

Adaptive brownfield management

**Analysis of the way actors deal with complexity and how this
affects the governance capacity of the complex governance
network**

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Preface

This thesis is part of my Masters in Public Administration, specialisation Management and governance of Complex Systems at the Erasmus University of Rotterdam. Besides the completion of my Masters, this report is also the result of a six months research, conducted during my internship at Deltares.

During the writing of this report I went through ups and downs. It has been an interesting learning curve and a challenge to find a balance between theory and practice. Nevertheless, writing this thesis would not have been possible without the help and support of others. First of all, I would like to thank my supervisor Arwin van Buuren for his critical feedback and his patience. Thank you for the supervision and being available for questions. I would also like to thank my second reader Frank Boons for his critical remarks. In addition many thanks to my supervisor at Deltares, Gerald Jan Ellen, I enjoyed the opportunity of writing my thesis at Deltares.

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Summary

Industrial sites arose all over Europe in the period of industrialisation. Partly due to employment opportunities, workers started to live nearby industry and former villages expanded into cities. Many urban industrial sites are now abandoned or underused and have become brownfields. Abandons can be caused by several aspects, e.g. movement of companies to low-wage countries, expansion of companies on the border of a city, or dynamics that forced the company to close.

In the past decade awareness rose about the extensive soil consumption of our expanding cities. Land is a scarce and finite resource. (Urban) brownfields would appear to be a great opportunity for re-use and limiting soil consumption. However, regeneration of these brownfields is a complex matter for several reasons. First of all, brownfield regeneration takes place in complex networks of actors (stakeholders) which can have contradictory interests and views on the issue. Secondly, brownfield regeneration does not take place isolated from its environment. In addition, the multi-faceted character of regeneration of brownfields crosses policy domains (environment, safety, economics, spatial planning) concerned with brownfield regeneration. Partly due to this multi-faceted character various layers of government are concerned with the regeneration of brownfields and next to public actors, private and civil actors are involved too. An additional aspect that makes regeneration a complex task is the fact that the processes are lengthy and therefore bring along uncertainty.

Regeneration of brownfields is addressed by actors in networks. How these actors approach the complex task of regeneration differs per actor. This research elaborates upon the question: *How do parties involved in the regeneration process of brownfields deal with complexity and how does this influence the perceived governance capacity of parties in the network in terms of progress, problem solving capacity and legitimacy?*

To answer this question, two case studies are analysed in depth on the basis of a theoretical framework. To see how the actors in the governance network deal with complexity, this research elaborates upon the way actors demarcate and scope their regeneration projects (boundary judgements) and the strategies they develop. The correlation between boundary judgements and strategies is elaborated. Boundary judgements of actors can be wide or small. On the basis of literature it is expected that small boundary judgements lead to a more conservative strategy and that wide boundary judgements lead to a more adaptive strategy. In addition, the relation between strategies followed by actors and the perceived governance capacity of the network is studied. Based on literature it is expected that an adaptive strategy leads to higher perceived governance capacity than a conservative strategy.

Comparative analysis between the Dutch case study of Stork-Hengelo and the Italian case study of Terni-Papigno led to the following findings. *Conclusion 1:* The Dutch project of Stork-Hengelo develops in an adaptive way, whereas the project of Terni-Papigno develops in a conservative way. This means that the Dutch project develops in relation to its context; connections with other actors are made, they are open to new solutions and the project remains flexible to respond to changes. The Italian project, on the other hand, develops relatively isolated from its context, is more closed to new solutions and rather inflexible.

Conclusion 2: There is a strong correlation between the boundary judgments made by actors and the strategies they follow in the case study of Stork-Hengelo. However, the case study of Terni-Papigno shows some exceptions. This is a

remarkable finding of this research. The case study of Terni-Papigno shows that if managers on the project have a broad assignment their boundary judgements can be wide but their strategy can still be conservative. The explanation can be found in the fact that they do not have the possibility or the experience to connect to other actors and other policy domains. Fragmentation is reflected on the project due to long history of fragmented policy domains.

Conclusion 3: For the adaptive project of Stork-Hengelo, perceived governance capacity is scored slightly more positive than for the conservative project of Terni-Papigno. The strongest correlation has been found between the strategies employed and support to the project. The case study of Stork-Hengelo evolves in an adaptive way, whereas the project of Terni-Papigno evolves in a more conservative way. Where progress, problem solving capacity and legitimacy (transparency & support) are all scored positive (+) in the adaptive Dutch project, these variables are ranked as average (+/-) in the more conservative Italian project. Hence, the perceived governance capacity is higher in the case study that developed in an adaptive way, than in the case study that developed in a conservative way. Despite the clear distinction in strategies, the difference of the perceived governance capacity is limited in the two cases. Though, there is one variable that pops out. *Support* is scored negative (-) in the conservative Terni-Papigno case where it is scored positive (+) in the adaptive Stork-Hengelo case.

Glossary and abbreviations

Actor

This term refers to individual human beings and / or organisations that take part in the governance network. Also known as stakeholders or involved party.

Brownfield

“sites that have been affected by former uses of the site or surrounding land; are derelict or underused; are mainly in fully or partly developed urban areas; require intervention to bring them back to beneficial use; and may have real or perceived contamination problems” (CABERNET, 2005)

Greenfield

The counterpart of a brownfield. Undeveloped land destined for commercial / industrial use, often at the border of the city.

Governance network

“This term is used to describe public policy-making and implementation through a web of relationships between government, business and civil society actors” (Klijn & Skelcher, 2007, 587).

HOMBRE

Holistic Management of Brownfield Regeneration; a European project carried out under the Seventh Framework Programme

Integrated approach

“An approach that combines all aspects that are relevant to tackle the problems that VOC (Volatile Organic Compounds) in urban environment causes. Combines: depending on area, site, context you can use different aspects together or parallel to each other; All aspects: socio-economic aspects (like urban development, communication, financial and legal aspects), techniques, time, space, environment, actors (active & passive) and contexts” (City Chlor, n.d) .

Policy Domain

“Components of the political system organised around substantive issues” (Burstein, 1991)

PPP

Public Private Partnership

Regeneration

Intervention to bring back a brownfield into beneficial use (redevelopment of the area, reuse of the buildings, creating new area functions etc.)

Remediation

Clean-up of contaminated soil or groundwater. Remediation can be seen as a strategy that can be part of the regeneration, if contamination is present on the brownfield

SNI

Sites of national interests in Italy. Brownfields included in this list “have to undergo restoration, actions are prioritised, financing measures, monitoring and check legislation”(ministero dell’ ambiente e della tutela del territorio del mare, 2009:96).

1. Introduction

“*Vacancy, underused and abandoned sites, and lack of financial resources are currently highly prioritised on policy agenda’s*” (Jansen-Jansen & Mulders, 2012).

In the 19th century industrialisation took place all over Europe. Industry was regularly gathered on a place convenient for production and transport. Building industries near a river guaranteed the availability of water, which was used as energy source or as transport modality. Due to work opportunities provided by the industry, more and more people from the countryside and villages moved towards industrial locations where houses were built to accommodate workers. Later, infrastructure was developed to improve transportation of products and people. This is the development of cities in a nutshell.

However, cities have been expanding for decades. Novel locations are built on new parcels, on the borders of the city (greenfields¹). Some town boundaries grow together and they literally and jurisdictionally merge. In the meantime areas within cities become underused or abandoned. Companies in the centre of the city might not have the possibility to expand, causing them to move to border locations, or industry may completely move away to low-wage countries. This movement may have a reinforcing affect on other companies of those locations, because vacancy might lessen the attractiveness of the area. This results in abandoned or underused industrial areas. One can refer to abandoned and underused sites as **brownfields**².

The definition of the term ‘brownfield’ is topic of debate. According to the EU project CABERNET brownfields can be defined as: “sites that have been affected by former uses of the site or surrounding land; are derelict or underused; are mainly in fully or partly developed *urban areas*; require intervention to bring them back to beneficial use; and may have real or perceived contamination problems” (CABERNET, 2005). Thus, brownfields may suffer from contamination problems but this is not necessarily the case. Brownfields appear in urban, rural and as well as in commercial areas (e.g. shopping centres). Brownfields also appear in the form of derelict military areas or abandoned office buildings. According to their nature brownfields can be divided into three different groups: “a first generation of brownfields from heavy industries, mining and textile industry; a second generation from military conversion and traffic infrastructure (e.g. old train stations); a third generation for housing, social infrastructure” (Ferber, 2010). The latter is a popular subject, nonetheless the first and second generation of brownfields still exist. This research focuses on the first generation of brownfields in urban areas; industrial areas that need an intervention to bring them back to beneficial use.

Why are these brownfields of interest to regenerate and to whom are they of interest? Scarcity of land is a major problem in densely populated countries. Awareness grows that land (and soil) is a scarce and finite resource. At the same time, there are a lot of abandoned or under-used industrial sites. These sites provide an opportunity to cope with the lack of land and to minimise the use of ‘greenfields’. Next to the opportunity to minimise soil consumption, regeneration³ also offers the possibility to tackle the problems caused by the existence of brownfields. Economic problems are one of the concerns. One can imagine that with the abandoning of industrial areas, employment opportunities diminish and

¹ See glossary page 11

² See glossary page 11

³ See glossary page 11

economic development of the area is limited. Alongside the economic problems environmental problems affect the area. As the industrial areas are often contaminated this affects the environment and may also affect human health. Lastly, social problems can occur. Vacancy may attract vandalism or criminal activities and lessen real or perceived safety.

Hence, regeneration of brownfields can minimise soil consumption, and brings sites into productive (re-)use whilst tackling contamination; two birds with one stone you might say. Nevertheless, regeneration of abandoned or under-used sites often meets obstacles and is recognised to be a complex task. Complexity in this sense does not just mean difficult, but also refers to the intertwinement of the different parties involved, the multi-level governance, the longitudinal process which brings along uncertainties, and the changing context in which these processes take place.

To explain this complexity in depth: First, if soil and groundwater of the site are contaminated it needs to be remediated, which is an expensive procedure. The issue of responsibility of contamination can be a hindrance and raises the question of who has to pay for remediation⁴. Remediation is often in the interest of public parties and not in the interest of established companies and landowners. Another feature of the contaminated groundwater is that it does not stop at the border of the brownfield and may flow to other parcels. Compared to building on greenfields, re-use and remediation requires higher investment and brings along higher financial risks. Second, processes of regeneration and remediation are lengthy, therefore highly unpredictable. Third, the regeneration process involves a lot of parties with various interests which possibly contradict. Opposing interests between public, private and civil parties might be an obstacle to the progress of regeneration. Last but not least financial resources for regeneration are scarce, as government recently has cut back investments and private parties are less keen to take on financial risk.

1.1. HOMBRE

The opportunities and threats of brownfields are widely recognized. A vast amount of international projects and programmes have started to investigate the topic to get more in depth with the phenomenon. One of this international projects is ‘HOMBRE’⁵, Holistic Management of Brownfield Regeneration. A European project carried out under the Seventh Framework Programme. “HOMBRE wants to create a paradigm shift to ‘Zero Brownfields’, where brownfields become areas of opportunity that deliver useful services for society, instead of derelict areas that are considered useless” (HOMBRE, n.d.).

Multiple parties from various European countries participate in the HOMBRE project⁶. They have adopted the approach of circular land management as provided by the European project Circular Flow Land Use Management (CircUse). Figure 1 shows the land use cycle. This approach aims to provide an integrative policy and governance approach and aims to change the land use philosophy into sustainable land utilization (Preuss, Verbeucheln & Ferber, 2011:6).

⁴ See glossary page 11

⁵ See glossary page 11

⁶ See appendix A for the HOMBRE project partners

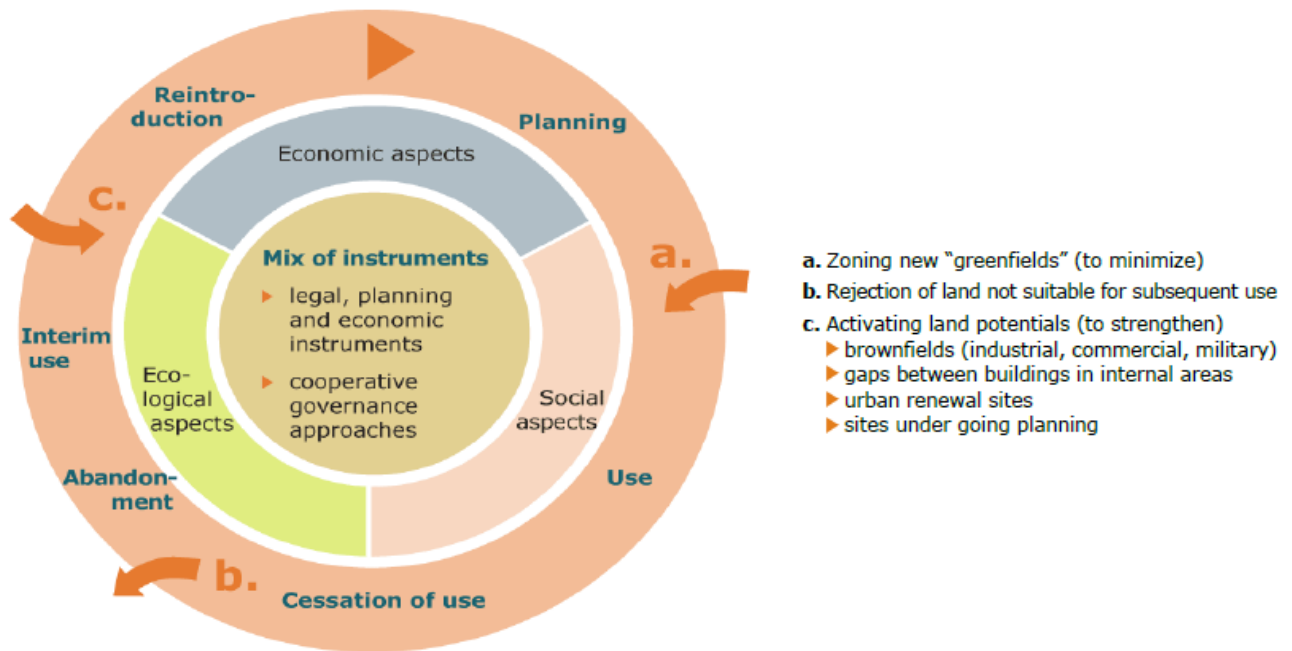


Figure 1: Land use cycle

Source: German Institute of Urban Affairs (Difu 2005).

1.2. RESEARCH SCOPE AND RESEARCH QUESTION

In order to change the land use philosophy into a 'zero brownfield policy', HOMBRE (aims, n.d.) defined the following aims:

- "Better understanding why, how, where and when brownfields are formed in order to avoid future brownfield areas, in different areas in the EU and in three main fields: urban, industrial and mining areas,
- Better and more creative solutions for long-term land use of current and potential future BF's.
- Better planning and more attractive communication technologies, that allow more holistic appraisal of BF regeneration options and early stakeholder involvement,
- Better operations, better implementation of state of the art technologies, and development of innovative technology combinations for more sustainable integrated BF regeneration".

