelderland 4,971km^2 is the largest province in the Netherlands.

[3] As of 1 January 2001 the new municipality of Lingewaard is a merger of the former municipalities of Bemmel, Gendt and Huissen.

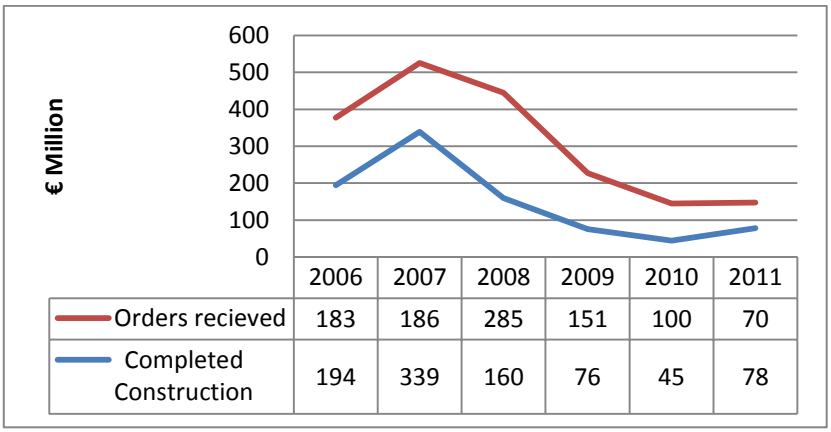


Figure 5: Investment reduction in greenhouse sector after the economic crisis. Source: (CBS, 2012)

Along with that, Energy Combination Bergerden[4], which was supposed to supply energy for the growers in Bergerden Agropark, went bankrupt (Vellema, 2011). The influx of new greenhouse entrepreneurs stopped after bankruptcy. In 2008, the greenhouse owners established a cooperative and purchased the Energy Combination Bergerden (Buurma & Ruijs, 2011).

2.1.2.2 Project features

The energy supply system and water collecting system are two prominent features in Bergerden Agroaprk that are supposed to reduce the cost of energy up to 10% (Buurma & Ruijs, 2011).

1. Energy Supply System

The Bergerden Agropark is the first commercial collective energy system. Natural gases and biofuel as raw material supply the energy system. Electricity, as the main products of the generators, goes for lightening of greenhouses and supplying the electricity demand of the nearby cities. The by-products of energy system, heat and Co_2, use in the greenhouses as well (Chen & Haoran, 2010)(Annex1).

A New kind of heat exchanger which is named Fiwihex[5] is being used for heat transfer in some of Bergerden Agropark greenhouses. Heat exchangers transfer heat from the greenhouse warm air to the water in summer and they transfer the warm water to the cool greenhouse air in winter. In Fiwihex system fine wires and tubes transfer heat from air to water or water to air very efficiently (Nederhoff, 2006).

2. Rain Water Collecting System

Bergerden water system is designed to collect the rainfall by the pipe from greenhouse roof in a shared reservoir to use as water for greenhouses in the area. The

[4] ECB Energy Collective Bergerden. It is also named collective energy system

[5] Fiwihex stands for fine wire heat exchanger

water from reservoir is purified and pumped to each greenhouse by special infrastructure and it provides water with quality type A for greenhouses. (Peter, et al., n.d.)

3. Near to the Tourist Attraction landmarks

Bergerden Agropark is a neighbour of the huge green buffer zone which is named Lingezegen Park. The 1,700 hectares area as a green buffer between two cities Arnhem and Nijmegen is constructed for the 160,000 current and future residents between Arnhem, Nijmegen, Bemmel and Elst (figure 6) (Anon, 2012).

Park Lingezegen is divided into 5 areas and each area has own character nd the sequence is De Park, Het Waterrijk, Het Landbouwland, De Buitens and De Woerdt from North to South that each of part designed for different activities (Annex 2) (Chen & Haoran, 2010).

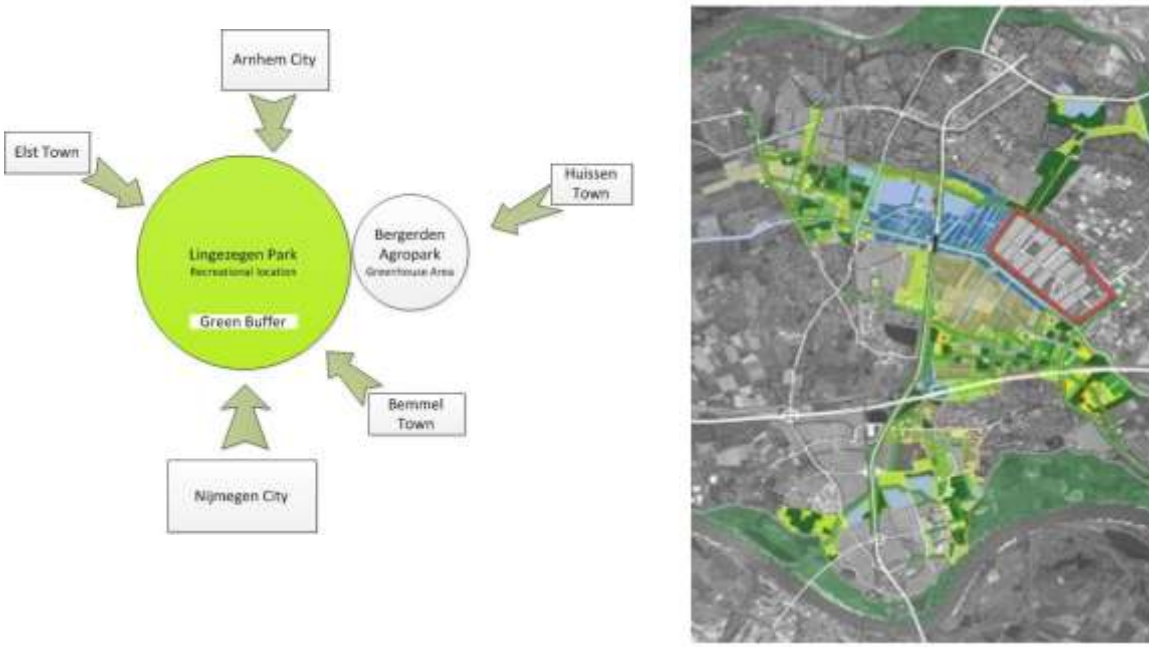


Figure 6: Lingezegen Park and Bergerden Agropark location.

Source: Photo from www.parklingezegen.nl,(2012) – Schematic Image by Author

4. Locating in the City Region of Arnhem Nijmegen

The City Region of Arnhem Nijmegen (Stadsregio Arnhem Nijmegen) is one of the five urban networks in the east of the Netherlands that support the regional economy. The region has aim to invest in further economic development in the coming years.

The City Region of Arnhem Nijmegen is getting more and more an international orientation and it has aims to further strengthen this broad economic activity as well as to take maximum advantage of the growing potential of the companies. The city region plans to encourage the growth of the following capable business clusters: Health, Fashion and design, Energy and environmental technology, Semiconductors, Logistics and Tourism to achieve these aims (Anon., 2012; Haran, 2010).

5. Crystal Palace; Huissen-Bemmel theme park

Crystal Palace as a conceptual theme park will be constructed in city region of Arnhem-Nijmegen and it will be surrounded by two towns Huissen and Bemmel. The park lies on greenhouse area Bergerden and the landscape of Lingezegen Park. Crystal Palace shows how city and horticultural sector are inextricably linked. Healthy food, floriculture, fashion and sports are images that come up. The visualizing future scenarios form the basis for drawing a wide audience. Experience, excitement, education, conferences, events and catering functions will economic tractors. (Fontein, et al., 2010)

2.1.2.3. Nearby citizens features

According to the CBS reports (2011), the majority of residents in two cities of Arnhem and Nijmegen have average age between 25 to 65 years old (Annex 3).

Coldwell Banker Richard Ellis (2010) reports the population of the Nijmegen within a radius of 10 kilometres is 265,100 residents. Moreover, the average disposable income[6] of the oldest city in the Netherlands per resident is 27,500 Euro annually.

Besides that, the population of the Arnhem as capital city of the Gelderland province within a radius of 10 kilometres estimate 271,900 residents. Similarly, the average disposable income per resident is 27,300 euro yearly.

2.2 Tourism

Tourism is accepted as an engine of growth in the various economies in the world (Maruti, 2009). Spending free time on sports and related activities is prominent character in Dutch society. Passing time on weekends in rented accommodations is a common activity among Dutch families.

Moreover, visiting garden centres and exhibitions and generally gardening is a popular activity among Dutch people. Resort locations such as theme parks are not only attractive for tourists but it is one of the popular places to visit among Dutch people.

Interestingly, the term “GEZELLIGHEID” in Dutch language which does not have equivalent in any other language express an atmosphere of harmony and a feeling of relaxation when one is spending time together with people, acquaintances and intimate friends (Anon., 2012).

Vacations and travelling are popular Dutch activities. The CBS (2011) reports, inside the Netherlands is the first priority of travel destination for the majority of Dutch people on short holidays, on the other hands, traveling abroad is the first priority for the majority of Dutch people on long holidays (Figure 7).

[6] Disposable income is total personal income minus personal current taxes

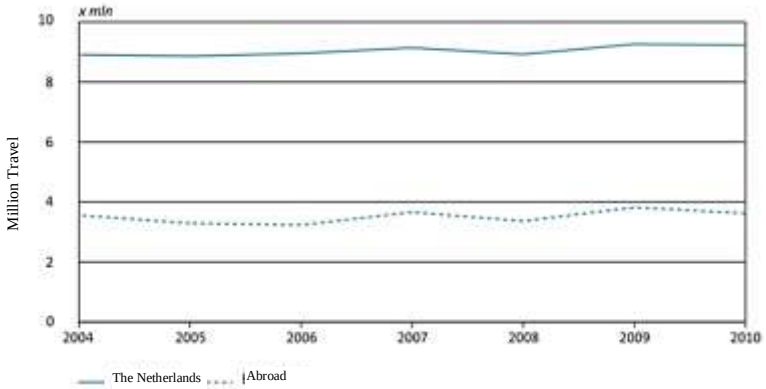


Figure 7: Short holiday trips of the Dutch by destination. Source: (CBS, 2011)

Statistics show (table 2-1) that Dutch people spend much more money on holidays after gobal economic crisis in 2007 in compare with perior years. CBS claims that on 2010 Dutch people spent 15,000 euro on holidays trip and near 3000 euro was belong to trip destinations across the Netherlands.

Table2-1: Expenditure of the Dutch on holidays by destination

	2002	2005	2006	2007	2008	2009	2010
	mln euro						
The Netherlands	2 900	2 482	2 570	2 702	2 699	2 773	2 780
Abroad	9 730	10 257	10 413	11 105	12 555	12 321	12 212
Total	12 630	12 739	12 983	13 808	15 255	15 095	14 992

Bron: ContinuVakantieOnderzoek.

Inlichtingen: CBS (088) 570 70 70.
Voornaamste publicatie: Vakanties van Nederlanders 2010.
Frequentie: jaarlijks.

Source: CBS (2011)

Province of Gelderland has the highest number of visitors in the Netherlands for short and long holiday trips as well as overnight stay in summer and winter holidays (table 2-2).

Table 2-2: Domestic holiday trip of the Dutch by length of stay and province of destination

	2-4 Days	5-8Days	9 Days and more	Total	
	x 1 000				%
Groningen	200	151	58	409	2
Friesland	582	416	293	1 292	7
Drenthe	766	661	249	1 675	9
Overijssel	647	509	313	1 468	8
Flevoland	288	96	35	419	2
Gelderland	1 548	927	504	2 979	17
Utrecht	335	117	73	525	3
Noord-Holland	1 025	556	330	1 912	11
Zuid-Holland	754	338	190	1 282	7
Zeeland	604	512	281	1 398	8
Noord-Brabant	1 304	594	251	2 149	12
Limburg	1 178	807	216	2 202	12
Totaal	9 233	5 683	2 793	17 708	100

Bron: ContinuVakantieOnderzoek.

Inlichtingen: CBS (088) 570 70 70.
Voornaamste publicatie: Vakanties van Nederlanders 2010.
Frequentie: jaarlijks.

Source: CBS (2011)

Transportation is one of the important issues in holiday trips. Accoutring to statistics, Dutch people choose their car, train and foot as mode of transportation, respectively. Moreover Due to the economic crisis, people prefer to go on holiday on the locations shorter and closer to home. As a result, more people go on holiday by car (table 2-3) (Klinkers, 2010)

Table 2-3 Domestic holiday trips of the Dutch by mode of transport

	2002	2005	2006	2007	2008	2009	2010
	x 1 000						
Fiets	330	360	310	330	320	280	280
Auto	16 650	15 570	16 120	15 790	15 720	16 430	16 091
Trein	860	840	890	890	880	770	810
Touringcar	150	140	120	130	130	100	110
Boot	110	70	80	130	120	90	120
Overige vervoermiddelen	600	330	290	320	290	280	300
Totaal	18 710	17 310	17 790	17 590	17 450	17 960	17 710

Bron: ContinuVakantieOnderzoek

Inlichtingen CBS (088) 570 70 70.
Voornaamste publicatie: Vakanties van Nederlanders 2010.
Frequentie: jaarlijks.

Source: CBS (2011)

Based on Numbeo cost of living comparison website (2012), Dutch people spend about 27% of their income for restaurants, sports and leisure (Figure 8).

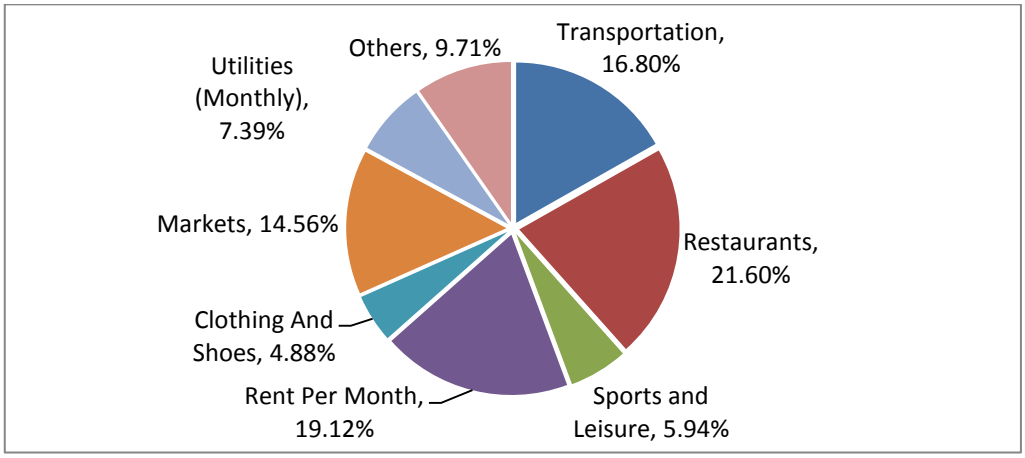


Figure 8: Distribution of cost of living expenses in the Netherlands. Source: NUMBEO (2012)

Since 2002 in Dutch statistic data tourist accommodation form defines: as accommodation form with the sleeping accommodation is not owned by the household, but of other individuals, or rented from professional providers of overnight accommodations.

the tourist accommodation are consider as house of family, friends or acquaintances, home of another individual, hotel, guesthouse, bed & breakfast, apartment, summer cottage, bungalow (leased), tent, caravan, trailer tent, motorhome, boat (cruise and rented sailboat or yacht), hostel or other property. (CBS, 2012)

Statistics show the visitors in Gelderland province choose tourist accommodation form which define above as their first priority during their stay (Figure 9) (CBS, 2011).

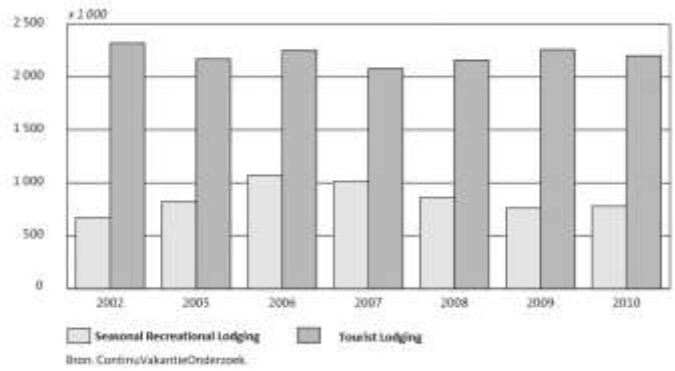


Figure 9: Holiday trips of the Dutch in Gelderland by type of accommodation. Source: CBS (2011)

2.2.1 Agrotourism

A term 'Agro-Tourism' is a new face of tourism. Agrotourism as commercial enterprise at agriculture and tourism sectors operated for the pleasure of visitors that generates supplemental income for the owner (Xuan, 2005).

Agritourism has been studied in numerous methods and contexts. Sharon *et al* (2010) reviewed the literature and found a vast definition for agrotourism. They provide most of applied definitions of agrotourism in literatures (Annex 4).

Robin G. & Edouard K. (2000) Agritourism as a direct marketing activity called "Agriturismo" in Italy, "Farm Stay" in New Zealand, and "Sleeping in the Straw" in Switzerland and they also state that it is explained as "a business conducted by a producer for the enjoyment and education of the public, to promote the products and thereby generate additional income (Sustainable Agriculture, 1998)."

They also consider Agritourism as an economic activity that occurs when people tie travel with products, services, and experiences of agriculture. Visiting a nursery and greenhouse attractions as part of a leisure time activity is a form of agrotourism in greenhouse industry.

Katherine L. (2004) categorised agrotourism projects in three subgroups:

- Have something for visitors to see
- Something for them to do
- And something for them to buy

She also named some activities in agro tourism projects (Annex 5) such as farm store, educational tours, festivals, cooking demos, pick your own, rent an apple tree, restaurants and themes.

2.2.1.1 The advantages of implementing agrotourism projects

Agrotourism has been tremendously successful as a leisure activity (Lopez & Garcia, 2006). Robin G. & Edouard K. (2000) count a number of benefits for agrotourism. Spreading interest, taxes, insurance, rental, depreciation, or advertising costs that are fixed in the short run over additional activities such as agri-tourism are significant benefits. Agrotourism consider as a business with low investment that it may employ surplus capacity of labour,

capital, land, and natural resources. Raising agri-tourism in a greenhouse is a revenue risk management strategy.

The nursery activity, pick/cut your own operation as well as something to take home will attract customers to the greenhouses and it may help to boost viability by elaborating the commercial possibilities of greenhouses and nurseries through direct sales of their products as well as other business accommodation also by adding value to regional landscapes.

Along with the points mentioned above, increasing awareness in public to promote nursery/greenhouse products as well as caring educational aspects for visitors such as learning the basics of how plant grows, are the positive reflect of implementing agrotourism project.

2.2.1.2 The disadvantage of implementing agrotourism projects

Robin G. & Edouard K. (2000) state that increasing traffic in the area and conflicting with non-farm neighbours may occurred in the area. Apart from that, agrotourism services should be customer oriented; hence the greenhouse owner and their employee should consider it. Moreover, Agrotourism may require hiring skilful employees and train them. The owner should increase the level of safety in their property to avoid any unwanted accident.

