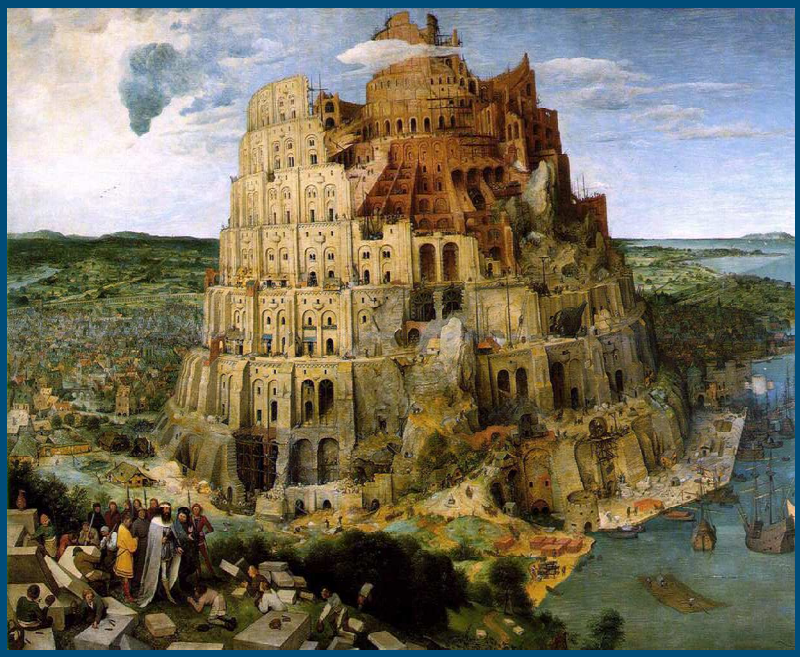
Institutional challenges in the development and realization of Agroparks



Msc Thesis Lilianne Laan
August 2009

WAGENINGEN UNIVERSITEIT
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Agricultural economics and rural policy group

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Cover illustration: *Toren van Babel* by Pieter Brueghel

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Preface

As I was thinking about a suitable subject for my thesis, my attention was drawn by an agricultural novelty that seemed of biblical proportions to me: the Agropark. Talking on the phone with my supervisor, the subject for this thesis came to life. The focus on institutional challenges makes the comparison to the tower of Babel a tempting one; man makes ambitious attempt to reach for the sky, but fails due to cultural gaps and language barriers. Referring to the overestimation of human capabilities may seem a bit harsh, but luckily, the Agropark story is likely to show a more happy ending.

I started this research out of curiosity: if Agroparks are such an interesting and promising future perspective, and seem perfectly fit for the Dutch agricultural sector, why does it appear so difficult to realize them? Are 'the children of men' really reaching too high? After writing this thesis, I can say I have learned more about this. On the technical and economic aspects, the realization of an Agropark would be perfectly feasible. It appears to be a matter of intangible human characteristics and values, and of the willingness to overcome differences between the parties involved.

I was able to perform my research in close cooperation with Lan Ge and Michiel van Galen from the LEI. I would like to thank them here for making me feel welcome at the LEI, for their continuous support and their valuable comments. I feel very lucky to have been in your company and I enjoyed it very much. The thesis is written in the perspective of a more broad knowledge basis research on bio-based economy that my supervisors are jointly working on, and I hope the results can make a contribution to the larger whole of the knowledge base project.

I would like to thank my supervisor Jack Peerlings for his honest and kind comments which I greatly value. I have great respect for how you can review so fast, precise and so perfectly, even in busy times. Thank you for showing me the value of my research topic and for the career advice alongside. Liesbeth Dries, thank you for being so kind to evaluate my thesis on such short notice. Thanks to every one who took the time to talk to me about the subject, especially the persons I interviewed.

Finally, an enormous thank you to Mersiha Tepic and Sander Smit who were so kind to share their data with me and maybe even saved my thesis by doing so. I cannot possibly repay you but let me wish you good luck with your PhD research and your future activities.

As part of the data in this thesis is confidential, some of the sources are referred to as anonymous. The sources are known to my supervisor.

Summary

The production of high-quality agricultural products in an ethically, economic and environmentally sound manner, is the great challenge that Dutch livestock producers stand for. One of the concepts that have been developed to meet these challenges, is the so called "Agropark". An Agropark can have several appearances, but can be described as the spatial clustering of agriculture with other activities, with the goal to close resource cycles and minimize transport, an innovative concept that proves to be difficult to realize. Little is known about the institutional side of Agroparks, as it is a new organizational form; therefore it is interesting to investigate the relative importance of different institutional factors.

The objective of this research is to identify the most influential institutional factors determining success or failure of Agroparks. Special focus is given to leadership and coordination mechanisms. The research is performed by a combination of literature study, semi-structured interviews and theory-based analysis, and is constructed around three case studies.

The first case study (Agropark 1) is an initiative from two researchers and a strategic planner, who took up the leadership of the project together. The project has been cancelled during the consolidation phase, and is considered as 'failed' in this research. Levels of trust and commitment were low and despite efforts to change this, could not be improved. There was not one single leader appointed and leadership was not shown strongly. There were no entrepreneurs involved in the early stages of the process, and no contracts were used. For the operational phase, a hybrid form with a strong dependency on contracts was planned for.

Agropark 2 is an initiative from three entrepreneurs and an external project leader. It is the 'successful' case in this research as it has gained approval for realization. The process is characterized by high levels of trust and commitment. Leadership was well-defined and proved to have a positive influence on communication and coordination. Contracts were used in the second phase to make commitment explicit. For the operational phase, a hybrid form with both hierarchical and contractual elements is chosen.

The initiative for Agropark 3 originates from the government side, with little involvement of entrepreneurs and changing leadership roles in an environment strongly influenced by cultural differences. The second phase is reached but the project is put on hold; Agropark 3 can be placed in between the first and the second case on the level of success. Efforts were made to maintain levels of trust and commitment, but it is acknowledged that this proved to be vulnerable and difficulties were hard to overcome, even with a capable project leader. As a coordination mechanism in the operational phase, a hierarchy-steered form is planned for.

Although in one of the cases a hierarchical organization form is selected, we can state that due to the high level of uncertainty that is inherent to Agroparks, a governance structure that relies on social capital is the most plausible choice. We can also conclude that "success" has different meanings to two groups of stakeholders: entrepreneurs one the one hand and researchers on the other. The perception of "failure" is more or less the same to all. From the analysis of the results, it is found that in the development and realization of an Agropark trust and commitment are the most important factors. Leadership also proved to be important and has an influence on a number of other factors, but is no guarantee for success if other important factors are lacking. Furthermore it appeared that the involvement of entrepreneurs at the initial phase favours the conditions for success.

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1. Introduction

In this first chapter, the outline of the research will be sketched. The chapter starts with some words on the background of the research. Then, the research objective and questions are formulated, followed by a definition of the Agropark concept and a discussion of the methodology. The chapter ends with an overview of the case studies that form the focus of the research.

1.1 Background

Changing times ask for new forms of agriculture. Providing the same number of people with food, while relieving the pressure on the environment and the use of fossil fuels asks for innovation. The production of high-quality agricultural products in an ethically, economically and environmentally sound manner, is the great challenge that Dutch livestock producers stand for. One of the concepts that have been developed to meet these challenges, is the so called "Agropark". It is a new way of clustering agricultural production, developed in the late '90 by the Innovation Network and Wageningen UR. The Innovation Network is an independent organization that performs research and develops new concepts in environment and agriculture, and is supported by the Ministry of Agriculture (Innovatienetwerk, 2009).

An Agropark can have several appearances, but has the following characteristic: spatial clustering of agriculture with other activities, with the goal to close resource cycles and minimize transport (De Wilt & Dobbelaar, 2005). An example is an intensive pork production facility with on-site slaughter facilities, combined with greenhouse horticulture and bio-refinery. Although Agroparks can take on various forms, the common goal is to produce and process in a way that causes the least harm to people, animals and the environment. In spite of the goals, the concept has met great controversy at its first introduction to the public (De Wilt & Dobbelaar, 2005). In this thesis the focus will be on Agroparks developed in the Netherlands with livestock production as the core activity.

As green resources are used and reused in production processes, Agroparks are typical examples of bio-based economy projects. LEI and Wageningen UR work together on a project in which bio-based supply networks are modelled to optimize production decisions in a bio-based economy (Peerlings *et al.*, 2008). The robustness of several types of bio-based economy projects are considered in case studies. Agroparks are included in these cases. The results from the research in this thesis will contribute to the bio-based economy project, and tends to provide information about institutional challenges that can be incorporated in the models. Therefore, the thesis research will be executed in close cooperation with the participants of the bio-based economy project.

What distinguishes bio-based economy projects like Agroparks from other undertakings, is the dependence on by-products and waste streams from other (non-agricultural) industries, that may fluctuate in price, availability and quality. The cooperation between these different types of firms in itself can form a challenge, as different stakeholders have different backgrounds, expectations and perceptions of 'success' and 'failure'. Also the projects sometimes (for a certain period of time) are dependent on government support to be able to compete with e.g. 'mainstream' energy suppliers or to take the leap across the starting phase. This reliability implies insecurity, for it is unknown whether or not this support will maintain in future. Little is known about the institutional side of Agroparks, as it is a new

organizational form; therefore it is interesting to investigate the relative importance of different institutional factors.

As mentioned above, innovative concepts like the Agropark have been developed to meet the changing demands on agriculture. Some of these Agroparks are ready for realization, others are yet to be developed. Others again, were planned to be brought into existence, but have been called off in a later stage. What the factors are that determine whether or not such a project becomes a success, remains unknown. But when do we consider an Agropark a success? How important is trust between stakeholders? Are the leadership qualities (or the lack of these) of the initiator an important factor? How are profits and risk divided between parties, and should this be made explicit in contracts? These are examples of the questions that should be answered in order to gain insight in the potential of a project. Apart from the technical, spatial and financial factors that determine success, the above described issues – contracts, trust, information, expectations – can play an equally important, if not greater, role in setting up a new project (Slangen, 2008).

1.2 Research objective and research questions

The objective of this research is to identify the most influential institutional factors determining success or failure of Agroparks, focussing on leadership, expectations, interests and trust. Special focus will be given to leadership. It is expected that due to the complex environment in which an Agropark is to be realized, with many stakeholders, unforeseen difficulties and hence incomplete contracts, leadership shown by a project leader will be an important factor in the development process. This leads to the following hypothesis:

> "Leadership is a key factor in determining success or failure of an Agropark"

The Agropark being a new form of cooperation in agriculture, special attention in this research is paid to the way coordination has been institutionalized during the process. This is expressed in the second hypothesis:

> "Due to the characteristics of an Agropark the most plausible choice for the coordination mechanism is a hybrid form"

The concepts of coordination mechanism and hybrid form will be explained in chapter two. Further argumentation behind the two hypotheses can also be found there.

The research objective and hypotheses will be supported by the following sub questions:

1. Which stakeholders are involved in realizing and running an Agropark?
2. What are their interests in, influence on and expectations of the project?
3. Which coordination mechanisms are selected during the development of the Agropark?
4. Which institutional factors influence the choice for a coordination mechanism?
5. How can "success" and "failure" be defined for an Agropark?
6. What are the institutional factors that play a role in the success or failure of Agroparks?
7. Is leadership of the project leader a key factor for an Agropark to succeed?
8. What other factors are influenced by the (lack of) leadership?

When these research questions are answered, a broad overview should result of how an Agropark ideally should be developed, according to the findings of this thesis. In the conclusions (chapter 6) we will return to this objective.

Questions 1 to 3 will be answered for each case in chapters 3, 4 and 5. These chapters give a description of each case study. Questions 4 to 8 will be answered in chapter 6 (analysis). In the conclusion (chapter 6) we will return to the research objective and questions, summarizing the results, to draw conclusions and make recommendations.

1.3 Definition of Agroparks

In literature on the subject, several terms are used for more or less the same concept, sometimes interchangeably; “Agropark”, “Greenport”, “Agri business complex”, “Agro production park”, “Agro cluster” are only a number of the names that can be found. In this research, the term “Agropark” is used, and to describe this we choose the following definition by the Innovation network (de Wilt et al., 2000):

“a purposive clustering of agriculture-related and non agriculture-related activities at an industrial estate or in a specific area, offering potentially interesting prospects for closing cyclic processes, reducing transport and making efficient use of scarce space.”

