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Stakeholder Analysis of Agroparks

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ABSTRACT

An agropark is a cluster in which several primary producers and processors cooperate to enhance sustainable agro-food production. Because agroparks represent complex system innovations, this article studies their realisation trajectories from the stakeholder management perspective. By using the case study method, the research confirms that agroparks are system innovations involving many participants, most of them being key stakeholders. The different stakes and power positions, and their impact have been assessed. and managed in line with the realisation process of the agropark. The paper provides first learnings on stakeholder management in agropark projects, which may promote their realisation.

Keywords: gropark, System Innovation, Stakeholder Analysis, Stakeholder Management

1 Introduction

Major trends in the world, such as environmental pressure, urbanisation, population and income growth, and increasing global competition are at the basis of agricultural reforms and major sectoral transformations (Knudsen *et al.*, 2006; Mougeot, 2005; Rigby and Caceres, 2001; Smeets, 2009; Van der Brugge, 2009). The trends stimulate the formation of strong agricultural clusters (cf. Porter, 1990), which is the cooperation and collaboration between grouped activities of heterogeneous, independent agro-companies. A recent example of location-specific agricultural clusters are agroparks, that spatially bring together agro-food production and related economic (processing) activities (Smeets, 2009).

In principle, agroparks may increase sustainability by higher resource productivity, better utilisation of agricultural primary products, waste products and by-products, deploying innovative technologies. The realisation of agroparks represents multi-faceted innovations in agro-food businesses. From the early stages of idea formation onwards, agroparks are characterised by high levels of uncertainty, because diverse, upcoming challenges and their impact are very difficult to foresee (Chiesa *et al.*, 2009; O'Connor, 2008). As a result agropark initiatives have been developed in various formats, but, especially in Europe, few of the drawing board concepts have been realised by 2010 (Smeets, 2011). One of the explanations of delays and unsuccessful realisation may be found in its complexity: Agroparks are system innovations that require institutional changes (Carlsson and Jacobsson, 1997), apart from company level changes, which involves unique sets of stakeholders, each of whom may fundamentally influence the realisation of a specific agropark. It makes it urgent that agropark realisation processes are studied from the stakeholder perspective. This article makes a start to fill the void by exploring the realisation processes of agroparks from the stakeholder management perspective.

It is the aim of this article to generate insights into the stakeholder impact on agropark project initiation, development and implementation, considering it a system innovation. In particular, the objective of this article is to determine the impact of different stakeholders, for example entrepreneurs, and local authorities, on the realisation processes of agroparks, by identifying and analysing the interests, roles, power, and position of the stakeholders in agropark projects.

The structure of this paper runs as follows; first, the literature study, second, the methodology, and third, the results and analysis. The paper closes with conclusions and recommendations. The recommendations are directed at project leaders and project managers, to enhance effective implementation and proper strategic governance of agroparks

2 Literaure

One may recognize both differences and similarities between agroparks, agricultural parks, eco-industrial parks, and biorefineries. From all of these categories one can find cases that aim at achieving synergies, due to linked, collaborative or joint, spatially clustered activities. However, some agroparks, especially in south-east Asia, run agricultural activities for the sake of recreation or education. Eco-industrial parks (EIPs) typically combine industrial manufacturing and services to increase resource utilisation, improving their financial and environmental performance. Classic examples of EIPs are Kalundborg in Danmark, and Burnside Park in Canada. Agroparks fulfil a similar ambition as EIPs, but agroparks create a variety of foodstuffs and non-foodstuffs on the basis of biomass. Biorefineries focus on producing, from biomass, higher value added outputs, such as renewable chemicals. In Brazil, the biorefinery concept has been developed and optimised on the basis of sugarcane. The plants may realise ethanol, sugar, electricity, heat, yeast, bio-fertilisers, and inputs for chemicals. The importance of those developments is represented in the creation of the Ibero-American Society for the Development of Biorefinery. In the context of this article, agroparks are directed at inventing, realising and expanding sustainable agro-food production (De Wilt and Dobbelaar, 2005b). Systematic proponents of such agroparks, both regionally and globally, are the Dutch *InnovatieNetwerk* and Wageningen UR.