The owner may elaborate his insurance to liability insurance according to the project risks. For reducing liability, rules on picking and climbing should be indicated in signs and on brochures distributed to customers. It is worth mentioning, Activities such as farm stand sales, pick-your-own operations, school tours, festivals are considered as a number of agrotourism projects in greenhouses (Robin G. & Edouard K., 2000).

2.2.1.3 Successful Projects in the World:

There are many successful agrotourism projects in the world. Among all different implemented projects, greenhouse tourism is a new trends in this sector. Greenhouse as one of the Dutch icons is becoming one of the popular area for implementing agrotourism projects.

Implementing agrotourism projects in the greenhouses such as visiting the nursery, pick and eat and greenhouse restaurant provide a new market for producers. There are few examples in the world specially in the netherlands leading the greenhouse tourism in greenhouse sector.

2.2.1.3.1 Dutch greenhouse open day

The Dutch government support tourism projects especially in agriculture sector as one revenue generator and there is one successful event in the Netherlands which is conducted annually. Kom in de Kas is the name of event that greenhouses open for public.

Kom in de kas that organise with the cooperation of governemnt and greenhouse owners in the first weekend of April every year. In one day festival the greenhouses in the Netherlands are open to the public. The festival gives the opportunity to visitors to see the Dutch greenhouses from the inside. Visitors can take a walk through the flower-,garden plants-,vegetables-,fruits greenhouses greenhouses and see the plants or even the products. The greenhouse owners provide information for visitors and they can ask any question during the tour about the greenhouses from the owner or person in charge. how it

all works (Anon., 2008). According to the governmnet reports in 2012, Kom in de Kas festival had 200,000 visitors. (Anon., 2012)

2.2.1.3.2 De Kas Restaurant

De Kas restaurant[7] in Amsterdam in the Netherlands is one of those successful projects which transferred from an intrinsically monofunctional greenhouse as a producer to a multifunctional producer and processor greenhouse.

In 2001, the dutch founder and owner of De Kas restuarant , Mr. Gert Jan Hageman, renovated an old glass greenhouse to a restaurant and nursery in Amsterdam in the Netherlands. The Greenhouses cover an area of 5000 square meters in open air and 3000 square meters under glass (box 1). De Kas has their own nursery, where they grow herbs and Mediterranean vegetables in the summer, and various kinds of lettuce in the winter. The nursey supply most of the raw materials for the restaurant.

Box 1: De Kas Restaurant

Source: Puck, (2012)

Providing healthy meals from fresh and organic raw materials leads to treating 45,000 to 50,000 guests annually. Intestingly, the De Kas is a menue-less resturant and what is served depends on their harvest that makes it more attarctive for the consumers. Moreover, the nursery provides open days for visitors and holding workshops in a certain period (May to October) each year (Anon, 2012).

Customers pay 50 – 80 euro in average for each meal and they should reserve a seat in advance. The owner of the restaurant in the interview with Food Service Europe, 2012 mentioned “Our occupancy levels seem to be very steady. The difference between the best and worst year is less than 10%. Luckily, we appear to be very little affected by the economic downturn. People’s reasoning seems to be: if we are going to go out for a meal, we may as well go to De Kas (Puck, 2012).

2.2.1.3.2 Emsflower Company

Johannes Bernardus Kuipers is a successful Dutch entrepreneur which expanded his business by implementing different kind of agrotourism projects in his greenhouse area.

Bennie Kuipers start his business in De Lutte in the Netherlands with business name of „Kwekerij Kuipers BV“ (Nursery Kuiper in English). Bennie produce different kind of vegetables, flowers and bedding plants in his company. He has expanded his business by establishing new greenhouses in Klazinaveen and Denekamp in the Netherlands as well as Fretzdorf and Emsbüren in Germany up to now (Anon., 2012).

Emsflower is the new name for the Kwekerij Kuipers BV. Emsflower Company is located in the Emsland district of Lower Saxony province in Germany in territory of the municipality of Emsbüren.

[7] In English means “The greenhouse restaurant”

The company is investing in 100 ha area in Emsbüren. Their company is one of Europe's largest flower and plant growers. Recently, the company extended its production area with approximately 85,000 square meters. They can produce spring flowers in winter as well as cucumbers and tomatoes until October/November by using new technology in new combination greenhouses (Anon., 2012).

The owner of the company has developed new adventurous projects in Emsburn such as Adventure Park, demonstration greenhouse and garden centre that leads company to be the Europe's largest visitable horticulture centre.

In the demonstration greenhouse visitors become familiar with modern cultivation methods and they can see roses, gerbera and athuria in cut flower greenhouses as well as cucumber plants, ripe capsicums, tomatoes, aubergines and chili peppers in vegetable greenhouses.

Visitors can purchase flower accessories, bedding plants, fresh vegetables and cut flowers (Box 2). Along with consistently changing seasonal plants they will also find refined flower arrangements, decorated by expert florists.

Emsflower Company provides facilities for celebrating special events and also visitors that are mentioned in following:

1- Amusement Park
1.1 visiting greenhouse
1.2 Tropical Garden
1.3 Production inspection

2. Indoor Playground
2.1 Birthday party

3. Display garden mini Emsflower
3.1 Christmas time at Emsflower
4. Free e-bike charging station

The garden is a miniature replica of Emsflower original Emsflower. The 30 hectares of greenhouse areas have been taken in replica boxwood. The main building and the 33 loading bays are reproduced in the order of 1:10 (Anon, 2012). The Emsflower Company charge the visitors for using the services such as tours and parties (Annex 6)

Box 2: Emsflower Company

Visitors purchase flower accessories.
Photo by: Fides De Lier (28.01. 2011)

Visitors inside the Emsflower Company.
Photo by: Fides De Lier (28.01. 2011)

2.3 Important factors in implementing an agrotourism project

2.3.1 Starting a greenhouse business

Each greenhouse entrepreneur considers some criteria before starting a business in the area. Ministry of Agriculture, Fisheries and Food of British Columbia (1997) states the economic success of the business starts with site selection. Location influences such factors as energy cost, labour, and pest control.

Apart from that, water quality, possibility for expanding, Municipality regulation for building and expanding greenhouses, land grading cost, road accessibility weather condition such wind direction average rainfall and temperature in a year are suggested to put it into account (Anon., 1997).

Verwilt & Mathijs (2002) Land price as a location factor has a major impact on profitability in Netherlands. The prices for greenhouse land will rise rapidly if a location is allocated to greenhouses.

Along all factors that mentioned above, Kessler Jr, (2006) considers energy system (cooling and heating as well as ventilation), accessibility to a market, neighbouring businesses, and irrigation system as important factors before starting greenhouse business. Moreover, Verwilt & Mathijs (2002) consider the Licences for establishing a greenhouse as an issue that each entrepreneur should take into the account before starting the business.

Verwilt & Mathijs (2002) state the firm structure has a crucial role to optimise profitability in the greenhouse industry. He also declares a square-structured firm shows a better economic and environmental performance.

Verwilt & Mathijs (2002) also mentioned new marketing strategy in horticulture sector such as selling outside the auction and transport the product directly to the buyer increase the potential marketing channels for the manager.

(Chen & Haoran, 2010; Smeets, 2010) confirm that Bergerden Agropark is designed for a greenhouse business and it has collective energy system which provides heat and electricity as well as co_2 for greenhouses.

2.3.2 Starting a agrotourism business

Maruti (2009) clarify that the location is one of the crucial factor for being success in the agro-tourism. The location must easy to arrive and have a good landscape. He also mentioned that urban tourists are interested into enjoying the nature and rural life.

Moreover, Maruti (2009) notes some features for the place of agro-tourism centre. He highlight the accessibility of the place to tourist and he goes to details and mentioned, the place must need easy accessible by roads and railways.

Besides, the centre should be developed near of historical tourist places and landmarks. These are the better places for the development of agro-tourism and there is more beneficial to both tourist and farmers.

Chapter 3: Methodology

3.1 Methodology

The following research is a case study which has qualitative approach. The process of data collection conducted in desk study and field study. The desk study includes printed documents and digital sources. Interview and questionnaire as well as direct observation were used in field study. The result of field study collected and analysed with statistic soft wares. Finally the outcome was compare with literature review.

Research questions were operationalized to identify an appropriate indicator for the research questions as well as appropriate sources for them (Annex 7) The desk study as a research technique was selected to inquire information about area and the Bergerden Agropark as a case study. The secondary data shows the knowledge gap in exploring the feasibility of implementation of sustainable greenhouse tourism projects in Bergerden Agropark as income generator for greenhouse owners that it is supposed to attract greenhouse entrepreneurs for Investment.

Data was collected via digital sources as well as printed ones. Digital sources mainly include: The National Dutch statistical organisation (CBS), Dutch government annually reports as well as the Nijmegen and Arnhem municipalities annually reports, European statistic centres. Printed sources include books, reports and thesis from Wageningen library.

Field study consists of mainly interviews and questionnaires as prominent data sources. Primary data collected via questionnaires and interviews from Bergerden nearby citizens and greenhouse owners, respectively. Due to the good internet infrastructure in the Netherlands, the questionnaires made in two soft and hard copy formats. Two individual structured questionnaires were prepared for greenhouse owners and visitors (Annex 8). The questionnaire was randomly spread among 50 Bergerden nearby citizen via email and social networks. The visitors' questionnaire wanted to understand visitors' preferences towards implementing greenhouse tourism projects in the area. The greenhouse owner questionnaires distributed among 15 owners specially those who could not be interviewed to figure out the current situation in the area.

The author interviewed with two greenhouse owners, the tour manager, and the manager of Energy collection system cooperation, the secretary of Crystal Palace steering group as well as the project manager of Bergerden Agropark.(Annex 9) The interviews were conducted to find out the status quo of the stakeholders in Bergerden Agropark and their preferences towards implementing greenhouse tourism projects in the area.

The author organised semi-structured interviews to digging the hidden aspect of tourism as well as the status quo of greenhouse in the area (Annex 10). In this research, stakeholders' attitude towards greenhouse tourism was framed in grounded theory and outcome of interviews and personal observation coded, accordingly (Annex 11) to bring out the pillars of the research questions.

Douglas G. Pearce, (2012) states *"by using the **grounded research method** as a strategy for qualitative data analysis, theory and theoretical frameworks flow from the data analysis rather than guide or structure it".* In grounded theory, the data is collected from transcripts of semi-structured interviews and observations. The various steps are taken to analyse them; familiarization which consists of open, axial and selective coding, and enfolding the literature.

The author visited the area for several times in different occasions to directly observe the real tourist attraction in the area as well as the infrastructure in Bergerden Agropark.

The SWOT analysis tool was used to show the Strengths, Weaknesses, Opportunities and Threats of investment in Bergerden Agropark for greenhouse entrepreneurs. The TOWS Matrix was depicted to develop a strategy according to the relation among internal strengths and weakness with external opportunities and threats of the Bergerden Agropark to attract the greenhouse entrepreneurs for investment.

Chain map as an analysis tools was applied to transparently depict the current situation in Bergerden Agropark according to the results from the greenhouse owners' questionnaire and interviews. It is worth mentioning, the result of questionnaires collected and the data analysed with Microsoft Excel software to present the respondents perspective towards greenhouse tourism.

At the end the whole research laid on three aspects of sustainability (Social, Environmental and Economical) to cover the main column of the research which is the exploring the feasibility of sustainable greenhouse tourism in the area.

3.1.1 Research Scope

In order to narrow down the research problem and considering the schedule of the research one scope was chosen among probable options. The research problem can be considered from four perspectives as follows:

- Government (Municipality)
- Greenhouse entrepreneurs inside Bergerden Agropark
- Greenhouse entrepreneurs outside Bergerden Agropark
- Visitors/Consumers

As mentioned in chapter 2, municipalities as the owner of the project is behind the project schedule on capital payback cost; moreover, the government is responsible for amount of money that invested in area. Hence, finding a solution for making the area much more attractive for the greenhouse entrepreneurs is one of their first priorities. This is the main reason why research framed to figure out the problem in the area from government perspective.

In this research the problem was distinguished from government perspective which is trying to find a solution for making the project much more attractive for the entrepreneurs for investment in Bergerden Agropark.

3.2. Conceptual framework

In this research, stakeholders' attitude towards greenhouse tourism was framed in grounded theory and outcome of interviews and personal observation coded, accordingly.

Creating Shared Value theory from Michael Porter and Mark Kramer supports the concept of this research. Their theory was published in Harvard Business Review magazine on January 2011.

They mentioned that answer for economic, environmental and social problems of a company or business is to change the way of looking at shared value. He suggested that the answer for these problems is to creating economic value in a way that also creates value for society by responding to its needs and challenges. In layman terms, what is good for society, it is good for business (Porter & Kramer, 2011)!

Moreover, **sustainability** is another theory which is built the structure of this research. According to Sikdar (2003) sustainability is "a wise balance among economic development, environmental stewardship, and social equity" In this research, the whole interviews are constructed according to three aspects of sustainability and cited in the result.

The supply chain concept was used to map out the various actors as well as chain supporters and influencer in Bergerden Agropark. Findings from semi-structured interviews was analysed according to the Grounded theory model. The interviews contexts coded based on the objective of the research. The results from grounded theory along with questionnaires show that government, greenhouse owners and greenhouse visitors' perspective towards greenhouse tourism. Moreover, the direct observation, secondary information and interviews point out the touristic feature of Bergerden Agropark.

AS mentioned in section 3.1, SWOT with the support of TOWS Matrix analysis tools were used to find the strengths, weaknesses as well as opportunity and threats of Bergerden Agropark for new greenhouse entrepreneurs. The results from SWOT and TOWS analysis tool, interview were discussed with support of created value share and sustainability theories by author to show how sustainable greenhouse tourism can motivate greenhouse entrepreneurs to invest in Bergerden Agropark.

3.3. Research Framework

The field study will be conducted on the greenhouse owners in Bergerden Agropark as producers and also citizens on two main cities Nijmegen and Arnhem and nearby villages and towns; Huissen, Elst, Bemmel and Bergerden.

Figure 13 shows the schematic steps of research frame work from beginning to end. The collecting data was divided into three sectors; Case study, Survey and Desk study.

Interviews and questionnaire are located under survey, Collecting Secondary data was under Desk study and examples of successful greenhouse tourism are located under Case study.

Data went for analysing by different tools. Chain map, SWOT as well as TOWS analysis tools. The result depicted according to the research sub-questions and discussion was made a link between result, literature review and objective of the research.

At the end, the author came with the conclusion of the whole research and provided some recommendation for the government as the reason of conducting this research.

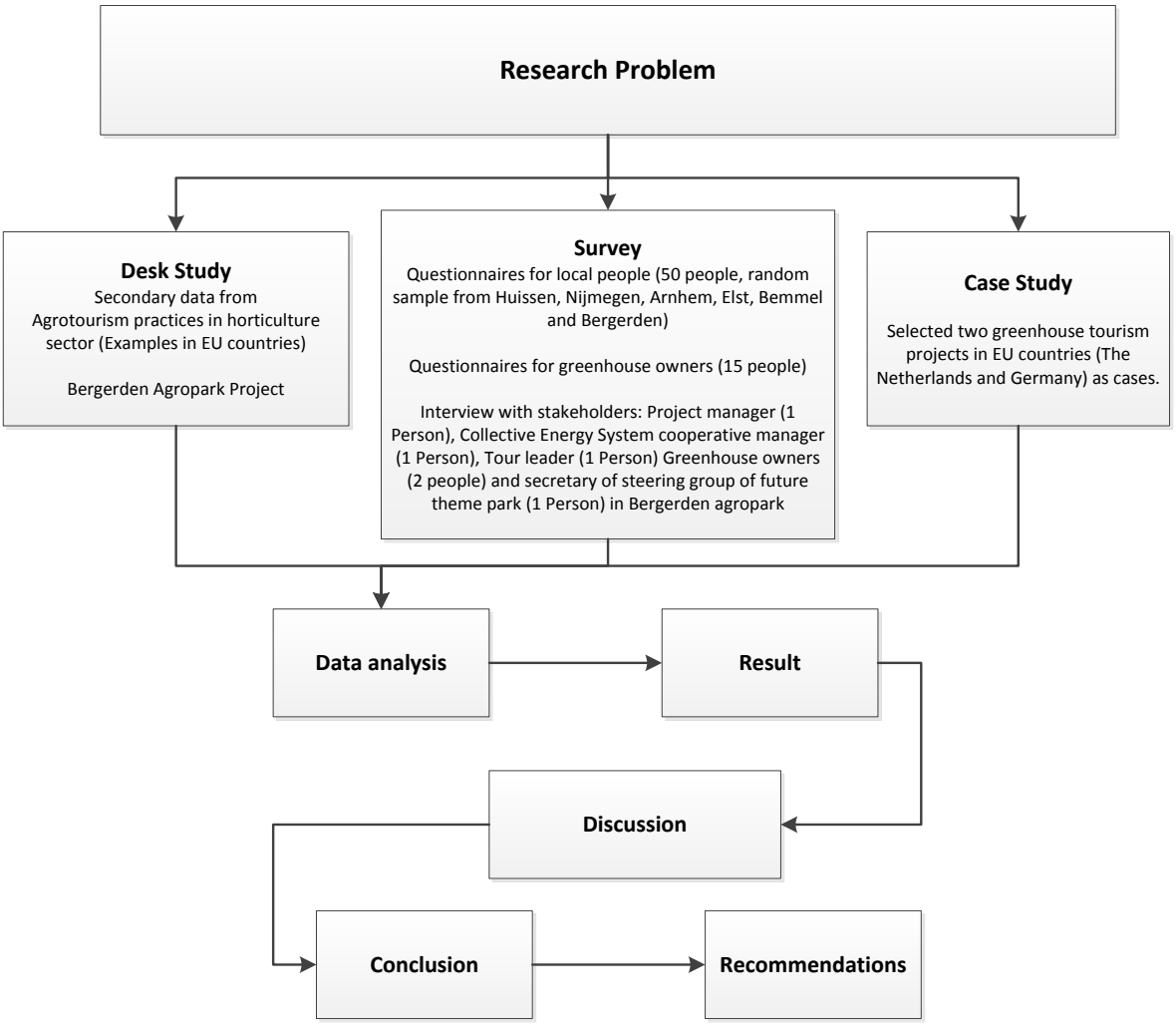


Figure 10: Research Framework

3.4. Research limitation

This research was conducted in the summer and unfortunately the first two weeks of collecting data overlapped by the summer holiday in the Netherlands and due to the Dutch culture of not working on holidays, the process of collecting data delayed.

Due to the language barrios for the foreigners, it was quite difficult to get sufficient responds from questioners. The researcher tried to overwhelm this barrier by translating the questioners to Dutch and provide them in two version of soft and hard copies.

There was a limitation in finding written sources for this project and also the available ones were in Dutch. This barrier took time to figure out the whole aspects of the project.

3.5 Data analysis

The process of data analysis describes in the following paragraphs. Finding from interviews and questionnaires were analysed respectively.

3.5.1 Interviews

Data form interviews processed in three steps according to grounded theory. The steps are open coding, axial coding and selective coding. The contents of the interview were coded in first step. After that, in axial coding the codes or topics which were in the same topic were selected and merge to gather. After that in third step, the codes which were related to the objective of the research were selected and located in the result.