This definition is further narrowed down to Agroparks where livestock production as well as horticulture is involved in the plans. This will make some of the institutional challenges for Agroparks more explicit than when e.g. only horticulturists are to work together in an Agropark setting. It is important to note that concepts like “Greenport” and “Agropark” are not static, but continually changing in time and often interpreted differently by different groups or persons. Hence, the definition in this thesis is not a universally accepted concept but mere subjective interpretation.

The research objective is to identify factors that determine success or failure for an Agropark. ‘Success’ and ‘failure’ are subjective matters and no general definition will be given. They will be defined separately for each of the case studies in chapters 3, 4 and 5. Furthermore, the theoretical concepts that are used in the research will be explained in chapter 2.

1.4 Methodology

The research will be performed by a combination of literature study, semi-structured interviews and theory-based analysis. The research is focused around three case studies. To gain the required information about the factors that play a role in realizing an Agropark, semi-structured interviews will be performed with the project leaders of the three cases. The questions will be formulated based on the existing knowledge of institutional challenges in new projects. The goal of the interviews is, to acquire information on what the project leaders consider or experience key factors in coordination and realizing their project. Also, a field of force analysis will be made partly based on the information from the interviews.

To create the interview questions, theory on new institutional economics will be used. Furthermore, available literature relating to alike projects can be valuable for this thesis and will be taken into account. To gain insight in the possible factors that may determine the success or failure of Agroparks, chapter 2 will give an elaborate overview of the institutional factors that play a role in and are specific for Agroparks.

To focus the research, not all factors will be treated equally elaborative in the interviews. A subject of special attention within the institutional environment will be the kind of *leadership* that is required to make a concept or project work – is 'charismatic leadership' a crucial factor in determining success? And to what extent is the choice for a coordination mechanism influenced by leadership? It is expected that apart from an influence on the success of the project on its own, leadership will also influence other factors as well.

In the interviews, the emphasis will therefore lie on (apart from mapping the field of force) coordination mechanisms, leadership and trust. Apart from these factors, attention will be paid to some institutional problems that can be seen as specific for bio-based economy projects: possible lack of well-developed institutions (legislation, contracts) and time inconsistency (in relation to funds).

1.5 Case studies

The cases selected for the interviews should ideally contain some projects that were called off and some that succeeded. Also projects that are still in the planning phase are interesting to look at. The following projects will be discussed:

Agropark 1 (status: "failed")
This case study is on one of the first Agropark initiatives in the Netherlands. Well defined project plans were made, but were not approved for realisation.

The goal of the Agropark 1 was to realize an 'energy-chain' which includes pig farming and greenhouse horticulture, as well as the production of feed, manure processing and production of bio-gas. Mushroom production and aquaculture (fish farming) were explored as options as well (Broeze *et al*, 2005). This case study will be further described in chapter 3.

Agropark 2 (status: "succeeded")
A more successful Agropark initiative that has gained approval by the municipality early 2009 and is currently waiting for construction- and environmental permits.

Agropark 2 will combine intensive livestock production with processing the produced waste streams into biomass, waste warmth, energy and compost. It will consist of two pig farms, one poultry farm and a manure processing plant (Albers *et al*, 2006). The description of Agropark 2 can be found in chapter 4.

Agropark 3 (status: "on hold")
The third case study in this research is currently postponed by the initiators; it is not known whether and in what form the development will continue.

In Agropark 3, large-scale livestock and horticulture will be combined with educational and recreational functions in a yet to be developed ecological area near a big city. The exact combination of enterprises that be run in the park is not decided on yet. The goal is to create a closed resource cycle with high-tech water and waste management (Anonymous (1), 2007). Agropark 3 is described in chapter 5.

There are a number of examples in which Agropark projects were called off due to location problems; municipalities are against the realisation of an Agropark in the proposed area and

therefore the search for other locations continues. This can be seen as multiple times of ‘failure’ for one project, but could also be seen as part of the process. This makes it complicated to decide whether or not a project can be classified as ‘failed’. The choice for Agropark 1 as an example of a failed Agropark is based on the fact that there were concrete plans and many parties were already involved at the moment of blowing off the project. To make a comparison between Agroparks at different stages of success, one case is included deliberately that has been called off.

Considering the Agropark definition that is mentioned in section 1.3, the choice for the second case study in this research asks for some explanation, as in the actual realization of the park no horticulture will be included. In the planning phase of Agropark 2, greenhouse entrepreneurs were involved, but they withdrew during the second phase. The fact that the horticulturists withdrew will be discussed in the research. Agropark 2 is as the most successful Agropark initiative to date an interesting case to compare with the other two case studies on many aspects, and therefore it is decided to include the case in this research despite the lacking of horticulture in the operational phase.

In chapter 2, the theoretical framework will be defined with which the abovementioned case studies will be analyzed.

2. Institutional economics of Agroparks

Institutional factors are, apart from the technical and economic factors, expected to have a major influence on the success of system innovations (Slangen, 2008). This can be expected especially in bio-based economy projects like Agroparks, where entrepreneurs of different professional and cultural backgrounds are to work together in a new organizational form.

In order to identify the institutional factors around Agroparks that are most important in determining success or failure, a theoretical framework should be defined. We select New Institutional Economics (NIE). The main question to be answered in this chapter is: "What are the institutional factors that play a role in organising an Agropark?" After an introduction on New Institutional Economics and definition of some key concepts, hybrid forms and the incompleteness of contracts will be discussed. Furthermore, the concepts of leadership and authority are explored. The chapter ends with an overview of the institutional challenges that can be associated with setting up an Agropark.

2.1 New Institutional Economics

The theory on which this research is based, mostly originates from New Institutional Economics (NIE), a branch of economics that was founded by Williamson (1975). It incorporates institutions into economics, which were formerly neglected by Neoclassical theory – markets were assumed to function perfectly and players to behave purely rationally. With the introduction of NIE, these assumptions were relaxed (Slangen, 2005).

Two important concepts in NIE are the institutional environment and institutional arrangements. The institutional environment is the total of formal and informal 'rules of the game' in which society functions, and that thereby influence economic activity. It is a dynamic environment that can change in place and time and operates on an aggregate level (Polman, 2002). Institutional arrangements (or governance structures) are 'the play of the game'; the rules by which economic activity is administered. These rules can be formal or informal. Institutional arrangements are often depicted as a spectrum with markets at the one end (with prices as coordination mechanism) and purely hierarchical organizations at the other (with hierarchy as the coordination mechanism). A whole range of hybrid forms exist between these two extremes, like clubs, cooperatives and contracts. The actual organizational form can take many different appearances; the institutional environment determines for each situation which of these forms works best (Slangen, 2008).

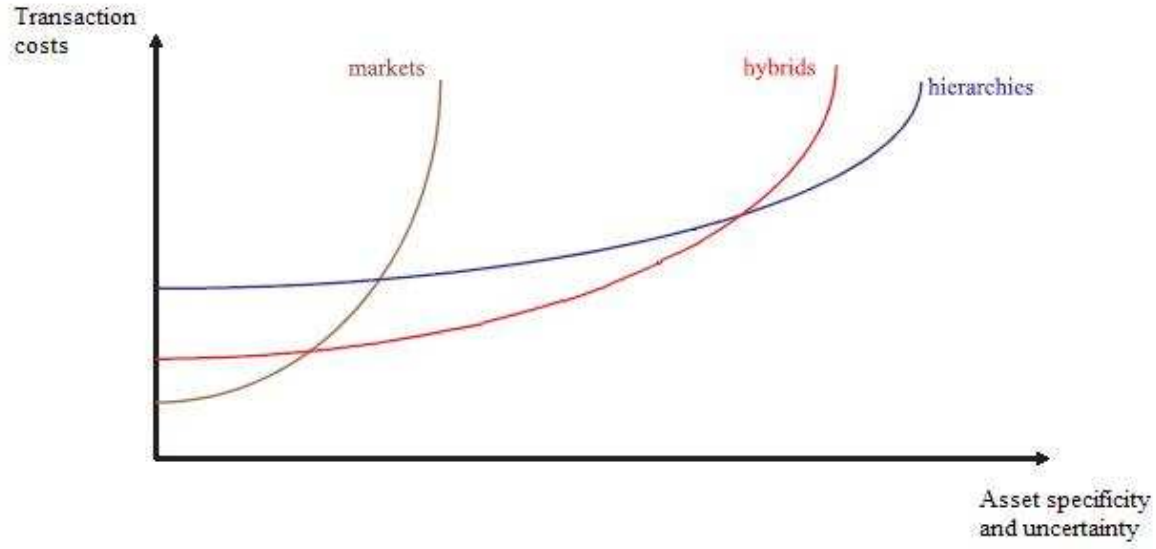
In contrast to markets and organizations, where prices and hierarchy form the rules, contracts are the main coordination mechanism in hybrid forms. Although contracts play a role in markets and hierarchies as well, the function is in these structures more supportive rather than the central coordination mechanism. The next section will further elaborate the concept of hybrid forms.

Property rights and transaction costs are central concepts in NIE. Property rights describe the right of one (or more) contracting partner(s) to decide over the income generated from an asset, to transform and transfer the asset and the right to exclude others from using it. It is strongly related to the concept of residual income; whoever has the property rights, has the right to decide over residual income and is therefore the owner of the asset. In general, two kinds of ownership are distinguished: private ownership and collective ownership. The kind

of ownership that is present according to the property rights is an important factor for determining which governance structure 'fits' best in a certain economic activity.

Transaction costs arise in exchange processes and when setting up a contract; it incorporates the costs of gathering information, pricing, bargaining over aspects of the contract and enforcement costs. Whether transaction costs are high or low determines the choice for an institutional arrangement, and is influenced by factors like asset specificity and uncertainty. This relation is illustrated in figure 2.1.

Figure 2.1 A typology of governance structures



(Based on Ménard 2004, p. 25)

From this figure, it follows that the higher the level of asset specificity (and uncertainty) within a certain organization, the higher the transaction costs and the more dependent organizations are on informal coordination mechanisms (as are strongly present in hierarchies). The transactions costs involved with setting up a contract that accounts for all future contingencies get higher when uncertainty grows. Hence, informal coordination mechanisms become more important. With asset specificity, the sunk costs are meant that are necessary for an investment (or transaction). Sunk costs are investments in assets that cannot easily be made of use in another economic activity, so which value is closely related to a specific transaction. With sunk investments, uncertainty about future contingencies and opportunistic behaviour or hidden action from the contracting partner grows. To deal with this uncertainty transaction costs rise. Asset specificity and uncertainty can be placed on the same axis in figure 2.1. due to their relation to transaction costs. This can be explained as follows: if sunk costs are high, asset specificity is high and the asset cannot easily be made of use in another transaction, which implies that the stakes get higher for the involved partners – and the risk of opportunistic behaviour from the other party. To deal with this uncertainty in contracts, transaction costs grow. So, high asset specificity is linked to higher levels of uncertainty in such a way, that they both lead to high transaction costs.

In the figure, we see three frontiers, corresponding with the respective governance structures. Considering the asset specificity, uncertainty and transaction costs, in each situation the most suitable governance structure can be determined. For hybrid forms, moving from left to right in the graph means making more use of values related to hierarchy, like authority and social

capital, instead of prices and complete contracts. So moving from left to right also means moving from formal to informal, and from (relative) completeness of contracts to higher levels of incompleteness.

This thesis focuses on both the institutional environment and institutional arrangements and seeks to find the causal relationship between both. The goal is to identify the relationship between factors in the institutional environment ('rules of the game', culture, leadership, trust), the institutional arrangements (what kind of coordination mechanism is used) and the effect of these factors on success.

2.2 Hybrid forms and incompleteness of contracts

As mentioned before, the central role of contracts as the main coordination mechanism distinguishes hybrid forms from the other governance structures. For hybrid forms to be efficient, trust and commitment among contracting partners are required. This has to do with the fact that contracts are always incomplete to some extent.

The incompleteness of contracts is a result from the impossibility to catch all complexities of the world in a contract, and to foresee what the future will bring. This has important implications for the way people deal with transactions; the higher the level of uncertainty, the greater the incompleteness of the contract. Therefore residual control rights must be assigned. Whoever has the residual control rights, has the power to decide on events or income that fall outside of the contract (Polman, 2002).