We define agroparks as spatially clustered agro-food systems in which several primary producers and suppliers, processors and/or distributors cooperate to achieve high-quality sustainable agro-food production. Agroparks are clusters of several businesses from different sectors, where each part seeks both the individual benefit, and the collective benefit through the enhanced environmental performance, and economic synergy gains. Here, agroparks link various food and non-food activities, such as energy, water and waste management, logistics, transport and spatial planning. The integrated production chains in agroparks enables to close material flow cycles, creating more sustainable production (InnovatieNetwerk, 2010). The nevertheless very mixed reception of the concept of agroparks, together with data availability on agropark cases in the Netherlands, makes us focus on Dutch agroparks.

Agropark projects have all the characteristics and meet all the criteria of a system innovation. Classic examples of similar system innovations are the introduction of steam power or the steel industry in the beginning of 19th century, electricity, automobiles, aircrafts, and oil in the beginning of the 20th century, computers, software, telecommunication, and the internet at the turn of the millennium (Geels, 2005). Innovations come about in different types, such as incremental, radical, semi-radical, organisational, product, process, design, or management innovations (O'Connor, 2008). A system innovation can be described as a combination of various types of innovations, which create socio-technological transitions from one system to another (Geels, 2005). An agropark creates a system innovation in agro-food businesses, as it relates to a major change of perspective, an extended time horizon, an integrated and multi-level approach, and collaboration between many stakeholders (De Wilt *et al.*, 2000). Finally, agropark projects involve high levels of uncertainty, preventing smooth fulfilment of the often primarily rationally planned realisation trajectories.

System innovation processes in general are stated to involve the following phases (De Bruijn *et al.*, 2004; Van de Ven *et al.*, 1999):

- Initiation
- Development
- Implementation
- Operational

In the initiation phase, the combination of at least two out of three drivers of system innovations is required: knowledge, market and government (De Bruijn *et al.*, 2004). In the development phase, the initial ideas take numerical forms, and activities start to proceed. In this second phase, the obstacles of the project design surface, mostly caused by unexpected, or at least unanticipated, external events. In the implementation phase, the innovation is adopted, realised and formalised. Finally, the completion phase, where the innovation starts to function on a going concern-basis (Van de Ven *et al.*, 1999).

Williamson (2000) classifies institutions into four levels: social embeddedness, institutional environment,

governance structure, and incentive structure. In principle, a system innovation requires changes at all four levels, with an emphasis on the second, that is the institutional environment. Besides rather inert institutions, there are other factors that can cause system failures, for example, deficient infrastructures, lacking capabilities, and strong stakeholder interests (Carlsson and Jacobsson, 1997). System innovation is not a linear process, and its realisation process requires the interaction of multiple stakeholders (Van Mierlo *et al.*, 2010).

3 Stakeholders as Unit of Analysis

Stakeholders became a unit of attention for managers in the 1980s (Freeman and Reed, 1983; Mitchell *et al.*, 1997). On the one hand, production and technological developments led to more and more efficient and low-cost mass-production, which gradually predominated whole supply chains. On the other hand, probably due to rising prosperity firm objectives broadened beyond the financial dimension of shareholders. This led to an increase in the number of groups, actors, who (claim to) have a stake in the strategic decisions of organisations. Accordingly, stakeholders are defined as actors who have an interest in the project, who are affected by the project realisation and/or who (could) have an influence on the decision-making and realisation of a project (Brugha and Varvasovszky, 2000b).

The involvement of a large amount of stakeholders in a system innovation requires time, human, and financial resources. Moreover, conflicting interests of stakeholders can result in delay or even failure of system innovative projects (Freeman *et al.*, 2007). Planning a system innovation for a variety of stakeholders requires an understanding of the different stakeholders, their importance, and the analysis of their interests and influence on the innovation (Cooper, 2008). System innovations can be affected strongly by the stakeholders until the potential benefits have been specified by its application in practice, and until the success of the novelty has been proven (Kemp *et al.*, 1998).