3.5.2. Questionnaire

Two questionnaires were made for greenhouse owners and visitors and they distributed among 15 and 50 respondents, respectively.

Among 15 responds to the greenhouse owner's questionnaire, 3 responds was discarded before analysing because the respondents did not fill the form completely and they left a lot of blank answer for the questions figure (11).

Visitor's questionnaire was distributed via internet among Bergern Agropark nearby citizens as target groups. 13 out of 50 responds were discarded because they filled out by unintended target groups specially people from places outside the Elst, Bergerden, Huissen, Bemmel, Arnhem and Nijmegen.

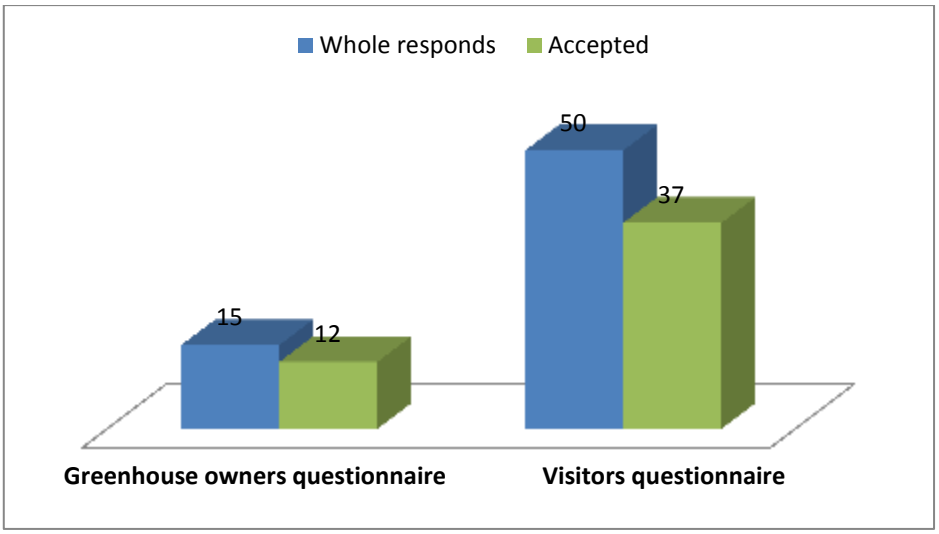


Figure 11: Number of the accepted responds from questionnaires

The result of questionnaires collected and analysed in Microsoft Excel software. The outcome categorised according to the objective and sub questions of the research and present in this chapter.

The interviews recorded on sheets and voice recorder and they were processed according to the contents and check list individually. The interviews were coded according to the grounded theory and irrelevant codes discarded in selecting coding. The outcome presents base on the objective of the research and sub questions (Annex 11).

Chapter 4: Result

Following the previous chapters, primary data presents in this chapter. The content of the following chapter includes the result of the interviews, questionnaire as well as the author's direct observation which draw status quo of Bergerden agropark and stakeholders preferences towards implementing greenhouse tourism in Bergerden Agropark.

4.1 Bergerden Agropark

As observed and according to interviews, Bergerden agropark is an exclusive greenhouse area near Huissen between two well-known cities Nijmegen and Arnhem.

Near 50% of the whole area is covered by the modern greenhouses in different land sizes from 3 to 9 hectares. According to the interviews most of the greenhouse owners have their own family business in Bergerden Agropark and most of them moved to this area for building new and modern greenhouses.

According to the interview with the project manager of Bergerden Agropark, the area was designed to meet most of the requirements for building ideal greenhouses in area such as land size and shape and also possibility for expanding (box 4)

Henceforward, the author shows details on actors in Bergerden Agropark according to the interviews and questionnaire. The following paragraphs depict a transparent image from current situation Bergerden Agropark.

Box 3: Bergerden Agropark

Photos by author (25.06.2012)

Photos by author (25.06.2012)

Anthurium Greenhouse
Source: http://www.bergerden.nl/

Semi mechanised collecting system in Paprika greenhouse
Source: http://www.bergerden.nl/

4.1.1 Suppliers and producers

According to the interviews and author`s observation, the greenhouses in Bergerden Agropark receive their raw materials such as seeds, fertilisers, vase and pots from foreign countries (e.g; HYDROKULTUR Spezialist, a German company) as well as Dutch companies.

Moreover, some of them receive plants from outside the Netherlands and grow it in their greenhouse. As an example, Hydrohuisman Company receives kind of plants from Costa Rika and grows them in its greenhouse.

The tour manager in Bergerden Agropark and greenhouse owners and also project manager confirmed that there are 15 greenhouse owners in the area that produce most demanded greenhouse products (part 4.1.2).

According to the interviews with greenhouse owners, most of the greenhouses have been in family business for more than one generation. They are in middle age and young age group and also they have a lot of experience in managing the greenhouses.

4.1.1.1 Relationship

In interview with the manager of collective energy system cooperative revealed that all the current 15 greenhouse owners in Bergerden Agropark are the member of the collective energy system cooperation and they cooperate with each other to how to get much benefit from the system.

Moreover, one of the paprika (Bell pepper) growers in Bergerden Agropark mentioned that although there is another paprika grower in area, they do not have any kind of cooperation even in sharing the stuff and knowledge with each other.

The tour manager of Bergerden Agropark mentioned that the greenhouse owers are very cooperative in group projects such as tourism. Moreover according to the author's observation, most of the greenhouse owners know each other in the area and they have good relationship with the project manager.

4.1.1.2 Greenhouse Production

According to the questionnaire and interviews, the greenhouses in Bergerden Agropark produce paprika (bell pepper), orchids, pot plants in different types and sizes, strawberries, fruit and garden trees, anthurium flower, bedding plants and aubergine (eggplant). The tour manager of Bergerden Agropark mentioned near 60% of the whole greenhouse owners produce pot plants. According to the questionnaire, Bergerden Agropark production as well as the products availability schedule shows in table 4-1.

Table 3-1: Bergerden Agropark Production Table

Greenhouse Production	Product Availability											
	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC
Garden Plants	○	○	○	○	○	○	○	○	○	○	○	○
Vegetables		○	○	○	○	○	○	○	○	○		
Pot Plants		○	○	○	○	○	○	○	○			○
Vegetables		○	○	○	○	○	○	○	○	○		
Pot Plants	○	○	○	○	○	○	○	○	○	○	○	○
Vegetables			○	○	○	○	○	○	○	○	○	
Pot Plants	○	○	○	○	○	○	○	○	○	○	○	○
Pot Plants				○	○							
Flower	○	○	○	○	○	○	○	○	○	○	○	○
Pot Plants	○	○	○	○	○	○	○	○	○	○	○	○
Pot Plants	○	○	○	○	○	○	○	○	○	○	○	○
Vegetables		○	○	○	○	○	○	○	○	○		

Questionnaire reveals that some of the greenhouses mostly flower and pot plants do not produce market ready products. They control and manage the first growth phases of plant in their own greenhouses and after that they sell it to outside greenhouses for continuing the further growth phases to become ready for market.

4.1.1.3 Quality system

According to the questionnaire, most of plant growers comply with Milva Regels Glastuinbouw (Dutch regulation) and MPS-Florimark[8] which is a comprehensive certificate for ensuring quality in their greenhouses. Moreover, most of Vegetable growers comply with Global G.A.P[9], ISO series, B.R.C[10]., H.A.C.C.P[11]. and Groenlabel Kas[12] standards in Bergerden Agropark greenhouses.

4.1.2 Collectors and Processors

As observed, the greenhouses in Bergerden Agropark commercially produce fresh vegetables, flowers and bedding plants, fruit and pot plants in large volumes. The greenhouses are well equipped with the high technology in collecting as well as energy system.

Questionnaire shows that the greenhouse owners have contact with large wholesalers such as greenery association. Apparently, they sell their products to the large wholesalers. The greenhouse owners send their products to the customers and wholesalers.

In some greenhouses especially flower and pot plant growers the products is customised according to the market demand to suit it for their customers. Decorating pot plant with different kind of vases is applied in some of the greenhouses.

4.1.3 Customers

The most of the vegetable products of the greenhouses especially paprika goes directly to the Greenery association for selling and distributing. Some other greenhouses such as pot plants producers, sell their products through flower auction, big wholesalers and their own show rooms.

The most of the production of flower greenhouses and bedding plants producers goes to the flower auction for selling. Along with these prominent customers (a kind of wholesalers), the greenhouse owners named their customers as follow:

- Company or wholesaler inside the Netherlands:

Lemkes, Intratuin, Waterdrinker, Tuincentrum, Greenery association, flower wholesalers.

- Company or wholesaler outside the Netherlands:

---

[8] Milieu Programma Sierteelt (MPS) Certification Promotes Social Responsibility and Sustainable Production in Horticulture and it is active in the floriculture, bulb, arboriculture, vegetable and fruit sectors. MPS-Florimark Production: MPS-A (environmentally qualified), MPS-GAP (retail requirements), MPS-Quality, and MPS Socially Qualified (Anon., 2012).

[9] GLOBAL Good Agricultural Practices (GlobalGAP) Certification System: A certification system that complies with both the requirements of ISO IEC Guide 65 and the requirements defined by the EUREPGAP General Regulations.

[10] The British Retail Consortium (BRC) Global Standards are a leading global safety and quality certification programme

[11] Hazard analysis and critical control points, or (HACCP)is a systematic preventive approach to food safety and pharmaceutical safety that identifies physical, allergenic, chemical, and biological hazards in production processes that can cause the finished product to be unsafe

[12] Groenlabel Kas is a greenhouse certificate for the commercial cultivation of horticultural crops with a lower environmental impact (including energy, nutrients and pesticides) and thereby contributes to the sustainability of the greenhouse.

Kaufland and EDEKA(Germany), OBI, North-west Blumen, Bouwmarkt,

Moreover, some of the greenhouse owners specially pot plant growers like Hydrohuisman Company export their products directly to their customers abroad. European counties mostly Germany, Middle east mostly United Arab Emirates and Kuwait and South East Asian countries such as Malaysia, Singapore are the most important export destination for greenhouse owners.

4.1.4. Supply Chain map

The Supply chain map in the area depicts a transparent image from the current situation in Bergerden Agropark(figure 12).

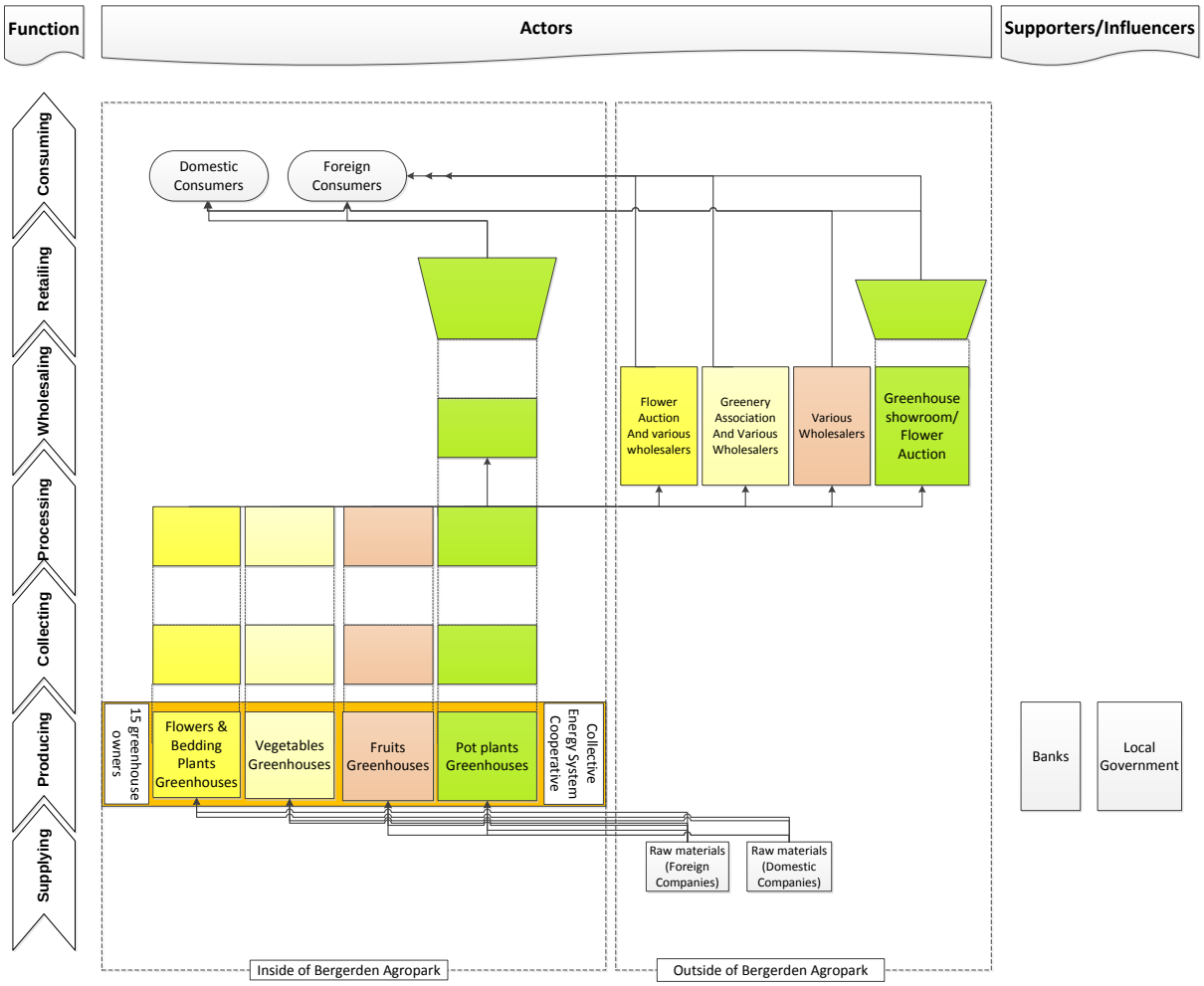


Figure 12 Bergerden Supply Chain Map

4.1.5 Influencer and Supporter

As observed and according to the interviews, all greenhouses in Bergerden Agropark are well equipped by high technology systems and these greenhouses have not received any kind of support from government up to now. The Local government (Municipalities of Nijmegen and Lingeward) ,the owner of the lands, sell the lands to the eligible businesses. It

is worth mentioning, the Bergerden Agropark is a horticultural zone with greenhouse focus and the land should sell for building a greenhouse. The government provides the greenhouse building permit and also imparts greenhouse construction standards to the greenhouse owners before commencement of construction.

According to the interviews, banks are the most supportive organisation in the area because they provide loans for greenhouse entrepreneurs to buy land to start their business as well as expanding their business. For example, HydroHuisman Company received 4.5 million euro from bank as loan to build the nursery in 2006 for starting his business.

4.1.6 Tourism

All the interviewees confirmed that the Collective Energy System in Bergerden Agropark is one of the prominent features of area for visitors. Pot plant grower declared that some of greenhouse owners and he have already implemented a kind of educational tour in their greenhouses in Bergerden Agropark.

The eminent entrepreneurs also mentioned that a nearby nursery has a big canteen and it provides food services for the visitors. Besides, the tour manager mentioned, an excursion tour to Bergerden Agropark cost 200 euro for a group of maximum 20 members. The benefit from tours shares among current greenhouse owners in Bergerden Agropark even those who are not involved in activities.

As observed, park lingezegen provide facilities for the visitors such as bed and breakfast, restaurants and cycling routine that attract citizens from nearby cities into the area. Some of the cycling routines continued to Bergerden Agropark (box 4).

Moreover, he stated that one of the reasons of attracting visitors to the area special pot plant nurseries is they are really well organised and neat so people can easily walking through the nurseries as like as their home.

Author noticed there are many ways for reaching to the area such as omnibus and tourist bus, car, as well as bicycle. Besides, he confirms that the beautiful soft and hard landscape is really eye catching and he touched a peaceful environment in Bergerden Agropark and Lingezegen Park.

Box 4: Park Lingezegen

Park Lingezegen, Tourist accommodation, bed and breakfast. Photo by author (25.07.2012)

Park Lingezegen. Photo by author (05.07.2012)

According to the interview with tour leader they have visitors from different social classes or even nationalities. They are mostly interested to visit the innovative Energy system in the area.

Project manager and Hydrohuisman company manager unanimously showed their interest to attach to the Crystal Palace, an imminent theme park project which will be located in the confluence of Bergerden Agropark and Lingezegen Park, to improve the agrotourism projects in the area.

4.1.6.1 Crystal Palace

In the interview with the secretary of steering group of Crystal Palace described the details about the location and function of the future theme park in the area. According to his statement, the Crystal Palace is going to be built in Bergerden Agropark (Figure 13).

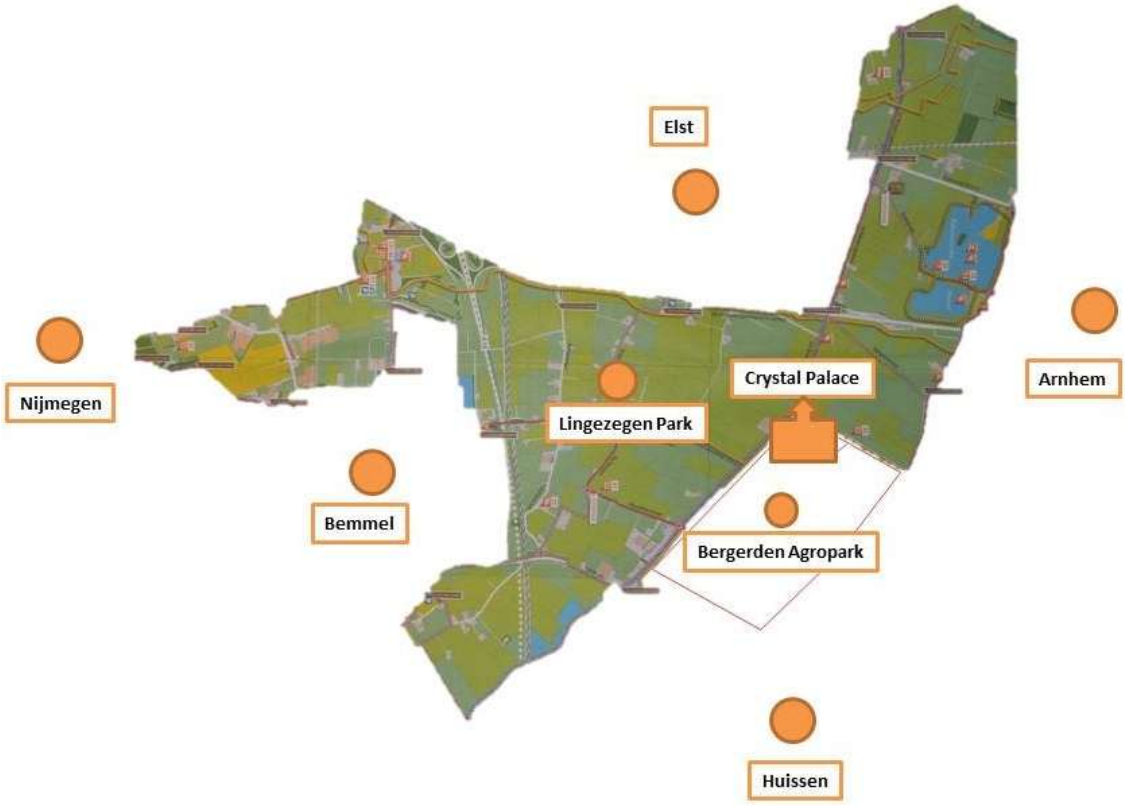


Figure 13: Crystal Palace Location
Source: Park Lingezegen brochure-reillustrated by Author

There is a nursery in Bergerden Agropark belongs to the local government in the area of 15 hectare. The secretary of the steering committee also mentioned that they are in negotiation with government to buy the nursery and start the project. He also confirmed that they inspired from Eden project in the United Kingdom[13] and Ems flower company in Germany[14]. The Crystal Palace is supposed to allocate to the different functions such as garden, fresh market, restaurant and also business space for rent.