The uncertainty that comes with the incompleteness of contracts affects the contracting partners. Because not all possible events nor factors of influence can be foreseen, people tend to behave in a bounded rational way – decisions are optimized in a rational way for as far as all circumstances can be overseen. Beyond that, trust among partners is the key factor to prevent opportunism. The lack of information that leads to incompleteness of contracts (or asymmetry of information – when the individuals in an agreement do not all share the same information) can lead to opportunistic behaviour and moral hazard. We speak of moral hazard when not all actions of the contracting partners can be observed or verified; it implies the risk of post-contractual opportunism (Slangen, 2005).

Furthermore, hybrid forms can be distinguished from the pure hierarchical coordination mechanism in that the relationship between members in the organization is more or less equal. This reduces enforcement costs, which is a distinct advantage of hybrid forms. The workability of hybrid forms depends on the mutual consent of its members. Here, the basic elements of the coordination mechanism are prices nor hierarchy, but informal values like trust, shared codes of conduct, reputation and commitment. Another important feature is that participants maintain the property rights over their assets, while some (part) of the assets become common property – hence, the residual control rights become unclear. This is a reason to incorporate some formal rules to the coordination scheme. For forms of co-operation that ask for a more complex and flexible coordination mechanism than prices or hierarchy, a hybrid form will proof to be a more suitable option.

2.3 Leadership, authority and hierarchy

One of the main focal points of this research is the role of leadership in the process of setting up an Agropark. In this section the concept of leadership will be defined and discussed. In

literature on the subject, leadership qualities are mostly referred to as authority. Although the concepts of leadership and authority overlap, they are not fully interchangeable and will not be used as synonyms in this thesis. Authority has a strong link with the concept of leadership, in the sense that it can be considered the most important feature of leadership qualities. Still, it is merely one of more aspects that together determine good leadership.

In his article on leadership, Andersen (2006) enumerates several definitions of leadership. It mentions among others the broadly accepted definition by Tannenbaum et al. (1961) which describes leadership as follows:

> "interpersonal influence, exercised in a situation, and directed, through the communication process, toward the attainment of a specified goal or goals".

Andersen adds that some theorists would narrow the definition to influence on others resulting in enthusiastic commitment. As in the development of Agroparks creating committed support from many different stakeholders is a basic requirement, the above mentioned definition of leadership, with an emphasis on enthusiastic commitment, can be considered as suitable and will therefore be used in this research. Authority can be considered the most characteristic feature of good leadership; it is now elaborated further.

As Polman (2002) states, authority is seen as the main instrument in hybrid forms. Here, it is important to distinguish authority from hierarchy. With authority, the agreement on the transfer of capacities to make decisions is continuously renewed and acknowledged by the members, while in hierarchies the power to make decisions is fixed in rights that are not influenced by the participants (Ménard, 1995). Thus, hybrid forms are co-ordinated by active forms of governance emanating from the partners. This makes clear that in a hybrid form like a cooperative, hierarchy does not play an important role, whereas authority does. This has to do with the fact that "the rules of the game" are partly set by the participants themselves. As Agroparks can be considered as new institutional forms which ask for more complex coordination mechanisms than prices or hierarchy, this is the basis on which the hypothesis on leadership and authority in this thesis is founded on.

In hierarchies, the power to coordinate is a privilege embedded in an institutional arrangement, whereas authority follows from informal codes between the members (Polman, 2002). Another essential difference is that hierarchy is backed by a specific institutional arrangement; this may or may not be the case with authority (Ménard, 1996). Also, authority is closely associated with a specific person. In this research one of the goals is to determine whether there is such a person during the development process, and if strong leadership is shown.

2.4 Institutional challenges for Agroparks

Agroparks (and other bio-based economy projects) have some distinct features that create specific institutional challenges. The institutional side of bio-based economy projects like Agroparks is scarcely described in literature, as it concerns a new organizational form in agriculture. In this section an overview is given of the particular institutional challenges with which an Agropark has to cope, and of concepts of NIE that can be particularly relevant for Agroparks.

One distinct feature of bio-based economy projects in general, is the dependence on by-products and waste streams from other (non-agricultural) industries, that may fluctuate in

price, availability and quality. An institutional challenge relating to this property could be, that policy and regulations for using by-products and for integration of enterprises like in an Agropark may not be sufficiently developed. Furthermore, the projects sometimes are (for a certain period of time) dependent on government support to be able to compete with e.g. 'mainstream' energy suppliers or to take the leap across the starting phase. This reliability implies uncertainty, for it is unknown whether or not this support will maintain in future – an institutional uncertainty that is known as time inconsistency.

The cooperation between firms or partners from different professional backgrounds may also be a challenge, as the respective contracting partners have differences in culture, objectives, expectations and perceptions. The same holds for institutions that are involved with the Agropark, like (semi-) governments on different levels, NGO's, banks and interest groups. Earlier mentioned problems that are linked with asymmetric information may pose a threat, e.g. trust issues, moral hazard, opportunistic behavior and bounded rationality.

In contracting, difficulty can be caused by defining property rights and assigning them among partners – for instance over the technical concept, business concept, and marketing concept, or over the different enterprises within the Agropark in the operational phase. However, the asset specificity in an Agropark should be high enough to create mutual dependency among the contracting partners. Contracts will be incomplete and adjustments to the contracts frequent. Because of this incompleteness, disputes are expected to be frequent and are less likely to be solved by formal procedures. The development of personal relationships is expected to be an important feature in Agroparks, which makes both long term contracts and the existence of informal modalities like mutual consent and trust of great importance.

Considering property rights in Agroparks, identifying the residual claimant will be important: who has the rights over residual income, hence, who has the power of control? The concept of the residual claimant can be a helpful tool in determining who is the actual 'leader' in the Agropark in the operational phase. In governance structures with a high degree of incompleteness of contracts, this may not directly be clear – for instance when separate ownership is maintained, or when stockholders are considered the owner of an enterprise. According to the property rights approach, it is the owner of the asset that has residual control rights; but as shown earlier, ownership is partly made common in hybrid forms – so this is not always the case. Therefore it has to be clear to the members in advance how income generated out of these assets will be divided.

Although the above mentioned challenges may have great impact on the individual decision making of stakeholders and consequently on the development of the park as a whole, planners of Agroparks may be unaware of their impact. The influence may change over time. The choice of coordination mechanism is strongly determined by the institutional setting and it is therefore important that stakeholders are aware of this.

Considering governance structures, Agroparks ask for a flexible organizational form. An Agropark is a combination of different enterprises that work together in one organization, in order to gain economic and environmental benefits from this cooperation. This implies high levels of incompleteness in contracts, and asks for a more complex and flexible coordination mechanism than solely prices or hierarchy. The complexity of Agroparks as organizations, and therefore possible characterization as a hybrid form puts a focus on leadership qualities of the project leader. This explains the choice for the two hypotheses that form the focus of this research.

It will be interesting to see how the coordination mechanism is shaped case by case. Looking at figure 2.1, different Agroparks may be placed on different positions. In chapter 6 we will return to the theory explained in this chapter to answer the research questions.

3. Case study Agropark 1

As the first of three case studies, Agropark 1 is analysed. This is one of the first initiatives for the development of an Agropark in the Netherlands, but has been called off before realization; it will therefore function as an example of a 'failed' case in this research. In this chapter, the following research questions will be answered:
- Which stakeholders are involved in realizing and running this Agropark?
- What are their interests in, influence on and expectations of the project?
- Which coordination mechanisms are selected during the development of this Agropark?
Furthermore, the project, organizational setup and process will be described, and a field of force analysis will be given.

3.1 Background

The goal of Agropark 1 was the realization and implementation of the newly developed Agropark concept, where different agricultural enterprises and related value chain activities were to be linked as closely as possible, both spatially and organizationally – with as a result, an innovative, urban agricultural complex (Breure *et al*., 2007). The Agropark was to be a cost-saving and value-creating combination of agricultural and non-agricultural functions that was fully compatible with the people-planet-profit approach. The concept on which the park was based originated from the Innovation Network (Anonymous (3), 2009).

The location designated for Agropark 1 was considered ideal to produce food in an industrial setting, closely related to a major city, which would provide the market and labour force. The location would be logistically perfect both for supply of inputs and distribution of outputs. Some important suppliers of inputs were located nearby. Furthermore, the considerably large distance from other livestock areas would strongly reduce the risk of animal diseases. The location was also very suitable for greenhouse horticulture due to relatively high light intensity and the nearness of auction facilities (Breure *et al*., 2007).

3.2 Description

Agropark 1 was supposed to be enclosing a complete pork production chain from the mixing of feedstuffs to slaughtering facilities, combined with greenhouse horticulture, possibilities for fish farming and mushroom production, and production of energy by manure co-fermentation and -processing. The facts and figures mentioned in this section all originate from Breure *et al*. (2007).

For the pig housing, 100.000 animal places were planned for (which corresponds to the slaughtering of 300.000 pigs per year). With these numbers, slaughtering facilities (only the first step of production), supply of feedstuffs over water and a feed mixing facility would be economically feasible. For the option of fish farming, no definite numbers were given, although for calculation of the economic feasibility a yearly production of 250 tonnes was considered.

On the top layer of the building, greenhouse horticulture would be situated. In the basic scenario there would be 12 ha of tomato production under glass – a surface corresponding with the size of the pork production facilities. Production of mushrooms was also considered an option; the production surface would equal that of the greenhouse production and be

situated on the ground floor (lowest layer) of the building. The cooling needed for the mushroom production could be combined with that of the pork production facility.

The co-fermenting installation was to be another central aspect of the Agropark. Manure and vegetable waste streams would be processed into biogas and a fertile digestate. The biogas could either be used on the Agropark for generating electricity and providing CO_2 and heat for the greenhouses; or turned into green electricity for the mainstream network. From the digestate, the liquid fraction could be marketed to arable farming and grassland, and the solid fraction worked up into phosphate fertiliser. Furthermore, an educational function was considered a distinguishing mark of the Agropark in the design. The setup of the facilities should be transparent so that the production processes in the Agropark are visible to visitors.

3.3 Organizational setup

The Agropark is designed in production units of 4 ha each, so that relative flexibility in both management and size could be maintained. In case of growth of the park, all facilities could be expanded in units of 4 ha.

For the organization of the project, a “shopping mall” concept was selected. In this setup, the building is provided by a real estate developer, funded by banks or institutional investors. The entrepreneurs would then be able to rent a unit in this building per m^2, which avoids high investment costs for the entrepreneurs. The center would be managed by an administrator employed by a real estate management company. Synergetic cooperation between entrepreneurs (e.g. for use of waste streams) would be ensured by long-term contracts including ‘back-up supply’ in case of calamities. The co-fermentation and energy production would be managed separately by an external party. The gains from the synergy-functions were to be distributed among the entrepreneurs and the buyers by fixed distribution shares, which should provide sufficient incentives to maintain the synergetic function.

This setup seemed most suitable to the initiators, but other forms were considered as well, among which a cooperative of the entrepreneurs (possibly combined with shared ownership (stock holding) by farmers and citizens in the region). During the process, no contracts were used as a coordination mechanism, and there was no detailed business plan designed.

3.4 Process

The process of realizing the Agropark can be cut up into three separate stages: a design phase, a consolidation phase, and a realization phase. The project has been called off during the consolidation phase.

The first idea for Agropark 1 on this specific location came up in a meeting between a representative from a research institute who had been involved with Agroparks for a longer period of time, and a representative from the company that was to be facilitating the location, who worked as a strategic planner. A representative from the Innovation Network was also part of the process from the beginning. The research representative discussed the plan with the strategic planner, and soon external companies showed interest, ranging from energy and feedstuffs companies to chemical industries. Regional and national governments were invited to join the brainstorming process, as well as an NGO that represented environmental interests. Other NGOs, for instance animal welfare interest groups, were invited but explicitly took distance from the project. Only one agricultural producer from the horticultural sector was

involved at the first stage. No livestock farmers were found to participate in the first stage of the process, and also during the second phase the initiators had difficulty finding entrepreneurs that were interested in joining the project.