3.1 Stakeholder Analysis

Stakeholder analysis is an approach, a tool or set of tools, for generating knowledge about actors, with the aim to understand their conflicting interests, intentions, and behaviour, to assess the influence and resources they bring to bear on the decision-making and/or on the implementation activities (Brugha and Varvasovszky, 2000a). Stakeholders are differentiated by their actual or potential benefits and harm that they (anticipate to) experience because of the innovation (Donaldson and Preston, 1995). Based on their power, importance, and influence to the project success or failure, stakeholders may be classified into the following three types: potential stakeholders; influential stakeholders; and key stakeholders (Bourne, 2009).

Key stakeholders are the critical subgroup of the total set of stakeholders. Key stakeholders are all identifiable groups or individuals who significantly affect the achievement of an organisation's objectives, or who are considerably affected by the achievement of an organisation's objectives (Freeman and Reed, 1983). . Influential stakeholders have an indirect impact on the realisation of the project objectives, and/or whose stakes are influenced by the project implementation (Donaldson and Preston, 1995). Successful system innovations typically involve the key stakeholders in the realisation processes (Kitson, 2009). Whether this claim holds in agropark projects is as yet unknown.

3.2 Stakeholders and their roles in agroparks

The realisation of system innovations formally requires the involvement of several public and private stakeholders, such as public authorities, and potential future member companies (Heeres *et al.*, 2000). Loopback (2007) stresses the importance of tracing the (essential) roles of (potential) stakeholders in project realisation processes, to decide which are the key stakeholders, that should figure prominently in local stakeholder management practices. The use of the list of public and private stakeholders in the context of agroparks, brings about the following roles of stakeholders in designing and implementing complex and sustainable agricultural production systems: initiator, planner, organiser, executer/operator, coordinator, monitor/evaluator, investor, (legal) approver, and partner. Several stakeholder may play the same role in the scope of one agropark project. For example, both environmental organisations and political parties have a role of approver, denoting social and/or political acceptance.

4 Methodology

The selected research strategy for this research is case centred, as we use the theories on system innovation, clusters, and stakeholders, to gain a better understanding of the cases. By means of this

research strategy we gathered information to build up a detailed picture of reality, as well as related it to the literature for a better understanding of the cases (De Vaus, 2001).

A case study is a type of research that is suited to gain profound insight into different processes and/or objects, restricted in time and space (De Vaus, 2001). It is characterised by being selective, strategically sampling a small number of research units, and exploring depth more than breadth (Verschuren and Doorewaard, 1999).

Stakeholder analysis in general involves many subjective aspects (e.g., differences in political systems, and cultures), which makes it difficult to compare cases of different countries. For that reason, the researchers opted for cases from one country alone. The analysis of the agroparks from the same country enabled us to draw less ambiguous, more representative conclusions. As stated earlier, data availability on the managerial aspects of Dutch agroparks, and their mixed reception and progress made us choose for empirical research in the Netherlands. As a consequence, we strategically selected agropark-cases, based on the following criteria: the agroparks should (1) differ in the development phase they are in; (2) they provide access to the management and governance aspects at stake; (3) fulfil the criteria of a system innovation; and (4) they are located in the Netherlands.

The combined criteria brought about three prime cases, named, respectively, Agriport A7, Biopark Terneuzen, and New Mixed Farm. The cases are spread out across the Netherlands, placed respectively in the North-West, the South-West, and the South-East of the country, but still within a range of 300 km, and under one jurisdiction. To realize our objective we need 1) to understand the nature of these agroparks, 2) to explore the involvement of stakeholder (groups), 3) derive the key stakeholders, and 4) assess their stakes, roles, power, position, attitude and interaction with their agropark.

The units of analysis are the stakeholders of the three selected cases. In principle, the project designers, project leaders, and scholars could provide information about different stakeholders of these agroparks, which allows us to conduct comparative case study analysis.