The aim of this research is to contribute to the paradigm shift towards 'zero brownfields'. In addition to the aims of HOMBRE this research aims to provide more insight on the functioning of the governance processes between the interdependent parties involved in regeneration projects. Insight will be provided by elaborating on how parties involved in the regeneration process deal with complexities they face. Two European case studies that deal with the task of brownfield regeneration are studied.

In order to attain this aim the following research question is highlighted in this research:

How do parties involved in the regeneration process of brownfields deal with complexity and how does this influence the perceived governance capacity of parties in the network in terms of progress, problem solving capacity and legitimacy?

In order to answer the research question a couple of sub questions will be addressed. First, an actor⁷ analysis will be made. Actors are individual human beings or organisations involved in the regeneration process, also called parties or stakeholders. Studying the actors involved in the regeneration process will give a better insight into their interests, resources and their interconnectedness.

I. *Which public and private parties take part in the regeneration of brownfields, what are their interests and what are their mutual dependencies?*

Secondly, a closer look is taken on the complexity of regeneration. How do parties involved in the regeneration process demarcate their project (boundary judgements) and which strategies do they follow to deal with complexity? Governance networks can create a certain capacity to come to supported and effective action. The cases will be studied to see how actors involved in the regeneration process perceive the governance capacity of the network.

II. *How do parties involved in the regeneration process demarcate the regeneration project?*

III. *Which strategies are followed by the actors in the governance network⁸ to deal with complexity of the regeneration process?*

IV. *How do actors in the governance network perceive the governance capacity?*

Finally, the relation between the boundary judgments, strategies and governance capacity will be analysed by answering the question:

V. *How are boundary judgements, strategies and governance capacity related to each other in the two case studies?*

1.3. SOCIETAL AND SCIENTIFIC RELEVANCE

Brownfields are abandoned or underused sites, which bring along societal, economic and environmental problems. At the same time brownfields form an opportunity to society, as reuse of brownfields can contribute to a reduction of soil consumption. Regeneration of brownfields is however a complex process with a lot of different parties involved with their own interests. Regeneration is a longitudinal process and takes place in multiple contexts. This study can contribute to the knowledge on the governance networks that are formed around brownfields. Studying brownfield regeneration in its natural (empirical) situation can provide an insight on how actors in the field deal with the complexities related to brownfield regeneration. Analysing two specific cases can lead to recommendations which can be used in the two specific case studies.

There is much scientific research on the way actors demarcate complex spatial projects and the strategies they follow to deal with complexity. Most literature is applied to water management issues (e.g. Edelenbos et al. 2010; Van Buuren et al, 2010; Van Buuren et al. 2009; Van Meerkerk et al. 2010). This research uses the insights of these authors to study the

⁷ See glossary page 11

⁸ See glossary page 11

issue of land management; more specific brownfield regeneration. Literature already provides insight into adaptive land management. However, most literature on adaptive land management focuses on the American Superfund programme: Macey & Cannon (2007) 'Reclaiming the land'; Cannon (2005) 'Adaptive management in Superfund: Thinking like a contaminated site'. This research wants to contribute to European literature on brownfield regeneration by studying two European case studies. This research wants to contribute on the literature of land management by applying theory and concepts on complex water management issues to complex land management issues.

1.4. OUTLINE OF THE RESEARCH

After this introduction *Chapter two* elaborates upon the theoretical framework that provides a theoretical perspective on the empirical case studies. The following theoretical concepts are elaborated: governance networks, boundary judgements, conservative / adaptive strategies and governance capacity. The chapter ends with an analytical framework where theoretical concepts are made measurable. In the next chapter, *chapter three*, the research methodology is explained. The chapter elaborates upon the research strategy and related methodologies utilized in this research.

These first three chapters are followed by description and analysis of two case studies. In *Chapter four* the decision-making process of the regeneration of the Stork terrain is described in several rounds and is followed by the analysis of the case study in *chapter five*. The next chapter (*six*) starts with the description of the decision-making process in regard to the regeneration of the industrial site of Terni-Papigno. The description is followed by an analysis of the case study in *chapter seven*. *Chapter eight* is an overarching chapter, in which the two case studies are compared. The *final chapter* elaborates upon conclusions, provides an answer to the main question of this research and ends in recommendations to the case studies.

2. Theoretical framework

This theoretical framework provides a theoretical perspective upon the empirical brownfield case studies. The framework is composed of theoretical concepts that guide the research. First, the governance challenges related to brownfield regeneration are explained. Secondly, in section 2.2 the theory on complex governance networks is discussed. Subsections are about interdependencies between the actors in a governance network and elaborate upon the resources and interests that create these interdependencies. Section 2.3. elaborates upon boundary judgements (mental demarcations) made by actors and the strategies actors follow to deal with the earlier mentioned governance challenges. Section 2.4 discusses the governance capacity of governance networks, in terms of progress of the project, problem solving capacity and legitimacy. The relation between boundary judgements made by actors, the strategies they follow and the governance capacity in the network will be visualised in a conceptual model in the final section of this chapter.

2.1. COLLECTIVE TASK OF BROWNFIELD REGENERATION AND GOVERNANCE CHALLENGES

Based on the definition of CABERNET brownfields are “sites that have been affected by former uses of the site or surrounding land; are derelict or underused; are mainly in fully or partly developed *urban areas*; require intervention to bring them back to beneficial use; and may have real or perceived contamination problems” (CABERNET, 2005). The object of this research is *industrial* brownfields situated in *urban* areas. The selected case studies both have a rich industrial history that has caused contamination of soil and groundwater. However, one has to keep in mind that contamination is not always a characteristic of brownfields. By selecting this object of research, contamination will be discussed as a first characteristic of this type of brownfields.

Contamination of soil and groundwater might form a threat to the environment and human health. Buildings on the industrial site are (partly) vacant and can be a source of contamination, for example for asbestos. Remediation of soil, groundwater and buildings is a very costly procedure. It is often hard to trace who is the initial polluter and who is responsible for the (remediation of) contamination. Industries have been followed up by each other for decades, which makes it hard to point to a specific polluter. In addition, contaminated groundwater flows. This means contamination, if present, does not stop at a juridical border of a landowners’ parcel.

A second characteristic of urban brownfields is that the brownfield is part of a city and regeneration takes place in an urban environment. The industrial site has been part of the city for generations and the area and buildings are of historic value to some. The surrounding area is affected by the regeneration and regeneration is affected by its surroundings. An example to illustrate how the two affect each other: regeneration may cause inconvenience to the neighbourhood due to construction etc. However, regeneration also could positively affect its surroundings and lead to economic development and increase quality of life of the neighbourhood. This example shows how surroundings can be affected by the regeneration of a brownfield. To illustrate the other way around one can think of the availability of infrastructure that enables access to the brownfield, also think of political and public support to or reject of regeneration.

Due to its industrial and urban location and the economic, environmental and social problems caused by brownfields, regeneration crosses various policy domains⁹. Economic, social and environmental domains are all concerned with the regeneration of brownfields. The variety of domains, the industrial history and urban location of brownfields make clear that regeneration is a matter of coordinating the different elements. “Brownfields present particular challenges to national and regional policy makers in terms of bringing the land back into beneficial use and of cleaning up contaminated soil and groundwater. In this respect successful brownfield redevelopment policies and strategies need a combination of environmental, spatial and urban planning approaches” (Grimski & Ferber, 2001:143). The characteristics of brownfields lead to *governance challenges* faced by actors concerned with regeneration of brownfields. The challenges *plurality, uncertainty and complexity* are explained underneath.

Plurality

Like other governance processes, the multi-faceted character of the regeneration of brownfields crosses policy domains (environment, safety, economics, spatial planning) that are concerned with brownfield regeneration. This plurality of domains leads to inclusion of governmental actors from different backgrounds, from various institutions and from different governmental scales (multi-level governance). Even within an organisation there can be multiple roles towards brownfield regeneration. One section of a municipality takes environmental measures, but a different section of the municipality takes spatial planning into account; institutional fragmentation. Besides, not only governmental actors are concerned with regeneration, private and civil society actors are too. Developers, constructors, private investors, environmentalist, organisations that protect industrial heritage and resident associations might all be active in the regeneration process.

Plurality of actors can lead to contradicting frames, interests, roles and objectives concerning the brownfield regeneration. Solutions are multiple and ideas about problems and solutions can vary among actors. Edelenbos, Klijn & Van Buuren (2010:5) argue that in complex issues actors have different frames, they work in different organisations in different domains (spatial planning, environment, economic development) and on different scales (local, regional, central).

Uncertainty

A second challenge, faced by the actors in the governance network, is uncertainty. Regeneration is a lengthy process, partly because of the complexity of the task. In the United States for example, redevelopment currently takes around four and a half to five years, whereas before it only took around three years. “This may be an indication that the brownfield sites that are now being redeveloped are more complicated than in years past, or a symptom of the weakened economy” (United States conference of mayors, n.d.). However, there are also familiar cases (e.g. the two case studies of this report) where brownfield regeneration, foreseen or unforeseen, takes 10 to 20 years. This wide time frame brings along uncertainty; one cannot predict what will happen in the future. Teisman, Gerrits & Van Buuren (2009:56) describe three sources of dynamics in governance processes that lead to complexity and indicate changes over time.

The first source of dynamics is small changes in the initial conditions. “When a process evolves into a new round of implementation, the initial conditions may have been slightly altered, perhaps going unnoticed by officials but still

⁹ See glossary page 11

creating a situation where action methods successfully applied during the earlier round end up working out quite differently” (Teisman et al. 2009:57).

Secondly, the multiplicity of context can be a source of dynamics. If something changes in the neighbouring systems, this could influence the governance system. Sometimes this happens and other times it does not, however the managers never know when multiple-contexts will change conditions (Teisman et al. 2009:58).

Thirdly, change events can be seen as a source of dynamics. These kind of events are often unforeseen and have an impact on the development of the governance process (Teisman et al. 2009:76). A change in government or the political situation of a country are examples of a change event.

Complexity

A third challenge, faced by the actors in the regeneration process, is complexity. Plurality and uncertainty both contribute to complexity. In this research multiplicity and uncertainty are seen as governance challenges, as these two factors seem to play an important role in the empirical reality of brownfield regeneration. One could say the complexity is experienced partly due to the multiplicity and uncertainties within a governance network. However, complexity can be defined a bit more in depth. “The scientific and practical added value of the substantive ‘complexity’ and the adjective ‘complex’ is that they indicate systems, characterized by interrelatedness between constituent parts, where the whole is different than can be expected from the sum of the parts because of the emergent characteristics of the co-evolution and self-organization within and between systems” (Teisman et al. 2009:5).

2.2. COMPLEX GOVERNANCE NETWORKS

The previous mentioned governance challenges are faced by actors, in complex governance networks formed around the regeneration of brownfields. Nowadays, the idea of central government which steers top down has changed. One can observe a shift from government to governance where public, private and civil parties work together in networks. The traditional public administration concepts tend to focus on steering and control, a positivistic view in which the world can be controlled and shaped. The idea of governing has replaced by governance, in which the government is one of the actors among many in a horizontal structure. “So, government as well as other actors in the network have the ability to influence goal attainment of public policies or change their content” (Boons, 2008:43). The term *governance network* is used in this research “to describe public policy-making and implementation through a web of relationships between government, business and civil society actors” (Klijn & Skelcher, 2007:587).

This research focuses on heterogeneous networks, which means that actors have different interests and different resources (Börzel, 1997:4). This means that actor are interdependent because of their variety in interests and resources. The next section elaborates upon this interdependencies.

2.2.1. INTERDEPENDENCIES

Changes are often hard to implement and results can be disappointing. Large and lengthy governance processes seem to be subject to stagnation and conflict. Of course, there are also success stories where results are promising and satisfactory. However, most of the time changes are hard to implement, this is explained by De Bruijn, Ten Heuvelhof & In ‘t Veld. The initiating actor has to function in a network of interdependent actors and cannot realise a change (brownfield regeneration) individually. Therefore, actors need each other’s resources to accomplish regeneration (De

Bruijn, Ten Heuvelhof & In 't Veld, 2008:2). This theoretical section elaborates upon the roles, authority and resources of actors in the governance process. To see what happens between the actors and how they are interconnected, an actor analysis is made of each of the case studies. This analysis elaborates upon the actors' interests, authority and resources.

2.2.2. RESOURCES & INTERESTS

Governance networks are made up of a web of relationships between various actors. But why would these actors with different backgrounds work together in a network to make policy and realise implementation? Koppenjan & Klijn (2004) explain: "what links this diverse field of actors is that they depend upon one another" (p.46). Two factors that contribute to the interdependency of the actors are resources and interests. To illustrate this statement brownfield regeneration is taken as an example. In order to realise regeneration a variety of resources is needed, that often are not possessed by one actor. Financial resources are needed to make regeneration possible, remediation¹⁰ of soil and reuse of buildings requires knowledge and financial resources and legitimacy, and landowners need to make their land (production resource) available for regeneration. Cooperation should be sought to find solutions and make regeneration possible by linking each other's resources. Resources come in different types, Koppenjan en Klijn (2004) distinguish the following five types:

- *Financial resources*: are important to make implementation possible and covers the extra expenses of the long and complex decision-making.
- *Production resources*: enable policy initiatives. In the case of brownfield regeneration one can think of land owners which possess the land (production resource).
- *Competencies*: formal and juridical authority to make decisions. This might be a formal approval to remediate the site.
- *Knowledge*: is needed to develop and implement solutions and to understand the problem. Knowledge can be found in documents, but it can be also based on non-documented experiences.
- *Legitimacy*: is also an important resource. Individuals or groups might not have factual competencies, but if they disagree on the regeneration, it can lower the legitimacy of the project" (p.144)

These resources create interdependence to a certain extent. Sharp (as cited in Koppenjan & Klijn, 2004) argues: "an actors' degree of dependence is determined by the importance this actor attaches to resources owned by others and by the possibility of substituting these resources or acquiring them through other actors" (p.47). The possession of an important irreplaceable resource gives the power to block (hindrance power) or realise (realisation power) the project. To what extent the actor relies upon other actors depends on the substitutability and the importance of the resource (Koppenjan & Klijn, 2004). A typology of dependency is visualised in table 2.1

¹⁰ if contamination is present, like in the two case studies of this research

Table 2.1: Dependency

Source: Koppenjan & Klijn, 2004

	Substitutability of the resource	
	High	Low
Importance of the resource		
Large	Low dependency	High dependency
Small	Independence	Low dependency

Next to resources, each actor also has its own interests. Interests are guiding values and related to the identity of an actor (Koppenjan & Klijn, 2004:142). Interests are formed of series of perceptions, environment, domain rules and professional codes. According to Koppenjan & Klijn (2004) interests can be determined by answering the question: “Why does this actor pursue this objective in view of the problem situation?”(p.142)

2.3. BOUNDARY JUDGEMENTS AND STRATEGIES

In addition to the interaction and interdependence between actors, actors make individual choices and act in a certain way. Each actor in the governance process will deal with the governance challenges (complexities), as described in section 2.1, in his own way. This section first explores the theory on boundary judgements (the mental demarcations made by actors) and secondly elaborates upon the theory of strategies that actors may follow (the behavioural aspect).