With the stakeholders gathered during the first phase, workshops were organised. These workshops served two goals: brainstorming about ideas for the Agropark and building trust among the stakeholders. The presentation of the results of the workshops can be marked as the start of the consolidation phase. In this phase, feasibility studies were performed by two consultancy firms. The whole process was characterized by the fact that there were a lot of changes within the group of stakeholders; many parties dropped out during the phases and few were involved during the whole process. In an evaluation report, written before the project was officially called off, the need for one party to take up the role of a 'puller' of the project in realizing and running the Agropark was emphasised. On the contrary, the tasks associated with project leading were divided among the three initiators. The plans for Agropark 1 were - what was supposed to be temporarily- stopped three years after the first plans were made, followed by a thorough evaluation of the process. After this evaluation, the project has stagnated and was officially called off.

3.5 Field of force analysis

In the project, around twenty stakeholders were actively involved. They originated from regional and national governments, knowledge institutes, industry, agriculture and NGOs. Apart from these parties, there were also stakeholders that were not participating in the process, but on the contrary took distance from it, but still had an influence on the development. In the case of Agropark 1 we can mention two animal welfare organizations, the Dutch 'Friends of the earth' organization, and (local) government officials that did not approve of the idea. These 'shadow' stakeholders are not expressed in the tables 3.1, 4.1 and 5.1, but where their influence on the development process was relevant, they will be mentioned and included in the analysis.

In table 3.1, an overview is given of the stakeholders that were actively involved in the development process and their role in the different stages of realization.

Table 3.1 The role of stakeholders in different stages of the process of Agropark 1

DESIGN PHASE		**CONSOLIDATION PHASE**		**REALIZATION PHASE**
STAKEHOLDERS	**ROLE**	**STAKEHOLDERS**	**ROLE**	
• Innovation Network	• Initiator	• Bank	• Investor	**Process stagnated**
• Research institutes	• Research and initiator	• Construction development company	• Partner (ind.)	
• Farmer's organization	• Representing farmers' interests	• Transport organization	• Partner (logistics)	
• Communication bureau	• Communication	• Construction company	• Partner (ind.) & consultancy	
• Location facilitating company	• Initiator, investor	• Educational institute	• 'Brainstorm' partner	
• Waste processing company	• Partner (industry)			
• Chemical industry	• Partner (ind.)			
• Feedstuffs company	• Partner (ind.)			

• Consultancy bureau • Energy company • Environmental NGO • Province • Logistics innovation group, funded by Ministry of Agriculture • Horticultural producer • Meat processing company	• Consultancy • Partner (ind.) • Representing environmental stakes • Government • Government (Ministry of Agriculture) • Entrepreneur • Partner (ind.)			

(Source: partly based on Breure *et al.*, 2007 and Anonymous (2), 2009)

During the process, differences in perception and expectations between stakeholders became apparent. In the following overview, the different interests and expectations of the stakeholders, grouped by common interest, are shortly drawn (based on Breure *et al.*, 2007 and Anonymous (2) and (3), personal interviews, 2009).

ENTREPRENEURS	
Interests	Profit maximization
Expectations	Perspective on long-term secure profits
Attitude	Commercial, reserved

INDUSTRY (FUTURE PARTNERS)	
Interests	Profit maximization
Expectations	An innovative new business, new markets
Attitude	Commercial, opportunistic

RESEARCHERS	
Interests	Acknowledgement by knowledge institute, reputation
Expectations	Contributing to a new innovation
Attitude	"Show piece", committed

GOVERNMENT	
Interests	Reputation
Expectations	A new sustainable form of agriculture with broad public acceptance
Attitude	Reserved, committed yet influenced by public opinion

INITIATORS	
Interests	Making the concept a success, reputation
Expectations	A successful Agropark
Attitude	'Show piece", committed

CONSULTANCY/COMMUNICATION	
Interests	Profit maximization, reputation
Expectations	Possibly a loyal long-term client (the Agropark)
Attitude	Commercial

In chapter 6, these roles and perspectives will be analyzed, supported by the theory in chapter 2, and compared to the situation in the other case studies.

4. Case study Agropark 2

The second Agropark that is considered, is during the writing of this thesis (mid 2009) in the process of obtaining environmental permits for realization. According to the project leader (Anonymous (4), 2009) prospects are good and there are at this moment no serious threats to realization. Therefore, this Agropark will be considered as the 'successful' case in this research.

For Agropark 2, the following research questions will be addressed in this chapter:
- Which stakeholders are involved in developing and realizing the Agropark?
- What are their interests in, influence on and expectations of the project?
- Which coordination mechanisms are selected during the development of the Agropark?

First, an overview is given of the background of the project and the goals of the project are stated. Second, the proposed park setup and organization will be described, followed by an explanation of the process. The chapter ends with an overview of the involved stakeholders and a field of force analysis, which will answer the above mentioned research questions, and on which the analysis in chapter 6 will be based.

4.1 Background

Agropark 2 started as an idea for the spatial clustering of mushroom production, glasshouse horticulture and pork and poultry production, combined with a central co-fermentation plant for waste streams (van Steekelenburg *et al.*, 2005). During the process, the plans have been changed to a synergetic combination of pork and poultry production with a shared co-fermenting installation, when the greenhouse and mushroom producers withdrew from the project. The goals of the Agropark remained the same: to show that inter-sector cooperation and a focus on the re-use of waste streams can lead to real innovation and sustainable development, by creating opportunities for quality production with high standards for animal welfare, high energy efficiency and low environmental burden, while cutting down on transport and production costs (Anonymous (4), 2009).

The first idea for this project originates, as opposed to the other two case studies, from the producers' side. Two entrepreneurs from the region where the Agropark is due to be realized met one of the founders of the Agropark concept on a meeting about innovations in agro-logistics, and started considering the idea of an Agropark. The entrepreneurs who took up the initiative, already had their business in the appointed region and considered it a good location for an Agropark because one of them already had plans there for a large scale intensive livestock farm. It is in an area that is appointed by the government as a development region for intensive livestock production (a LOG, "Landbouw Ontwikkelings Gebied"), which makes it a plausible choice for an Agropark. Also, the entrepreneurs have good contacts with other producers in the region, as well as with industry and the local government (Knowhouse, 2009).

4.2 Description

Agropark 2 will consist of large-scale intensive pig and poultry farming, combined with manure co-fermenting and processing. The pigs and poultry will be kept in different buildings, but located close enough to ensure transport efficiency, whilst integrating several

stages of production. Poultry will be slaughtered on-site, pigs will be slaughtered in an abattoir less than 80 km. away (Kool *et al.,* 2008).

Pig and poultry farming cannot gain much from each others waste streams, but they can benefit from shared facilities for processing of waste streams (a central materials exchange plant), and shared water, energy and feed supply. In the processing plant, the reuse of residual flows and by-products within the Agropark is maximized and valuable resources will be created for in- as well as external use. Produced heat and energy can be delivered to greenhouses and livestock farms in the neighbourhood (Knowhouse, 2009). The transport of inputs to and from the outside world is minimized by concentration in one large flow (van Steekelenburg, *et al,* 2005). Apart from waste streams from the Agropark itself, by-products from the food industry and energy crops from outside the park can be processed in the co-fermenting installation to create heat, energy and compost (Buck Consultants International, 2008). Apart from expected gains in cost efficiency, the cooperation will generate environmental benefits, in terms of CO_2 reduction due to energy production from biomass and the reduction of transport movement.

In the original plan, when there was still greenhouse horticulture and mushroom production accounted for in the park, the goal was to adapt the production facilities to each other in such a way that the nutrient cycle could be closed to a high extent. This was no longer feasible when the two latter producers withdrew. At this point the plans were reconsidered and a more flexible system was adapted to allow producers to enter (or leave) the park at a later stage. The sustainability goals can still be met but it makes the system less vulnerable (Anonymous (4), 2009). Apart from the livestock producers, a technical engineering company takes part in the realization to deliver the technical equipment related to the co-fermenting installation and remains involved in the Agropark as a shareholder.

The way of manure processing into compost, water and minerals is a novelty, at least on the large scale that is planned for in the Agropark. The products from the Agropark will be sold as sustainable and animal friendly products.

4.3 Organizational setup

According to the initiators, the setup of Agropark 2 asks for a new kind of business model, fit for the intensive cooperation between pig farmers, a poultry farmer and a technical engineering company.

In the first stage (planning) contractual agreements were not yet an issue for the partners. But as the process went on, and at a certain moment entrepreneurs stepped out the process, the necessity to make some agreements became apparent, to prevent parties from withdrawing whilst taking the newly generated knowledge with them. This is when a business plan was made, together with some conditions for future partners. These agreements could not have been realized in the first stage of the process according to the partners (Anonymous (4), 2009).

During the process, many arrangements were made on an informal basis. According to the project leader, the nature of the project makes it impossible to create formal agreements on most topics. This would involve too high transactions costs, because changes are due to happen during later stages as there is a high level of uncertainty. This explains the dependency on informal agreements in the first stage.

Nevertheless, as the planning process went on, agreements were made on the form of cooperation, on the allocation of tasks during the process, as well as on deadlines, confidentiality and later on also about decision rights and, as mentioned, clauses for entrepreneurs withdrawing from the project. Making these agreements is said to have cost the most energy in the first stage of the process, and the initiative for this was in the hands of the appointed project leader (not one of the entrepreneurs). The technical and economic aspects of the project were not experienced as problematic – these were said to be easy to cope with compared to the organizational part (Anonymous (4), 2009).

In the operational management of the Agropark, three separate corporations will remain, with agreements between each other about the synergetic parts. In this way, each entrepreneur can be fully responsible for his own operational decisions and accounting, while the part that influences the other corporations will be dealt with through a combination of formal and informal agreements. At this moment, mid 2009, no contracts are drafted yet as the project is still in the consolidation phase, but the expectation is that the main lines of cooperation will eventually be defined in contracts. The poultry farm is one corporation, the pig farm is another corporation with two owners, and the co-fermenting installation will also be a separate corporation, but with multiple owners; the pig and poultry farmers will be equal shareholders and the technical engineering company will be a (percentually smaller) shareholder as well. There will be no umbrella organization; all shared facilities will be coordinated with contracts and/or agreements between the three corporations (Anonymous (6), 2009).

4.4 Process

The very beginning of the idea for Agropark 2 originates with two livestock producers that were considering cooperation to gain mutual benefit from combined input- and output streams and energy production on manure basis. They accidentally met a researcher who was involved with Agroparks, which made the entrepreneurs consider the idea of realizing their ideas in an Agropark (Anonymous (4), 2009). In a process of brainstorming about innovative development in the region, with representatives from different backgrounds present, a group was formed which would take up the stimulation and guidance of the innovative agricultural initiative in the region. This group has put forward a project leader that has as such supervised the process of the Agropark from the beginning.

In the design phase, brainstorm sessions were organised with the initiators, other interested producers and government officials. Greenhouse horticulturists were invited, but they stepped out of the process because of the negative public opinion about intensive livestock production; they did not want to be associated with this. An interested mushroom producer stepped out due to financial difficulties on the own farm (Anonymous (4), 2009). The design phase was followed up with a consolidation phase, in which attention has been paid to determining who the partners are that will actually participate in the project, making a blueprint of what the Agropark will look like and making a business plan, and communicate the idea to the public and interest groups. On initiative of the project leader, a network of government officials from different levels was formed which has proven to be valuable in overcoming difficulties posed by underdeveloped regulation for innovative projects like the Agropark. Because contact was frequent and lines were short, time could be saved on legal processes. For some time during the process, Agropark 2 was appointed a temporal experimental status by the Ministry of Agriculture (Anonymous (4), 2009).

Apart from communication, in this stage a lot of attention was paid to drafting some formal agreements between the partners as well as on team building, to overcome the differences in the ways of working and problem solving that existed between the partners.

Early 2009, requests for environmental permits were sent out, which was a milestone for the participants. It is expected that the approval will be given by the end of the year, after which the next phase (realization) can commence. No further difficulties are expected during the process by the project leader.

4.5 Field of force analysis

In the following overview, the stakeholders in the project are shown. The overview is limited to partners that have had a substantial influence on the process. The stakeholders are grouped in the phase in which they entered the process.