We started the cases studies by gathering documented information about agroparks. First, we scanned the printed materials partially provided by the project manager. Second, we consulted the official websites, as well as the media announcements about agroparks. Third, we reviewed the existing websites of, and on, the potential stakeholders.

Following document analysis, data collection continued with a series of in depth interviews. The goal of the interviews has been to define the stakes, the roles, the power, the position, and the attitude of the different stakeholders in an agropark project, and to learn the interaction of stakeholders with the agropark as organisation. Some concepts of stakeholder analysis (for example, concerning roles) could not be operationalized by closed or scaled answers. Hence, we used both closed and open-ended questions.

This phase with interviews comprised of seven face-to-face interviews, using a semi-structured questionnaire. The interviewees are (all) project leaders, project managers, and scholars who are involved in the design and development processes of agroparks. These respondents turned out to be competent to provide information about the stakeholders of the agroparks. However, they are also stakeholders of the agroparks, with potentially biased opinions. To overcome this disadvantage we triangulated the information from interviewees, with the aim to strengthen the internal validity of the research.

Research should check for internal and external validity, and for reliability. Internal validity refers to whether the research measures what it is supposed to measure. To increase the internal validity researchers triangulate methods or sources (De Vaus, 2001). Given the lack of any questionnaire on this topic, we choose for both several methods and several sources. We consulted several theories, and various types of literature, to find info on the relevant factors for the stakeholder analysis, and to ensure support for our assumptions. Concerning the methods, the research benefited from the consultation of books on the chosen agroparks, websites, and on-line media announcements, next to the in depth interviews.

External validity concerns the extent to which the results of the article can be generalised outside the studied cases. The research was focused not on the uniqueness of the individual cases, but on the understanding of agropark projects in general (De Vaus, 2001). Although many scholars believe that there are no easy recipes for creating agroclusters, or making system innovations happen, the efforts to draw learning points may have positive results (Buckles, 1999; De Bruijn *et al.*, 2004; Rennings, 2004; Van de Ven *et al.*, 1999; Van Der Veen, 2010). The conducted stakeholder analysis is based on qualitative criteria, that provide no results for statistical generalisation. Therefore, results have been theoretically generalised through using the replication logic (De Vaus, 2001). The outcome of this research can be applied to other cases under similar conditions.

Reliability relates to the demonstration that the methods and measures of the research will provide the same results the second round again (De Vaus, 2001). To maximize reliability evidently the bibliographic database has been saved and the interviews have been recorded. Although recorded and transcribed interviews will not be published, because of the confidentiality reasons, the recordings have been saved in .mp4, and the transcripts have been stored in docx files.

5 Results and Analysis

The empirical research concerns three agroparks in the Netherlands. First, Agriport A7 located in the North-Western province North-Holland. The project started up in 2005 by with the objective to combine different sectors that aim at closing material cycle, reduce traffic, etc. (Agriport A7, 2010). In Agriport A7, primarily large-scale greenhouse horticulture and logistic companies spatially clustered to create cost economies and efficiency improvements in production, and logistics, to capture economic and environmental advantages (Agrologistiek, 2010). Most companies are active in producing, packaging, and transporting agricultural produce. The size of the project is approximately 410 ha for greenhouses and 80 ha for agribusiness, logistics, and 15 ha for knowledge-intensive business and leisure. The minimum size of the greenhouses is 15 acres, and the maximum size is 100 acres (Agriport A7, 2010). By 2010 the turnover was expected approximately Euro 2.5 until Euro 3 million per year. Extensions were prepared, for example attracting a datacentre to use excess electricity from the CHP. The existing park itself generates approximately 38 jobs. The agropark project claims to create over 3000 direct and 1000 indirect jobs within a few years (Agriport A7, 2010).