2.3.1. BOUNDARY JUDGEMENTS

In section 2.1, the complexities faced by actors in the regeneration process are elaborated. One of the characteristic of complex governance processes is that governance issues cross policy domains. The multiplicity of actors results in a wide pallet of interests and each actor can frame the issue in its own way. Each actor makes choices about what they take into account and what they do not. Hence, they make mental demarcations. Churchman (as cited in Flood,1999: 92) argues that boundaries are mental models of actors. They determine the ‘action area’ and the elements taken into account, and thereby select out the elements which are not. “Boundary judgements are about ethical choice making and value laden” (Flood, 1999:93). Van Meerkerk, Van Buuren, Edelenbos (2010:3) argue that boundary judgement are made consciously as well as unconsciously. It is a way to frame and demarcate the issue.

Regeneration of brownfields is about social, economic and environmental issues. By looking at the policy domains taken into account by each actor, one can see how actors demarcate their project. By making such choices, the *content* (function of the area) of the projects is bounded (Van Buuren, Edelenbos & Klijn, 2010:200). Involved actors not only demarcate the project by selecting policy domains, they also demarcate the project to its *structure*; who is responsible for which part of the project and how are sub-projects connected (in time, place, financially)? Van Meerkerk et al. (2010) refer to the content and structure demarcation as substantive boundary judgements and structural boundary judgements.

Substantive boundary judgements, provide an insight into which policy domains are considered relevant by actors (Van Meerkerk et al., 2010:4). The actors in the regeneration process of a brownfield may value regeneration as an economic, cultural, social or environmental activity. By deciding on the relevant domain the issue can be judged or interpreted (Van meerkerk et al., 2010:4). So, substantive demarcations create value, and by doing so create meaning. The demarcations of

different parties involved can be conflicting. One sees that in the political process substantive demarcations often become clear by prioritizing policy programmes and related values (Van meerkerk et al., 2010:4). The substantive demarcations of the parties involved in the regeneration process can become clear through their (proposed) solutions.

Structural boundary judgements have to do with the separation of responsibilities among subprojects. Brownfield regeneration is often split into subprojects. These projects can be for example related to remediation or to reuse. Another subproject is concerned with monitoring and evaluation. Who is responsible for which subproject? Are responsibilities shared or separated between the different subprojects. “Here demarcations of different phases and elements of the policy process are made and how are these different parts connected and who is responsible for each part” (Van Meerkerk et al., 2010:4).

Boundary judgements made by actors can be wide or small. If actors exclude most domains, and focus on their primary objective, their substantive boundary judgement will be defined as small. If they include a variety of domains their substantive boundary judgement can be defined as wide. More precise the domain demarcations will be qualified as follows: small demarcation if focus on one domain; relatively small domain demarcation if focus on two domains; relatively wide demarcation if focus on three domains; wide demarcation if focus on four or more domains.

The same counts for the structural boundaries. Structural boundary judgements are small, if subprojects and responsibilities are not connected in time, place and financially. If responsibilities of the subprojects are shared, structural boundary judgements are qualified as wide.

2.3.2. STRATEGIES

Previous research shows that boundary judgements, as elaborated on in the previous section, influence the way actors act within a governance network (Van Meerkerk et al., 2010; Edelenbos et al., 2010). However, researchers also make the assumption that project demarcation (substantive boundary judgements) are influenced by political choice and are the managers’ project assignment (Edelenbos et al. 2010). “Managers with a rather broad project scope (with many aspects and domains included) can apply a conservative strategy¹¹ within this broad scope and exclude signals from outside. At the same time project managers dealing with strictly demarcated projects can follow a very adaptive strategy¹² to connect the project to all kinds of context dynamics” (Edelenbos et al., 2010). Scoping is done by all actors in the field of regeneration including the managers. Scoping can influence to what extent actors are able to adapt to changes and how the project is related to its context.

Plurality, uncertainty and complexity result in non-linear processes. Actors may have various strategies to deal with the governance challenges. Do they embrace complexity, by connecting to actors from various backgrounds and hereby increasing plurality, by being tolerant toward new solutions and keeping directions open to be able to deal with uncertainty. Or, are they trying to reduce complexity by keeping connections to other actors limited and diminish the level of plurality, by sticking to initial solutions and reacting to dynamics in a rigid way.

¹¹ Edelenbos et al. 2010 refer to conservative as autopoietic orientation

¹² Edelenbos et al. 2010 refer to adaptive as dissipative orientation

In general two dominant strategies can be distinguished. These strategies indicate the relation of the project to its context. Literature refers to these strategies as management strategies or management styles. Because this research focuses on the actors in the governance process it is simply referred to as strategies, because not every actor has a managing role.

The first strategy draws stable and relatively closed boundaries between the project and its related contexts (Edelenbos et al. 2010). In this research this strategy is referred to as **conservative strategy**¹³. “Actors are result and goal oriented and manpower and finances are strictly planned in advance” (Mantel as cited in Edelenbos & Klijn, 2009:310). These actors try to *reduce complexity* by keeping the process structured, narrowly demarcated and by keeping control of the internal subsystems. The orientation of these actors is mainly conservative. This means that a very limited number actors is involved in the network; actors are mainly closed to participation of new actors; actors are closed to developing and implementing new ideas in the project (Edelenbos et al. 2010:10).

“The project is split in clear demarcated subsystems. The conservative strategy can be seen as *conservative self-organization* of different subsystems that develop relatively independent” (Teisman et al. 2009:177). This conservative strategy tries to reduce complexity and is a more classical thought.

‘Reality’ is a lot more complex, as interaction between different actors takes place, policy domains are intertwined and dynamics from the environment could disable structured plans. The boundaries between the different subsystems are crossed, due to plurality of the policy domains concerned with complex spatial processes. Actors *embracing complexity* follow a more **adaptive strategy**¹⁴. These actors are less strict on demarcating the subsystems of a project and do not isolate the project from its context. “Boundaries between project and environment are dynamic and fluid and the project evolves with its environment (Van Buuren et al., 2010:205). In contrast to the conservative strategy, the subsystems are now characterized by *dissipative self-organization*; they remain open and responsive to changes in other subsystems (context)” (Teisman et al., 2009:177). According to Edelenbos & Klijn (2009) “managers are guiding the process by reacting to changes in a flexible way and by connecting to different actors” (p.310).

Actors try to deal with dynamics in a way that it becomes productive and functional to the project (van Buuren et al., 2009:205). These actors *embrace complexity* and demarcate the project in a flexible way to make adaptation possible. Actors that follow an adaptive strategy connect to a large number of actors in the network; are open to participation of new actors; are open to developing and implementing new ideas during the project (Edelenbos et al. 2010:10).

2.4. PERCEIVED GOVERNANCE CAPACITY

The conservative and adaptive strategy both have their pros and their cons. “The conservative strategy is said to be oriented at quick and substantive progress. The drawback is that overall support to the project can be lacking” (Edelenbos & Klijn, 2009). The adaptive strategy can result in wide supported solutions, but the process can be costly and time consuming (Edelenbos & Klijn, 2009).

¹³ Literature also refers to the strategy with various terms autopoietic style or project management.

¹⁴ Literature also refers to this strategy as dissipative style and process management.

Earlier research found a more positive effect between the adaptive strategy (process management) and project outcomes and a more negative effect between a conservative strategy (project management) and project outcomes (Edelenbos & Klijn 2009; Kickert, Klijn & Koppenjan 1997).

To see what the effect of the strategies is, this section elaborates upon three variables in relation to the outcome of the project, which are clustered under the term **governance capacity**. The term *perceived* governance capacity will be used, because the opinion and experiences of the actors in the governance field are measured. It is hard to objectify governance capacity and therefore this research looks at the perceived governance capacity.

“*Governance capacity* is the ability of agents in the governance system to collectively come to legitimate and effective collective action. So, governance capacity is about the ability to solve problems and the ability to connect” (Van Buuren et al., 2009:7) In the case studies progress, the problem solving capacity and legitimacy are reviewed.

The progress of the regeneration process is studied to see when stagnation occurs or when progress takes place. Progress is an indicator to the process outcomes (Edelenbos & Klijn, 2009). To see how the actors perceived the progress, the following statement is put to the actors: I am satisfied with the progress and continuation of the project so far.

Secondly, the problem solving capacity will be reviewed. This is an indicator of the substantive outcomes of the project (Edelenbos & Klijn, 2009). To see how actors perceived the way problems are tackled, they are asked to score the following statement: The current solutions that are presented, do tackle the actual problems.

Since governance capacity is not only about problem solving but also about legitimate action the third variable that is measured is legitimacy. Legitimacy can have different meaning depending if one refers to political / formal democratic legitimacy or to the more governance like form of legitimacy as wide acceptance of the project by all stakeholders. Governance networks are central to this research, which means that all actors can influence decision making to a certain extent. so legitimacy is defined as an open, transparent and accessible process, which leads to wide acceptance of solutions. To measure the perceived legitimacy the following two statements are presented to the actors: Current plans are widely supported by all organisations involved in the regeneration process; and all parties communicate with each other in a transparent way.

2.5. CONCEPTUAL MODEL

In this research the connection between three variables is studied. Boundary judgements, strategies and perceived governance capacity. Figure 2.2 shows the relationship between the three variables. The left rectangle in the figure presents the actors, resources and interests of the governance network. The actors in the network make boundary judgements. Boundary judgements of actors can be wide or small. On the basis of literature it is expected that small boundary judgements lead to a more conservative strategy and that wide boundary judgements lead to a more adaptive strategy. In addition, the relation between strategies followed by actors and the perceived governance capacity of the network is studied. Based on literature it is expected that an adaptive strategy leads to higher perceived governance capacity than a conservative strategy. These strategies are the independent variable, which influence the perceived governance capacity, the dependent variable. The perceived governance capacity is split into three variables, namely progress (process indicator), problem solving capacity (substantive indicator) and legitimacy.

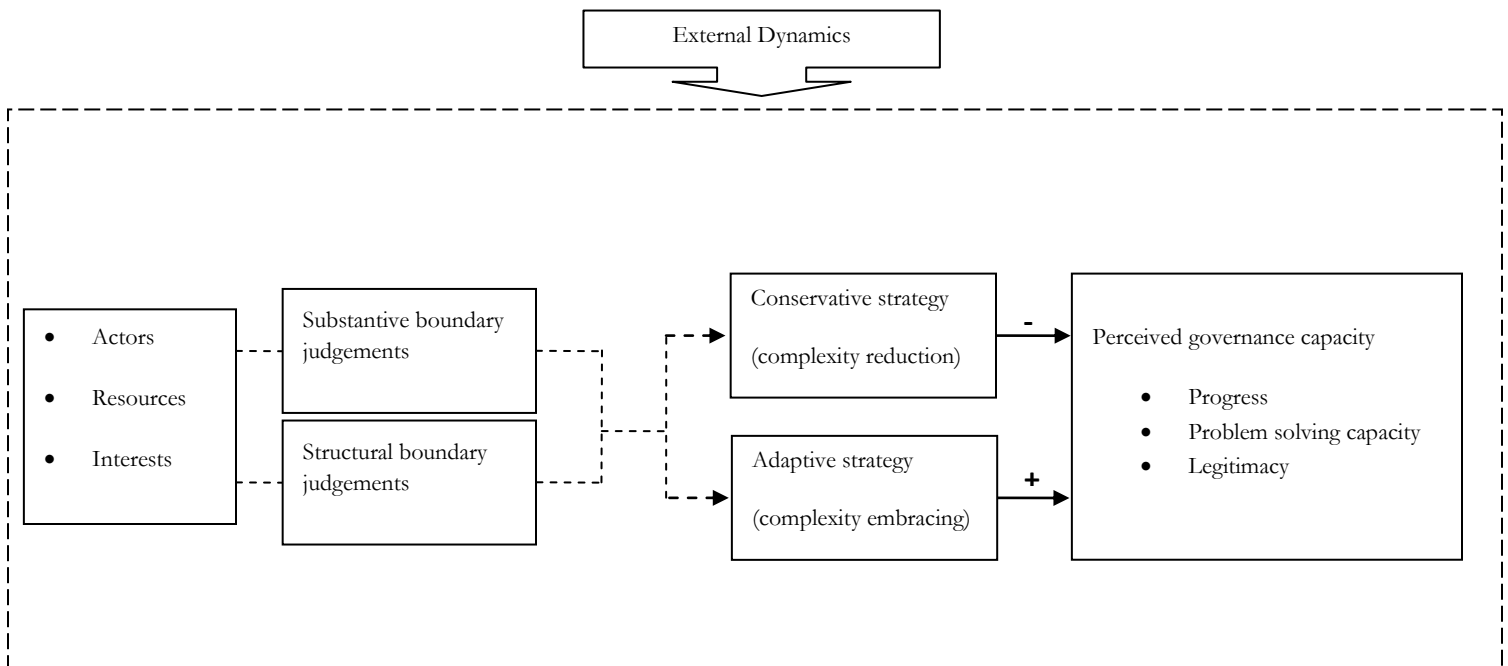
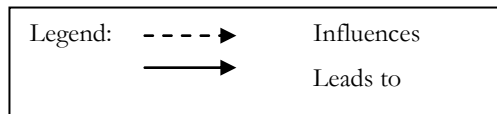


Figure 2.2: Conceptual model



2.5.1. ANALYTICAL FRAMEWORK

In this analytical framework the theoretical concepts are made measurable. Table 2.2 shows how the actor analysis, boundary judgements, strategies and governance capacity are measured in the empirical case studies. The interview questions that are linked to the theoretical concepts can be found in appendix B.

Table 2.2: Analytical framework

Concept	Definition	Variable	Indicator	Questions (see appendix B)
Actor analysis	Identifying actors And interdependence	Resources	Financial resource	1, 2, 3, 9, 10, 11,15, 14
			Production resource	
			Knowledge	
			Competencies	
		Interests	Idea behind the objectives	
			Professional value	
Competency	Empowered by law, agreements (contract covenant etc)			
Boundary judgements	Mental models, which determine what is the 'action area' and which elements are taken into account and which are not by the parties involved in the regeneration process. Churchman as cited in flood (1999: 92)	Substantive boundaries	Dominant policy domain(s) in policy programmes or proposed solutions	4, 14, 15, 16, 17
		Structural boundaries	Separated or shared responsibilities among subprojects	4, 14, 15, 16, 17
Conservative strategy (Reduction of complexity)	"Different subsystems that develop relatively independently" (Teisman et al. 2009, 177)	Reduction of complexity	Closed to environment Limited connections to actors Closed to new solution	5,6,7,8,10, 11, 12
		Strengthening boundary judgements	Repeating same form of organization(rigid)	
		Conservative Self organisation		

<p>Adaptive strategy (embracing complexity)</p>	<p>Remain open and responsive to changes in other subsystems (context)” (Teisman et al. 2009:177).</p>	<p>Embracing complexity Adaptation Widen boundary judgements Dissipative self-organization</p>	<p>Open to environment Connecting to actors from different backgrounds Open to new solutions flexibility</p>	<p>5, 6, 7, 8, 10, 11,12</p>
<p>Governance capacity</p>	<p>The term <i>governance capacity</i> is the ability of actors in the governance system to collectively come to legitimate and effective collective action. So governance capacity is about the ability to solve problems (effectiveness) and the ability to connect (legitimacy)” (Van Buuren et al., 2009:7)</p>	<p>Progress Problem solving capacity Legitimacy</p>	<p>Progress / Stagnation Tackling problems Transparency Wide acceptance</p>	<p>I, II,II,IV</p>

3. Research methods

The central topic of this chapter is the research design; the research strategy and associated methods for data collection. Section 3.1 elaborates upon the case study as a strategy of this research. Furthermore it clarifies the selection of the case studies. Section 3.2 discusses the research methods chosen to collect data. Validity and reliability of the research are discussed in section 3.3. The final section elaborates on the research steps taken.