[13] The Eden Project is a visitor attraction in Cornwall in the United Kingdom, including the world's largest greenhouse.

[14] It describes in section 2.2.1.3.2

4.2 Stakeholders' perspective towards implementing greenhouse tourism in the area

4.2.1 Greenhouse owners

The tour manager and innovative advisor stated that all of the greenhouse owners are really cooperative in the current tourism project and the reason that some of them cannot join it is that there is high risk of disease transmission in their greenhouses. Vegetable growers prefer to not open their greenhouses to visitors as disease infection prevention.

He also revealed that the prominent reason for holding such programmes is drawing a positive image from area and he also mentioned greenhouse owners are not willing to have constant visitors unless it has benefit for them.

The Paprika grower mentioned there are some constraints in opening greenhouses to the visitors and they need to hire a skilful person to lead the visitors inside the greenhouses and also they should allocate work time to manage these activities, inconsistently.

The result of questionnaire shows, that most of the greenhouse owners do not consider greenhouse tourists as potential customers Figure (14). Potential consumers define as person who may spend money in order to buy a product.

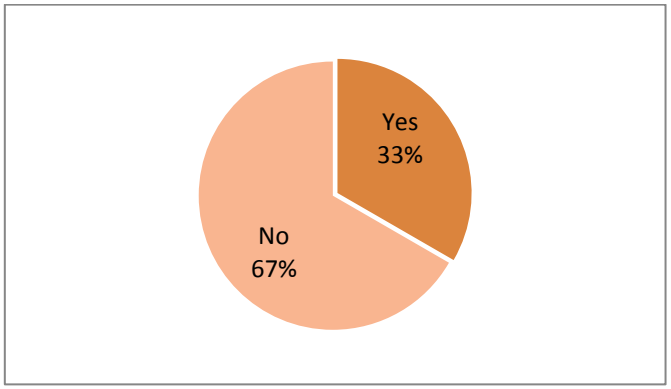


Figure 14. The percentage of greenhouse owners who consider greenhouse tourists as a potential customers (N =13)

According to the responds to the questionnaire, which was distributed among greenhouse owners, 58% of them are willing to open their greenhouses to visitors figure (15).The precaution for diseases transmission and hygiene are the main reasons for closing the greenhouses for public among those who are not willing to open their greenhouses.

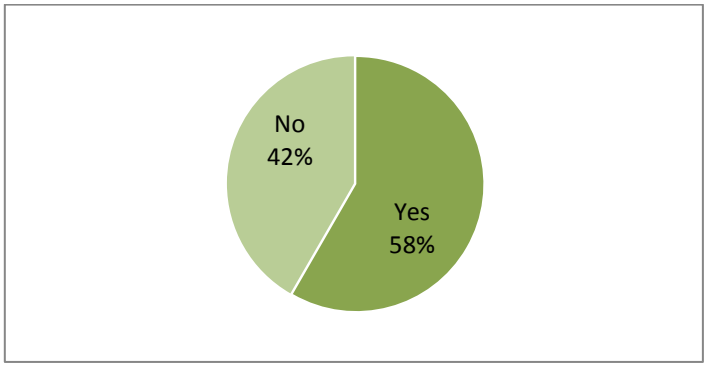


Figure 15: The greenhouse owners' willingness to open the greenhouses to visitors. (N=13)

The questionnaire results shows that 83% of the greenhouse owners attend in greenhouse festivals which they open their greenhouse to the visitors such as Kom in de Kas festival Figure (16). They also revealed that the promotion and making a positive image for their greenhouse and area were the main reasons for attendance in this kind of festival.

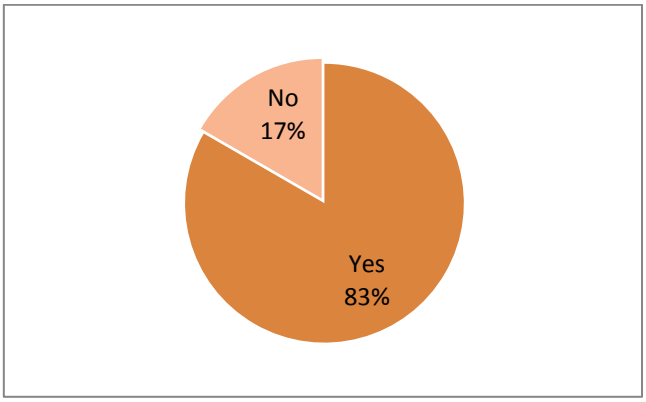


Figure 16: The percentage of greenhouses owners who opened their greenhouses to public (N=13)

Moreover, it was asked from greenhouse owners to what kind of support do they expect from government and the respondents mostly selected financial support such as providing subsidies, loans and incentives along with consultancy support, reducing bureaucracy and encouraging innovation, respectively.

Besides, greenhouse owners mentioned that they want to know the feasibility of the project as well as sort of facilities that they should provide for visitors before implementing greenhouse tourism project. Some of the greenhouse owners also keen to know about the organisation or management structure of the project as well as the expectation and cost/benefit analysis of the project.

4.2.2 Visitors Perspectives

In this research Bergerden Agropark nearby citizens considered as sample groups to figure out their perspective towards greenhouse tourism in the area. The secretary of the steering group of Crystal Palace mentioned it is supposed to have 1000000 visitors in each year for the area because Bergerden Agropark is located in a touristic area. The results from questionnaire shows 92% of sample group as citizens in Huissen, Bemmel, Elst, Arnhem and Nijmegen did not visit Bergerden Agropark Figure (17).

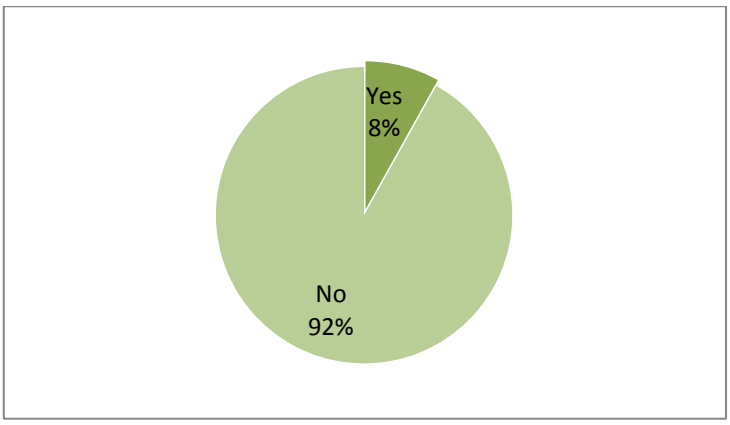


Figure 17: The percentage of respondents who visited Bergerden Agropark (N= 37)

They choose unfamiliarity with area along with inappropriate transportation system, long distance and high cost as reasons for not visiting the area.

Among those who visit the area, they mostly prefer to buy fresh products from greenhouses along with visiting a demonstration greenhouse. Moreover, respondents choose pick your own operation and greenhouse excursion as their third preferable activities in Bergerden Agropark Figure(18).

Figure 18: Respondents preferred activities in Bergerden Agropark (N=3)

N.B. People may select more than one checkbox, so overall numbers may add up to more than total.

Questionnaire result demonstrates that national events such as queens day, freedom day and family occasions such as Birthdays, Weddings and Graduations and open day Dutch greenhouses (Kom in de Kas) are the most selected reasons among visitors who have visited the area to go to the greenhouses as a tourist.

On the other hand, people, who did not visit the area, prefer to attend in greenhouse activities as tourist in open day Dutch greenhouses (Kom in de Kas), holidays and weekend, national events and family occasions, respectively. Besides, some of them offer activities music festivals, landscape exhibition as their strong reason to attend in greenhouse as a tourist.

The outcome of questionnaire shows that 68% of the respondents who did not visit the area are willing to attend in greenhouse activities in future figure (19).

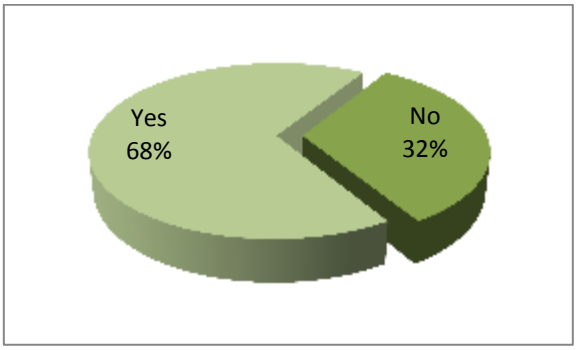


Figure 19: Willingness to visit the area among respondents who did not visit the area (N=34)

Moreover, most of the respondents stated that they have 2000 euro monthly income and they prefer to spend 10-14 euro or less for attending in greenhouse activities in Bergerden Agropark (figure 20).

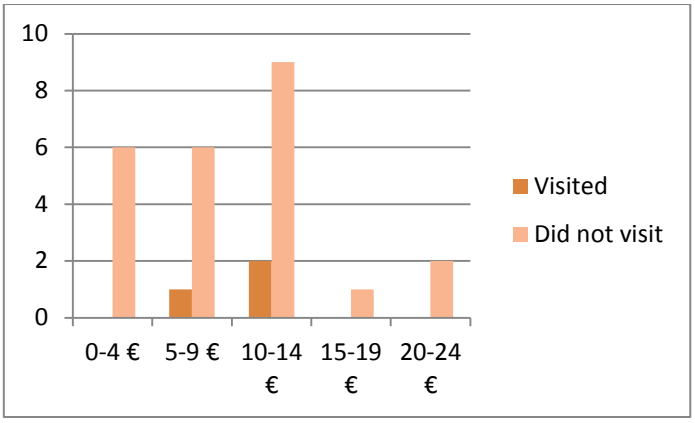


Figure 20 amount of money that visitors prefer to spent per visit for greenhouse activities

Besides, results reveal that the visitors prefer to attend in greenhouse activities during summer, spring and autumn, respectively.

4.2.3 Government perspective

According to the interview with the project manager in Bergerden agropark, the government welcome to all innovative projects to come out of recession on project. The secretary of steering group mentioned that the government is trying to decrease the limitation for investors in Bergerden Agropark.

The key stakeholders' influence and perspective towards implementing greenhouse tourism depicts in table 4-2.

Table 4-2: Key stakeholders' influence and perspective towards implementing greenhouse tourism.

Stakeholder	Implementing Agrotourism in Bergerden Agropark					
	Influence			Perspective		
	Low	Moderate	High	Negative	Moderate	Positive
Greenhouse owners			X		X	
Visitors			X			X
Project Manager	X					X
Tour manager		X				X

In the above table, two effective criteria are considered showing the role of the stakeholders in implementing greenhouse tourism in Bergerden Agropark. Influence considers defines as the capacity to have an effect on development of greenhouse tourism and Perspective defines as opinion of stakeholders towards implementing Agrotourism in Bergerden Agropark.

The influence and perspective of stakeholders towards implementing greenhouse tourism in Bergerden Agropark defines in three levels and Moderate level define as the respondents do not have any specific direction in general.

4.3 Bergerden Agropark and Sustainability

The results from interviews, questionnaire and author's observation express in three dimensions of sustainability in the following paragraphs.

4.3.1 Environmental Performance

Interviewees unanimously consider collective energy system and closed water system as two prominent features of the area. The manager of collective energy system explained the structure of the energy system as first and the only collective energy system in the Netherlands that save energy cost up to 10%.

He also declared that the outcome of the collective energy system; electricity, heat and Co_2 uses in greenhouses and the system has a low environmental pollution rate in compare with the available energy system. The manager of Cooperative Energy system states that the Bergerden agropark has a close water system and it does not use underground water. The greenhouses supply by water from precipitation. (Annex 12).

Besides, innovative advisor mentioned that Hydrohuisman Company as a pot plant grower installed a kind of energy efficient system that named heat producing greenhouse. The system design to use heat in summer for warming the water cycle in the greenhouses as well as warming the inside of greenhouse by using the heat of the underground water.

4.3.2 Social performance

The manager of Hydrohuisman Company stated, there is a 15 hectare nursery in the Bergerden agropark employed 650 disabled people. The secretary of the steering group of Crystral Palace mentioned that the nursery as small government business engaged in Corporate Social Responsibility by employing these people to train them for real jobs and also run its business. But it is not successful in making a profitable business.

As mentioned in section 4.1.1.3, some of the greenhouses comply with standards which show Social Responsibility and Sustainable Production especially in Horticulture such as MPS standards.

4.3.3 Economic performance

The manager of the Cooperative Energy System, declared the profit/loss of the energy system each year is equal zero. He also mentioned the system reduces the cost of energy in greenhouses. Energy system advisor confirmed that the collective system reduce the cost of establishing a greenhouse in the area. The greenhouse owners just need to attach to the network of collective energy system instead of installing an individual energy system.

The paprika grower mentioned recently the price is low in the market and they have low income. The manager of Hydrohuisman declared that after global economic recession, it has been a sharp decrease in the number of his customers especially in the Dutch market.

He also declared that some of the greenhouses went bankruptcy just two or three years after establishment in Bergerden Agropark and their properties was sold with low price like one of the tomato producers.

The project manager of Bergderden Agropark stated that the project is behind the plan for sailing the land to the greenhouse entrepreneurs and he also confirmed that the municipalities of Nijmegen and Lingeward as join owners of land have a big loss each year.

4.4 Touristic features of Bergerden Agropark

According to the interviews, questionnaires and authors observation, Bergerden agropark has a lot of features to attract tourist to the area. Bergerden Agropark is in way of cycling routine which continue from Lingezegen Park that a lot of people pass by the greenhouses daily. Moreover, the secretary of Crystal Palace steering group mentioned that the area between Arnhem and Nijmegen which include Bergerden Agropark is a touristic area. There are many museums and specially two horticulture museums one in Arnhem and the other one is in Nijmegen-lent which attract many visitors to the area.

According to the interviews with the secretary of Crystal Palace steering group, and tour manager, the sustainable energy system in Bergerden Agropark is one of prominent features to attract tourist in this area.

As observed, Bergerden Agropark surrounds by the beautiful landscape and also locates in a peaceful area. The tour manager mentioned that people want to reduce their daily stress by going to the peaceful area and greenhouse and nursery can play as a stress killer for visitors.

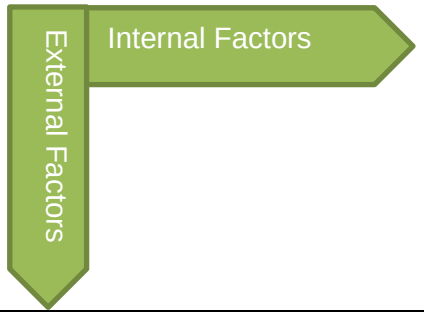
4.5 Attributes of Bergerden Agroparks for new greenhouse entrepreneurs

The interviewees directly and indirectly indicated the strengths and weaknesses as well as opportunity and threats of Bergerden Agropark for new investors. The author collects this statement in this section and it continues to draw a TOWS Matrix analysis table 4-3 at the end Most of the interviewees confirmed that the global economic crisis and recession in horticulture sector of the Netherlands are the main problems in attracting investors in the area.

Apart from that, the secretary of Crystal palace mentioned that the second hand greenhouses are less expensive rather than building a new one. On the other hands, the paprika grower mentioned that at this moment the area does not have extra benefit for investors in compare with other location in the Netherlands.

As observed, the Bergerden Agropark is close to the logistic companies and also they do not have any market in the area to sell their products to them. The table 4-3 shows Strengths, Weakness, opportunity and Threats of Bergeden agroparks for new investors.

Table 4-3 TOWS Matrix table

	**Strengths** • S1 It is a Greenhouse zone area • S2 It has a collective energy system which reduces the cost of greenhouse • S3 low energy system installation • S4 There is an appropriate transportation system in area • S5 Close to the residential area • S6 It is also closeness to the logistic companies. • S7 There are appropriate land sizes in the area. • S8 Still there is reasonable land price 35 € per square meter. • S9 Available place for expanding the business and greenhouses • S10 Possibility to hire labour with low wages	**Weaknesses** • W1 There is no direct market in the area and the whole products go to the big wholesalers, subsequently; reduce the gross margin of the producers. • W2 It is very hard to get a loan from bank to build new greenhouses • W3 No extra advantage in compare with other greenhouse locations in the Netherlands • W4 No financial support from government
Opportunities • O1 Close to the future theme park project, named Crystal Palace, which basically provide a new market for area • O2 The price of the land will increase according to the Netherlands economic norm. • O3 There is less bureaucracy for applying greenhouse licences from government. • O4 Locating in the City Region of Arnhem Nijmegen • O5 There is a demand in buying fresh products from greenhouses. • Close to the tourist spots	**S-O: Maxi-Maxi** **Since Bergerden Agropark is a greenhouse zone area and there is an appropriate transportation system in area and it is close to the residential area then <u>opening a new market for selling greenhouse products</u> can increase the access to the opportunities in the city region of Arnhem-Nijmegen and also meet the demand of buying fresh products from nearby citizens.** **If there is a greenhouse zone area and there is a reasonable land price in the area then <u>introducing new possibilities for investors in the area like packaging or landscape decorating</u> can use the opportunity of locating in the city region of Arnhem-Nijmegen economic development project**	**W-O: Mini-Maxi** **Since there is no direct market in the area for the local products and also no extra advantage in compare with other greenhouse area then <u>opening a new market in area to sell the product of Bergerden Agropark (Local for local)</u> decrease the weaknesses and increase the opportunity to meet the visitors demand of buying fresh products in the market**
Threats • T1 Market demands for greenhouse products will go down. • T2 Government policy on greenhouse zone area will change. • T3 Energy price will go up	**S-T: Maxi-Mini** **Since Bergerden Agropark is a greenhouse area and it is close to the residential area, then <u>providing entertaining programmes inside greenhouses</u> can decrease the affect of threats of decreasing market demand and also increasing energy price in the area.**	**W-T: Mini-Mini** **By <u>implementing direct market</u> the affect of the absence of market will minimised and avoid the effect of decreasing in Market demand.** **Government policy financial support with certain policy in Bergeden Agropark minimum the affect of lack of financial support in the area and avoid changes in governmnet policy in the area.**

Chapter 5 Discussion

5.1 Current situation of Bergerden Agropark

As observed, most of the Dutch people in the area spend their holidays in the nature and cycling in the area which is confirm the CBS 2011 reports on Dutch habits in the holidays

Results of questionnaire and direct observing shows the Bergerden Agropark is an exclusive horticulture zone and most of the greenhouses are in medium and large size and they have commercial production that confirmed vellema (2011) statement. Interviews show that most of the greenhouses sell their products directly to the whole sellers. It means that they do not have direct relationship with nearby customers in Bergerden agropark.