Second, Biopark Terneuzen, A7 located in the South-Western province Zeeland. Biopark Terneuzen claims to represent new thinking in the creation of agro-industrial sustainability (Biopark Terneuzen, 2010). The main function of Biopark Terneuzen is to create links between existing and new companies from different sectors, such as chemistry, energy, logistics, greenhouses, etc. Specifically, the project is to maximise the exchange and use of by-product and waste, which then become feedstock, energy, or utility supplements for production processes. The cooperation between the stakeholders for the development of the Biopark has started between 2005 and 2007 (Smeets, 2009). Its greenhouse area comprises of 250 ha in total, with a potential of realising approximately 1500 jobs. Already the job openings makes Biopark Terneuzen of strategic importance for the economic development in this province (Geertse, 2010). Following Biopark Terneuzen, completed in 2010, the project comprises two further development phases, namely Valuepark Terneuzen and Bio-Based Europe. By 2010 the second and the third phases are in the project design and development processes.

Finally, the third case study concerns New Mixed Farm (NMF), located along highway A73 next to the river the Maas in the South-Eastern province Limburg. NMF was initiated already in 2001, and the development of this agropark started in 2004. Within the context of NMF various large but regional primary farmers in poultry, pigs, mushrooms and greenhouse horticulture planned to cooperate using each other's by-products and waste (De Wilt and Dobbelaar, 2005a). NMF is tailored for sustainability, re-using waste flows from each member company, with the aim to increase production efficiency through upscaling and chain-integration, reducing both costs and environmental harm. However, despite clear potential advantages to the firms involved, the project has not been implemented by 2010.

The three case studies confirm that Agriport A7, Biopark Terneuzen, and NMF hold the characteristics of system innovations. They spatially cluster agro-food systems, where several producers and suppliers, processors and/or distributors cooperate to achieve sustainable agro-food production.

As presented in the literature-section system innovations involve the initiation, the development, the implementation, and the completion phase, with their specific processes (De Bruijn et al., 2004; Van de Ven et al., 1999). Figure 1 presents our placement of the three agroparks in the realisation processes of system innovations, which is based on the data analysis. The arrow indicates the direction of the project realisation phases.

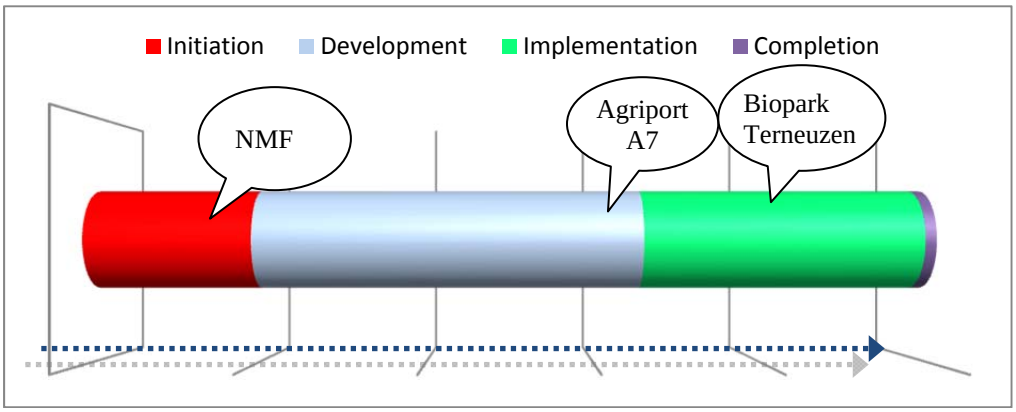

Figure 1. System Innovation Realisation Processes

Out of the three cases only Agriport A7 is in the early implementation process. There, the building of greenhouses and several commercial activities have started following the project approval by the municipality. Although many buildings and joint activities have been completed, still many greenhouses are awaiting further expansion, and some of the projected activities, for example the datacentre and a large farm, may not even get implemented. Biopark Terneuzen is further in the implementation processes than the other two agroparks, because the complex itself, the pipeline systems, and external connections with local companies have been created, next to the training centre, joint publicity, etc. New Mixed Farm, despite its long history, is still in its initiation or early development processes. Early on the municipality has approved the project, and entrepreneurs signed several agreements. However, over the years opposition was growing and support was falling, preventing further development of the agropark.