3.1. RESEARCH STRATEGY

To answer the main question of this research, ‘case study’ is used as a research strategy. Van Thiel (2010) states that with this research strategy one studies a phenomenon within its empirical situation and it is very suitable for applied science. This strategy is chosen to understand brownfield regeneration in a specific context. Each brownfield is unique and surrounded by a specific context. The aim of this research is to gain better understanding of the functioning of governance processes between the interdependent actors involved in the regeneration process, by studying how the parties involved in the regeneration process deal with complexities. Using the strategy of case study supports this aim by studying the governance processes in reality.

Two case studies are selected for this research. Both cases are industrial brownfields in urban areas. The cases are different in their political and social context. However, the actors in both cases face the task of regenerating a brownfield. Both case studies are analysed to see how the actors in the field deal with the complexity of regeneration projects, and how this affects the governance capacity of the overall network.

Case selection

This research is an international comparative study and focuses on the policy issue of regenerating brownfields. Two European case studies are selected to analyse. This might be a limited number. However, due to the time frame of this research it is a feasible number. Too many cases will not allow the researcher to go in depth. The cases are selected in accordance to the following criteria: the case is located in an urban area; has an industrial past and is affected by contamination; a variety of actors from different backgrounds is concerned with the regeneration of the brownfield. Practical considerations also play a role in the selection of these specific cases. The HOMBRE project is connected to the case studies, this provides access to sources and respondents.

The first case study described and analysed in this research is the regeneration project of the industrial brownfield of “ironworks Stork” located in Hengelo, The Netherlands. This brownfield is selected to contribute to the knowledge of regeneration in the Dutch context. The industrial site is located in an urban area, affected by contamination and is subject to complexity as many actors with different aims and interests are concerned with the regeneration of the brownfield. The process of regeneration is lengthy and brings along uncertainty.

The second case study is the brownfield of Terni-Papigno, Italy. Like the previous case study this brownfield is located in an urban area, is affected by contamination and the multiple actors involved in the governance process are faced by complexities (multiplicity, uncertainty and complexity).

3.2. RESEARCH METHODS

According to Van Thiel (2010) one can distinguish quantitative and qualitative research methods, in which the first refers to numerical data and the latter to non-numerical data. For this research mainly qualitative data collection methods are used. These type of methods are suitable for this research, because people's behaviour, interests and opinions are researched in order to find out how actors in the governance network deal with complexity and how they experience the governance capacity. An in depth analysis is made with qualitative data. In order to realise 'case study' as a research strategy, the methods of *content analysis* and *interview* are used. The two methods are elaborated underneath, and it is made explicit which method is used for which part of the research.

"During content analysis the content of previous produced material is studied"(Van Thiel, 2010: 123). "Content analysis can be used to determine facts and opinions and to reconstruct reasoning"(Van Thiel, 2010:125).

The second method to collect data is conducting interviews. This method is used to gather opinions, perceptions and observations of the respondents. Semi-structured interviews are held during this research. These semi-structured interviews are composed of the topics (theoretical concepts) presented in the analytical framework: regeneration process, interests, resources, boundary judgements, strategies and perceived governance capacity. Each topic is accompanied by several questions. During the interviews, the interviewee is given room to add information. Each interview is recorded and transcribed.

In order to make a *case description*, data is collected through content analysis. Historical documents are studied as well as policy documents and (if available) previous research on the case studies, in order to reconstruct the decision-making process. Interviews were also used to gather information about the decision-making process. Actors are asked to describe the main decisions made in the project and to describe dynamics they face during the process.

To analyse the *boundary judgements* of the actors, policy documents are studied to see which policy domains are emphasised in these documents. Documents are mainly scanned on topics like goal, objective, aim, mission and vision. In addition to policy documents, interviews are used to clarify the boundary judgements made by actors. Policy documents and previous research on the cases are used to validate statements of interviewees and to underpin analysis.

Data on the *strategies* of the actors in the governance process is mainly gathered through interviews. Questions are related to the cooperation with other actors, the openness to new ideas and the flexibility of the actors. A small part of the data is also gathered through content analysis (if available) by looking into the possibilities of participation and process agreements.

The third theoretical concept, *perceived governance capacity*, is measured by a quantitative method. A short question list is presented to the interviewees on which they can score four statements on a five point Likert scale (totally agree/agree/neutral/disagree/strongly disagree). Thereafter the interviewees are asked to underpin their opinion.

Selection of respondents

The theoretical framework states that this research is approached from a "governance network" perspective. This means that a variety of parties from different organisations with different backgrounds, roles, interests are involved in the regeneration process of brownfields. For each case, At least one respondent is selected from a public, private and civil stakeholder, involved in the regeneration of the brownfield. The interviewees are mainly representatives of organisations

who take part in the regeneration process of a brownfield. By interviewing them, they can share their experiences and the researcher can observe their behaviour in the field. Also, two informants are interviewed, to get the broader picture of the case studies, this information is mainly used to complete the case descriptions. These informants are also a passage to the other interviewees of the cases.

3.3. VALIDITY EN RELIABILITY

The downside of using interview as a research method is that the response of the interviewee is value laden, as the answers are never completely objective and there is the risk of social desirability bias. The interpretation on the interviewer can influence the meaning of the answers too. To lower the risk of wrong interpretation, interview report can be checked by the interviewee on request. The interviewee will also be given the opportunity to stay anonymous, to create a reliable ambience and reduce the risk of social desirability bias.

Research is conducted in various ways to increase reliability and validity. By using different methods, like content analysis and interview, insights are gathered from different sources. Multiple sources will help to analyse the case from different perspectives and help to objectify.

3.4. RESEARCH STEPS

Research is conducted in various steps. First, relevant literature on brownfields is read to explore the subject. A research design is made on the base of the relevant literature, in alignment with the HOMBRE project and my own interests. The research design contains a problem analysis in relation to brownfield regeneration and results into the formulation of the goal of the research and the research question. Secondly, based on the research design, theory and concepts that offer a tool to analyse the empirical cases are elaborated. The concepts are made measurable to provide the analytical framework for the research. In the meantime a couple of case studies are compared to see which cases do fit the selection criteria.

Interviews were conducted in Terni and Rome in the beginning of June 2012. The visit was coordinated by the HOMBRE contact person of Terni-Papigno (Renato Baciocchi). The Interviews for the Dutch case study are conducted in the second half of June. The interviews were transcribed in June and July. Analysis of the interviews is based on the theoretical concepts provided in the theoretical framework.

In June, July and August the research report was written and on regular basis reviewed by colleague and supervisor Gerald Jan Ellen. The first draft is reviewed by the informants of both case studies. The section on the case study Terni-Papigno is reviewed by Renato Baciocchi. The section on the case study Stortk-Hengelo is reviewed by Ernst Veenhoven.

CASE STUDY

STORK-HENGELO



4. Regenerating the brownfield of Stork-Hengelo

This chapter provides a case description of the regeneration process of the industrial brownfield of Stork in Hengelo. The project to regenerate the area is called ‘Hart van Zuid’ (Hearth of South). This chapter begins with an introduction to the case study. It tells the story of the development of the industrial site from the beginning of the 19th century until the start of the regeneration in 1998. The introduction also elaborates upon the geographical, political and societal context of the project. Section 4.2 gives an overview of the decision-making process from 1998, when several buildings became vacant due to changing technologies, different production methods and the relocation of production to low-wage countries, until now. The decision-making process is reconstructed in several rounds.

4.1. INTRODUCTION

In 1850, Hengelo was a village that focused on agricultural activities. These activities were supported by the abundance of creeks in the area, that supplied water to the farmers. However, farming alone did not provide a sufficient income, so the farmers started to weave. Weaving took place at home and a domestic industry developed in Hengelo (Projectorganisatie Hart van Zuid, 2002:27). When the steam engine was invented in the second part of the 19th century, the domestic industries started to expand and the domestic activities moved to small factories. This was the beginning of the textile industry at Hengelo.

Due to the development of the textile industry, the demand for service engineers to repair machines rose (Projectorganisatie Hart van Zuid, 2002:35). In 1859, Coenrad Craan Stork, one of the younger brothers of Charles Theodoor Stork, started a repair shop in Borne (near Hengelo). His business was the precursor of the later developed machine industry. When Coenrad Craan died in 1863, Charles Theodoor Stork took over his brother’s business (Projectorganisatie Hart van Zuid, 2002:35). He started a machine factory in Hengelo in 1868.

This was the beginning of the industrialisation of Hengelo. Industrialisation gave a big impulse to the city and Hengelo expanded. Development was accelerated by the construction of various railways and the construction of the channel of Twente (‘Twentekanaal’) in 1920. This broadened the transport modalities of Stork and other companies located in the area (Projectorganisatie Hart van Zuid, 2002:31). Stork had a major impact on social life and spatial planning in Hengelo too, as Stork provided housing and facilities for its workers. The village for its workers was called ‘Tuindorp het Lansink’ (Stuurgroep Hart van Zuid, 2001).

In the past, Stork got confronted with events that influenced production. The crisis in the cotton industry made Stork aim at another market. Also, the Second World War damaged part of Stork’s factories. Furthermore, due to the oil crisis of 1973 the iron foundry in Hengelo had to close, along with some other factories of Stork. In the eighties, the industrial site in Hengelo became partly abandoned because industries moved to low-wage countries and production techniques changed due to technological developments. By this time the municipality came into contact with Stork. Further developments are addressed in section 4.2.

4.1.1. GEOGRAPHICAL, POLITICAL, AND SOCIETAL PROJECT CONTEXT AND PROJECT STRUCTURE

This section elaborates upon the geographical, political and societal project context. It is important to understand the context of the case study as the regeneration of brownfields is not separate from its environment. Each brownfield is unique and has its own context.

Geographical context

The municipality of Hengelo is positioned in the east of the Netherlands, in the province of Overijssel. The municipality is part of the region of Twente. “Hengelo forms an important link between west and east; between the Dutch “Randstad” (Amsterdam, The Hague & Rotterdam) and Eastern Europe. And forms a link between north and south; between Scandinavia, Hamburg-Ruhr region and the region of Frankfurt” (Gemeente Hengelo, 2008: 14). The train station of Hengelo forms an important international junction and is of high economic value to the municipality of Hengelo and the region of Twente. Upgrading of the station is needed due to increased use of the railways. “Economic growth of Berlin and the entry of Poland and the Baltic states into the EU, increase pressure on rail and road traffic” (Gemeente Hengelo, 2008:14). To become a Metropol-region, Twente establishes extensive collaboration with the German towns of Osnabrück and Münster.

The industrial site of Stork is located on the southern part of Hengelo, adjacent to the train station. The surface of the selected area for regeneration is about fifty hectare. An important characteristic of the site is that industry and businesses are still present in the area, so the site is underused but not abandoned. This leads to several side effects. On the one hand, it has the positive effect that activities continue on the site. On the other hand, industries present in the area have to be taken into account when making new plans. Industry in the area might have to be displaced, which leads to extra costs, or regeneration possibilities might be restricted e.g. by rules on safety, air quality, and noise. The site has a rich industrial history, as a result parts of the soil and groundwater are contaminated.

Political and societal context

The area is highly prioritized on national, regional and local policy agendas. On a national level, the project ‘Hart van Zuid’ is included in national strategic policy documents on spatial development. First in the ‘Vijfde Nota Ruimtelijke Ordening’ and later in the ‘Nota Ruimte’. The inclusion of the project in the ‘Nota Ruimte’ results in a financial contribution of 14,5 million euro, provided by the former Ministry of Housing, Spatial Planning and the Environment. On the level of the province, the project ‘Hart van Zuid’ is part of the programme ‘Innovatie Driehoek’ (Innovation Triangle). The province of Overijssel gives financial support to the project as it corresponds with the provincial objectives of improving quality of life and supporting economic development (Provincie Overijssel, 2010). The last investment decision, in relation to the programme ‘Innovatie Driehoek’, results in a contribution of 45 million euro to the project. On local level the project is

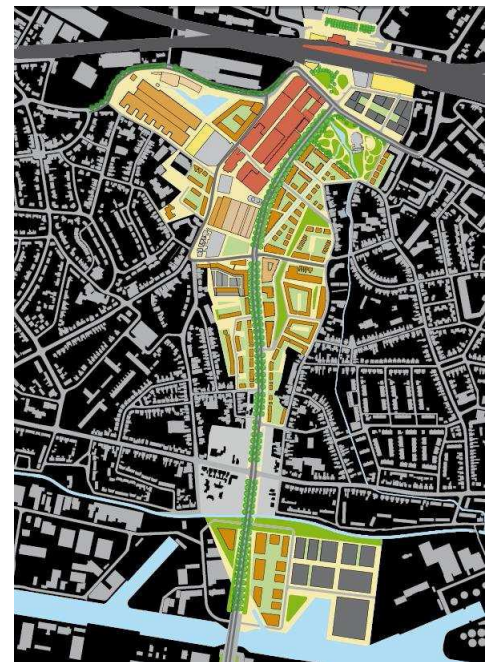


Figure 4.1: Location Hart van Zuid

Source: Gemeente Hengelo & projectbureau ‘Hart van Zuid’, 2010

of importance to the city development. The project crosses different policy areas of the municipality: housing, spatial development, environment, infrastructure and economic development.¹⁵

Project structure

The structure of the project is as follows: the municipality of Hengelo, developer Van Wijnen Group N.V. and developer Heijmans signed a declaration of intent in 1998. In 2002, the organisational form of the project is formalised into public private partnership (PPP) by signing a cooperation agreement between the three parties. Today, only two partners are still in the PPP, as the company Heijmans resigned from the contract. The municipality of Hengelo and Van Wijnen Group N.V. are both investing in the project and both are risk-bearing parties. Both parties are represented in the project agency 'Hart van Zuid'. "This agency is responsible for daily affairs and coordinates the implementation phase of the project. The agency works closely together with other private and public parties" (Projectbureau 'Hart van Zuid', n.d.)¹⁶.

4.2. DECISION-MAKING PROCESS STORK: 1998 - PRESENT

Public intervention in regard to the regeneration of the industrial site of Stork-Hengelo can be traced back to 1998. To provide insight into the decision-making process of the project 'Hart van Zuid', the process is divided into several rounds in accordance with the round model ('rondenmodel') of Teisman. The round model is chosen as a tool to describe the decision-making process, as it suits the non-linearity of decision-making in networks. Actors can support or hinder decisions in various rounds. After each round, a new round may occur and actors may enter or leave the decision-making round (De Bruijn et al. 2008:17). Thus, decision-making is not realised in phases and is therefore described in rounds. The decision-making process is divided into 5 rounds (round 0 – round 4), by which each round can represent a variety of actors and ends in a decision. Table 4.1 summarises the rounds, the actors involved, the main decision of the round and the characteristics of the content or direction of the process.

¹⁵ The amounts of subsidy / investments named in this paragraph are just a small selection of the total number of subsidies provided to the project. In total the project received over fifty subsidies and private investments are made.