According to the interviews with greenhouse owners, project manager and also the secretary of Crystal Palace steering group, energy system is the most attractive feature of the area. Moreover the tour manager in area stated that they have a lot of visitors yearly for greenhouses and energy system. It means Bergerden agropark can be named as greenhouse technology tourist spot.

Based on questionnaire and direct observation, greenhouses produce Sweet pepper orchids, pot plants in different sizes, strawberries, fruit and garden trees, anthurium flower, bedding plants and aubergine and paprika. The Ghianni (2011) also placed most of these products as new trends in Dutch greenhouses. This means that they are aware of changes in market and they professionally produce commercial products according to the market demand.

Observation and interviews revealed that Collective Energy System and closed water system are sustainable approaches in Bergerden agropark as Buurma & Ruijs,(2011) mentioned. More over questionnire shows that most of the greenhouses comply with sustaibale certificates in their greenhouses such as Groenlabel Kas and MPS. These evedence shows the high attitude in sustaible production in Bergerden agropark and also it shows how far the project managers consider sustainblity in this projects.

As Buurma & Ruijs,(2011) mentioned, the collective energy system in Bergerden Agropark was purchased by the current greenhouse owners and greenhouse owners showed their satisfaction of having this kind of energy system. Moreover interviews reavealed thatdo not have any kind of cooperation with each other even those who grow the same products except in energy affiars. So It can be intrepreted energy system is the strong reason for cooperation among greenhouse owners.

Moreover, according to the author's observation in Bergerden Agropark, there are different transportation ways for visitors to reach to the location such as car, bicycle, bus. Maruti (2009) also consider transportation as one of the important factor in start an agro tourism project. On the other hands, the respondents select inappropriate transportation system as a reason why they did not visit the area. It can be interpreted that they are not aware of the transportation system in the area.

As observed Lingezegen Park attract many visitors daily especially at weekends and holidays and there is also a cycling routine which pass through the Bergerden Agropark. It can be interpreted that the neighbouring with Lingezegen park can help Bergerden agropark to introduce his future touristic project to people easily.

5.1.1 Sustainability

According to the findings from interviews, questionnaires and author's observation, Bergerden Agropark greenhouses have efficient energy system and closed water system that confirm the Chen and Haoran (2010) report on features of Bergerden Agropark. Questionnaire shows that most of the greenhouse in the area complies with sustainable standards such as Global GAP. It can be interpreted that the Bergerden Agropark shows a positive image in term of Environmental Sustainability Index.

Interviews reveal that 15 hectare governmental nursery business in Bergerden agropark employ disabled people as part of their corporate social responsibility (CSR). Moreover questionnaire shows that some of the greenhouses comply with sustainable standards which focus on CSR aspect of business. It means that Bergerden Agropark greenhouses consider social dimension of sustainability in project.

According to the interviews with greenhouse owners and also the secretary of the steering group in Bergerden Agropark, some of the greenhouses in the area went bankrupt and currently there is a low demand in the market and they cannot sell their products with good price in the market. Apart from that, project manager mentioned that they could not sell the lands to the greenhouse entrepreneurs according to the project schedule. This evidence reveals that the Bergerden Agropark project does not show a good image of economical sustainability.

5.2 Government Perspective

The project manager mentioned that the government does not support greenhouse owners after selling the land to them and it is just responsible for issuing a building permit. On the other hand, the secretary for Crystal Palace steering group stated that government is trying to increase the range of allowed activities in Bergerden Agropark to attract more greenhouse entrepreneurs.

As observed, the government consider any kind of project in the area to motivate the greenhouse entrepreneurs for investment in the area. Moreover, the secretary of the steering group of the crystal palace mentioned that the government deduct the limitation for investors in Bergedrden agropark. It can be interpreted the government support any idea that develop area.

5.3 Visitors Perspective

Results shows that the majority of respondents did not visit the area until now and most of them mentioned they are not familiar with the area. It may confirm the opinion of some of the greenhouse owners that they do not want constant visitors. On the other hand Chen and Haoran (2010) and Peter,*et al*. (n.d.) named collective energy system and closed water system as most important features in Bergerden Agropark that it can be interpreted the area is interested for special class of people in society and it is not interested for all.

Although that the majority of visitors did not visit the area, they are willing to attend in greenhouse activities such as pick your own operation in future. It may be confirmed the statement that visiting garden centres and exhibitions and generally gardening is a popular activity among Dutch people (Anon., 2012).

As CBS (2011) reports vacationing and travelling are popular Dutch activities in holidays, the results shows that the majority of respondents prefer to visit the area on holidays and

weekends, national events and also festivals such as open day Dutch greenhouse. It can be interpreted they best moment for holding tourism programmes is in holidays and weekends.

The report of the Numbeo (2012) on proportion of Dutch family spending on leisure activities and also the CBS (2011) report on expenditure of the Dutch on holidays, the results show the respondents willing to spend around 10% of their monthly leisure budget for greenhouse activities It may confirmed the statement from the tour manager in Bergerden Agropark that it is better to hold touristic activities with low entrance fee.

As result shows, visitors are willing to attend in greenhouse activities in Bergerden Agropark in spring, summer and autumn. Coincidentally, the most of the greenhouses in Bergerden Agropark have ready products in these seasons especially in spring and summer. It can be interpreted that the visitors want to visit the area when the greenhouses have products ready for harvest.

Some of the interviewees states that the Begrerden agropark is located in a touristic place such as Lingezegen Park and two horticulture museum in Arnhem and near Nijmegen on the other hand, Maruti (2009) stated that, the place for agrotourism project should be developed close to the historical tourist places and landmarks. It shows that the project manager, intently or unexpectedly choose a good location for developing greenhouse tourism as a kind of agrotourism project in Bergerden Agropark.

5.4 Greenhouse owner perspective

Result shows that most of greenhouse owners are willing to open their greenhouse to the visitors and also they prefer to continue tourist programmes for improving the image of the area especially their greenhouses.

One the other hand, the result revealed that the majority of the greenhouse owners are not considering the tourist as a potential consumer. This may highlight the statement of tour manager in Bergerden Agropark that mentioned most of the greenhouse owners are willing to join to the greenhouse tourism programme if the programme brings profit for them.

Apart from that, results show that some of the greenhouses cannot participate in touristic programmes due to the high risk of disease transmission and hygiene precaution. This shows that the product inside the greenhouse is a factor that should be considered among the factors that Maruti (2009) mentioned for starting an agrotourism project.

In interviews, the author figure out that some of the greenhouse owners are not willing to have a constant visitors as tourist and it can be intrepreted that they hesitate to take a risk in the economic recession period

In questioner shows that most of the greenhouse owners want to receive financial supports from government for implementing greenhouse tourist that means they do not want to take risk in order to join these kinds of activities. It can be a sign of economic crisis and also not being sure of successfully agro tourism project implementation.

As observed, there are two groups of greenhouse owners in Bergeden agropark; the first group are pioneer in introducing new innovative projects in their greenhouse and area such as Hydrohuisman Company and the second group is typical greenhouse producer. The first group really prefer to implement a kind of touristic projects such Emsflower company.

Moreover the first group has a good relationship with other greenhouse owners that make it possible for them to motivate the second group to join the greenhouse tourism if they have a doubt.

5.5 Feasibility of sustainable implementation of greenhouse tourism

Interviews reveal factors which make constraint to attract new greenhouse entrepreneurs for investment in Bergerden Agropark. Absence of direct market in area, barrios in getting loan from banks, no subsidy from government and also no extra advantages in compare with other greenhouse zones inside the Netherlands. These factors comes under the umbrella of economic concerns of greenhouse entrepreneurs for investment in Bergerden Agropark and it can be interpreted they cannot see any economic progress in the future of Bergerden Agropark.

Accouding to the theory of shared value of Porter & Kramer (2011) for coming out from these recessions, business should create economic value in a way to create value for society by addressing its needs and challenges.

Questionnaire show that visitors even those who did not visit the Bergerden Agropark are willing to visit the greenhouses and spend their weekend and free time there as tourist and also the Dutch culture in spending time in nature and agriculture spots is undeniable.

These testimony and proofs may interpret that there is a missing puzzle piece to respond to the society needs and also convince new greenhouse to invest in Bergerden Agropark. On the other hand, Bergerden Agropark has almost the necessary attributes for being a agrotourism spot according to Maruti (2009) indicators. It can be interpreted that implementing greenhouse tourism as a kind of agrotourism is a missing puzzle piece in the area.

As mentioned before, Bergerden Agropark shows a positive image of sustainability in term of environmental aspect. But in other aspects of sustainability, economical and , social aspect it does not depict a positive image as it does in environmental aspect.

According to the successful examples such as Emsflower Company discussed in this thesis, greenhouse tourism can be an income generator for the greenhouses. It means that implementing greenhouse tourism in Bergerden Agropark can be considered as new income generating generator.

According to the authors observation Park Lingezegen as a neighbour area provides a lot of facilities for the tourists it can be interpreted that the area is going to change to a tourist spot in the Netherlands. Moreover, it confirms the statement of Haran, 2010 that one of the aspects of economic development of Arnhem and Nijmegen is tourist development.

According to the three aspects of sustainability, the environmental sustainable index in Bergerden Agropark is bolder than the other two other aspects of sustainability. According to the created shared value theory for improving the two Economical and social aspects of Bergerden Agropark business that refers to greenhouse should consider the visitors demand in the area.

The visitors show their interest in visiting the greenhouse with buying the fresh products abd also spending around 10 percent of the leisure proportion of their income of respondents (2000 euro). On the other hand government also show his interest to support the new project to make more benefit from the project.

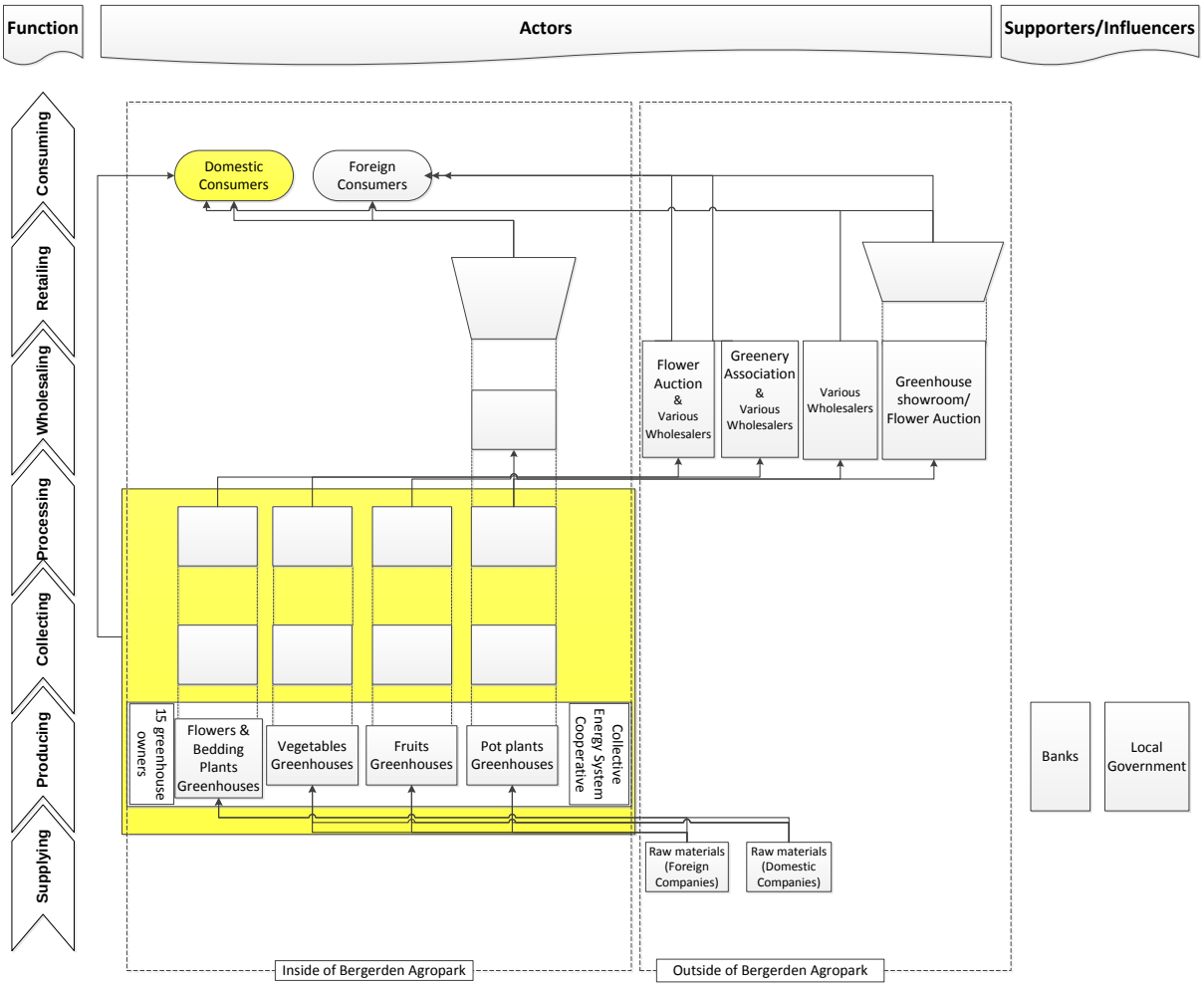
Greenhouse tourism can be an answer for the visitors demand in the area that consequently increase the social aspect of sustainability in Bergerden Agropark and also when it gives satisfaction to the visitors the economic aspect of sustainability will also improve.

According to the facilities which are available in the area like bed and breakfast, Cycling routine in lingerzegen Park and also the high interest of the some of the greenhouse owners to implementing a new and innovative project in area and also support from government it seems the implementing the project will be successful in Bergerden Agropark.

The idea to boost the area is laid on implementing greenhouse tourism as kind of direct market which depicted in figure 21 can increase the gross margin for the greenhouse owners in the area and it will definitely add value to Bergerden Agropark. Moreover, it can be a motivator for new greenhouse entrepreneurs in the area.

It is worth mentioning; figure 21 depict the Bergerden Agropark after introducing direct market in the area. The products directly sell to the consumers that are willing to buy fresh and local products.

Figure 21: Supposed chain map for greenhouse tourism



Chapter 6: Conclusion and Recommendation

This chapter concludes the theses with significant points came out during the research and suggest some possible recommendations for the government as the problem owner.

6.1 Conclusion

The following conclusion is driven from the collected data during the short period in the area and undoubtedly the conclusion would be much more elaborate if the number of responds was bigger.

Bergerden Agropark is one of the greenhouse zones in the Netherlands. The 340 hectare area is located between two important cities Arnhem and Nijmegen in Gelderland province

The local government, municipalities Nijmegen and lingewaard are the owner of the lands sold almost half area to the entrepreneurs to implement modern greenhouses.

Fifteen greenhouse owners built their greenhouses in the area and they produce vegetables, flowers, pot plants and fruits. Pot plants as majority of growers in the area along with other greenhouses sell their products to the big wholesalers.

Recently, global economic crises and recession in horticulture sector in Netherlands, brings up some problems in the area. There are no customers for the land as well as greenhouse products in Bergeden Agropark. The government has a concern to find a way to pay his debt to the bank for the money that he borrowed and invested in the sustainable energy system infrastructure. On the other hand, the greenhouse owners are worried to overcome the high cost of operation as well as low price of the products in the market.

Greenhouse tourism as new trend in agriculture sector and also a new approach in revenue generation became a reason to find its feasibility in the area with three aspects of the sustainability.

The research tries to figure out the visitors' perspective as well as greenhouse owners perspective towards greenhouse tourism in the area. Moreover, government's perspective was captured and come to level of making decision on feasibility of the project in the area.

Generally there are two types of the greenhouse owners in the area. The first group are creative and innovative and they are willing to open their greenhouse to the visitors and also they are looking to find a way to implement a concept of "Local for Local' to generate much more income.

The second group are follower and they are not really interested to attract greenhouse tourism in the area and they even do not consider greenhouse tourism as a potential customer.

On the other hand, although many of the visitors did not visit the area but most of them show their interest to join in the greenhouse tourism projects for buying fresh product and visiting the greenhouses.

The government as the owner of the land is really open to welcome the new ideas and they have positive opinion on greenhouse tourism and also they are going to reduce the limitation for the investors in the area to attract more customers for the rest of land area.

In terms of sustainability, finding s show that Bergerden Agropark show a positive image in environmental pillar by implementing sustainable energy system in the area but they could not present a good image in Economic and social pillars.

According to the created shared value and also finding from field study, greenhouse tourism can improve the in two sustainability aspects of the project, economic and social, by intruding a new market and increase the gross margin as well as meet the demands of the visitors and provide a peaceful location for their holidays, respectively.

Based on the activities which is mostly applied in greenhouse tourism projects and according to the result from questionnaire the most suitable greenhouse tourism activity for the area is selling fresh product in the greenhouse under the pick your own operation strategies.

6.2 Recommendation

The following recommendations are framed to the government as the owner of the problem with the support of TOWS Matrix table.

Due to the high risk of investment at this moment, it is better to have a low investment in tourism project to reduce the dependency on return on investment. It means that it is applicable to use the assets in area such as the nursery canteen and Park Lingezegen tourist facilities to start the project.

Some of the greenhouse owners as key actors in implementing greenhouse in the area have hesitate to implement greenhouse project in the area. They need support from government such as subsidies, or consultancy services. It is better to show his real support to them before implementing the project.

The energy system is well presented in the area and still there is not any similarity project in the world, It is highly recommended to consider it as a greenhouse technology tourists as one of the aspect of the tourism in the area. This feature can be an initiative for greenhouse tourism in the area without spending too much money.

Although the Bergerden Agropark is located in the touristic area, the reason that most of the respondents did not visit the area was unfamiliarity with area. It is better to introduce the area in different occasions in different places before implementing greenhouse tourism.

The government can support a direct market project in the area to use the available strengths and opportunities in the area to decrease the weaknesses of the area by providing a bigger gross margin for the producers in the cover of direct marketing.

Government also can provide financial incentive in certain policy for the area to support the greenhouse entrepreneur for start the project and also minimise the affect of the weaknesses in the area. Decreasing the price of the land and also cooperating with the banks to post pons the first payment of the loan can be such examples of financial incentives form government.

Further research could also be conducted to determine the quantitative data on economic feasibility of the project in the area in order to give a clear image of possibility of the project implementation to the greenhouse owners.

References

Anon., 1997. *Commercial Floriculture Grower, Getting Started,* s.l.: British Colombia, Ministry of Agriculture, Fisheries and Food.

Anon., 2007. *EXPORT MARKETS FOR HIGH-VALUE VEGETABLES FROM TANZANIA,* Washington: United States Agency for International Development.