5.1 Involved Stakeholders

In Table 1 we present the *de facto* involved stakeholder groups, their power, position and the assessment as being an influential or a key stakeholder in the agropark realisation processes. A surprisingly large numbers of stakeholders are involved in the realisation processes of the three agroparks. Moreover, the research brought about that most of the involved stakeholders in agropark realisation processes are actually key stakeholders with (rather) high power. Specifically the key stakeholders are:

- Initiators, designers, and project developers,
- Public sector organisations,
- Member companies,
- Communities,
- Environmental organisations, and
- Political parties.

These stakeholders have a significant impact on the achievements of the project targets, either positively and negatively. The other stakeholders are influential stakeholders.

Table 1.
Analytical Matrix

Nr	Involved Stakeholders	Power	Position	Assessment
1	Initiators, designers and developers	High	Support	Key
2	Public sector stakeholders	High	Support, Opposition	Key
3	Member companies	High	Support	Key
4	Potential future members	Medium	Neutral, Opposition	Influential
5	Financial institutions	Medium	Neutral, Support	Influential
6	Knowledge institutes	Low	Support	Influential
7	Community	High	Opposition, Neutral	Key
8	Environmental organisations	High	Opposition, Neutral	Key
9	Political parties	High	Support, Opposition	Key

The stakeholders presented in table 1 belong to different societal groups with not only a position, and level of power, but also with a certain stake/interest, and role in an agropark.

5.2 Stakes/Interest and Roles

It is important to realise that most of the key stakeholders try to realize their own interests in the respective agroparks. For example, member companies and public sector stakeholders have an interest in new business development, respectively reduce unemployment. The development of Agriport A7 and Biopark Terneuzen have had strategic importance not only from the perspective of sustainability, but also for the economic development of specific regions in the provinces of North-Holland and Zeeland. The unemployment rates in their regions were relatively high. In the meantime, the political parties near NMF do not prioritize the development of the local economy in Limburg. There, the regional unemployment rate is rather low. This can explain the upfront, or later, adverse perception of public sector stakeholders and political parties towards the agropark NMF. We derive that when the province or region prioritize the development of the local economy, and want to reduce unemployment rates, then they are more likely to support an agropark-initiative, and speed up realisation processes.

Other key stakeholders, expecting negative effects on their stakes from the project realisation, normally oppose an agropark initiative. Opposing communities create unwanted delays, resulting in unexpected, essential changes in projects. Interestingly, the conventional believe that the community near agroparks counter project targets, i.e. the NIMBY-argument, has been falsified in the two successful cases. For example, prompt communication created a positive turning point in the deteriorating reception of Agriport A7, following the public hearing on the project.

An important learning from the cases is that the expected/potential future companies/members do not possess a strong interest. These companies avoid losing their reputation, and keep their options open. They do not speak out. Moreover, although potential future firms are thus assessed as merely influential stakeholders, proponents of an agropark expect potential future members to have and express a positive stake. Their factually at best neutral interest may be harmful to the realisation trajectory of the project. Thus, the success in realisation processes of the agroparks is related to the position of the key stakeholders.

In general, supportive key stakeholders stimulate project realisation processes and vice versa. We have found that the opposition of even one group of key stakeholders will create essential obstacles. An agropark in the Netherlands seems to require the support of all key stakeholders.

Finally, the communication amongst stakeholders has been investigated. It came out that early communication is an important instrument to gain support and speed up the realisation processes. However, if the stakeholders expect negative impact on their stakes, they will oppose the agopark, no matter when and how they have been informed. Overall, as system innovations, agroparks are likely to be affected by stakeholders expectation until the potential benefits have been specified and standardized by its application in practice.

6 Conclusion and recommendations

The involvement of many key stakeholders in the development and implementation processes requires time, human, and financial resources, as well as management efforts to satisfy their interests. This research on agroparks confirmed that opposing powerful stakeholders can create considerable delays in the project realisation processes, block the development of some parts of the projects, and/or compel essential adjustments. The opposition of even one group of key stakeholders could decelerate the realisation processes of agroparks. In contrast, supportive key stakeholders provide the potential to form a winning coalition and promote, speed up and accelerate the realisation processes of agroparks. The impact of stakeholders on agropark project realisation processes as system innovations is presented in Figure 2.