Table 4.1 The role of stakeholders in different stages of the process of Agropark 2

DESIGN PHASE		**CONSOLIDATION PHASE**		**REALIZATION PHASE**
STAKEHOLDERS	**ROLE**	**STAKEHOLDERS**	**ROLE**	**Not yet achieved**
• University 1	• Research	• Environmental interest group	• Representing env. stakes & animal welfare	
• Consultancy bureau/ knowledge broker	• Coordinating process, project leader, communication	• Local interest group	• Representing (part of) public opinion	
• Technical engineering company	• Technical engineering, shareholder	• Glasshouse horticulturists corporation	• Entrepreneur (withdrawn)	
• Municipality	• Local government	• Consultancy bureau	• Consultancy	
• Pig farmer 1	• Partner/Entrepreneur			
• Pig farmer 2	• Partner/Entr.			
• Poultry farmer	• Partner/Entr.			
• Mushroom producer	• Entrepreneur (withdrawn)			
• Ministry of agriculture	• Government			
• Province	• Government			
• University 2	• Research			
• Research institute	• Research/ coordination			

(Source: Anonymous (4), 2009 and Knowhouse, 2006)

During the process, specific attention has been paid to bringing the differences in perception and expectations between stakeholders to the surface. In the following overview, the different interests and expectations of the stakeholders, grouped by common interest, are drawn (based on Anonymous (4), 2009 and Anonymous (6), 2009).

ENTREPRENEURS	
Interests	Licence to produce (future for intensive livestock production), profit maximization
Expectations	Extending economic activities
Attitude	Commercial, committed

TECHNICAL ENGINEERING COMPANY	
Interests	Opportunity to experiment with new techniques, profit maximization
Expectations	New entrepreneurial chances, spreading the concept when it proves successful.
Attitude	Commercial, committed

RESEARCHERS	
Interests	Accreditation, reputation
Expectations	Development of new knowledge
Attitude	'Show piece', committed

GOVERNMENT	
Interests	Reaching policy targets, reputation
Expectations	A new sustainable form of agriculture with broad public acceptance
Attitude	Committed, yet sensitive for public opinion

PROJECT LEADER (FROM GUIDANCE GROUP)	
Interests	Reputation, knowledge on new innovation
Expectations	Learning experience on complex innovation, contributing to successful new development
Attitude	'Show piece', committed

INTEREST GROUPS	
Interests	Public interest, maintaining support from their members
Expectations	A new development with possibly negative implications to their interests
Attitude	Ranging from 'reserved' to 'committed to preventing realization'

In chapter 6, the results shown in this field of force analysis will be used to answer the research questions, making use of the theory in chapter 2.

5. Case study Agropark 3

The third case that is considered in this research, is a large-scale Agropark to be built on the outskirts of a major city, located far away from the development team and the possibly participating entrepreneurs. After three years of planning and development, the project is at the moment put on hold. Although it is unlikely that the Agropark will eventually be realized in the form that was originally planned, the initiative has not been officially called off. Therefore, Agropark 3 can be placed between the other two case studies in terms of success. For now, it is unknown what the next steps will be towards realization (or cancellation) of the project (Anonymous (7), 2009).

In this chapter, the following research questions will be addressed for the third case:
- Which stakeholders are involved in developing and realizing Agropark 3?
- What are their interests in, influence on and expectations of Agropark 3?
- Which coordination mechanisms are selected during the development of the Agropark?

To answer these questions, the chapter starts with a short section on the background of the initiative of the park. It continues with a description of the park and of the proposed organizational setup. This is followed by an explanation of the development process. The chapter ends with a field of force analysis.

5.1 Background

Agropark 3 is described in the plans as a large-scale Agropark, and has been initiated by an investment company on demand of a local government. Through a contest, a research institute was selected to develop a plan for an Agropark, which would be part of a newly developed ecological area near the city. The goal of the Agropark is to implement a new form of agriculture to supply the city with food, in a sustainable, yet intensive and highly efficient way. According to the plans for Agropark 3, this will be reached by spatial clustering of the total production chain, thus combining agro-processing and non-agricultural functions like energy production and waste and water management. Thereby, animal welfare will be improved and transport movement and veterinary risks reduced (Anonymous (1), 2007).

The proposed location, a yet to be developed nature area, would be suitable for an Agropark for several reasons. The nearness to a large city brings possibilities for product marketing and for providing the required labour force. The fact that it is located in a yet-to-be-developed region also creates specific opportunities; for instance, there are plans to create a new harbour in the region near the Agropark, which is a chance to gain from the improved logistic possibilities this brings whilst influencing the development of the harbour to fit the specific needs of the Agropark (e.g. a railroad to the park could be integrated in the building plans of the harbour).

Apart from agricultural production, the region will have a recreational function too, and there are plans to create on-site housing for the workers in the Agropark (Anonymous (1), 2007).

5.2 Description

In Agropark 3, a combination will be made of agricultural production and processing, together with other functions like recreation, knowledge development and education. There will presumably be livestock production as well as greenhouse horticulture included, together with

the production of mushrooms, although the exact combination of enterprises has not yet been decided on.

For the combination of agricultural activities, several scenarios are developed. The scenario's entail options that include pigs, mushrooms, greenhouse horticulture (ornamental plants), algae & fish, poultry, dairy, or even insects, reptiles or horse breeding. Most likely, pigs, poultry, mushrooms and greenhouse horticulture will eventually be the basic enterprises in the Agropark, as they are included in each of the scenario's (Anonymous (1), 2007). A network of pipelines and conveyor belts is supposed to run through the park to take care of the processing of energy, CO_2, water and waste streams; the goal is to create a closed cycle with only the outflow of valuable products like clean water and energy.

In a demonstration area, visitors will have the opportunity to gain insight in all stages of the production process via webcams. Also, information is given on sustainability in general, Agroparks elsewhere in the world and the circular water system in the park. Apart from this informative function, the park area will also be suitable for recreation both on land and water. A second goal of the Agropark, apart from food and energy production, is to develop possibilities for education in agribusiness and knowledge development on the park site. Finally, a business and trade center is also to be included in the Agropark.

Within the designated developing region of 86 km^2, an area of 27 km^2 is supposed to be taken up by the Agropark. Inside the boundaries of this area, flexibility is kept for the implementation of enterprises in terms of size. It is the goal to handle space as economical as possible, making use of multiple storey buildings and spatial clustering of closely related activities.

5.3 Organizational setup

Already during the early stages of the process, the importance of contracts became apparent. In the planning phase, agreements were made on the basis of effort and on schedules, but not on deliverables as it was considered too much of a blank page to get any more formal than this. In entering the second phase, the research institute that worked on the plan put up formal contracts with the initiator for the next steps, according to the project leader at a rather late time. This was said to be a very intensive procedure, as the investment company was not eager to sign contracts at this stage. In these contracts some agreements on financing and partners and time schedule were made – be it in a rather incomplete way, as the process still entailed a lot of uncertainties (Anonymous (5), 2009). The creation of these contracts was an effort; they were signed when phase two had already started. As a reason for the long time it took to create and sign these contracts, cultural differences are mentioned, together with the novelty of the process: no ready-made contract could be pulled out of a drawer. At the whole, the process depended mostly on informal agreements, which were held together by trust and friendship (Anonymous (5), 2009).

When the park is realized, it will be owned and run by a cooperative that will also finance the construction of the park. The shareholders of the cooperative are an investment company, knowledge institutes and government institutions. This combined cooperative is responsible for the management of the park and will appoint day-to-day managers and a park director. Within the park, the separate enterprises are employed by the cooperative. This implies that the park has a hierarchical organizational structure, with well defined roles and tasks (Anonymous (1), 2007).

The agricultural entrepreneurs will therefore be employed by the cooperative, but maintain the decisive power on which enterprises will be present in the park and how they will be run. In the plans, a strict division is made between the tasks of the designers, the managers and the entrepreneurs; the latter will remain in charge of their own enterprise, facilitated by the park management. It should give the entrepreneur the freedom to be an entrepreneur instead of a 'stand holder' (Anonymous (1), 2007). Intermediate parties will be appointed to guard the cooperation between the different agents in the park.

5.4 Process

As with the previous cases, the development of Agropark 3 can be divided in three phases; planning, consolidation and realization. During the writing of this thesis, the process was put on hold during the consolidation phase. It is unknown if the process will continue and in what form.

The first initiative for Agropark 3 lies, in contrast with the other two cases, on the side of a local government, which functions like a principal in the development of the park. In the development of a new rural area located near a big city, an innovative rural park was planned for. To collect ideas on what this rural park should look like, a competition was held in 2002. The Agropark concept, entered in the contest by a research institute, won the competition and was from then on included in the development process (Anonymous (5), 2009). A distinct feature of the process of Agropark 3 is the need to cooperate with (semi-) government officials who have the role of initiator or principal, in an area distant from the developers – both spatially and culturally, which may account for specific institutional challenges. The first phase was co-financed by the investment company and by knowledge development-stimulating funds of the involved research institutes.

The investment company is closely related to and financed by the local government, which made that the decisive power was with the government officials and not with the investment company who did the actual developing of the Park. The process was eased by a platform of government officials, which proved to be helpful in keeping the pace in bureaucratic or legislative matters (Anonymous (5), 2009). During the initial phase, the leader of the project was a researcher who was linked both to the above mentioned research institute, and a government-based research and consultancy program. The leadership role changed a number of times as the process went along, but for the most prominent part the appointed project leader was a member of the research institute that came up with the concept, who at the same time was involved with the development of Agropark 2 (Anonymous (7), 2009). Apart from the project leadership, the roles changed a lot between persons during the whole process.

In the development of the concept, specific attention was paid to including partners from all 'sides' in the process from the start: entrepreneurs, industry, government, and research. Only interest groups were missing in the first phase as a stakeholder group, but apart from the fact that it can be disputed if interest groups should take place in this early stage, were they at the location of the Agropark not actively present. Overall, the first phase went along well (Anonymous (5), 2009). There were producers involved from an early stage on, which resulted in their commitment and participation in the process, although there were some changes in the group of entrepreneurs concerned.

The planning phase was finished in 2004, followed by a quotation by the investment company to continue with the second phase – the formation of concrete plans for the implementation as well as a business plan. A master plan, created in phase 1 by the team of researchers from different involved institutes, was approved by the local government, and further research and development of the plans was requested by the investment company, but without assigning financial support. The research institute, and with them the appointed project leader, decided to stop their cooperation in phase 2 as the investment company was not willing to promise financial support at this point. So for them the process ended at the beginning of phase 2. The lead was then taken over by a team of researchers that cooperated on writing the master plan.

In the consolidation phase, entrepreneurs were brought together by the project team to try to form a consortium that would eventually operate in the Agropark. However, the plans were still too unclear for the entrepreneurs to give credit that they would invest the park, which implied that no specific business plan could be written. While the consolidation phase was moving along, the project leading team started to make a point of getting financial support on a contractual basis from the investment company to continue. This proved to be difficult, and the researchers decided to put the development on hold for as long as no funds could be provided. This is the current situation. It is unknown whether the investment company, which also had alternative plans running for the area, will continue with the development of the Agropark.

5.5 Field of force analysis

In the development of Agropark 3, a number of parties was involved with a larger emphasis on government officials than in the first two case studies. In the following overview, the stakeholders concerned are mentioned in the phase in which they entered the process.

Table 5.1 The role of stakeholders in different stages of the process of Agropark 3

DESIGN PHASE		**CONSOLIDATION PHASE**		**REALIZATION PHASE**
STAKEHOLDERS	**ROLE**	**STAKEHOLDERS**	**ROLE**	**Not yet achieved**
• University 1	• Research	• Construction company	• knowledge input, ind. partner	
• Local government 1	• Initiator, government	• Communication bureau	• communication advice	
• University 2	• Research	• Food processing company	• future partner (ind.)	
• University 3	• Research	• Seed production company	• future partner (ind.)	
• University Medical centre	• Research	• Waste management company	• future partner (ind.)	
• Research institute	• Research, consultancy, project leading			
• Government-based research program	• Initiator, investor, coordinator			
• Consultancy bureau/knowledge broker	• Mediation, coordination, fundraising			
• Local government 2	• Investor, entrepreneurs			
• Producer's cooperative	• Entrepreneurs, knowledge suppliers			

• Industrial investment company	• Investor, initiator, coordinator			

(Source: Anonymous (1), 2007 and Anonymous (5), 2009)

The specific interests, expectations and attitudes of the groups of stakeholders are drawn in the following overview (based on Anonymous (5) and Anonymous (7)):

ENTREPRENEURS	
Interests	Profit maximization, being part of innovation
Expectations	New markets, securing long term profits
Attitude	Commercial, committed

INDUSTRY (FUTURE PARTNERS)	
Interests	Profit maximization
Expectations	New markets
Attitude	Commercial, reserved

RESEARCHERS	
Interests	Acknowledgement, reputation
Expectations	Development of new knowledge
Attitude	"Showpiece", committed, commercial

GOVERNMENT (INITIATOR)	
Interests	Status, reputation
Expectations	Securing long-term food security, creating successful Agropark
Attitude	"Showpiece", committed

MEDIATORS/PROJECT LEADERS	
Interests	Reputation, creating new knowledge
Expectations	A successful Agropark with new forms of cooperation
Attitude	"Showpiece", committed

CONSULTANCY/COMMUNICATION	
Interests	Profit maximization, reputation
Expectations	Possibly a long-term client
Attitude	Commercial

In the analysis (chapter 6) we compare the information on the three case studies, utilizing the theory on new institutional economics, in order to draw conclusions in chapter 7.