¹⁶ An overview of the organizational structure of the project 'Hart van Zuid' can be found in appendix E

Table 4.1: Decision-making process

	Round 0 First contact	Round 1 Towards a master plan	Round 2 Public Private Partnership	Round 3 Start implementation	Round 4 Towards the second phase
Year	1998-1999	2000-2001	2002-2003	2004-2008	2009- present
Participating actors	<ul style="list-style-type: none"> • Municipality of Hengelo • Developer Van Wijnen • Landowners • Individual residents 	<ul style="list-style-type: none"> • Municipality of Hengelo • Developer Van Wijnen • Developer Heijmans • National government • Province of Overijssel • Landowners • Resident foundation 'Hart voor Zuid' 	<ul style="list-style-type: none"> • Municipality of Hengelo • Developer Van Wijnen • Landowners • Resident foundation 'Hart voor Zuid' 	<ul style="list-style-type: none"> • Municipality of Hengelo • Developer Van Wijnen • Landowners • Resident foundation 'Hart voor Zuid' 	<ul style="list-style-type: none"> • Municipality of Hengelo • Developer Van Wijnen • Landowners • National government • Province of overijssel • Resident foundation 'Hart voor Zuid'
Main decision	1999 'Perspectievennota'	June 2001 Master plan and establishment project agency	June 2003 Cooperation agreement between the municipality of Hengelo and Van Wijnen	September 2008 Actualization master plan	July 2012 Decision by the province of Overijssel to invest 45 million in the second phase of the project
Characterisation of content / direction	Diversity in the area leads to five directions: <ul style="list-style-type: none"> - central station of Twente - heart of knowledge and initiative - bustling heart - heart of facilities - unwind heart 	The five directions of the 'perspectievennota' are elaborated and the project is divided into three phases.	Scope change in programme content: "The number of houses that would be realised in the area increased from 900 to 2039, and the surface available for companies lessened. The total surface used in the project increased from 375.000 m ² to 420.000 m ² " (Doeschot, 2003).	Scope change in regard to the programme content: Significant decrease in the total number of houses. Catering industry is no longer an area function Increase in the total m ² available for companies.	Start of the implementation of the second phase of the project.

Round 0: first contact

In the eighties, Stork started to use different production methods and part of its production moved to Eastern Europe. Stork realised that some of its industrial buildings would become vacant and land would be unused. Until that time the municipality of Hengelo was expanding mainly on the north side of the city. In the nineties, the southern part of Hengelo became interesting to bring back the balance between the northern and southern part of the city. Stork and the municipality started to communicate about the development of the area.

The industrial site of Stork and Dijkers was a location of interest for several reasons. First of all, the site is adjacent to the train station and could therefore become economically viable. Secondly, the area is located close to the centre and forms the ‘heart’ of the city. In 1998, Stork approached the development and building company Van Wijnen groep N.V. to cooperate in the development of the area. The same year the municipality of Hengelo, Van Wijnen and a second development company Heijmans signed a declaration of intent to develop the area (Gemeente Hengelo & Projectbureau Hart van Zuid, 2010).

In March 1999, the cooperation between the municipality of Hengelo, the developer and landowners resulted in a ‘Position Paper Hart van Zuid’. This paper elaborated on the current situation, the opportunities of the area and the guidelines of national policy (Stuurgroep Hart van Zuid, 2001: 14). In October that year, a nota with the perspectives on the area was published (‘Perspectievennota’) in which the quality and possibilities of the area were described. “The location of the city, the surface of the industrial site and the industrial nature of the site form unique chances and challenges” (Stuurgroep Hart van Zuid, 2001: 14). Residents and experts discussed the nota during several workshops, where new ideas were formed (Stichting Hart voor Zuid, n.d). The final nota elaborated on the diversity of the area and five directions were developed: central station of Twente; heart of knowledge and initiative; bustling heart; heart of facilities; unwind heart (Stuurgroep Hart van Zuid, 2001: 14).

Round 1: towards a master plan

After the creation of the document with perspectives on the area (‘Perspectievennota’), the residents which participated in the workshops were not satisfied with the way they were involved and felt they were not heard. The various independent resident associations decided to cooperate and form a united resident foundation, called ‘Stichting Hart voor Zuid’ (Stichting Hart voor Zuid, n.d.). This foundation was widely supported by the municipality and later on it was financially supported by the project agency ‘Hart van Zuid’.

In 2001, the municipality decided to invest 50 million euro to transform the area from an industrial area into a multifunctional area. The first action was taken in 2001, when the reuse of an old Stork building was realised; a fire brigade was located in the building and the original water tower now provides fire fighting water. Concerning further development of the area, a master plan was created, which was determined by the council of Hengelo on 29th of January 2002 (Gemeente Hengelo, 2008:5). In the master plan the opportunities and threats of the area were explored and the ambitions of the involved parties were formulated (Stuurgroep Hart van Zuid, 2001). The master plan was established in cooperation between the different partners in the project; the municipality of Hengelo, Van Wijnen Groep N.V., province of Overijssel, private parties, residents, landowners (like Stork and Emga), historians etc..

The objectives of the master plan of 2002 were as follows: “Create vision and starting points to transform the area from a business area into an urban area where connections are made with the adjacent neighbourhoods; Creating good accessibility for the southern part of Hengelo to relieve existing infrastructure; In the context of Trans- European networks, developments need to be initiated to shape the central station of Twente (Hengelo) into an important junction on the railroad between Amsterdam and Berlin; Create the foundations for an identity of the area Hart van

Zuid”(Stuurgroep Hart van Zuid, 2001:10). These objectives resulted into nine principles (‘ankerpunten’)¹⁷. The master plan gave (and on the moment of writing still gives) direction to the development of the area, but did not provide a blue print on the area functions. The starting point was to create a multi-functional area where housing, economic activities and facilities are developed integrally. The master plan divided the project into three phases to create flexibility and to enable to move along with the over time changing prevailing view on housing, entrepreneurship and facilities in the area (Stuurgroep Hart van Zuid, 2001:84).

Round 2: Public Private Partnership

In 2002 and 2003, the master plan was studied in depth to proceed to implementation. The scope of the master plan changed in this period. “The number of houses that would be realised in the area doubled, and the total surface area available for companies lessened. The total area used in the project increased from 375.000 m² to 420.000 m²” (Doeschot, 2003). “Increase of the total number of square meters available to the project, could be found in other area functions like health care, welfare, culture, leisure, retail and catering industry (bar / restaurants)” (Doeschot, 2003:6). The increased number of houses (up to 2039 houses) can be partly explained to the task of the municipality to build 3500 houses in relation to the policy programme Network City of Twente (‘Netwerkstad Twente’).

In regard to the industrial heritage present on the brownfield, agreements were made on how to approach the industrial heritage. A process with many parties involved, diverse points of view and interests could lead to controversy. Some organisations like the Dutch ‘Cuypersgenootschap’ (an association that is committed to the conservation of heritage) wanted to make sure that the heritage on the brownfield was not demolished. The municipality acknowledged the importance of industrial heritage, but pure conservation could hinder the reuse of the buildings. A covenant was established, in order to understand each other’s point of view. Agreements were made on the approach towards industrial heritage of Stork and Dijkers, to improve the progress of the reuse of industrial objects and to overcome disagreement between concerned parties. The covenant contained agreements on process, content and implementation in regard to industrial heritage. This covenant was signed by the actors involved on the 27th of June 2003. The covenant was signed by the private actors, The Dutch Institute for Cultural Heritage, the province of Overijssel, consultant agency ‘Oversticht’, municipality of Hengelo and the Supervision team. The Supervision team was established to monitor the architectonic- and spatial development of the area. Regardless of the several subprojects the unity of the overarching project could be guided by the supervision team (Projectbureau Hart van Zuid, n.d.).

Despite the covenant, the Dutch ‘Cuypersgenootschap’ requested to The Dutch Institute for Cultural Heritage to give twenty-two objects in the project ‘Hart van Zuid’ the status of national monument, as they feared demolishing of the industrial heritage. With this request, the Dutch Institute for Cultural Heritage had to assess every architectural adjustment to the buildings. The municipality acknowledged the importance of the protection of industrial heritage, but was also worried about the influence the status of monument could have on the planning and implementation in the area. In the end the request of the ‘Cuypersgenootschap’ was rejected.

On the 27th of June 2003, another important agreement was signed. The PPP construction was now formalised and an agreement to cooperate (‘samenwerkingsovereenkomst’) was signed between the municipality of Hengelo, Van Wijnen

¹⁷ The principles can be found in appendix F

Group N.V and Heijmans (Gemeente Hengelo & Projectbureau Hart van Zuid, 2010:61). Important aspects of this agreement were “that the municipality of Hengelo and Van Wijnen jointly take care of the risk and payment of the production and distribution of ground. Next to this, the municipality agreed to participate as a private judicial party in the PPP construction” (Gemeente Hengelo & Projectbureau Hart van Zuid, 2010:10).

Round 3: start implementation

In 2004, the construction company Heijmans withdraws from the project because of the high investment risk (Timmers, 2004). Nevertheless, the municipality and Van Wijnen proceeded to the acquisition of land. They bought a part of the land of Stork to realise one of the first projects, the realisation of the Regional Community College of Twente (R.O.C.). Consternation occurred in the city council in relation to this acquisition and seventy-two questions were asked (Gemeente Hengelo & Projectbureau ‘Hart van Zuid’, 2010:61). After the questions were answered, the city council committed to the project again. However, to avoid similar scenarios in the future, the project agency ‘Hart van Zuid’ decided to inform the city council every quarter to create commitment.

In January 2006, the land exploitation in regard to the first phase of the project has been accepted by the city council and they proceeded to the acquisition of the land of landowner Emga (Gemeente Hengelo & Projectbureau Hart van Zuid, 2010:61).

In 2008, the city council of Hengelo provided budget to make a social cost-benefit analysis and to update the master plan. This was partly done to receive subsidy from the central government in relation to the strategic policy document on spatial development ‘Nota Ruimte’ (Gemeente Hengelo & Projectbureau Hart van Zuid, 2010:61). The main objectives of the updated master plan were (and still are) three-fold: enhancement of the economic structure; improvement of the (EU) region accessibility; enhancement and improvement of the quality of life of the southern part of Hengelo (Gemeente Hengelo, 2008:10-11). The main difference with the previous master plan could be found in the substantive programme. E.g. the area around the channel was approached in a different way, the initial planned housing could not proceed, the number of houses had diminished from 2039¹⁸ to 1500¹⁹. Due to the financial crisis and changes on the housing market, the substantive programme had changed and other solutions had been sought (and on the moment of writing still are sought) to guarantee progress of the project. The nine target points (“ankerpunten”) remained the same, as these represent quality, cooperation and financing. All parties agreed that the quality of the project should not be damaged by the speed of the process. These target point were guided by the Supervision team, that checks and balances the process.

Round 4: towards the second phase of the project

In July 2009, policy towards soil changed. A covenant was signed by the Ministry of Housing-Spatial Planning and the Environment, the Ministry of Agriculture-Nature and Food Quality, the Ministry of Transport-Public Works and Water Management, the Association of the Provinces of the Netherlands (IPO), the Association of Dutch municipalities (VNG) and the Association of Water Management Authorities. Some of the basic principles of the covenant were:

¹⁸ The original number of houses in the master plan of 2002 was 877 houses. This number was increased to 2039 houses when the master plan was studied in depth as described in round 2.

¹⁹ A comparison between the master plan of 2001, the masterplan towards implementation 2003, and the master plan 2008 can be find in appendix G

decentralization of responsibilities and task; further integration between the policy domains of soil, energy, water and subsurface; Integration between policy on remediation and an integrated approach in relation to policy on spatial planning. The integrated approach²⁰ was partly presented as a solution to the remediation of the deeper groundwater. The responsibility of the remediation of the deeper groundwater can be transferred to a public authority by lump sum payment. This policy was (and still is) presented as a solution to stagnation in spatial development projects due to the discussion on responsibility of the contaminated deeper groundwater (convenant, 2009)

In September 2009, the project 'Hart van Zuid' was included in the national strategic policy document on spatial development; 'Nota Ruimte'. The inclusion of the project resulted in a financial contribution of 14,5 million euro, provided by the former Ministry of Housing, Spatial Planning and the Environment. The steering philosophy of the document is as follows:

“In their vision and objectives on spatial development, the cabinet takes the starting point of a dynamic and development-oriented spatial policy with a clear division of responsibilities between central government and local governments. In the past, national policy in regard to spatial issues, was separated in different policy documents. This cabinet chooses to integrate national policy (as far as possible) in one document. One document helps to integrate the different policy domains, clarifies and ensures greater consistency in policy and its implementation” (VROM, n.d.).

In 2010, the city council has agreed upon the land exploitation of the second phase of the project. July 2012, the province of Overijssel has decided to invest 45 million euro, and the project heads towards the implementation of the subprojects from the second phase. The money will be partly used for the construction of the lane 'laan Hart van Zuid', the displacement of 'Stork Technical Services' and the construction of a bridge.

²⁰ See glossary page 11

5. Analysis of the Stork-Hengelo case study

This chapter contains an analysis of the regeneration process of the industrial site of Stork in Hengelo. This analysis is based on the theoretical and analytical framework provided in chapter 2. In section 5.1 an actor analysis is made, to provide insight into the governance network and the interdependence between the different actors. Interests, authority and resources are elaborated per actor. Section 5.2 and 5.3 provide an analysis on how actors deal with the complexity of the regeneration process. How do they demarcate the project mentally and subsequently how do they act towards complexity. Section 5.4 focuses on the governance capacity, reflecting on the actors opinion. This chapter ends with an interim conclusion.

5.1. ACTOR ANALYSIS

The first sub question of this research is: *Which public and private parties take part in the regeneration of brownfields, what are their interests and what are their mutual dependencies?* To answer this first sub question, this section provides an actor analysis which elaborates upon the interests, authority and resources. A distinction can be made between: financial resources, production resources, competencies, knowledge and legitimacy. Mapping resources and interests provides insight into the interdependencies of actors in the field and is of explanatory power to actors behaviour (hinder or encourage the project). Table 5.1 sums up the findings per actor. The degree of dependency in the table is degree of the dependency of the problem owner on the other actor. The municipality is considered to be the problem owner in this research as they are the authority that has the responsibility and interest to regenerate the area.