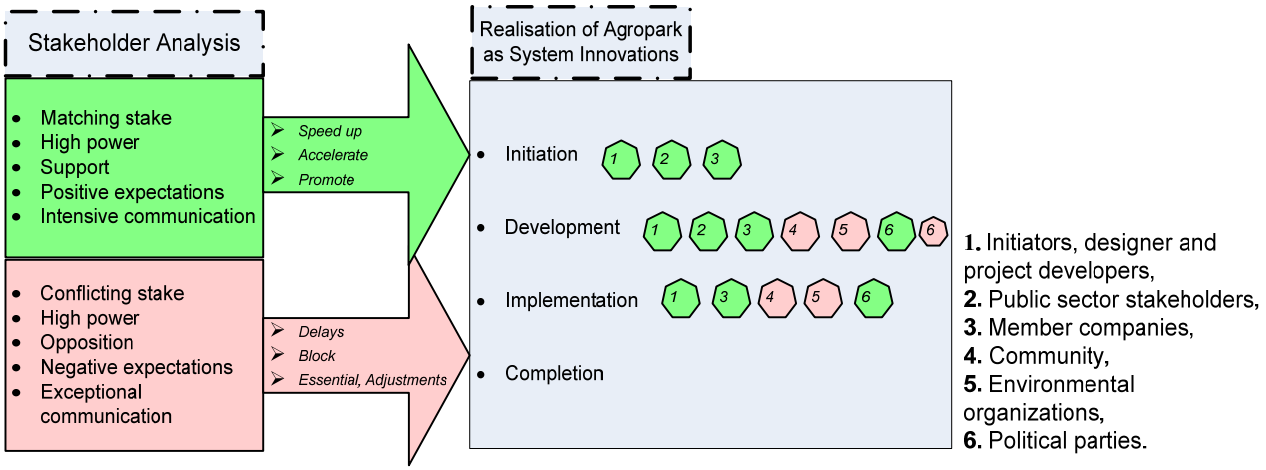

Figure 2. Stakeholders' impact on system innovation realisation

In Figure 2, the green/dark colour indicates the support and the positive impact on the three agropark realisation processes. The pink/lighter colour indicates the opposing stakeholders, as well as the negative impact of the stakeholders on the realisation processes. The opposition became manifest during the development phase of the studied projects. Conflicting stakes, adverse perception, and negative expectations create opposition, and thus generating delays, blocking realisation processes, or compelling essential and unexpected changes in the projects. To the contrary, the propitious expectations of stakeholders create support and thus accelerating, speeding up and promoting the realisation processes.

Finally, recommendations for project managers and project leaders have been formulated to explicitly gain support, avoid opposition, and/or deal with the existing opposition of the key stakeholders. Cooperation, intensive communication, strong networking, and coalition building can help avoiding some obstacles, and thus speed up agropark realisation processes. To avoid opposition, project management should involve also public sector stakeholders in the project initiation processes, create informal networking, manage the expectations of the key stakeholders, and explicitly deal with any opposition of the community. At least in the Netherlands, managers have to adjust the project in case negatively inclined key stakeholders do not change their position and behaviour. In general, project managers and/or leaders should anticipate during the initiation phase that some interests become manifest only in later project realisation phases.

The research met several limitations. First, because in the period of data gathering many agropark projects were not yet completed, the data gathering was limited to only three strategically chosen cases from the Netherlands. Further studies on related formats in various countries are recommended. Second, in line with the literature data gathering prioritized secondary sources, and interviews with initiators, project managers, and scholars. Additional interviews may further raise our understanding of networking practices. Thirdly, understanding the impact of enabling and constraining legal and institutional factors requires complementary research. Finally, the authors are aware that we should expand the research to eco-industrial parks, and biorefineries, towards what one may call synergyparks broadly defined. We present this article as a first inquiry into the managerial complement of technological research in a techno-managerial approach on collaborative activities in businessparks.

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