6. Analysis

In this chapter, the information that has been presented in the description of the case studies will be analyzed and linked to theory. In discussing the different aspects, the order of the research questions is maintained. The chapter starts with the differences in definitions of success and failure that have passed in the three case studies. Then the most important factors determining success or failure for the three case studies will be discussed. The chapter ends with discussing the importance of leadership and the choice for coordination mechanisms in the case studies. In the conclusion (chapter 7) the results of this chapter will be summarized and linked to the research questions.

6.1 Perception of success and failure

The definition of success appeared to differ between the case studies, but most strongly between groups of stakeholders. The perception of "failure" was interpreted more universally in each of the three cases. For instance in Agropark 1, "success" according to the initiators would have been reached at the point where a consortium of entrepreneurs who would have been formed, to set up a detailed business plan and thus enter the realization phase. So, apart from whether or not the park would be profitable in the long term, the initiators would consider the project a success if a business plan was made and the third phase would be reached (Anonymous (2), 2009). There were no entrepreneurs among the respondents, but it can be doubted whether they would have the same interpretation of "success".

The second case study in this research shows a very different view then the first. Although not operational yet, this combination of intensive poultry- and pig farming and a shared bio-energy plant has promising prospects at the time of this research, and would in the definition of Agropark 1 be a success already. According to the project leader, Agropark 2 will be considered a success if it is operational and all proposed sustainability measures are included (Anonymous (4), 2009). For the producers, success has a slightly different meaning: an operational Agropark with the emphasis on profitability. The project leader also mentioned intermediate goals that have already been reached and are part of the success: making a contribution to knowledge about innovative project development and new forms of cooperation (Anonymous (4), 2009). This can be seen as success from a researcher's perspective.

The third case study lies somewhere between the other two with respect to success. For now the process is postponed and it is unknown whether it will be picked up again by the investment company, and in what form it would then be realized. "Success" would mean to the project leader that the investment company and local government formally agree to invest in realization of the plans and entrepreneurs show their commitment to take part in the Agropark (by investing time, money and knowledge). This shows a strong similarity to the definition of success in case 1. Although realization is not to be expected in near future, intermediate goals have been met for the knowledge institutes: knowledge is generated on the development of innovative networks, and a leap is made in the development of the Agropark concept (Anonymous (6), 2009). This makes the project partly a success already in the view of the researchers that are involved. In this perspective, "failure" in the true sense is no longer possible for case 3.

Nevertheless, Agropark 3 would be acknowledged as "failed" by the stakeholders when the investment company formally withdraws from the plan, which implies that the park will not

be made operational. This corresponds strongly with the definitions of failure for the other two case studies. In Agropark 1, for the project partners, the end of the project was definite when one by one all partners stepped out of the process, making further continuation impossible. Also for Agropark 2 failure would mean, to both the entrepreneurs and the researchers, the termination of the process, ending without realization of the plan.

From this, we can conclude that "success" has different meanings to two well-defined groups of stakeholders: the entrepreneurs on the one hand and the researchers on the other. The perception of "failure" is more or less the same in each case. For entrepreneurs, "success" is strongly related to profitability, while initiators originating from research pay more attention to whether the *process* proved to be successful (i.e. the third phase is entered) and new knowledge is developed.

6.2 Factors determining success and failure

In chapter 2, a number of institutional factors are mentioned that were expected to be an influence on the development of an Agropark. In this section, the factors are discussed that have proved to be of importance in the three case studies. Leadership and the choice for coordination mechanisms will be discussed separately in section 6.3 and 6.4.

Lack of well-developed institutions (e.g. legislation)

In chapter 2 the problem of insufficiently developed legislation specifically for Agroparks is mentioned, as well as the uncertainty posed by time inconsistency. The latter was not experienced as a problem in the case studies; government-related problems were however present in some cases.

In case 1, the process was not developed up to the stage where problems in legislation came to the surface. However, it was acknowledged by the initiators that committed support from government officials can certainly speed up or slow down the process, as they can influence public opinion, assign an experimental status to the Agropark, or influence decisions on higher levels positively. Case 2 did experience some problems with legislation in practice. For instance, the transport of manure via pipes from one enterprise to another is legally seen as 'transport' and each batch should therefore be tested. In the reality of the Agropark it is actually 'internal' transport, and it is very inconvenient (and useless) that the existing legislation for manure transport accounts here. This is an example where legislation is lagging behind. The project team around Agropark 2 have solved this for a great deal by initiating a team of government officials that comes together to look at such matters and find solutions. Hence, by cooperating with stakeholders from the government side who show commitment, the legislation problem can be dealt with. In case 3, it was acknowledged that legislation and bureaucracy considerably slowed down the process (Anonymous (7), 2009). It is however not mentioned as a factor responsible for (danger of) failure.

As Agroparks are to some extent dependent on government support, to overcome the phase in which sustainability measures are not yet profitable, time inconsistency of the funds forms a possible threat. In case study 1 and 2 this was acknowledged, but not experienced as a real threat to development. Some funds that were used to finance the process in earlier stages are no longer needed; hence there is no time inconsistency to be found there. In case 3, the uncertainty of government funds is not mentioned. Furthermore, each of the Agroparks is

planning to eventually be profitable without government support, which probably explains why the respondents showed no concern.

There is however a third way in which governments can pose a threat, and that is related to public opinion. As the local government at some point has to give approval to the realization of an Agropark at a certain location, they have the power to stop the park from realization. NGOs can influence the government and thus hinder the development. In the first case, this was a serious problem. The concept has been excluded from a number of locations due to public resistance. This resistance was the result of a visual presentation of the Agropark as a 'pig flat' that caused great aversion among the public. It appeared to be very persistent, despite several attempts to explain the improvements on the level of sustainability and animal welfare that can be gained in an Agropark.

Apart from the influence on government officials, the public opinion also proves to influence entrepreneurs. They are aware of the possible bad reputation that they would get from working in the Agropark (as occurred in case 1 and 2). Producers' organizations also proved to be hardly supporting of the Agropark concept, partly because it will only benefit very few of their members and on the other hand could form great competition to all the others (Anonymous (2), 2009). Reputation also played a role for the producers' organizations. The lack of support was experienced as problematic by the entrepreneurs in case 1 and 2. It did scare off some producers and it slowed down the process in Agropark 2, but was not considered a crucial factor in success or failure. Concluding: legislation does in some ways form a problem associated with Agroparks, but it does not need to form a serious threat to the succeeding of the project. It can slow down the process but is not likely to be a factor determining 'failure' for Agroparks in general, when we consider the case studies in this research.

Differences in background and culture

Cultural differences were in chapter 2 mentioned as a possible problem, as the Agropark concept asks for close cooperation from producers from very different professional backgrounds; for instance a pig producer that is supposed to team up with a greenhouse horticulturist and a waste management company. It has indeed proven to be an issue in the case studies. Especially in Agropark 1 it was difficult during the process for all stakeholders to understand each others problems and expectations. Also, the livestock producers were reluctant to move to a site which is not a rural area, and which would not allow them to live near the farming site. This is not so much a cultural problem between participants, but is inherent to the Agropark concept, which is mostly placed in a more industrial setting.

In Agropark 2, which can be considered the most successful of the three cases, culture was not considered a very important problem. Cultural differences happened to be small; the entrepreneurs that take part are from the same region, roughly operate in the same business and knew each other well before starting with the Agropark which created a broad basis of trust. Between the most important partners there was friendship. These are some very case-specific and fortunate properties that have proven to be of great importance, but that cannot be 'created' when lacking in other cases. Hence, cultural differences were not mentioned here as an issue, but there were differences present in the style of working and coping with problems, but acknowledging these and making them explicit proved sufficient to overcome them (Anonymous (4), 2009).

However, in case 2, the greenhouse producers stepped out of the process because they feared that the bad reputation of livestock production would blemish their 'green' image – they did not want to be associated with it. This can be seen as a sign that cultural differences were present in Agropark 2 and that it was a challenge for greenhouse horticulturists and livestock producers to cooperate; the initiators however have dealt with this by excluding the horticulture branch from the Agropark plans. On the other hand, it can also be argued that the dropping out of the greenhouse horticulturists was more because of the fact that they entered in a later stage, which automatically excluded them from the committed 'incrowd' of the initiators. In that sense, it is not culture which proves to be the problem but the stage of entering and social capital.

Case 3 showed a very different picture. The fact that the principal and the location of the eventual Agropark are very distant from the developers and entrepreneurs, accounted for some very specific institutional challenges; cultural differences were much more present than in the other two case studies, which made that communication during the process took more effort. Hence, cultural differences were present in the development of Agropark 3, but were according to the project leader not a threatening factor. In fact, it proved to be less of a problem than was expected (Alterra, 2005).

As a whole, cultural differences played a very different role in all three cases. But we can conclude that in general, cultural differences between stakeholders will be present and it strongly depends on the situation and the persons involved how this will be dealt with. It is a problem inherent to the concept of the Agropark.

Differences in interests

The field of force analyses in sections 3.5, 4.5 and 5.5 show that there are differences in interest between the stakeholders. Although there are some different nuances in the three cases, in general the main interest of the entrepreneurs and industry is (long-term) profit maximization, for the researchers this is reputation and knowledge development, for the governmental institutions reputation, and for the communication or consultancy bureaus the main interests are both profit maximization and reputation.

It is no surprise that the interests differ, but according to the case studies the differences in itself do not have to be a threat for realization. They can be overcome by continuous acknowledgement of each others interests and mutual respect for these interests. This can be done by very carefully guiding the process and paying sufficient attention to this, which is a task for the project leader. The processes of Agropark 1 and 3 have shown, that when this acknowledging of interests fails, the risk of opportunistic behaviour becomes a threat resulting in trust issues. Where in case 3 these problems came up at a later stage, in case 1 there has not been sufficient common ground from the start. Most involved stakeholders had a reserved attitude towards the project; they were willing to gain but not to invest or to take chances. According to researchers that evaluated the process, the interests were too far apart to create the trust and commitment that is necessary for this kind of innovation (Breure *et al.*, 2007).

To summarize, it can be said that differences in interest have to be dealt with carefully, but if an atmosphere of mutual respect and sharing of knowledge can be maintained, it does not need to form a threat to the realization process.

Trust

The incompleteness of contracts, and with that the expected importance of social capital is mentioned in chapter 2 as a specific challenge of Agroparks. It appeared from the research that this was indeed the case: social capital turned out to be the most important factor determining success or failure. Trust was in all case studies considered an important condition for success. In Agropark 2 it was said to be the most important factor by the project leader (Anonymous (4), 2009). In the developing process of Agropark 2, a certain level of friendship and trust was already present from the start as the partners already knew each other. However, in the beginning of the process the attitudes started off somewhat businesslike and reserved, but trust grew considerably during the process. Eventually all parties involved in Agropark 2 acknowledged trust as a basic condition for a successful development process.

In the first case study, the level of trust was low at the beginning (Breure et al., 2007). Efforts were made to make trust grow through workshops in which the partners would gain understanding for each others interests; this effort was however not sufficient to create the trust that was needed to deal with other difficulties in the process. Lack of trust is not explicitly mentioned by the respondents as a factor of failure of the project, but it is recognized as a negative influence on other factors.