Table 5.1: Interdependency

Actor	Interest	Authority	Resource	Dependency (by problem owner)
National government	<ul style="list-style-type: none"> Quality of the human environment and integral spatial development. Model project in the 'Nota Ruimte' 	<ul style="list-style-type: none"> Providing national policy 	<ul style="list-style-type: none"> Knowledge Financial resources 	<ul style="list-style-type: none"> High large importance and low substitutability
Province Overijssel	<ul style="list-style-type: none"> International competitiveness Focus on economic activity from the perspective of the programme 'innovatie driehoek' 	<ul style="list-style-type: none"> Advice 	<ul style="list-style-type: none"> Financial resources knowledge 	<ul style="list-style-type: none"> High large importance and low substitutability

Municipality of Hengelo	<ul style="list-style-type: none"> • Urban development • Remediation of the environment • Exploitation of land 	<ul style="list-style-type: none"> • Local authority to make decision • Public tasks according to soil protection Act (“wet bodem bescherming”) • Providing policy and control and maintaining of the area • Area controller 	<ul style="list-style-type: none"> • Competency • Knowledge • Production resources (after land acquisition) • Financial resources 	<ul style="list-style-type: none"> • Problem owner
Developer and constructor Van Wijnen	<ul style="list-style-type: none"> • Profit • Spatial development and Commitment 	<ul style="list-style-type: none"> • Decision-making power in the project agency (PPP) • Development and construction 	<ul style="list-style-type: none"> • Competency • Financial resources • Knowledge • Production resources 	<ul style="list-style-type: none"> • Medium-High <p>Other developers could develop the area.(substitutable) However, Van Wijnen has been involved in the project from the beginning, is one of the managing actors and a close relationship with the municipality is established.</p>
Foundation Hart voor Zuid	<ul style="list-style-type: none"> • Protecting quality of life during the regeneration process 	<ul style="list-style-type: none"> • Advice 	<ul style="list-style-type: none"> • Legitimacy 	<ul style="list-style-type: none"> • High <p>Large importance and low substitutability</p>
The Dutch Institute for Cultural Heritage (part of the ministry of education culture and science)	<ul style="list-style-type: none"> • Cultural Heritage 	<ul style="list-style-type: none"> • Providing advice based on research • Appointing national monuments in name of the minister of education culture and science 	<ul style="list-style-type: none"> • Legitimacy • knowledge 	<ul style="list-style-type: none"> • High <p>Large importance and low substitutability</p>
Landowners (Stork, emga)	<ul style="list-style-type: none"> • Selling the abandoned land and buildings 	<ul style="list-style-type: none"> • Landowner 	<ul style="list-style-type: none"> • Production resources 	<ul style="list-style-type: none"> • High <p>Large importance and low substitutability</p>
Supervision team	<ul style="list-style-type: none"> • Guarding quality and unity 	<ul style="list-style-type: none"> • Providing advice 	<ul style="list-style-type: none"> • Knowledge • Legitimacy 	<ul style="list-style-type: none"> • Medium <p>Knowledge can be gathered from other persons, so is substitutable. However, they are involved from the project of the beginning</p>

The National government supports the project ‘Hart van Zuid’. Government is not steering the project in a direct way and has no formal decision power. However, by providing financial resources they steer the project in accordance to their own interests. The inclusion of the project into two national policy documents requires a certain standard from the project and causes time and quality pressure.

The project ‘Hart van Zuid’ is included in the ‘Vijfde nota Ruimtelijke Ordening’. This is a strategic national policy document on spatial planning. In this document, Hengelo is presented as part of the “urban network of Twente” together with Enschede and Almelo. This policy document emphasises the importance of the development of living and working in one area (Stuurgroep ‘Hart van Zuid’, 2001:22; Doeschot 2003:9). This national policy steers on multi-functional land use and connecting the project to its surrounding area (Enschede, Almelo). The national policy document “Vijfde Nota Ruimtelijke Ordening” is succeeded by ‘The Nota Ruimte’ in 2006. In 2009, the project ‘Hart van Zuid’ is also included in the “Nota Ruimte”. An amount of 14,5 million euro is assigned to the project. The guiding principles of this document are as follows:

“In their vision and objectives on spatial development, the cabinet takes the starting point of a dynamic and development-oriented spatial policy with a clear division of responsibilities between central government and local governments. In the past, national policy in regard to spatial issues was separate in different policy documents. This cabinet chooses to integrate national policy (as far as possible) in one document. One document helps to integrate the different policy domains, clarifies and ensures greater consistency in policy and its implementation” (VROM, n.d.).

Both policy documents provide a guideline, based on the national objectives towards spatial development. The task and responsibilities of the actual regeneration of the area ‘Hart van Zuid’ are, however, delegated to the regional and local authorities. To receive subsidy from the national government the project has to contribute to the national objectives. In addition, the project was included as a model project in the ‘Nota Ruimte’. Presenting the project as a ‘role model’ increases commitment of the public parties and at the same time generates pressure to the project.

National government provides *national policy* on spatial development. Their main interest is *quality of the human environment* and *integral spatial planning*. They possess *financial resources* and *knowledge*, which are of large importance to the project and of low substitutability. This makes them an important player (to the problem owner) in the governance network. So the dependence on the national government is high. At the same time national government needs the municipality to make the project a success and live up to their standards, as it is one of their model projects.

The province of Overijssel invests in ‘Hart van Zuid’ and gives advice on the function of the area. Because this actor invests in the area, they provide advice mainly in the initiation and planning phase. They have no actual decision-making power. However, due to their financial contribution they have the authority to give advice and steer the project into certain directions. They provide direction to the development of the area in relation to housing, employment and transport (interview province of Overijssel, 2012). Decisions made by the province in regard to ‘Hart van Zuid’ are mainly investment decisions.

The province contributes to the project with its *financial resources*, which are necessary to develop plans and realise implementation. They contribute to the development of plans with their *knowledge* of the province. Both resources are of large importance to the project and of low substitutability which makes the level of dependency high.

In this research, **the municipality of Hengelo** is seen as the problem owner. They have a public interest in relation to area development and environmental protection. At the same time, they have the role of a private judicial party in relation to landownership in the PPP construction.

As local public authority, the municipality provides policy. They make policy in regard to the development of the area (e.g. master plan and zoning plans) and act in accordance with the Soil Protection Act ('wet bodem bescherming'). Another task is to manage and maintain the area. As an area controller they have the responsibility to control the development of the area. Their public tasks in regard to spatial development and environmental protection explains the interest of the municipality in the regeneration of the area and the remediation of soil and groundwater.

The municipality has several resources that contribute to the project 'Hart van Zuid'. *Competency* (decision-making power) is one of these resources. Proposals made by the project agency in regard to remediation and reuse have to be accepted by the steering committee 'Hart van Zuid'. In this committee two actors have the power to vote, namely the project-alderman of the municipality and the board member of Van Wijnen. These actors have to agree upon proposals and discuss proposals in their own organization. The alderman of the project has to present the proposals to the Mayor and executive board (consists of Mayor and Aldermen) and to the city council. The city council has the final decision-making power to approve proposals (e.g. master plan). Zoning plans have to be approved by the city council as well, as they are responsible for the urban planning of the city.

Knowledge is another important resource of the municipality. They have knowledge on remediation, area development, noise, air quality, demography etc. Last but not least, the municipality invests money in the area of 'Hart van Zuid', thus they also contribute to the project with *financial resources*. However these resources are not sufficient to complete the project on their own, so they depend on other actors' resources.

Developer Van Wijnen is the other coordinating party in the PPP construction. As a private party they have the interest of making profit. However, as one of the coordinating parties Van Wijnen also has the interest of the development of the area in its entirety. They take into account the wider project interest and they have an eye for the different interest in the area and emphasise the importance of having commitment to make regeneration to a success.

The developer has different resources that are of relevance to the project. First of all, they have *competency*, as they have decision-making power. They contribute to the project with *knowledge*. They are an expert in the field of development and construction. Van Wijnen is an expert on markets, risks, locations, financing and exploitation (Van Wijnen, n.d.). In the implementation phase of the project they have the role of executer, they implement and coordinate construction²¹.

Van Wijnen takes part in the steering committee 'Hart van Zuid'. Next to the municipality, the board of Van Wijnen also has to decide upon the proposals provided by the project agency "'Hart van Zuid'", thus they have the authority to make decisions in regard to the project. They are the ones that develop and construct the area, they thus have the competence to implement project plans.

In regard to the resources, Van Wijnen possesses *competency* as they are empowered to make decisions. Other important resources of van Wijnen are *financial resources* that they invest in the project. They possess *knowledge* and *production resources*

²¹ Of some of the sub projects, not all.

for building and developing and they are developing their knowledge on regeneration of brownfields. The dependence on Van Wijnen is regarded medium to high, because other developers could develop the area. However, Van Wijnen has been involved in the project from the beginning, is one of the managing actors and has established a close relationship with the municipality.

The foundation ‘Hart voor Zuid’ is an interest group that represents the interests of the residents in, and surrounding the area. They give their opinion on plans and proposals in regard to the development of the area. They are not really actively participating in creating function for the area; they are more concerned about the quality of living and protecting values like green areas or parking places.

The foundation does not have formal decision-making power or financial resources to realise projects. However, this actor is able to influence the progress of the project it can give *legitimacy* to the project by supporting or rejecting plans. The foundation ‘Hart voor Zuid’ is a cooperation between several individual resident associations, therefore they represent quite a number of residents and do have legitimacy power. The municipality depends upon the commitment of this actor which is of large importance and low in substitutability. This creates high dependence to this actor.

The Dutch Institute for Cultural Heritage is concerned with the approach towards cultural heritage. One of their interests is reuse of cultural heritage, without losing the characteristics of the heritage. They contribute to the project by doing research and giving advice on (the development of) industrial heritage. They have the authority to appoint national monuments, in name of the ministry of education, culture and science. However, rules on the protection of monuments have been modernised in 2009, and the interests of area development and protection of monuments become more integrated. Agreements are made in regard to the process, the content and the implementation concerning industrial heritage (covenant, 2003).

Moreover, they contribute to the project with their *knowledge* and research on the value of (industrial) heritage and give advice. In the project ‘Hart van Zuid’ the institute conducted research and gave advice on the reuse of industrial heritage. The institute also can contribute or block the process with *legitimacy*. By approving the reuse of industrial heritage and providing guidelines they give legitimacy to the project. This legitimacy in regard to the reuse of industrial heritage has also been used as a hindrance power by other parties, like the Cuypersgenootschap.²² Their resources are of large importance and of low substitutability, therefore the degree of dependence is high.

The land owners. Referring to Stork one could say that it was their interest to sell the abandoned land. After all they are the ones that approached the Municipality and Van Wijnen. However, it is less of their interest to remediate contaminated soil and especially the deeper groundwater. This conflicts with the interest of the municipality whose interest is in environmental remediation. In accordance with the act on soil protection (“wet bodembescherming”) a landowner is responsible for the contamination on its parcel from a certain year that the owner could know about the contamination (interview gemeente Hengelo, 2012)

²² see section 4.2., round 2

The landowners do possess the important production resource of *land*. The municipality highly depends on the landowners, because this resource is of large importance and of low substitutability.

“**The supervision team** is made of experts concerning landscape, urban planning, architecture and industrial heritage. The team is appointed to guard the identity of the area, despite the division of the project into several sub-areas. When Van Wijnen and the municipality of Hengelo present plans concerning a certain subsection of the area, the supervision team provides a document with the spatial requirements of that area. Plans of the area are presented to the supervision team to give advice (Gemeente Hengelo, 2008:26). The team actually checks and balances the project and by doing so they can give or withhold legitimacy from the project. Knowledge is replaceable by other actors. However, the supervision team is involved from the beginning and fulfils the role to create legitimacy, therefore the degree of dependence is medium.

5.2. BOUNDARY JUDGEMENTS

Central to this section are boundary judgements (mental demarcations) made by actors in regard to the project. By analysing these boundary judgements the second sub question of this research is answered: *How do parties involved in the regeneration process demarcate the regeneration project?* This section only discusses the boundary judgement of actors which are interviewed. Two types of boundary judgements are distinguished, substantive boundary judgements and structural boundary judgements. The former indicates the scoping in regard to policy domains. The latter refers to the way actors divide responsibilities. Boundary judgements are qualified small / relatively small / relatively wide / wide in accordance with the specification underneath the table. Table 5.2 summarises the findings of the analysis per actor.

Table 5.2: Boundary judgements

Actor	Substantive boundary judgements (policy domains)	Structural boundary judgement (responsibility)
Municipality of Hengelo (project agency)	Wide Economic development Urban development Environmental improvement Social issues (quality of life) Cultural- historic issues	Wide Shared responsibilities among the municipality and developer Van Wijnen in PPP construction. Takes into account the project environment
Developer and constructor Van Wijnen	Wide Economic development Environmental improvement Social issues (quality of life) Cultural- historic issues	Wide Shared responsibilities among the municipality and developer Van Wijnen in PPP construction.
Province Overijssel	Relatively Small Economic development Urban development (Interest of the province and from the point of view of the programme “Innovatie Driehoek”)	Relatively wide Responsibilities shared among actors
Foundation Hart voor Zuid	Small Social issues (quality of life)	Small Responsibility of the governmental parties
The Dutch Institute for Cultural Heritage (part of the ministry of education culture and science)	Relatively small Cultural historic issues Urban development	Wide Responsibilities shared among public actors, supervision team and own organisation.

small demarcation: focus on one domain
 relatively small domain demarcation: focus on two domains
 relatively wide demarcation: focus on three domains
 wide demarcation: focus on four or more domains

The Municipality of Hengelo considers many policy domains from the start of the project; economic development, urban development, environmental improvement, social issues (quality of life), cultural-historic aspects (maintenance of industrial heritage). These domains can be found in the objectives of the master plan ‘Hart van Zuid’. The main objectives are: “enhancement of the economic structure; improvement of the (EU) region accessibility; enhancement and improvement of the quality of life of the southern part of Hengelo” (Gemeente Hengelo, 2008:10-11). The reuse of industrial heritage also receives much attention in both master plans of 2001 and 2008.

The content of the programme takes into account working, living, facilities, culture, leisure, infrastructure (Gemeente Hengelo, 2008:17). The objectives did not change over the period. However, looking at the content of the programme (the functions in the area) the project scope did slightly change ²³. Overall the municipality (as one of the two coordinating actors in the project agency “Hart van Zuid”) has considered many domains and the *substantive boundary judgements* can therefore be qualified *wide*.

Although there is a strong division in subprojects, the PPP construction divides responsibilities and risks among the municipality and Van Wijnen. Furthermore, the project ‘Hart van Zuid’ is not separated from its environment. The

²³ Also see table 4.1 decision-making process project ‘Hart van Zuid’

project is connected to the infrastructure in the surrounding areas and the development of adjacent neighbourhoods :“You have to take into account the already established surroundings, with established structures, and companies should be able to continue to function. You have to connect to the city centre and to the neighbourhoods surrounding the project zone” (interview Wil Bohnen in Stuurgroep Hart van Zuid, 2001:55). Considering the shared responsibilities and the connection to the surrounding area one can qualify the *structural boundaries wide*.

Van Wijnen has various roles in the project ‘Hart van Zuid’. As a developer they take into account the domain of economic development and urban development. However, to realise this economic development and urban development they also take into account other policy domains like environmental issues and cultural historical issues. “The main objective is to redevelop the area. However, to accomplish this other things like remediation need to be arranged as well” (interview Van Wijnen, 2012).

Because van Wijnen is concerned with the task of managing the project, they decide to take into account a wider variety of domains, including social aspects (quality of life), environmental issues, cultural-historical issues to realise objectives. *Substantive boundary judgements* of van Wijnen can be qualified as *wide*.

Responsibilities and risks are shared among the public and private parties in the PPP construction of the project. Overall, the structural boundary judgements of Van Wijnen can be considered *wide*.

The Province of Overijssel mainly emphasises on the policy domains of economic development and social aspects (improvement of the quality of life). “The decision about additional investments is mainly based on the possibility of economic development and employment” (Interview Province of Overijssel, 2012). The province states that the reason to invest in the project ‘Hart van Zuid’ is because the project stimulates the quality of life and creates economic activity (Provincie Overijssel, 2010). *The substantive boundary judgements* of the province of Overijssel can be qualified *relatively small* as they approach the project mainly from the economic and social perspective.