Anon., 2008. *Open day dutch greenhouses/ Kom in de Kas.* [Online] Available at: http://www.travbuddy.com/Open-day-dutch-greenhouses-Kom-in-de-Kas-v192234 [Accessed 25 07 2012].

Anon., 2011. *http://parklingezegen.nl.* [Online] Available at: http://parklingezegen.nl/uploads/files/Presentatie%20De%20Woerdt%2029112011_1.pdf [Accessed 04 08 2012].

Anon., 2012. *About Arnhem and Nijmegen City Region.* [Online] Available at: http://www.coolregion.nl/about-en?set_language=en [Accessed 08 08 2012].

Anon., 2012. *DAILY LIFE AND LIFESTYLE IN THE NETHERLANDS,* s.l.: s.n.

Anon., 2012. *Festive opening last weekend in Emsbüren, Germany: Emsflower expands substantially,* s.l.: Freshplaza.

Anon., 2012. *http://www.emsflower.nl/.* [Online] Available at: http://www.emsflower.nl/nl/bedrijf/geschiedenis/ [Accessed 26 07 2012].

Anon., 2012. *http://www.komindekas.nl/.* [Online] Available at: http://www.komindekas.nl/files/Persbericht%20Kom%20in%20de%20Kas%20trekt%20veel%20bezoekers.pdf [Accessed 20 07 2012].

Anon., 2012. *http://www.my-mps.com/.* [Online] Available at: http://www.my-mps.com/Registration/tabid/75/language/en-US/Default.aspx [Accessed 2012 08 10].

Anon., 2012. *Total Areas in Major Greenhouse Production Countries,* Arizona: s.n.

Anon., n.d. *DAILY LIFE AND LIFESTYLE IN THE NETHERLANDS..* [Online] Available at: http://elib.kkf.hu/nether/holland/everyday/EN.htm [Accessed 04 08 2012].

Anon, 2012. *An overview of the Dutch economy.* [Online] Available at: http://www.euro-challenge.org/doc/Netherlands.pdf [Accessed 08 07 2012].

Anon, 2012. *Arnhem-Nijmegen Spatial Planning.* [Online] Available at: http://www.cchangeproject.org/Arnhemplanning [Accessed 07 07 2012].

Anon, 2012. *Emsflower, The horticulture park.* [Online] Available at: http://www.reiseland-niedersachsen.de/en/emsflower-1 [Accessed 28 07 2012].

Anon, 2012. *http://www.komindekas.nl/.* [Online] Available at: http://www.komindekas.nl/files/Logo%20Kom%20in%20de%20Kas%20klein.jpg [Accessed 20 07 2012].

Anon, 2012. *http://www.restaurantdekas.nl/history.* [Online]
Available at: http://www.restaurantdekas.nl [Accessed 08 08 2012].

Buurma, J. & Ruijs, M., 2011. Sustainable greenhouse horticulture and energy provision: two regional transition processes compared. In: *Transformation and sustainability in agriculture.* s.l.:s.n.

CBS, 2011. *Gemeente Op Maat, Arnhem,* Den Haag: CBS.

CBS, 2011. *Gemeente Op Maat, Nijmegen,* Den Haag: CBS.

CBS, 2011. *Toerisme en recreatie in cijfers 2011,* The Hague: CBS.

CBS, 2012. *Tourist accommodation form.* [Online]
Available at: http://www.cbs.nl/nl-NL/menu/methoden/begrippen/default.htm?conceptid=3202
[Accessed 02 08 2012].

CBS, N. D. s. o., 2012. *Building, construction and non-building construction, to construction,* The Haag: s.n.

Chen, D. & Haoran, L., 2010. *Design an integrated system with more cooperation between Park Lingezegen en Agro-Park Bergerden in sustainable development,* s.l.: s.n.

Douglas G., P., 2012. *Frameworks for tourism research.* Wellington: CABI.

Fontein, R. J. et al., 2010. *Crystal Palace - Een regionale showcase,* s.l.: Greenport, Betuwse Bloem.

Ghianni, R., 2011. *More vegetables and fewer flowers grown in greenhouses,* s.l.: National Dutch statistical organisation CBS.

Haran, N., 2010. *The power to collaborate : How judicious use of power accelerates the strategic capacity of regions in the Netherlands,* Delft : Eburon.

Heinrichs, C., 2009. *HEINRHow to raise poultry: everything you need to know.* Minneapolis(Minnesota): Voyageur Press.

Katherine L., A., 2004. *Entertainment Farming and Agri-Tourism,* s.l.: ATTA.

Kessler Jr, J., 2006. *Starting a greenhouse business,* s.l.: Alabama Cooperative Extension System.

Klinkers, A., 2010. *Tourist spending dramatically down.* [Online]
Available at: http://www.cbs.nl/en-GB/menu/themas/macro-economie/publicaties/artikelen/archief/2010/2010-3160-wm.htm
[Accessed 25 07 2012].

Kunst, H., 2011. *Financiële situatie GR Bergerden ,* Nijmegen: Nijmegen Municipality.

Lier, F. D., 2011. *Trip to Europe photo album>Photo 102 of 102,* Emsbüren: http://picasa.google.com/.

Lier, F. D., 2011. *Trip to Europe photo album>Photo 7 of 102,* Emsbüren: http://picasa.google.com/.

Linda, M., 2007. *Average income Dutch household approximately 50 thousand euro.* [Online]
Available at: http://www.cbs.nl/en-GB/menu/themas/inkomen-bestedingen/publicaties/artikelen/archief/2007/2007-2215-wm.htm
[Accessed 05 08 2012].

Lopez, E. P. & Garcia, F. J. C., 2006. Agrotourism, sustainability tourism and Ultraperipheral area: the case of Canary Islands. *PASOS,* 4(1), pp. 85-97.

Maruti, K. V., 2009. *AGRO-TOURISM: SCOPE AND OPPORTUNITIES FOR THE FARMERS IN MAHARASHTRA.* [Online]
Available at: http://www.indiastat.com/article/09/kvm/fulltext.pdf
[Accessed 20 08 2012].

Muffels, T., 2008. *A review of sustainable development in agriculture, land and rural development, drought and desertification, and Africa.,* Hauge: Netherlands Ministry of Foreign Affairs.

Nederhoff, E., 2006. Closed Greenhouse and Heat-Producing Greenhouse. *Grower,* 61(10), pp. 67-69.

NUMBEO, 2012. *Cost of Living in Netherlands.* [Online]
Available at: http://www.numbeo.com/cost-of-living/country_result.jsp?country=Netherlands
[Accessed 01 08 2012].

Peter, S. et al., n.d.. *Better City,Better Agriculture, Better Life, Greenport Shanghai,* Wageningen: Wageningen Academic Publishers.

Porter, M. & Kramer, M., 2011. *Creating Shared Value,* Harward: s.n.

Puck, K., 2012. Ten Years of Cooking to 'the Whims of Nature'. *Food Service Europe and Middle East,* Issue 2, pp. 68-70.

Richard, E., 2010. *Understanding Retail Destinations in the Netherlands 2010,* s.l.: CBRE.

Robin G., B. & Edouard K., M., 2000. *Agricultural Tourism as Income-Based Risk Management Strategy for Greenhouse and nursery Producers,* s.l.: s.n.

Schout, H. J. & Harkema, S. J., n.d.. *GREEN GROWTH: INNOVATIVE CAPABILITY OF SME'S IN THE DUTCH GREENHOUSE,* Hauge: s.n.

Sharon, P., Colin, H. & Kirsty, B., 2010. A typology for defining agritourism. *Tourism Management,* Issue 31, pp. 754-758.

Sikdar, S. K., 2003. Sustainable development and sustainability metrics. *AIChE Journal,* 49(8), pp. 1928-1932.

Smeets, P., 2010. Systems design in metropolitan agriculture. In: *Exploring the potential of high technological and eco-efficient agriculture.* Wageningen: Wagening Academic Publisher, pp. 85-98.

Smeets, P. J., 2011. *Expedition agroparks.* Wageningen: Wageningen Academic Publishers.

Smeets, P. J., n.d. Systems Design in Metropolitan agriculture. In: Wageningen: Wageningen Academic Publisher.

Sukkel, W. & Hommes, M., 2009. *Research on organic agriculture in the Netherlands.* Wageningen: Wageningen UR and Louis Bolk Institute.

Vellema, S., 2011. *Transformation and Sustainability in Agriculture Connecting practice with social theory.* Wageningen: Wageningen Academic Publishers.

Verwilt, P. & Mathijs, E., 2002. *Sustainable Development of the Flemish Greenhouse Industry,* Leuven: University of Minnesota.

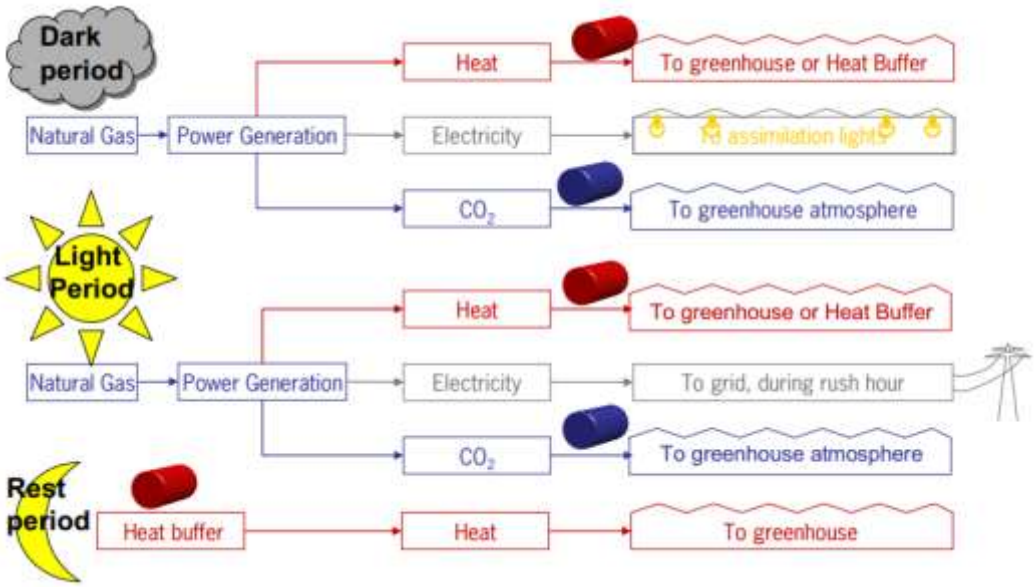
worldBank, 2012. *AVERAGE MONTHLY RAINFALL AND TEMPERATURE FOR NETHERLANDS, THE FROM 1960-1990.* [Online]
Available at:
http://sdwebx.worldbank.org/climateportal/index.cfm?page=country_historical_climate&ThisRegion=Europe&ThisCCode=NLD
[Accessed 2012 08 05].

Xuan, G., 2005. *Development Strategies of Agriculture Pilot Model Center and Agri-tourism in Beijing,* Deventer: s.n.

Ziemba, K., 2007. *RISK ANALYSIS AND RISK FINANCING OPPORTUNITIES FOR,* Wageningen: s.n.

Annexes

Annex 1 Greenhouse and power production



Source: Smeets (2010)

Annex 2 : Lingezegen Park functions

Source: www.parkLingezegen.nl

Annex 3: Population by age in Arnhem, Nijmegen ,

	Arnhem		Nijmegen		Gelderland		Netherlands	
	absolute value abs.	%		%		%		%
Residents								
Younger than 5 years	8,997	6.1	8,149	5.0	109,942	5.5	924,881	5.6
5 to 10 years	8,028	5.5	7,735	4.7	125,986	6.3	1,003,249	6.1
10 to 15 years	7,263	4.9	7,773	4.8	124,493	6.2	984,781	5.9
15 to 20 years	8,055	5.5	10,086	8.2	126,969	6.4	1,015,423	6.1
20 to 25 years	11,163	7.6	18,147	11.1	117,264	5.9	1,012,910	6.1
25 to 45 years	48,100	32.7	48,199	29.6	515,998	25.8	4,476,642	27.0
45 to 65 years	36,787	25.0	41,154	25.3	563,310	28.3	4,618,775	27.9
65 to 80 years	13,389	9.1	16,080	9.9	234,304	11.7	1,890,334	11.4
80 years or older	5,236	3.6	5,640	3.5	76,670	3.9	647,994	3.9

Last update: 1 January 2010

Source: CBS, 201

Annex 4: Agrotourism definition in different literatures

Term used	Definition	Reference
Agritourism	"any practice developed on a working farm with the purpose of attracting visitors"	Barbieri and Mshenga (2008: 168)
	"a specific type of rural tourism in which the hosting house must be integrated into an agricultural estate, inhabited by the proprietor, allowing visitors to take part in agricultural or complementary activities on the property"	Marques (2006: 151)
	"rural enterprises which incorporate both a working farm environment and a commercial tourism component"	McGehee (2007: 111) and McGehee, Kim, and Jennings (2007: 280)
	"tourism products which are directly connected with the agrarian environment, agrarian products or agrarian stays"	Sharpley and Sharpley (1997: 9)
	"activities of hospitality performed by agricultural entrepreneurs and their family members that must remain connected and complementary to farming activities"	Sonnino (2004: 286)
Agrotourism	"tourism activities which are undertaken in non-urban regions by individuals whose main employment is in the primary or secondary sector of the economy"	Iakovidou (1997: 44)
	"tourist activities of small-scale, family or co-operative in origin, being developed in rural areas by people employed in agriculture"	Kizos and Iosifides (2007: 63)
	"provision of touristic opportunities on working farms"	Wall (2000: 14)
Farm Tourism	"rural tourism conducted on working farms where the working environment forms part of the product from the perspective of the consumer"	Clarke (1999: 27)
	"tourist activity is closely intertwined with farm activities and often with the viability of the household economy"	Gladstone and Morris (2000: 93)
	"to take tourists in and put them up on farms, involving them actively in farming life and production activities"	Iakovidou (1997: 44)
	"commercial tourism enterprises on working farms… This excludes bed and breakfast establishments, nature-based tourism and staged entertainment"	Ollenburg and Buckley (2007: 445)
	"activities and services offered to commercial clients in a working farm environment for participation, observation or education"	Ollenburg (2006: 52)
	"a part of rural tourism, the location of the accommodation on a part-time or full-time farm being the distinguishing criterion."	Oppermann (1996: 88)
	"increasingly used to describe a range of activities… [which] may have little in common with the farm other than the farmer manages the land on which they take place"	Roberts and Hall (2001: 150)
Farm-based tourism	"phenomenon of attracting people onto agricultural holdings"	Evans and Ilbery (1989: 257)
	"an alternative farm enterprise"	Ilbery, Bowler, Clark, Crockett, and Shaw (1998: 355)
Vacation Farms	"incorporate both a working farm environment and a commercial tourism component"	Weaver and Fennell (1997: 357)

Source: Sharon, et al., (2010)

Annex 5: Agrotourism activities

Wineries with Friday happy hours	Educational tours	Historical re-creations
Arts & crafts demonstrations	Farm schools	Living history farms
Farm stores	K-12 schools	Heirloom plants and animals
Roadside stands	Outdoor Schools	Civil War plantations
Processing demonstrations	Challenge Schools	Log buildings
Cider pressing	Movement-based retreat centers	Maple sugaring
Antique villages	Native American villages	Sheep shearing
Herb walks	Frontier villages	Wool processing
Workshops	Collections of old farm machinery	Sorghum milling
Festivals	Miniature villages	Apple butter making
Cooking demos	Farm theme playgrounds for children	Fee fishing/hunting
Pick-your-own	Fantasylands	Farm vacations
Pumpkin patches	Gift shops	Bed and breakfasts
Rent-an-apple tree	Antiques	Farm tours
Moonlight activities	Crafts	Horseback riding
Pageants	Crafts demonstrations	Crosscountry skiing
Speakers	Food sales	Camping
Regional themes	Lunch counters	Hayrides
Mazes	Cold drinks	Sleigh rides
Crop art	Restaurants	Rest areas for snowmobilers or cross-country skiers
Pancake breakfasts during sugaring season	Pizza farms	Themes (apple town, etc.)
Bad weather accommodations	Native prairies preservation	Picnic grounds
Tastings	August "Dog Days" —50% off dogwoods if customer brings picture of family dog, etc.	Shady spots for travelers to rest
Buffalo	Campgrounds	Hieroglyphics, rock art
Dude ranches	Indian mounds, earthworks art	Hunting lodges

Source: Katherine L. (2004)

Annex 6: Emsflower Company touristic programmes entrance fees

Activity/event	Admission Cost With tour (tour leader) Duration 90 minutes		Admission Cost without tour			
			Cost for adults		Cost for children 7 – 14 years and disabled	Cost for children below 7 years old
	Group up to 11 people	Group (12 or more)	Individual	Group (more than 10)		
Amusement Park Include: Cacti and tropical garden Nursery and cutflower location Logestics	75 €	6.5 € p.p.	6 €	5.5 €	3.50 €	Free
Indoor Playground (Only for children 3 – 12 years old)	Admission cost without party	Admission cost with party				
		Popcorn (Popcorn and chips, mineral water, apple juice)	Small (French fries with chicken nuggets)	Medium (Tropical Garden Walk, gummy bears as decoration, orange juice, mineral water, apple juice, French fries and chicken nuggets.)	Large (Tropical garden walk, tired of candy, orange juice, mineral water, apple juice tired of fries and chicken Nuggests.)	XXL (Tropical Garden Walk, a piece of cake, candy and chips, orange juice, mineral water, apple juice, French fries and chicken nuggets)
	Free of cost	5 €	3.90 €	5.95 €	7.95 €	9.95 €
Christmas time	Admission Cost for buffet table					
	17.50 €					

Source: http://www.emsflower.de

Annex 7: Operationalization table

Sub-question	Operationalization	How	Whom
What is the current situation in the area?	Stakeholders Products Relationship among stakeholders Pros and cons of the project Prominent features	Interview Observation Questionnaire	Greenhouse owners, project manager, Manager of Cooperative Energy system
What are the critical factors to make greenhouse tourism successful in Bergerden Agropark?	Potential Tourist Attractions Available sources	Interview Observation	Greenhouse owners, Project manager, tour manager, Secretary of the steering group of Crystal Palace
What is the government's perspective towards implementing greenhouse tourism in the area?	Agrotourism (greenhouse activities) Support Possibilities	Interview	Project manager, Secretary of the steering group of Crystal Palace
What is the perspective of the visitors in Bergerden Agropark towards implementing greenhouse tourism in the area?	Opinion about Agrotourism (greenhouse activities) Interesting activities in Greenhouse expectation	Observation Questionnaire	Visitors, nearby citizens
What is the greenhouse owners' perspective towards implementing greenhouse tourism in the area?	Opinion about Agrotourism (greenhouse activities) Possibilities Requirements for implementation	Interview Questionnaire	Greenhouse owners, tour manager.

Annex 8 Questionnaires
English Version

Visitor's questionnaire

I as a Master student in Van Hall Larenstein University of Applied Sciences currently work on an Agrotourism project in Bergerden Agropark. The area is located between three cities Nijmegen, Arnhem and Hussein. This survey is attempt to find the Agropark's visitors preferences in the Netherlands and the outcome will help the management team of Bergerden Agropark to make the area much more interesting for local people as well as visitors.