In Agropark 3 trust also came forward as a very important factor. It is emphasised by Anonymous (5) that the inclusion of new partners was mostly based on the network around the development team, in which people already knew and trusted each other; this way entrepreneurs, as well as other possible partners from industry, consultants and engineers were involved in the project. Trust between the development team and the investment company was vulnerable, as proven in the second phase of the project. As appointments were not met and the differences in interests were no longer acknowledged, the level of trust was severely harmed, which according to the project leader contributed to the postponing of the project (Anonymous (5), 2009).

The complexity of setting up a project like an Agropark appears to rely strongly on social capital, especially since there is close cooperation required from a great diversity of stakeholders. How ever ideal the other factors for realization may be, the development of an Agropark needs a core of people who completely trust and understand each other, and are fully committed to the cause. It appears to be a basic condition that strongly influences other factors. If trust is not present in an early stage, it is difficult to create it later on in the process how ever great efforts are put in to it. So, the well-known adage about trust appears to hold also in an Agropark situation: it comes by foot and leaves by horse (Slangen *et al*., 2008).

Commitment

A second factor of social capital that greatly enhanced the chances on success appeared to be commitment. In case 1, which failed in the end of the consolidation phase, there was a lack of commitment, which was acknowledged by two respondents (Anonymous (2) and (3), 2009) and in the evaluation report (Breure *et al*., 2007). Although the three initiators of Agropark 1 showed commitment, they did not succeed in passing this on to entrepreneurs, possible industrial partners and government officials, which is an indication that leadership qualities were insufficient. Because of the reserved attitude that existed with most of the parties, no consortium was formed that could take up the initiative for the realization phase. It is therefore mentioned explicitly as one of the reasons why the project failed.

In case 2 on the other hand, commitment from a group of entrepreneurs was high from the start, and with the project leader they succeeded in passing this on to other stakeholders. It is mentioned by several participants in the process as an important factor for success (Anonymous (4) and (6), 2009). Important to mention here is that the initiators of this project were the entrepreneurs themselves, in contrast to the other two case studies where the initiative came from either researchers or government officials. From the start, the entrepreneurs were determined to realize the Agropark and put full energy in this. The high levels of trust and commitment minimized the risk of moral hazard and opportunistic behaviour throughout the planning process. It is said that due to high commitment possible threats like differences in culture, objectives and expectations were easily dealt with. The commitment in case 2 was said to have grown stronger when an opposition of NGOs against the project appeared; it made the entrepreneurs even more determined to show that their ideas can be realized.

In the third case commitment was also acknowledged as an important factor, and treated as such. It was said to be quickly lost when mutual respect for the different interests of the involved parties could not be maintained (Anonymous (5), 2009). This has occurred in case three near the end of the second phase, which resulted in the postponing of the project.

From the case studies, a great threat to commitment appeared to be the fact that creating a stable group of stakeholders has proven to be difficult in the realization of an Agropark. The development processes were in all three cases characterized by frequent changes within the group of stakeholders; parties dropped out and others entered at later stages, while only few stakeholders were involved during the whole process. As continuity in the group greatly benefits social capital in the form of commitment, trust and group dynamics, this makes Agroparks difficult to realize. It is however seen as a feature of innovative design; parties come to have a look out of curiosity but dare not invest in a later stage. In the most successful case of the three, case 2, this problem is dealt with by creating a contract in which the involved entrepreneurs formally express their commitment. These contracts can be seen as both an instrument to make commitment explicit, and as a result of the existing commitment. We can conclude that commitment is an important, yet vulnerable property in the realization of an Agropark. Commitment is related to leadership more strongly than trust and can therefore be controlled to a larger extent. It can be passed on to others where trust really has to grow during the process. It appeared to be helpful to express commitment formally at some point during the process to overcome the uncertainties that are inherent to innovation processes like setting up an Agropark.

Entrepreneurs as initiators

Apart from the factors discussed in the theory (chapter 2), the presence of enthusiastic entrepreneurs at the first (planning) stage of realizing an Agropark was empirically found to be a favourable, if not necessary precondition. It may be possible to realize an Agropark without producers as initiators, but it is expected to be difficult; the three case studies are however not sufficient proof to state that it would be impossible. What we have observed, is that the one case where the entrepreneurs took up the initiative themselves, the development process went far more smoothly than in the other two cases.

In case 1, where the plan originated from the researchers' side and case 3, where it came from the side of the government, it appeared to be difficult to pass on enthusiasm to producers in

such a way that they were willing to show commitment and invest in the project. The negative impact of this has been acknowledged by independent respondents (Anonymous (2) and Anonymous (3), 2009). In case 3, it was also acknowledged that although entrepreneurs were found to participate in a later stage, the level of trust and commitment was not high enough to actually form a consortium that would take up the operation and realization of the Agropark. In case 3 it was mentioned by the project leader that the emphasis was possibly not enough on the entrepreneurs in the first phase, due to a cultural difference; the principal did not acknowledge the importance of the entrepreneurs in the first phase (Anonymous (5), 2009). This proves that although it was not possible to include entrepreneurs, the project leader was already aware of the importance of the commitment of entrepreneurs.

Apart from the entrepreneurs, also the involvement of other stakeholders from an early stage was said to be important, although there is no agreement among the respondents on the fact if it is desirable to incorporate all stakeholders from the very start. Some were very determined about the importance of this (Anonymous (4) and (5), 2009), while others put question marks on whether e.g. local governments or NGOs should be part of the early brainstorming phase. It was said to be possibly slowing down the process unnecessarily and that it would be better to create a commonly agreed concept first with the entrepreneurs and researchers before discussing it with the world (Anonymous (2) and (7), 2009). However, the key importance of involving entrepreneurs in the process in an early stage is acknowledged unanimously by all respondents.

6.3 Leadership

To discuss the importance of leadership in the case studies, we return to the definition of leadership mentioned in chapter 2:
"interpersonal influence, exercised in a situation, and directed, through the communication process, toward the attainment of a specified goal or goals". Focussing this definition on leadership as influence on others resulting in enthusiastic commitment, we can state the following about the leadership in the case studies.

In Agropark 1, there was not one single person who took up the leading role. The project was led by a two researchers and a strategic planner that believed in the possibilities of realizing the Agropark at that specific location. Although these three persons had very much the same ideas, and had well defined roles, they could not manage to streamline the process and pursue other parties to invest in the concept or create sufficient mutual consent. It was later on acknowledged by the team that the lack of leadership had a negative influence on the process (Breure et al., 2007). In an evaluation report, written before the project was officially called off, the need for one party to take up the role of a 'puller' of the project in realizing the Agropark is mentioned. It is emphasized that entrepreneurs and other parties could have possibly been persuaded to take part in the process if this was coordinated with more authority, and communicated with more enthusiasm by one leading person or party (Breure *et al*., 2007). Other factors that were negatively influenced by this lack of leadership were communication with external parties, constructive design and management of the process. Cooperation between the interested parties could have been stimulated with strong leadership (Anonymous (2), 2009). So, for Agropark 1 (lack of) leadership can be considered a key factor that contributed to the failure of the project.

For Agropark 2 on the other hand, where an external project leader was appointed by the entrepreneurs, leadership proved to be well executed and effective. Leadership has shown to

have an effect on cooperation between the entrepreneurs, communication with external parties and streamlining and coordinating the planning process. Considering this, we can pose that leadership of the project leader has shown to be a key factor for success in this Agropark.

For case 3 leadership was placed in a more difficult position. Here also, an external project leader was appointed who did a great effort in coordinating the process and communicating enthusiasm to possible partners. Different persons have taken up the leading role in different stages, but there has been one person for the longest period of time during the process who took up the responsibility for the project and is acknowledged by other stakeholders as the project leader or 'face' of the project. This project leader showed good leadership qualities throughout the process: authority, enthusiasm and the capability to transfer this to other persons, and making efforts to streamline the process and facilitate good communication between stakeholders (Anonymous (7), 2009). The project leader paid specific attention to maintaining an atmosphere of mutual respect for the different interests of the stakeholders (Anonymous (5), 2009). However, both from the principal's side as from the entrepreneurs' side, authority of the project leader was not in all situations acknowledged, which expressed itself in disputes. Also, when the concept started to be successful, several stakeholders tried to make the project 'their' showcase and lost their view for the interests of other parties. Eventually this had a negative effect on the levels of trust and commitment. Due to the great spatial and cultural distance between several participating stakeholders, it was a very complex process compared to the other two case studies. We could state that these contingencies are a result of failing leadership, but it is more likely due to the nature of the process and the parties involved that good leadership alone was not sufficient to overcome the negative influence of other factors and make the project a success (Anonymous (5) and (7), 2009). It was however acknowledged that the changing of project leaders throughout the process has had a negative impact on the development (Anonymous (5), 2009).

From this we can conclude, that leadership is definitely a factor of great importance in setting up an Agropark. However, case 3 shows that even with the best effort in sense of leadership, if the other determining factors are troublesome leadership alone cannot guarantee success. But we can conclude that in case 1 the lacking of one leading person had a definite negative impact on the project. It negatively influenced the communication with other parties, the way that conflicting interests were dealt with and, partly related to that, the commitment by (possible) partners.

6.4 Coordination mechanisms

In the case studies and the previous sections, we discussed the institutional factors that play a role in determining success. We will now identify the relationship between factors in the institutional environment (like culture, leadership, trust) and the institutional arrangements that are chosen for each Agropark.

Use of contracts during the process

During the process, in some cases contracts were used and in others not. In case 1, there were hardly any contracts used in the process, which was also considered to be unsuitable in the situation as too many things were still unclear. On the other hand, in both other cases, contracts were made during the process, as a way to make the commitment of the involved partners explicit. In case 2, after the design for the park was decided on, the three entrepreneurs signed formal agreements in which they committed themselves to invest both

time and resources (Anonymous (4), 2009). The stakeholders mention explicitly that after the first stage of planning, contracts are very important. The lacking of contracts or other kinds of formal agreements in case 1 can be argued to be a sign of a low level of commitment. For case 3, there was a diminishing in the commitment noticed near the end of phase two, and the project leader deliberately tried to avoid opportunistic behaviour of the stakeholders by putting op contracts. This is said to have taken a great effort; the long process of gaining approval of the involved parties with the contracts was accompanied with high transactions costs. Cultural differences and the novelty of the process were mentioned as the reasons why these transaction costs for concluding the contract were so high. Despite this fact, as the most important coordination mechanisms during the process, trust was mentioned; its place can not be taken by contracts (Anonymous (5), 2009).

In both case 1 and 3, the lacking of a business plan resulted in a stalemate situation for contracting: entrepreneurs are reluctant to formally commit themselves to participation in the Agropark as long as no business plan can be shown. This is not surprising, as the entrepreneurs have in the first place an economic interest – they want to make a decision based on a business plan. But, as long as it is not clear what kind of producers will enter the Agropark, what the size of their enterprise will be and how it will be run, it is merely impossible to create a business plan, ending up in a stalemate situation. In case 2, this problem is overcome by the fact that the initiative originates from the producers themselves. They have a shared goal and can work on the business plan on their own account. In situations where the entrepreneurs are involved in a later stage, there appears to be a very reserved attitude maintained among the producers until a business plan can be put on the table to be discussed.

Asset specificity

The use of contracts can be seen as a way to deal with the fact that although uncertainty and sunk costs are considerable, there is no tangible asset yet in which the asset specificity can be expressed. In some way lock-in is deliberately created in case 2 by putting up formal contracts for participants, so they have to express their commitment. During the process, it appeared that a sunk investment exists in setting up an Agropark that had not been accounted for beforehand: knowledge. It had not only been money, but also the effort of the innovative process that they invested, with as an output the new knowledge on how to perform the development of an Agropark. Before this was acknowledged, parties could drop out and take this knowledge with them without any consequence. So, this is the way the project team of Agropark 2 dealt with the sunk investment of knowledge that at first glance not created lock-in; they made the lock-in visible in a contract. Also in case 3, the problem with the sunk investment of knowledge was faced. Here, the principal tried to gain from the knowledge while being reluctant to invest, which is an example of opportunistic behaviour.

Due to these experiences, knowledge is now considered an asset by the project members, and treated as such by means of contracts (Anonymous (4), (5) and (7), 2009). This is to prevent further opportunistic behaviour of project partners. The newly generated knowledge, first seen as an externality, is made excludable by the contracts and therefore ownership can be defined more easily. As expected according to figure 2.1, the putting up of these contracts was accompanied by relatively high transaction costs (Anonymous (5), 2009), as asset specificity and uncertainty were high for the knowledge investment. The transaction costs were higher in case 3 than in case 2, which was to be expected as in case 2, the levels of trust and commitment are considerably higher than in case 3, and hence the incompleteness of the contracts could be dealt with more easily.