The province of Overijssel integrates the project ‘Hart van Zuid’ into a programme called ‘Innovatie Driehoek’ (Innovation rectangle). “The goal of this programme is to enhance the economy of the region Twente by improving the business climates for innovative businesses and knowledge institutes” (Projectbureau Hart van Zuid, 2012). From a regional perspective, the province wants to compete economically with other provinces as well as internationally. “The decision to combine the projects in the programme ‘Innovatie Driehoek’ was partly made to generate support from ‘The Hague’ and to overcome competitiveness between the three big projects” said during the interview with the Province of Overijssel. By combining the project and overcome negative competition between the projects one can say that the province makes *relatively wide structural boundary judgements*.

The Foundation ‘Hart voor Zuid’ focuses mainly on the social aspects of the area. They find it important to keep the area attractive and to minimise inconvenience for the neighbourhood. Their interest is mainly on issues like maintaining the number of parking spaces and ensuring green space within the area. The main subjects in the vision document of the residents are housing, traffic, squares and green areas and facilities (Stichting Hart voor Zuid, 2001). Because Stork is located in Hengelo for over a hundred years, the maintenance of the industrial heritage is also highly prioritized “a lot of citizens prefer the authentic atmosphere of this neighbourhood instead of the coldness of new constructed

neighbourhoods. This won't change the coming years, therefore the industrial heritage should be maintained. What we demolish now, will never return" (Stichting Hart voor Zuid, 2001).

Because the foundation mainly focuses on the social domain, one can qualify the *substantive boundary judgements* of the foundation as *small*.

The foundation focuses mainly on its task of being reflexive on plans of the project agency. They consider the development of the area as the main task of the public parties. Overall, their *structural boundary judgements* can be considered *small*.

The Dutch Institute for Cultural Heritage approaches the project mainly from a cultural-historic point of view. However, policy in regard to the protection of monuments has changed over the years. Policy on (industrial) heritage has been integrated with the spatial development of areas. In 2009, three cornerstones were added to integrate the policy on the protection of monuments with spatial development: cultural historic interests need to be integrated in spatial development; regulation need to be simplified; promotion of reuse (Rijksoverheid, 2009). The Dutch Institute for Cultural Heritage mainly takes into account the two domains; the cultural-historic domain and urban development. Their *substantive boundary judgements* can therefore be qualified as relatively *small*.

With signing the covenant The Dutch Institute for Cultural Heritage divided the responsibilities in relation to the reuse of the cultural heritage among different actors, like supervision team, own organisation and other private and public actors. Therefore their *structural boundary judgements* are *wide*.

5.3. STRATEGIES TO DEAL WITH COMPLEXITY

Next to mental demarcations made by actors, actors also act and react in a certain way to complexity. The theoretical framework distinguishes two main strategies. A more closed **conservative strategy** and a more open **adaptive strategy**. The former strategy refers to actors that make few connections to other actors and especially not to actors with a different background, are closed to new solutions and inflexible. The latter strategy refers to actors that connect to other actors (from different backgrounds), are open to new ideas and are able to react to changes in a flexible way. This section provides an answer to the sub-question: *which strategies are followed by the actors in the governance network to deal with complexity of the regeneration process?* Table 5.3 summarises the findings.

Table 5.3: Strategies

Actor	Strategy
Municipality of Hengelo (role of coordinator in the project agency)	Adaptive <ul style="list-style-type: none"> • Connect to actors from various backgrounds. • Solutions are developed with a variety of parties (in interactive workshops). • Flexible: master plan is not a blue print, provides commitment to the process but not to the final result.
Van Wijnen	Adaptive <ul style="list-style-type: none"> • Cooperate with a lot of parties from various backgrounds. • Solutions through joint fact finding and constantly looking for other area functions. • Create feedback from the environment by appointing supervision team and supporting the resident foundation ‘Hart van Zuid’ (increasing complexity by enlarging the number of actors in the governance process).
Province of Overijssel	Alternates between conservative and adaptive <ul style="list-style-type: none"> • First cooperation with a wide variety of actors in the steering committee and in the designing phase of the master plan. In the implementation phase their main partner is the municipality of Hengelo so connections are limited.
Foundation ‘Hart voor Zuid’	Conservative <ul style="list-style-type: none"> • Connects to limited number of actors. • Closed to new solutions, as they prefer the prestigious project from the beginning.
Dutch Institute for Cultural Heritage	Adaptive <ul style="list-style-type: none"> • Connects to a variety of actors. • Open to new solutions on how to reuse and protect industrial heritage. • Creating flexibility by steering into a certain direction but do not provide a blue print on the function of each building.

The Municipality of Hengelo started relatively autonomous with the project in 1998.

“In the initial planning phase we started with hiring an external project leader to connect people within the organisation to come to an initial design. Afterwards, a project agency was started where at first only Jan Nieuwenhuizen (of Van Wijnen) was appointed as a project director. When the project extended, the municipality also connects to the project agency ‘Hart van Zuid’ (Interview municipality of Hengelo, 2012).

The municipality now cooperates with a wide variety of parties. As one of the managing actors of the project, the municipality connects to private and civil parties to collectively create ideas and content of the area “‘Hart van Zuid’. The municipality connects to a variety of parties. Whether governmental, civil or private, all parties were involved from the initiation phase until the implementation phase.

“we work together with all parties, of course in the PPP construction with Van Wijnen, but also with all kinds of organisations and companies like the regional community college (ROC), Stork Siemens and NS and ProRail in relation to improvement of the station. To create commitment we work together with all parties within the area, but also outside the area; the surrounding cities, the region, the province and national government. Actually we also connect to the European region (Eur region), so that is trans boundary cooperation. This project is too large to tackle by cities” (Interview municipality of Hengelo, 2012).

Interactive workshops are held with the actors involved in the area and a common vision, goals and strategic directions for the area are formed. Their main partner is Van Wijnen Group N.V. The municipality connect to other public parties:

to the province, region, neighbouring municipality of Enschede and the national government. They connect to private parties and investors like the Regional Community College, NS (Dutch Railway company), businesses in the area like Stork & Siemens etc.. The municipality also connects the different policy fields within the organization.

The municipality is open to dynamics from the environment and to new ideas. The master plan for the area is not a blue print. It provides the possibility to react in a flexible way to dynamics and to create other function in the area. “A blueprint would not provide sufficient dynamic. Instead, the challenge of this longitudinal process is to gradually add area functions that have a positive effect on the quality of life and appeal of the area”(Stuurgroep ‘Hart van Zuid’, 2001). We strongly recognize the commitment to the process and not to the result as stated as an important process characteristic by De Bruijn et al. (2008:49). The division of the subprojects and the different phases also allow a certain extent of flexibility “You have to have an eye for changes and at the same time the project has to continue”(interview municipality of Hengelo 2012).

In regard to the interest of the municipality to improve the environment and remediate soil, conflicting interest are present. Despite (or maybe due to) all connections conflict occurs sometimes due to conflicting interests. For the municipality (in the role of public authority) remediation is of importance. The companies still located in the area do not always prioritise remediation and do not want to invest in remediation. Discussion on the gravity of the contamination has led to conflict. However, the municipality remains open to discussion and developed a new policy to tackle problems.

So, in the beginning the municipality acts in a more conservative way, but as soon as they realise that the project becomes more extensive the municipality connects to more parties and joins the project agency ‘Hart van Zuid’ in the PPP construction. By connecting to parties with different backgrounds, they receive a lot of feedback from the environment which makes them alert to changes in the environment. Moreover, unexpected change events, like the financial crisis, cannot be foreseen. However, by remaining open to alternative solutions with the guiding master plan they are able to react in a flexible way. Overall, the municipality follows an *adaptive strategy* and embraces complexity. It takes into account complexity and therefore is able to react to dynamics in an adaptive way.

Van Wijnen is the other manager in the area ‘Hart van Zuid’. They intermediate between private, public and civil parties.

“Van Wijnen has the responsibility to redevelop the area, we have the support of the authority of the municipality, but they also have their own role and game. We try to be the connection between the municipality and Stork”.

Van Wijnen tries to connect these parties. Also, when conflicts occur due to contradicting research reports, they arrange joint research to join forces. They also connect to the users of the area:

“With regeneration we redevelop a complete area. From the demolition of buildings to rebuilding, renovation, restoration, renovation and new construction of buildings. Restructuring also means - and perhaps above all communicate with the people who live or work in the area It is crucial for the successful completion of a project” (Van Wijnen, 2012).

Van Wijnen is very open to dynamics from the environment. They connect to a wide variety of partners with different points of view, to make sure that solutions are not one sided. The project agency appointed the supervision team and supported the establishment of the foundation ‘Hart van Zuid’. By appointing a supervision team, the amount of players

in the field is increased. By doing this, complexity in the governance field increases; an extra actor in the field with its own interests, goals and roles, which might be contradictory to others. However, by doing so, Van Wijnen and the project agency are able to get signals and feedback from the environment and adapt their plans. Increasing complexity makes it in this case easier to pick up signals from the environment and to establish progress.

“I have created trust and at the same time opposition” says Jan Nieuwenhuizen (project director ‘Hart van Zuid’) in the Belvedere Festival Magazine 2008. Van Wijnen is constantly looking for new directions of solutions in the area.

Van Wijnen follows an *adaptive strategy*, they open up to signals from the environment by connecting with a lot of parties. They are not only embracing complexity, but also increasing complexity by enlarging the number of actors in the governance process.

In the planning phase **the province of Overijssel** was represented in the Steering Committee “‘Hart van Zuid’”. In the implementation phase however, they resign from this committee to lessen pressure on governors and because they do not have decision-making power in the implementation phase. Their cooperation in the project switched from quite an active role in which they were connecting to a variety of actors to a more passive role, where they mainly cooperate with the municipality. “We are not in the steering committee anymore because the implementation phase takes place on the level of the municipality” (interview province of Overijssel, 2012).

The province seems to alternate between an *adaptive* and a *conservative strategy*.

The Foundation ‘Hart voor Zuid’ cooperates mainly with the project agency and with the retailers association. The foundation is not really open to new solutions and does not fully support the current plans provided by the project agency. The interviewee of the foundation ‘Hart voor Zuid’ said: “Where are the prestigious projects from the beginning? Although at the moment I would not know which other functions could be implemented in the area” (interview foundation Hart voor Zuid). The foundation mainly follows a *conservative strategy*.

The Dutch Institute for Cultural Heritage cooperates with a variety of actors. Their main contact is the project agency ‘Hart van Zuid’. However they cooperate with parties from all kind of backgrounds, private, public and civil society, to create ideas about the development of the area and in regard to the approach towards industrial heritage.

They take into account the lengthiness of the process. They contribute to research that provides a guideline but do not give a blueprint on which functions should be located in which building. A covenant is signed, wherein intentions are expressed in regard to the approach towards the industrial heritage in the area of ‘Hart van Zuid’.

“One of the items from the covenant is that protection would take place as less as possible. We expressed our intentions into a certain direction of transformation. One of the aspect was to have more flexibility; one building can be very attractive but is not economically viable, while another building looks less attractive but is suitable for reuse” (interview the Dutch Institute for Cultural Heritage, 2012).

By supporting the covenant the institute for cultural heritage supports flexibility in the development of the area. The institute makes a switch from pure conservation of heritage to reuse of heritage and this was not expected of an actor

that protects heritage for a long time. “You have to have courage and support from governing partners to switch from pure protection to reuse” (interview the Dutch Institute for Cultural Heritage, 2012).

Thus, one can say that the Dutch Institute for Cultural Heritage follows an *adaptive strategy* and connects to its environments and invents new ways and creates vision on the approach of heritage to make area development possible.

5.4. PERCEIVED GOVERNANCE CAPACITY

“The term *governance capacity* is the ability of actors in the governance system to collectively come to legitimate, effective and collective action. So, governance capacity is about the ability to solve problems and the ability to connect” (Van Buuren et al., 2009:7). This section answers the last sub question of this research: *How do actors in the governance network perceive the governance capacity?* Governance capacity is divided into three variables, progress (process indicator), problem solving capacity (substantive indicator) and legitimacy (both progress and substantive indicator). The perceived governance capacity of the Stork-Hengelo case is measured by asking the actors to score the following statements:

- I: I am satisfied with the progress and continuation of the project so far.
- II: The current solutions that are presented, do tackle the actual problems.
- III: Current plans are widely supported by all organisations involved in the regeneration process.
- IV: All parties communicate with each other in a transparent way.

To create an average score stakeholders are asked to give their opinion and score the statements on a five point Likert-scale (totally agree / agree / neutral / disagree / totally disagree). One has to take into account that scores are not objective, but opinions and experiences of the actors. To broaden the analysis the researcher’s opinion on the current realised outcomes is also included. The project is still in progress, so governance capacity can change over time, this is however not included in this research. Six actors filled out the short list with statements. Table 5.4 summarises the findings on governance capacity. The final row gives an overview of the perceived governance capacity of the actors in sum. The qualification for the perceived governance capacity in sum is inspired by the research of Edelenbos et al. (2010:16-17).

Table 5.4: Perceived governance capacity

	Outcomes Realised	Actors	Progress	Problem solving capacity	Legitimacy	
					Support	Transparency
Stork-Hengelo	Finalising the first phase of the project Hart van Zuid. Created commitment and financial support to start the second phase of the project	<i>Managing actors</i>	<ul style="list-style-type: none"> • agree • agree • agree 	<ul style="list-style-type: none"> • agree • strongly agree • strongly agree 	<ul style="list-style-type: none"> • agree • strongly agree • agree 	<ul style="list-style-type: none"> • agree • agree • agree
		<i>Remaining public actors</i>	<ul style="list-style-type: none"> • disagree • totally agree 	<ul style="list-style-type: none"> • agree • agree 	<ul style="list-style-type: none"> • neutral • agree 	<ul style="list-style-type: none"> • agree • neutral
		<i>Remaining private and social actors</i>	<ul style="list-style-type: none"> • neutral 	<ul style="list-style-type: none"> • disagree 	<ul style="list-style-type: none"> • neutral 	<ul style="list-style-type: none"> • agree
In sum			positive (+)	positive (+)	positive (+)	positive (+)

++	very positive	(all actors agree or strongly agree)
+	positive	(more than half of the actors agree or strongly agree)
+/-	average	(half of the actors agree or strongly agree)
-	negative	(less than half of the actors agree or strongly agree)
--	very negative	(one actor agrees or strongly agree)

The governance capacity in terms of *progress* is measured by asking the actors to give their opinion on statement I. Progress is used as an indicator to measure the process outcomes. In regard to the progress and continuation of the process four out of six respondents are satisfied or strongly satisfied. They express a variety of factors that contribute to this satisfaction: spatial development and remediation are going hand in hand, creation of wide political and financial support, PPS construction, covenant in relation to the approach of industrial heritage, commitment and long-term ambitions without blue print planning made progress possible.

The two actors, of which one is more mediate and one disagrees, give the following explanation on the fact that they are not satisfied about the progress of the project: “plans are adapted to the current circumstances, however plans have become less ambitious and we do not fully agree with these plans”. The second actor disagrees, mainly because they were involved late with the partial displacement of Stork.