Your cooperation is appreciated.

Questionnaire for exploring the customer preferences towards greenhouse tourism

Background information of visitors

1. Location:
   □Bergerden; □Arnhem; □ Nijmegen; □ Huissen; □ Lingezegen Park; □ Others ……
2. Gender: □ Male □ Female
3. Age: …….
4. Monthly income: □ less than 2000 €; □ 2001-3000 €; □ 3001-4000 €; □ More than 4000 €
5. Job: □ Government employee; □ Non-government employee; □ freelance □ Student
6. Level of education:
   □ High School diploma □ Bachelor degree/student
   □ Vocational degree □ Master degree/student
   □ PhD degree/student
7. Have you ever visited Bergerden Agropark nearby Lingezegen Park (between Nijmegen and Arnhem)?
   □ Yes, Follow the questions in Box 1
   □ No, Follow the questions in Box 2 in the next page

Box 1:
If yes,

8a. Are you willing to go to the greenhouse as a tourist?
□ Yes
□ No, reason …….

9a. What kind of activities do you prefer to attend in the area (Multiple Choice)?

a) Cooking demonstration/lessons □ Yes □ No
b) Pick your own operation (PYO, u-pick, cut-your-own) □ Yes □ No
c) Greenhouse excursion/tour □ Yes □ No
d) Purchasing fresh products in greenhouses □ Yes □ No
e) Visiting demonstration greenhouses □ Yes □ No
f) Eating a meal in the greenhouse (Greenhouse restaurant) □ Yes □ No
g) Others ……..

Continued from Box 1:

10a. According to your answer to the question 9a, which one is much more interesting for you (Only one answer)? ……

11a. For which one of the following events/festivals do you want to attend in?

□ Holidays and weekends
□ National events (Queens day, Freedom Day,…)
□ Family Occasions (Birthdays, Weddings, Graduations,…)
□ Open day Dutch greenhouses festival / Kom in de Kas
□ Others ……..

12a. Which season(s) do you prefer to go to the greenhouses as tourism?

□Spring □Summer □Autumn □Winter

13a. How much do you want to spend per visit?

□ 0-4 €; □ 5-9 €; □ 10-14€; □ 15-19 €; □ 20-24 €

Box 2:

If No,

8b. Why you have not visited the area?

I am not familiar with the location □ Yes □ No
Inappropriate transportation system □ Yes □ No
It is not interesting □ Yes □ No
Long distance □ Yes □ No
Costly □ Yes □ No
□ Others ……..

9b. Are you willing to attend in agrotourism activities in future?

□ Yes, Follow the questions in Box 3
□ No, reason …….

Box 3:

If Yes,

10c. For which one of the following events/festivals do you want to attend in?

□ Holidays and weekends
□ National events (Queens day, Freedom Day,…)
□ Family Occasions (Birthdays, Weddings, Graduations,…)
□ Open day Dutch greenhouses festival / Kom in de Kas
□ Others ……..

11c. Which season(s) do you prefer to go to the greenhouses as tourism?

□Spring □Summer □Autumn □Winter

12c. How much do you want to spend per visit?

□ 0-4 €; □ 5-9 €; □ 10-14€; □ 15-19 €; □ 20-24 €

This questionnaire is provided by: Ehsan Kamalipour
Van Hall Larenstein Master Student
email: ehsan.kamalipour@wur.nl

Dutch Version

Bezoekers vragenlijst

Als Master student aan de Van Hall Larenstein Hogeschool werk ik momenteel aan een project in het Bergerden Agrotoerisme Agropark. Het gebied is gelegen tussen drie steden Nijmegen, Arnhem en Huissen. Dit onderzoek is een poging om de voorkeuren van de Agropark bezoekers in Nederland te vinden; de uitkomst zal het management team van Bergerden Agropark helpen om het gebied veel interessanter te maken zowel voor de lokale bevolking als voor de bezoekers.

Agropark de bezoekers voorkeuren vinden in Nederland en de uitkomst zal het management team van Bergerden Agropark helpen om het gebied veel interessanter voor de lokale bevolking als bezoekers.

Uw medewerking wordt op prijs gesteld.

Vragenlijst voor het verkennen van de voorkeuren van de klant naar het kas toerisme

Achtergrondinformatie van de bezoekers

1. Woonplaats:
   □ Bergerden; □ Arnhem; □ Nijmegen; □ Huissen; □ Lingezegen Park; □ Others ……
2. Geslacht: □ Man □ Vrouw
3. Leeftijd: ……
4. Maandelijks inkomsten:
   □ minder dan 2000 €; □ 2001 - 3000 €; □ 3001 - 4000 €; □ meer dan 4000 €

5. Job: □ Overheid werknemer; □ geen- Overheid werknemer; □ Zelfstandig
6. Opleidingsniveau:
   □ middelbare school diploma □ Bachelor / student □ Master / student
   □ promotie / student □ beroepsonderwijs diploma

7. Hebt u ooit Bergerden Agropark vlakbij Lingezegen Park (tussen Nijmegen en Arnhem) bezocht?
   □ Ja, Volg de vragen in box 1
   □ Nee, Volg de vragen in box 2 op de volgende pagina

Box 1

Zo ja,

8a. Bent u bereid om de kas in te gaan als toerist?
□ Ja
□ Nee, reden .....

9a. Welke activiteiten hebben uw voorkeur om bij te wonen in het gebied (Meerkeuze)?

a) Kook demonstratie / lessen □ Ja □ Nee
b) Kies uw eigen activititen (PYO, u-pick, cut-je-eigen) □ Ja □ Nee
c) Kas excursie / toer □ Ja □ Nee
d) Inkoop van verse producten in kassen □ Ja □ Nee
e) Een bezoek aan demonstratie kassen □ Ja □ Nee
f) Het eten van een maaltijd in de kas (Greenhouse restaurant) □ Ja □ Nee
g) Anders…….....

Vervolg van Box 1

10a. Volgens uw antwoord op de vraag 9, die een is veel interessanter voor u (Slechts een antwoord)? ……..

11a. Welke van de volgende evenementen / festivals wilt u bij wonen?
□ vakantie en in het weekend
□ nationale evenementen (Koninginnedag, bevrijdingsdag, ...)
□ familiefeesten (verjaardagen, bruiloften, diploma-uitreikingen, ...)
□ Open dag Nederlandse kassen festival / Kom in de Kas
□ Anders…….....

12a. Welk seizoen (en) heeft uw voorkeur om als toerist naar de kassen te gaan?
□ Lente □ Zomer □ Herfst □ Winter

13a. Hoeveel wilt u uitgeven per bezoek?
□ 0-4 €; □ 5-9 €; □ 10-14€; □ 15-19 €; □ 20-24 €

Box 2
Zo niet,

8b. Om welke redenen hebt u het gebied nog niet bezocht?
Ik ben niet bekend met de locatie □ Ja □ Nee
Onvoldoende openbaar vervoer □ Ja □ Nee
Het is niet interessant □ Ja □ Nee
Lange afstand □ Ja □ Nee
Duur □ Ja □ Nee
□ Anders…….....

9b. Bent u bereid om in het agrotoerisme activiteiten bij te wonen in de toekomst?
□ Ja, Volg de vragen in box 3
□ Nee, reden .....

Box 3
Bent u bereid om in het agrotoerisme activiteiten bij te wonen in de toekomst?
Zo ja,

10c. Welke van de volgende evenementen / festivals wilt u bij wonen?
□ vakantie en in het weekend
□ nationale evenementen (Koninginnedag, bevrijdingsdag, ...)
□ familiefeesten (verjaardagen, bruiloften, diploma-uitreikingen, ...)
□ Open dag Nederlandse kassen festival / Kom in de Kas
□ Anders…….....

11c. Welk seizoen (en) heeft uw voorkeur om als toerist naar de kassen te gaan?
□ Lente □ Zomer □ Herfst □ Winter

12c. Hoeveel wilt u uitgeven per bezoek?
□ 0-4 €; □ 5-9 €; □ 10-14€; □ 15-19 €; □ 20-24 €

Deze vragenlijst wordt verzorgd door: Ehsan Kamalipour
Van Hall Larenstein Master Student
email: ehsan.kamalipour@wur.nl

English Version

Greenhouse owner's questionnaire

1. What is the product of your greenhouse?
   □Pot plants; □Fruits; □ Vegetables; □Flowers; □Others ……

2. How many hectares is your greenhouse area? ---------- Hectare

3. Which month is your greenhouse product ready to harvest/collect (Allowed to choose more than one option)

   □Year round □January □February □March □April □May □June
   □July □August □September □October □November □December

4. Which kind of the following activities is done in your greenhouse area after harvesting/Collecting?
   □ Grading/Sorting
   □ Packaging
   □ Storing and cooling
   □Others -------

5. Who are your Customers? (Allowed to choose more than one option)
   □ Domestic (Inside the Netherlands)
   Name some prominent customers
   ……
   □ Foreign (Outside Netherlands)
   Name some prominent customers
   ……

6. Have you ever join any kind of festivals such as "Dutch greenhouse open days"/ Kom in de kas?
   □Yes, reason ….
   □No, reason ….

7. Are you willing to open your greenhouse to the visitors?
   □Yes, reason …….
   □No, reason ..……..

8. Have you considered a greenhouse tourist as a potential customer?
   □Yes □No

9. Which kind of quality system are you complying in your greenhouse?
   □ISO series □Global GAP □Biologic □Organic □ Others…….

10. What kinds of support are you expected from government?
    □ Financial support (Subsidy, loan, incentives, …)
    □ Consultancy support
    □ Others ……

11. Are you willing to cooperate with other greenhouse owners?

Inside greenhouse owners □Yes □No
If yes/no: What reason …….
Outside greenhouse owners □Yes □No
If yes/no: What reason …….

12. Imagine the government decided to implement agro tourism project (Specially greenhouse tourism/restaurant) in the area. What kind of information would you like to know before the implementation?
……
……

This questionnaire is provided by: Ehsan Kamalipour
Van Hall Larenstein Master Student
email: ehsan.kamalipour@wur.nl

Dutch Version

Kas eigenaar van de vragenlijst

1. Wat is het product van uw kas?
   □ Potplanten; □ Fruit, □ groenten, □ Bloemen;
   □ Anders.....

2. Hoeveel hectare is uw kas gebied? ---------- Hectare

3. In welke maand is uw kas klaar om te oogsten / verzamelen? (Toegestaan om meer dan een optie te kiezen)
   □ jaar rond □ januari □ februari □ maart □ april □ mei □ juni
   □ juli □ augustus □ september □ oktober □ november □ december

4. Welke van de volgende activiteiten gebeurt in uw kas gebied na de oogst / verzamelen?volgende activiteiten gebeurt in uw kas gebied na de oogst / verzamelen?
   □ Beoordeling / sorteren
   □Verpakken
   □ Bewaren en koelen
   □ Anders…….

5. Wie zijn uw klanten? (Toegestaan om meer dan een optie te kiezen.)
   □ binnenlands (binnen Nederland)
   Noem een aantal vooraanstaande klanten
   ……..
   □ buitenlandse (buiten Nederland)
   Noem een aantal vooraanstaande klanten
   ……..

6. Hebt u ooit meegedaan aan festivals zoals "Nederlandse kas open dagen" / Kom in de kas?
   □ Ja, reden.....
   □ Nee, reden.....

7. Bent u bereid om uw kas te openen voor de bezoekers?
   □ Ja, reden.....
   □ Nee, reden.....

8. Hebt u een kas toerist als een een potentiële klant beschouwd? Hebt u overwogen een kas toerist als een potentiële klant te behandelen?
   □ Ja □ Nee

9. Aan welk kwaliteitssysteem voldoet u in de kas?
   □ ISO reeks □ Global GAP □ Biologische □ Organisch □ Anderen .....

10. Wat voor soort ondersteuning verwacht u van de overheid?
□ Financiële steun (subsidie, lening, incentives, ...)
□ Advies ondersteuning
□ Anders.....

11. Bent u bereid om samen te werken met andere kas eigenaren ?
binnen gebied kas eigenaren □Ja □Nee
Om welke reden
…….....
buiten gebied kas eigenaren □Ja □Nee
Om welke reden
…….....

12. Stel je voor de overheid beslist om een agro-toerisme project (Speciaal kas toerisme / restaurant) in het gebied uit te voeren. Welke informatie wilt u hebben vóór de tenuitvoerlegging?
.....
.....
.....
.....
.....

Deze vragenlijst wordt verzorgd door: Ehsan Kamalipour
Van Hall Larenstein Master Student
email: ehsan.kamalipour@wur.nl

Annex 9: Interviews name list

Title	Name of Interviewee	Position/Role
Mr.	Thijs Zee	Bergerden Agropark project Manager-Municipality of Lingewaard e-mail address: t.zee@lingewaard.nl
Mr.	Stef Huismen	Greenhouse owner –Pot plant grower- Hydrohuiman horticulture company e-mail address: s.huisman@hydrohuisman.nl
Mr.	Jan van der Harg	Greenhouse owner – Paprika grower- e-mail address: harg-jan@xs4all.nl
Mr.	Theo Eeuwes	Innovation advisor and tour manager- IDeeuwes Innovative Consultancy e-mail address: info@ideeuwes.nl
Mr.	Berno Schouten	Manager of Cooperative Energy system Energy Systems Advisor at GreenVice Consultancy e-mail address: bschouten@greenvice.nl
Mr.	Ferry Hollinger	Former CEO of the Flower Auction of East Bemmel - Secretary of the steering group of a future theme park (Crystal Palace) e-mail address: ferry@hollinger.nl

Annex 10 Interviews Check lists:

Interview with Mr. Thijs Zee

Date: 29,05,2012 – 26,07,2012
Location: Municipality of Lingewaard, Bemmel, Netherlands

The background of Bergerden Agripark project

- ✓ The original purpose of this project
- ✓ Financial situation (Founder and Donors)
- ✓ The project policy (expanding and sustaining)
- ✓ Project supporters (Private sectors or Government and their function)
- ✓ Project area and portion of Horticulture business
- ✓ Competitors (similar projects in vicinity of Bergerden)
- ✓ Project features (Energy System, Water System …)
- ✓ Pros and cons of the project for the local people
- ✓ Sustainability of project

The current situation of Project

- ✓ Horticulture businesses (Numbers /what kind of products)
- ✓ Progress (How far meet the goals and why)
- ✓ Information flow among chain actors (type of information: price, quality and quantity etc)
- ✓ Horticulture Events and exhibitions in the location or around (Numbers and when)
- ✓ Bergerden citizens preferences in project (Landscape …)
- ✓ Horticulture businesses customers (Domestic or international Market)
- ✓ Logistic (Means, Cost, …)
- ✓ Perspective towards Agrotourism Project (greenhouse activities)
- ✓ Decision makers
- ✓ Government policy for the area (land regulation)

The future situation of Project

- ✓ Strategy for future
- ✓ Beneficiaries and Loser Groups

Interview with Mr. Stef Huisman

Dates: 05,06,2012 – 21,06,2012 – 01-08-2012
Location: Hydrohuisman Nursery, Bergerden Agropark, Netherlands

- ✓ The background of Bergerden Agripark project
- ✓ Area, Products of the greenhouse
- ✓ Land regulation and possibilities for extension
- ✓ Relationship with other greenhouse owners
- ✓ Loan (regulation on how to borrow and payback it)
- ✓ Amount of investment
- ✓ Suppliers and customers
- ✓ Constraints and problems
- ✓ Perspective towards Agrotourism tourism and greenhouse activities

Interview with Mr. Jan van Harg

Date: 05,06,2012
Location: Paprika nursery of the firm Harg-van der Winden, Bergerden Agropark, Netherlands

- ✓ The background of the greenhouse
- ✓ Why they came here
- ✓ Area, Products of the greenhouse
- ✓ Land regulation and possibilities for extension
- ✓ Relationship with other greenhouse owners
- ✓ Loan (regulation on how to borrow and payback it)
- ✓ Amount of investment
- ✓ Suppliers and customers
- ✓ Constraints and problems
- ✓ Perspective towards Agrotourism tourism and greenhouse activities

Interview with Mr. Theo Eeuwes

Date: 07,08,2012
Location: Hydrohuisman Nursery, Bergerden Agropark, Netherlands

What is the story of greenhouse tour in Bergerden Agropark

- ✓ Potential Tourist Attractions in Bergerden Agropark
- ✓ What kind of tour
- ✓ Visitors (number, social classes, …)
- ✓ Frequency, duration,…
- ✓ Pros and cons of greenhouse tourism in area
- ✓ Supporters
- ✓ Greenhouse owners opinion towards greenhouse activities
- ✓ Perspective towards Agrotourism tourism and greenhouse activities

Interview with Mr. Berno Schouten

Date: 16,08,2012
Location: Cooperative Energy System Office, Bergerden Agropark, Netherlands

What is the story of energy system in Bergerden Agropark

- ✓ Function of cooperative
- ✓ Members (membership fee, …)
- ✓ Why is it important?
- ✓ Perspective towards Agrotourism tourism and greenhouse activities
- ✓ Benefit for the members and area?
- ✓ Benefit for the new greenhouse entrepreneurs?

Interview with Mr. Ferry Hollinger

Date: 29,08,2012
Location: Herveld, Netherlands

What is the story of Crystal Palace

- ✓ Location
- ✓ Functions
- ✓ Pros and cons for the area
- ✓ Government role and policy
- ✓ Perspective towards Agrotourism tourism and greenhouse activities

Annex 11 Grounded theory (Open, Axial and Selective Coding)

Context of the interviews

1- Interview with Mr. Thijs Zee

The area was supported by the national government for implementing the project specially the energy system infrastructure. The money lend to the local government as the owner of the project and the local government has commitment on paying back the loan base on the project schedule.

The sum of money was invested in preparing closed water system and collective energy system which have capacity to supply the entire greenhouses in Bergerden Agropark. The close water system is a kind of sustainable system that provides water for greenhouses from precipitation.

The government does not support the greenhouse entrepreneurs neither for buying land in Bergerden agropark nor building and expanding their business. There is no incentive and subsidy from government. Currently, greenhouse entrepreneurs can buy one square meter with 36 euro in Bergerden Agropark. The government makes permit for building the glasshouses and energy system installation and also define standards for the greenhouses. It is worth mentioning, the land sizes are different from 3 – 15 hectares.

The government has proof that clarifies some of the greenhouse owners wanted to expand their business especially before the global crisis (2008) in Bergerden area. At this moment, there are three main problems in investing in the area as follows

The greenhouse entrepreneurs should deposit much more money for getting loan from Bank in compare to the prior global crisis.

The governments borrowed money from the bank of municipality for investment and they should pay back the interest to the bank. The government did not reach to the plan that they have for selling the greenhouse lots

The municipality of Lingewaard and Nijmegen are the owners of the land.

Greenhouse tourism could be an option to motivate the greenhouse entrepreneurs to invest in Bergerden Agropark. May be indirectly the cooperation of Bergerden Agropark with the nearby theme park Crystal Park will lead to the idea of investment motivator.