The ‘classic’ forms of asset specificity and lock-in that are related to investment in tangible assets, was not present in any of the three cases as none of them have been realized yet. There is no building there are no machines, there is only the effort and funds put in the development process. This makes asset specificity an interesting concept in the context of Agroparks.

Governance structures in the operational phase

For the operating of Agropark 1, a “shopping mall” concept was considered. The choice for this form had been strongly influenced by the fact that entrepreneurs were reluctant to invest in the project; offering a ready-made building where producers could join in, with low investment costs, was supposed to make joining the Agropark less risky for the producers. The day-to-day management of the park would be in the hands of an independent party. The risks and profits would remain with the producer’s own business in private ownership; synergetic cooperation between entrepreneurs (e.g. for use of waste streams) would be ensured by long-term contracts. Hence, the entrepreneurs retain the control rights over their own business, and only share the risks and profits with the other partners over the shared functions. The partners were to be equal in the management, and residual control rights over the shared functions divided among the partners by fixed shares. These features imply that this is a hybrid form with a stronger dependency on formality and (relatively complete) contracts than on hierarchy and informal modalities.

The choice for this formal kind of coordination mechanism can to large extent be explained by the low level of social capital that was observed during the process. In the shopping mall concept, the development of personal relationships is less important that e.g. in a cooperative. Social capital is replaced by long-term contracts. However, it can be disputed if this organizational form would be fit for an Agropark setting, which is bound to meet unforeseen difficulties which will prove the contracts to be incomplete – and this is where social capital is needed. Based on the observed lack of trust and commitment between the partners, moral hazard and opportunistic behaviour are realistic threats to this concept. Whether or not this kind of institutional arrangement would have worked in the Agropark setting cannot be told for sure, as the project has been called off before realization. Nevertheless, considering the presumed importance of social capital in hybrid forms, it can be argued that the separate ownership/shopping mall model would not have maintained in realization.

In Agropark 2, as the coordination mechanism selected for the operating of the park, a system of ‘chained corporations’ consisting of three separate corporations (BV’s) is planned for. This implies that private ownership is maintained to a large extent, and the producers will be the residual claimants of their own business. The shared facilities are run by a corporation in which the three partners are equal share holders, together with the engineering company holding a smaller share. Risks and residual income will be divided among them accordingly. These arrangements were preferred by the entrepreneurs due to the relative autonomy that can be maintained in this setting; each of the producers has the freedom to make his own business decisions. The co-fermenting installation (the ‘bio-energy plant’) is also run as a separate business. The interdependence between the partners is organized with contracts, which are yet to be developed. The uncertainties and incompleteness of contracts can be dealt with due to the high level of trust between partners. In the process of realizing the park, leadership will gradually shift from the external project leader towards the group of entrepreneurs. As they will be running the Agropark, they have to take over the lead, and hopefully retain the good works of their predecessor. Again, the high level of trust and commitment will show to be a

supportive backup to the incompleteness of contracts, as the risk on post-contractual opportunism is low. Considering this, the chosen coordination mechanism has a good chance to succeed in the long term.

The system of “chained corporations” that is planned for, is actually a hybrid combination of multiple hierarchical organizations. Within each corporation, hierarchy will be the coordination mechanism, but between the three enterprises contracts and informal agreements are the main coordination mechanism and relationships are equal. The high level of trust and mutual consent that is present will keep enforcement costs low. This makes that this institutional arrangement can also be determined as a hybrid form; albeit more regulated through hierarchy and informal modalities than in case study 1.

In case 3, of which it is yet unknown whether or not the Agropark will be realized, depending on the investment company, a far more hierarchical coordination is planned for. The park will be owned by shareholders from the investment company, knowledge institutions and partly by the local government. Together these shareholders form a consortium that is responsible for the management of the park and will appoint day-to-day managers and a park director. Within the park, the separate enterprises are under the supervision of the company. This means that the park has a strongly hierarchical organizational structure, with well defined roles and tasks. This dependence on hierarchy can be explained by a number of factors. Partly, it is due to the local culture in which the Agropark will be embedded, which is businesslike and hierarchical by nature with a strong emphasis on governance. On top of that, the initiative for the project originated from a semi-government, not from entrepreneurs, which makes the choice for a more formal organization form more plausible than in the other two case studies.

While the managing of the enterprises is done by the producers (be it under supervision), the residual claimant in the Agropark will be the consortium. The fact that producers are not part of the consortium carries a risk of opportunism in it; as there is information asymmetry between the consortium and the entrepreneur, the entrepreneur could take hidden action to his own benefit without the notice of the consortium. To prevent this, enforcement costs are high, which makes this governance structure less favourable in an Agropark setting than a hybrid form in which the relationships are more equal, like in the other two case studies. In figure 2.1 the selected coordination mechanism of case study 3 could be placed far more to the right than the other two, and can be characterised almost as a pure hierarchy. This can partly be explained by the low level of social capital in this case, as it is known that hybrid forms strongly depend on mutual consent and trust for their efficiency. The organization form of the “shopping mall” concept of case 1 can be placed most to the left, and the system of ‘chained corporations’ of case 2 somewhere in the middle. Both these coordination mechanisms can be identified as hybrid forms.

In chapter 7, the research questions and hypotheses will be answered, summarizing the results that were found in this chapter. Also, the research practice will be discussed and recommendations will be made.

7. Discussion & conclusions

In this chapter, the answers of the research questions will be summarized. The chapter ends with a short reflection on the research and some recommendations.

1. **Which stakeholders are involved in realizing and running an Agropark?**
2. **What are their interests in and expectations of the project?**

In all three case studies, the stakeholders involved included researchers, government institutions, agricultural producers, industrial entrepreneurs and communication and consultancy bureaus. The exact overview per case can be found in tables 3.1, 4.1 and 5.1. The groups of stakeholders appeared to have different, sometimes conflicting, interests, as well as different expectations of the projects. The overview of these interests are expressed in the field of force analyses, in sections 3.5, 4.5 and 5.5.

3. **Which coordination mechanisms are selected during the development of the Agropark?**
4. **Which institutional factors influence the choice for a coordination mechanism?**

During the process, contracts appeared to be of considerable importance. In two case studies contracts were made during the process, as an instrument to express that partners are committed. The stakeholders mention explicitly that after the first stage of planning, contracts are very important for the continuation of the process. It appeared that the choice for either a formal or informal, price driven or hierarchy driven governance structure for the operational phase could be explained by social capital properties: levels of trust, commitment, and cultural values among the partners.

5. **How can "success" and "failure" be defined for an Agropark?**
6. **What are the institutional factors that play a role in the success or failure of Agroparks?**

The definition of success appeared strongly dependent on the role of the actor. During the research, different perceptions of success were found, but they were reducible to two definitions. For entrepreneurs, "success" is strongly related to profitability, while initiators originating from research pay more attention to whether the *process* proved to be successful (i.e. the third phase is entered) and new knowledge is developed. The perception of "failure" is more or less the same in each case.

Summarizing the importance of institutional factors in the development process, the following was found. *Insufficiently developed legislation* does in some ways form a problem associated with Agroparks, but it does not need to form a serious threat to the succeeding of the project. It can slow down the process but is not likely to be a factor determining 'failure' for Agroparks in general, when we consider the case studies in this research. *Cultural differences* played a very different role in all three cases. But we can conclude that in general, cultural differences between stakeholders will be present and it strongly depends on the situation and the persons involved how this will be dealt with. It is a problem inherent to the concept of the Agropark. *Differences in interest* can be overcome by continuous acknowledgement and respecting of each others interests. Case 1 and 3 have shown that if this respect is lost, trust and commitment are affected negatively and can thus form a threat to success.

Social capital appeared to be of great importance in all three case studies. *Trust* appeared to be a basic condition that strongly influences other factors. If trust is not present in an early stage, it is difficult to create later on in the process no matter what effort put in to it. Trust indeed comes by foot and leaves by horse. Furthermore, we can conclude that *commitment* is an important, yet vulnerable factor in the realization of and Agropark. It is related to leadership more strongly than trust and can therefore be controlled to a larger extent. It can be passed on to others where trust really has to grow during the process. It appeared to be helpful to express commitment formally at some point during the process to overcome the uncertainties that are inherent to the kind of innovation process like setting up an Agropark.

Finally, an empirically found factor of great importance, was the presence of enthusiastic *entrepreneurs at the first (planning) stage* of realizing an Agropark. It has proven to be a favourable, if not necessary precondition. It may be possible to realize an Agropark without producers as initiators, but it is expected to be difficult; the proof of three case studies may however not be sufficient to state that it would be impossible.

7. **Is leadership of the project leader a key factor for an Agropark to succeed?**
8. **What other factors are influenced by the (lack of) leadership?**

We can conclude that leadership is definitely a factor of great importance in setting up an Agropark. However, case 3 shows that even with the best effort in sense of leadership, if the other determining factors are troublesome leadership alone cannot guarantee success. In case 1, the lacking of one leading person did have a negative impact on the project. Leadership influences mostly the communication with internal as well as external parties, the way that conflicting interests are dealt with and, partly related to that, the commitment by (possible) partners. Streamlining and coordinating the planning process can be greatly improved by good leadership.

Hypothesis 1:
“Leadership is a key factor in determining success or failure of an Agropark”

Answering the first hypothesis, we can state that leadership proved to be an important factor in the development of Agroparks, although it appeared not to be the most crucial factor. Trust and commitment can be seen as the most important factors; if these are lacking, good leadership alone is unlikely to make the project a success. Nevertheless, it has been shown that leadership can have a definite positive influence on the process and also affects other factors positively or negatively.

Hypothesis 2:
“Due to the characteristics of an Agropark, the most plausible choice for the coordination mechanism is a hybrid form”

Referring to the second hypothesis, we can conclude that the properties of an Agropark make hybrid forms indeed the most plausible choice for a coordination mechanism. Although in one of the cases a hierarchical organization form is selected, we can state that due to the high level of uncertainty that is inherent to Agroparks, a governance structure that relies on social capital is the most plausible choice.

Discussion

In this research, we have tried to identify the institutional challenges in realizing Agroparks by means of literature study, semi-structured interviews and theoretical analysis. What results is an overview of the processes around the development of a novelty in the agricultural landscape, that can hopefully offer some recommendations to future initiatives.

A drawback of the study is, that the limited number of three case studies was taken into account; however, it must be noticed that Agroparks are still in the development stage and no park is operational yet up to this day. This implied that writing this thesis was in a certain sense pioneering. This feature also resulted in some surprising findings, as it was not clear beforehand which institutional factors would come up as the most important. This also explains why not all factors found are treated equally extensive n the theory chapter.

Although the Agropark is a new kind of enterprise for agriculture, it is not unique in the sense of its multi-stakeholder innovative character. Other examples of leap innovation with the involvement of a great diversity of partners can be mentioned, like business parks with shared facilities, the development of a new kind of railroad through protected areas and different countries, or even the organization of large scale events like the Olympic Games. Lessons can be learned from all kinds of situations in which people are compelled to cooperate in an uncertain environment with multiple stakeholders from different backgrounds, dealing with conflicting interests. In this thesis, such other examples are not discussed. But for Agropark initiators, there certainly are examples to learn from, and they do not stand alone in their innovative approach as they may expect.

Summarizing the conclusions, the following recommendations can be made for future Agropark initiatives. An important finding is that the fact whether the initiative came from the entrepreneurial side or not, turns out to be of great importance for the success. The kind of project that an Agropark is asks for high levels of trust and commitment from the entrepreneurs, and it is very hard if not impossible to create this when the initiative comes from a knowledge institute or (semi-) government. Furthermore, appointing a capable project leader is an important feature, as well as making commitment explicit during the process via contracts. If these institutional factors are sufficiently fulfilled, and a solid business plan is made, chances are that institutional challenges like conflicting interests, cultural differences and legislative difficulties can be overcome in the development of the Agropark, and the challenge to lift high-tech, high-quality and high-sustainability agriculture into the 21st century will be met in a most extraordinary way.

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