2- **Interview with Mr. Stef Huismen**

Background of Company

The owner of the hydrohuiman company has 25 years experience in hydro plant business. The company is a kind of family business and they started in 2006. Two brothers manage the company. The nursery has a small showroom which is managed with the daughter of Mr. stef Huisman.

The nursery started 6 years ago by 3 hectares and they invested 6 million euro

Kick off cost

- 1 million land buying land
- 3 million Greenhouse constructions
- 2 million Heating system, cooling system and concreting

Now, I should pay back to the bank 2.2 Million euro the rest was paid until now. The company has another nursery (big show room) in the Aalsmeer near Amsterdam.

Company Products and Customers:

They produce pot plants mostly for shopping hall, swimming pool, landscape companies and offices. 60 % of the whole products go for export to Europe (Germany, France, Italy, Switzerland) and Asia mostly in Middle east (UAE, Kuwait, Saudi Arabia). The rest (40 percent) distribute inside Netherlands.

A small show room in the nursery provides the services for customers to buy their favourite products. The showroom is open on Fridays and Saturdays.

They used to transport cargo by plane and in good days, two or three flight per week used to transport his cargo. Currently they transport them by ship. The reason of transporting by ship is too cheap in compare with other transportation ways. Currently, he pays 2 euro per kilo for transporting cargo from Costa Rica to the Netherlands (Rotterdam) and it just takes 13 days. In average he had 2 containers in each week, but they have 2 or 3 crates in a week.

Problems:

At this moment, this capacity of nursery is more than market demand.

New regulation for getting loan

Regulation for applying loan:

The owner stated, the regulation for getting loan was too much easier before the global crisis in 2008. He gave an example from his business when he start it. He deposited 1.6 million euro in the bank and later on he received 4.4 euro from bank which overall start his business with 6 million euro. Now, he should pay back to the bank 2.2 Million euro of the whole loan and the rest was paid until now.

Nowadays, the minimum requirement for applying a loan from bank is to have around 40 percent of the whole amount of the loan in your bank account as deposit to be eligible for getting the loan from Bank. The bank preferably provides loan for buying bankrupted businesses instead of paying cash.

Example in Bergerden agropark

6.5 hectare tomato nursery which was built by 8 million euro in two years ago and they went to bankruptcy and in the last year they sold it with 3 million euro.

Plan for future:

Nursery from local government they have 15 hectares, they have indoor (glasshouse) and outdoor the company try to train handicap people and make profit but they have big loss every year. 650 people working in this company (inside and outside the greenhouse) we have a plan to make it as a show room.

They would like to make an open door for this park. There is a big restaurant in this nursery and they are going to make a very big fresh market in this nursery. Try to get subsidy

They want to use handicap people as labour (win-win situation). Sustainability is an important development approach in our present and future business.

Bergerden Agropark produce electricity in its collective energy system and they have plan to sell the product to the local people (local for local).

We have plan to sale everything in Bergerden Agropark as fresh market. Besides they want to build a wind mill as a land mark in the area and also implement close greenhouse systems in the greenhouses in future.

3 Interview with Mr. Jan van der Harg

It's a family business and they grow red paprika in 8 hectare area. They sell their products to the greenery association.

They just produce red paprika and there is also another paprika grower that produce red paprika in bergerden Agropark.

Problems:

Low price in the market specially in the last year

The best way to motivate greenhouse entrepreneurs is to introduce a new feature for the area. Currently, they can find similar locations in other places inside the Netherlands.

He has welcomed to greenhouse visitors but he mentioned that he is not interested to open the greenhouse for the visitors constantly because they should hire someone in order to guide the visitors. Moreover they cannot continue their routine greenhouse work when visitors are in the greenhouse.

4. Interview with Mr. Theo

Greenhouse tourism in Bergerden Agropark

Bennie kouper is a good example in implementing greenhouse tourism in his greenhouses.

He mentioned there are two main reasons for people to come here:

1. The area has innovative energy systems:
   - (Energy Collective System → sustainable approach in Bergerden Agropark
   - Energy producing greenhouse in Hydrohuisman Company.
2. The whole nursery is eye-catching, clean and neat to visit and well organized.

The visitors are coming from all parts of the world. They are from different social classes from housewives to specialists. Also different kind of Symposia and workshops with around 300 participants were hold here The visitors can apply for excursion and tour via internet on his website and he manages and organises the tour.

The tour cost 200 euro for a group of maximum 20 members. The tour includes powerpoint presentation and it takes usually one and half hours. The presentations are usually prepared in Dutch and English for visitors. The tour organisers have received a lot of positive feedback from visitors on the quality of the tour.

Most of the greenhouse owners are willing to join the tourism programs and they cooperate with each other. There is a nursery behind the Hydrohuiman which has a canteen and it can provide food for the visitors.

Problem:

Due to the risk of infection by diseases especially in vegetable greenhouse, there are a few greenhouses that cannot involve this activity.

Suggestion for having a successful greenhouse tour:

- To be flexible and meet the requirements of visitors
- Make it attractive for consumers
- Provide a peaceful place inside greenhouse for visitors like their homes (Place for chatting. Coffee, ...).
- Instead of having the high entrance fee it is better to provide products for selling in the greenhouses.

- It's not good to invest a lot of money for the tourism project because it sticks the greenhouse owners to return on investment.

Trust relationship

The greenhouse owners are unanimously agreed on sharing the benefit from tourism among all the greenhouse owners even those who are not involved in the project.

The greenhouse owners in Bergerden agropark do not have attention for constant flow of the visitors and it is not the purpose of greenhouse owners to have constant flow of the visitors. The purpose of implementing such kind of tourism in the area is to make a positive Image from area by intruding the collective energy System and Energy producing system along with the modern greenhouses.

In future, they have a plan to join with the project of theme park which is called Crystal Palace in the nearby area.

Tourist attractions in Bergerden Agropark:

We have different tourist spots in the area. Sustainable energy systems as well as closed water system are prominent tourist attraction in the area.

Energy producing system:

In summer, the greenhouse does not need to ventilate and it has many advantages such as controlling the Co_2 level as well as humidity. It is not necessary to have screen and reduce the level of sunlight in the greenhouse just for controlling the humidity. It is an example of closed greenhouses. You can control the climate condition inside the greenhouse!

The greenhouses are cooperative to join the tour project and will definitely join the touristic programmes if they generate income for them.

Around 60 percent of the greenhouse produce pot plants in Bergerden Agropark .and the others produce aubergine, fruit trees, anthurium, orchid, strawberry, paprika.

5. Interview with Mr. Berno Schouten

Project features towards implementing agrotourism project

- Collective Energy System
- Nearby the green buffer

Energy Cooperative system:

There are 15 members in this cooperative exclude the manager. The members pay 150 as membership fees yearly. Apart from that, the members should pay the Natural gas, Electricity and heat as well as the maintenance and investment cost.

The cooperative manage has responsibility to manage the cost of provided energy for greenhouses by selling the extra Electricity production.

Bergerden Agropark is the first commercial collective energy system in the world.

Capacity of System

The system is designed for 40 greenhouses (the supposed number of greenhouse for the whole area)

Energy collective system can produce 20 Mega Watt per hour

The manager of collective energy system mentioned that the members are not prefer to get a new member and they prefer to share the benefit of the whole system among the current members.

Around 90 percent of the whole electricity goes to the Network. The system produce 90,000 Mega Watt and the cooperative achieve 10,000,000 euro income per year.

January, February, March and December months have dark days and much more electricity goes for greenhouses. The green house use orange light for the greenhouse.

The Bergerden has an exclusive electricity distribution network which is supplied by the energy system.

The profit and lost at the end of the year is zero. The more we earn on selling the electricity, the more profit they receive and this profit reduce the cost of heating that we produce for the greenhouses. The system ables to reduce the cost of greenhouse energy up to 10 percent.

The cooperative is not willing to accept new membership and they look at the new greenhouse owners in the area as a new customer for the cooperative.

They prefer to share the benefit of selling electricity among the current members to reduce much more the energy cost for them instead of increasing the shareholders.

Close Water System

The rain water is collected by pipes and lead to the water reservoir via canals. The water is pumped to the greenhouses and it is controlled before pumping. In the case the water quality does not meet the standards; the water is diluted with underground water to reach that level.

Energy cost = 4 euro per joule

Business:

Make electricity and heat for greenhouse owners

7 generators in the system costing 1.7 million euro for each of them.

Two big reservoirs

They make the electricity in the day and store the heat in the morning in the reservoirs due to the high electricity price in the day which above the cost price.

They use natural gas as system supplier but also there is possibility to use biofuels such as palm oil. But they prefer not to use the biofuel due to the high cost, moreover, the oilpalm need to be treated before using in

The investment cost was too high for 15 greenhouses

What is the benefit for the new greenhouse owners to invest here?

They do not need to invest in installation system for their greenhouse.

The new greenhouse owners are not a member of the energy system cooperative and they can just buy the product (Electricity and heat) from the cooperative and it is definitely more expensive than the price which members should pay ,

On the other hand, it is cheaper in compere with individual energy system for a greenhouse and the new greenhouse owners in the area do not need to invest in installation system for their greenhouses and it definitely reduce the building cost of the new greenhouses in the area.

6. Interview with Mr. Ferry Holinger

There is a nursery in Bergerden Agropark which is placed for training disabled people by the local governmnet. The nursery is governing by 15 municipalities and they select this place for a part of social activities in their territory.

The nursery has two approaches:

1) New way of business
2) Prepare labour for the normal job and company

They cannot earn enough money and they have a plan to sell the nursery.

Steering group of Crystal Palace as a feature theme park in the area is in negotiation with the local government to buy the nursery and implement Crystal Palace project there. The project has aim to make a connection between two cities, park Lingezegen and Bergerden agropark

WUR had a business plan for it and now we are going to more detail on real figures and applicable suggestions.

Feature of theme park, Sustainability approach

He is really inspired from the Eden globe greenhouse in London in terms of marketing, excursion and benefit by showing the sustainability to the visitors.

The steering group made a plant tostart the project by the end of this year.what we are doing now that we know that the retail system is going to be change. Sustainability etc

There is an agriculture retailing system that has already come up that they really want to copy the system for the area.

There is a 15 hectare nursery in the Bergerden Agropark is governing by 15 municipalities provides a central place for disabled people to train them for working in real society. Social activities for the municipalities along with making profit are the aim of the nursery. But they are not successful in business aspect.

He mentioned that there is a regulation in Netherlands when somebody hires those people for their business they can pay fewer wages than normal to the labours.

The problem in the area

Economic problem and specially in the Netherlands

Currently around 15 area like Bergerden Agro park do not have customers for buying the land because:

1. Economic crisis a lot of them are going bankrupts
2. Price for the second hand glasshouse are going down

There are some examples even in the Bergerden that some of the greenhouse sold their greenhouse in low price after bankruptcy!

How about the successful projects in the Netherlands even in the economic crises such as Alsmeer area near Amsterdam

1. Location
2. They born there ...

Crystal palace can be a new revenue generator tor for area. The idea inspired from theme park eden in UK, ems flower company

They have a plan to give an extra image to area and build a landmark

Government has a plan to enlarge the possibilities for investors; hence, it provides new opportunity for investors to come to this area.

He has very optimistic opinion for the role of tourism in the area and also in BergerdenAgropark. There is cycle route here and this is a touristic area. There are a lot of tourist landmarks in two Arnhem and Nijmegen.

The role of government is to issue the license for the greenhouses. Local government has problem because they put in it and they lose money they looking for the way to sale the land.

Income of greenhouse is different from one greenhouse to another and it depends to the products and technology and facilities in the greenhouse and it the range of 50 – 300 euro per square meter.

According to his experience, most of the potplant and flower greenhouses has high turnover in compare to other greenhouses.

Cost of greenhouse depends on time. Nowadays, building a greenhouse is cheap (50-60 euro per square meter)

Due to the high cost of energy, greenhouses are trying to find a way to decrease the cost of energy. Closed greenhouses are one of this idea.

He thinks that they do not lose money after investment. Two horticulture museum are locating in the area one in Arnhem and the other one in Nijmegen lent.

Stef Huisman as a greenhouse owner in Bergerden Agropark and also Mr.Johnson as owner of a catering in Huissen are eagerly following this project. The mentioned people are two successful entrepreneurs in area and they are members of steering group of Crystal Palace.

The Beregerden Agropark sells electricity to the local people to increase the gross margin for the area and also social aspect of the project (Local for local).

The energy system in the area is really efficient around 90-95 percent. They have plan to sell the electricity as one of the products of the system to local people. They have already made a contract with one local company in Arnhem to implement the project.

According to their estimation this area is a touristic location and it has 1000000 visitor per year.

The crystal Palace location is going to be devided among the following functions:

- Educational excursions and tours (to demonstrate sustainability in energy system)
- Theme park
- Commercial – rent to the business
- Garden
- Fresh market for selling biological fresh products
- Restaurants

Axial coding

Code A Greenhouses in Bergerden Agropark	Code B Government Problems	Code C Sustainable approaches
• Customers • Supporters • Energy Cooperative • Production • Showrooms • Relation • Energy system	• Debt to the bank • Behind the project plan • Responsibility to the bank	• Energy system • Water system • CSR and social activities • Licenses
Code D Government perspective towards greenhouse tourism	Code E Tourism features	Code F Greenhouse owners perspective towards greenhouse tourism
• Role and strategy • (reduce the limitations) • Support (issue license)	• Lingezegen Park • Energy system • Pot plant nurseries • Available facilities • Museums • Cycling route	• Constraints • Benefit • Crystal palace • Tours and fees
Code G Similar projects	Code H Future plans for the agropark	Code I Greenhouse section
• Location • Pros and cons	• Building a land mark Wind mill • Crystal Palace	• Labour cost • Installation cost • Income • Competitors Inside and out side • Logistics
Code J Energy System		
• Energy system procedure • Closed water system procedure		

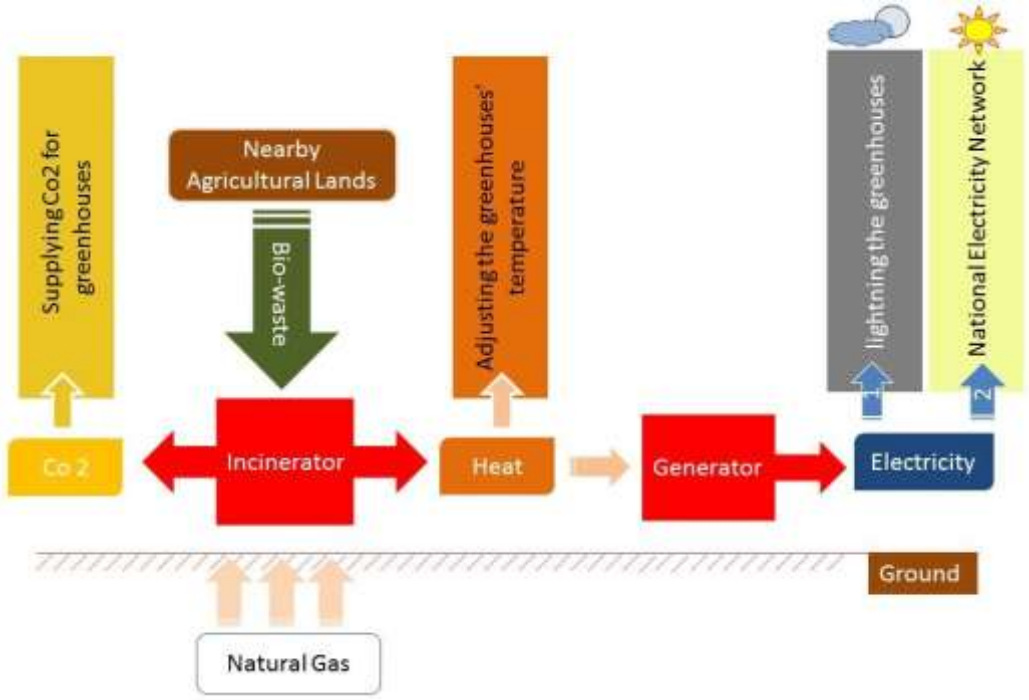
Selective Coding
CodeA – F selected according to the research objective

Annex 12 Prominent features of Bergerden Agropark

The energy system is set up with 7 generators and two big heat reservoirs that supplied with Natural gases. The system produces Electricity, Co_2 and heat for greenhouses. The surplus electricity goes to the network and the system makes benefit from selling the electricity. to reduce the cost of sully natural gases. The manager of collective energy system also declared that the system has the ability to be supplied by biofuels such as palm oil but they have not used them due to the high cost of raw materials.

The manager of collective energy system mentioned that they produce electricity during the day in rush hours and mostly sell it to the network that has high price. The generated heat from this process store in heat reservoirs and deliver to the greenhouses in case that they need it figure (1) .Moreover, the Co_2 goes to the greenhouses whenever they need it otherwise it goes out of system.

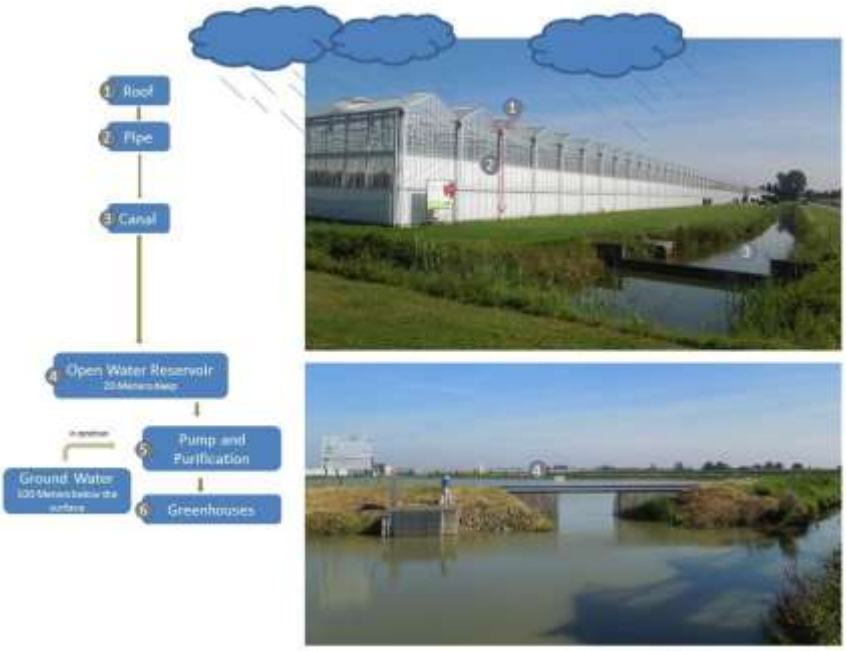
Figure 4: Energy Supply System



Illustrated by author

He also gave a detailed description on how water system works in Bergerden area. The system designed to use rain water instead of underground water. The rain water on roof collect by pipes and is directed to the water reservoir via canals around the greenhouses (figure 2).

Figure (2): Closed water system in Bergerden Agropark



Illustrated by author

The water pumps from reservoir to the greenhouses when they need it. Before pumping, the quality of water is checked and if it does not meet the standards, the water dilute with underground water and goes for pumping. He also confirmed that the system has not used underground water till now.