Overall the actors in the project are satisfied about the progress. More than half of the actors agree or strongly agree which leads to a positive qualification towards the progress of the project.

The *problem solving capacity* of the case was judged in the following way. In regard to the question if the current solutions tackle the actual problems, five out of six respondents agree or strongly agree. All five give as an explanatory factor that problems like vacancy, pauperize and contamination were tackled in the area. One of them explains “We are solution-oriented and searched for solutions together.”

The one actor that disagrees underpins his opinion by explaining that the current solutions and function in the area are not as ambitious as in the beginning. The area becomes less lively than planned.

Overall the problem solving capacity is experienced positively by more than half of the respondents and therefore the problem solving capacity is scored positively.

The *legitimacy* of the project was judged on the base of support and transparent communication. Asking the respondents whether all parties widely support the plans of the project, three out of six actors agree and one out of six strongly agrees. Cooperation and interaction are said to be important contributing factors.

Two out of six actors are neutral, they explain that there is some resistance from retailers located in the town centre in regard to providing catering industry and a shopping centre in the area ‘Hart van Zuid’. One of the parties also emphasises that not all parties agree on the function that should be present in the area.

In regard to transparency, five out of six actors agreed that they communicate with each other in a transparent way. Communicating with each other plays an important role. The sixth actor is neutral about this statement because he is involved in the project at distance.

Overall, the governance capacity in terms of legitimacy is experienced positively by more than half of the respondents.

These findings show that the perceived governance capacity in this case study is quite high. More than half of the six respondents agreed or totally agreed upon the statements, this leads to a positive attitude towards the governance capacity. Obstacles are the catering industry, which leads to resistance and the change in area functions (due to unexpected dynamics). The new functions do not live up to each actor its expectations.

5.5. INTERIM CONCLUSION

In this chapter the way actors in the project Hart van Zuid deal with complexity, in terms of boundary judgement and the followed strategies, and the overall perceived governance capacity is analysed. This section relates the three variables and provides an interim conclusion on the case study of Stork-Hengelo. This interim conclusion provides a partly answer to the main question of this research: *How do parties involved in the regeneration process of brownfields deal with complexity and how does this influence the perceived governance capacity of parties in the network in terms of progress, problem solving capacity and legitimacy?*

Most actors in this case follow an adaptive strategy. Comparing table 5.2 with table 5.3 shows a connection between the boundary judgements made by actors and the strategies these actors follow in the governance process. Looking at the boundary judgements that actors make in the project ‘Hart van Zuid’, one can conclude that the two managing actors, Van Wijnen and the municipality of Hengelo, both make wide boundary judgements. Looking at the strategies, they both act in an adaptive way and connect to actors from various backgrounds. They design the process in such a flexible way that adaptation to uncertain dynamics is possible. By approaching the project from different domains, the project resulted in an integrated project where remediation and spatial development co-evolve and are coordinated in time and financially.

The province of Overijssel balances between relatively small substantive and relatively wide structural boundary judgements. In their strategy they are balancing between a conservative and adaptive strategy. The foundation ‘Hart voor Zuid’ has made relatively small boundary judgements and follows a conservative strategy. The Dutch institute of Cultural Heritage had made relatively small substantive boundary judgements and wide structural boundary judgements, but follows an adaptive strategy. The relatively small substantive boundary judgements at first sight seem to contradict to the adaptive strategy. However, one sees that this actor has a relatively small assignment from its organisation can act in adaptive way. This is partly stimulated by the covenant on the approach of industrial heritage which has stimulated cooperation and an integrated project objective. So, wide boundary judgements seem to be related to an adaptive strategy. This also counts the other way around; small boundary judgements seem to be related to a conservative strategy. The Dutch institute for cultural heritage forms the exception in this case study.

To see whether the strategies followed influence the perceived governance capacity, actors are asked to give their founded opinion on the progress of the project, the problem solving capacity and legitimacy (transparency and support). Each variable scores positive (+). This corresponds with the theoretical assumption that adaptive strategies lead to positive outcomes in complex spatial projects.

CASE STUDY

TERNI_PAPIGNO



6. Regenerating the brownfield of Terni-Papigno

This chapter provides a case description of the regeneration process of the industrial brownfield of Terni-Papigno. The chapter begins with an introduction on the case study by telling the history of the industrial site and by describing the geographical, political and societal context of the project. The industrial site of Terni-Papigno develops from the beginning of the twentieth century. In the seventies production is stopped and the industrial site becomes abandoned. Public intervention to regenerate the site can be traced back to 1996, when the municipality decides to buy the abandoned industrial site. From then on, the decision-making process is reconstructed in several rounds in section 6.2. This section provides an insight into the development of the process around the regeneration of the industrial site of Papigno.

6.1. INTRODUCTION

The watery area of Terni provided the perfect circumstances for the city to develop into an industrial city. Like many other industrial sites in the period of the industrial revolution, the industrial site of Papigno was built around 1900. The site was built along the Nera river, which was used as a transport modality. On the industrial site they mainly produced calcium carbide, a product that was used in the lamp industry. The direct environment provided resources needed to produce the calcium carbide. Electricity was generated through the rivers Nera and Velin and limestone (needed for the production of calcium carbide) was available from the nearby mountain S. Angelo (Stentella, 2011).

The site was the most important facility of the ‘Società Italiana del Carburo di Calcio Acetilene e Altri Gas’ (Italian Society of Calcium Carbide Acetylene and other Gases) (Stentella, 2011). The industrial site expanded in the first years and other chemical activities were also established on the site. From the carbide a fertilizer (calcium cyanamide) was produced (Stentella, 2011). However, the market of carbide became extremely competitive and in 1922 the company merged with the Società Terni, the new holding was called: ‘Terni società per l’industria e l’elettricità’ (Terni’s association for industry and electricity) (Stentella, 2011).

In the past, industrial production was influenced by several events. The Second World War caused a shortage of coal and damaged part of the factories on the industrial site (Brunetti, n.d.; Stentella, 2011). “Production started again in 1945, nevertheless production was soon affected by the crisis in the carbide market. Eventually, the nationalisation of the energy market in 1962 led to the takeover by the state owned petrochemical group ENI” (Stentella, 2011). In these years there was a high demand of chemical fertilizer and the French were a big competitor on this market. A political decision was made in favour of the French production of fertilizer, and the plant was closed in 1973. Until the mid eighties part of the site was still used to produce oxygen and hydrogen, the site was partially owned by National Hydrocarbons Agency and partly by the National Electricity Board (l’Ente nazionale idrocarburi & l’Ente nazionale elettricità)(Stentella, 2011).

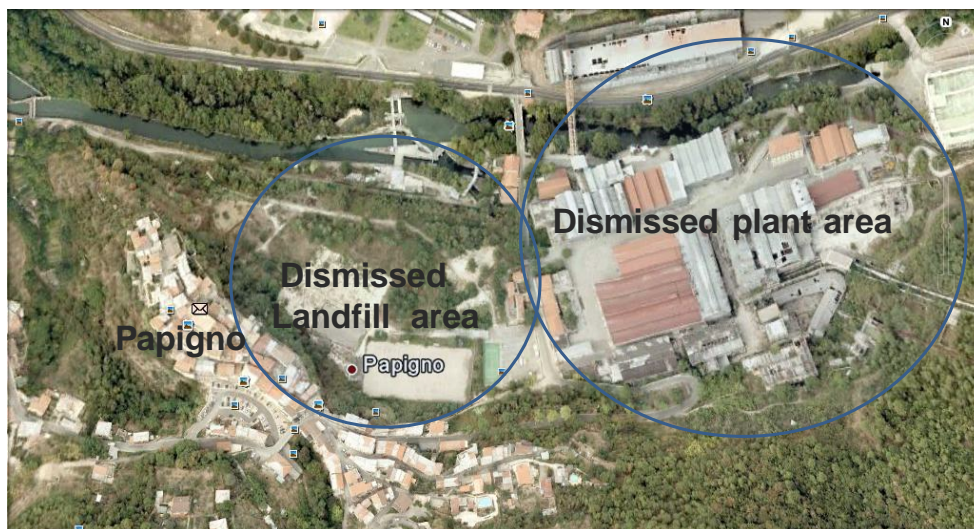
6.1.1. GEOGRAPHICAL- POLITICAL- AND SOCIAL PROJECT CONTEXT

This section elaborates upon the geographical, political and societal project context. It is important to understand the context of the case study as regeneration of brownfields is not separate from its environment. Each brownfield is unique and has its own context.

Geographical context

Terni is located in central Italy, north-east of Rome. The city is located in the province of Terni, in the region of Umbria. The nature around Terni attracts tourism and the nearby waterfalls ‘Cascate Delle Marmore’ allocate some 300.000 visitors a year. The river Nera that flows through Terni is used for leisure and activities like canoeing and rafting are offered. The Village of Papigno, near Terni, has a rich industrial history and locates the industrial brownfield of Terni-Papigno.

The industrial site of Terni-Papigno is located on the east side of Terni, along the Nera river. The size of the area that is subject to regeneration is around 105, 450 m². The site is split into two different parts; one part is a dismissed landfill and the other part is a dismissed plant area. The industrial site is almost completely abandoned. “On the site disused workshops and abandoned infrastructure (e.g. water & carbide penstock) are present. Infrastructure, like pipes and channels, are present in the ground and some of them are still operative and used by the Galletto hydroelectric power station” (Fioretti, personal communication, 2012). As a result of industrial use in history, parts of the soil and groundwater are contaminated.



Figuur 6.1: Brownfield Terni-Papigno
Source: HOMBRE

Political and social context

The political and institutional context of the project is as follows: the land owner is the municipality of Terni and therefore is responsible for remediation and regeneration of the industrial site. On the national level the redevelopment of brownfields initially is approached from the view of environmental protection. In 2001, the national government provides regulation on the national plan for restoration and environmental clean-up. The regions are given the autonomy to select sites of national interest (SNI²⁴). “These sites have to undergo restoration, actions are prioritised, financing measures, monitoring and check legislation” (ministero dell’ ambiente e della tutela del territorio del mare, 2009:96). The region of Umbria selects the industrial site of Terni-Papigno for the SNI list. and the region receives around four million euro for the remediation of the site. In 2008, the region nominates the Papigno site on a second list for revitalisation

²⁴ See glossary, page 11

under the act of 252-bis. The resolution Cipe 2007 provided a programme for the revitalisation of economic production of polluted sites (Regione Umbria, 2008). However, due to governmental changes on the national level subsidy is never made available. Selecting the industrial site as an SNI means that remediation plans have to be approved on national level by the ministry of the environment and territorial protection.

Project structure

The organisational structure of the project is a PPP construction, which is made up between ENEL, Federazione Canoistica (canoeing association), ATC (local public transport company) and others. However, the municipality is the risk bearing actor.

6.2. DECISION-MAKING PROCESS PAPIGNO: 1996 - PRESENT

In this section the decision-making process in regard to the regeneration of the industrial site of Papigno is described. Public intervention in regard to the regeneration can be traced back to 1996, when the municipality of Terni decides to buy the industrial site of Papigno. Similar to the case description of Stork-Hengelo in chapter 4, the decision-making process is divided into several rounds. This is in accordance with the round model (“rondenmodel”) of Teisman. The round model is chosen as a tool to describe the case studies, as it suits the non-linearity of decision-making in governance networks. The decision-making process is divided into 4 rounds (round 0 – round 3) in which each round can represent a variety of actors and ends in a decision. Data in order to reconstruct the decision-making process is partly retrieved from unpublished personal communication with the Italian actors, like interviews, emails and telephone calls. Table 6.1 summarises the rounds, its involved actors, the main decision of the round and characterises the content / direction of the process.

Table 6.1: Decision-making process

	Round 0 Initial plans	Round 1 Intervention of the film industry	Round 2 Research and analysis	Round 3 Crisis
Year	1996-1997	1997-2002	2002-2008	2008-present
Agents involved	<ul style="list-style-type: none"> • Municipality of Terni • Melampo company • Federazione canoistica 	<ul style="list-style-type: none"> • Municipality of Terni • Melampo company • Regione of Umbria • Province of Terni • National government 	<ul style="list-style-type: none"> • Municipality of Terni • Regione of Umbria • Province of Terni • National government • Comitato (2003) • ARPA • Cinecittà film studios (2005) 	<ul style="list-style-type: none"> • Municipality of Terni • Regione of Umbria • Province of Terni • National government • Comitato • ARPA • Cinecittà film studios
Main Decision	<i>1997</i> master plan	<i>2002</i> Placing the Papigno brownfield on the site of national Interest and update of the master plan	<i>2008</i> Site of public interest for industrial reconversion (due to government changes no money was made available)	<i>2012</i> Awaiting permission to start remediation works and searching for financial resources to realize implementation of executive plans
Characterisation of content / direction	Tourism: Green area, water sports, Museum	Cinema Tourism	Cinema Tourism	Cinema Tourism

Round 0: initial plans

Until the city council of Terni bought a major part of the Papigno site in 1996, a large part of the site was already abandoned for almost thirty years. The ex-hydroelectric power station in the southern part of the Papigno area was still owned by ENEL (Italian Electricity Board). In 1997, the municipality asked the region to allocate some resources through the EU programme Resider II (community initiative, measure 7E). With this programme around 3,5 million euro became available. The first two buildings were renovated and restored to their original state with this money. The buildings were later transformed into offices used by film production, a VIP room and a film laboratory.

In the same period, plans were made for the remaining part of the area. The development of these plans was made possible with the support of the programme Resider. Plans were mostly related to tourism activities. Water sports, like canoeing and rafting were located on the site along the Nera river. Plans were made to locate a museum of industrial archaeology and a green area to walk or bike (In contrast to the canoeing and rafting activities, the other plans have not been implemented until now). The plans were compiled into a master plan and formalised by the municipality of Terni in 1997.

Round 1: intervention of the film industry

In 1997, the famous Italian film director Roberto Benigni showed his interest in the Papigno site. His unit production manager, Mario Cotone, showed him the Papigno site and Benigni decided to film there part of his production of 'La vita è Bella'. Benigni earned a lot of money with the film and decided to invest this money in his new film production, 'Pinocchio'.

In 1998, part of the industrial area was reserved to implement the plans in regard to the film industry. In order to make the film, three warehouses were renovated by Benigni; the budget to remediate and reconstruct the warehouses was partly financed by Benigni's company Melampo (around 7 million) and the rest was financed by the municipality. In six months, the buildings were recovered and the shooting of the Pinocchio film started in June 2001. A couple of productive years followed with various films and some local productions. During these years the studios created employment opportunities for some of the local residents.

In August 1999, the project was connected to another European programme, PRUSST (Programma di Riqualificazione Urbana per lo Sviluppo Sostenibile del Territorio). This is an Urban Renewal Programme for sustainable land use.

In 2001, the region of Umbria was asked by the ministry of the environment to indicate Sites of National Interest (SNI) in the region of Umbria. "These sites have to undergo restoration, actions are prioritised, financing measures, monitoring and check legislation" (ministero dell' ambiente e della tutela del territorio del mare, 2009:96). In 2002, the first 14 SNI's were put on the list, including Papigno. The Papigno site was included within the perimeter of a wider Terni-Papigno SNI; this means that other industrial areas in the municipality were also included. Because the site is on the national list some subsidy was provided by the ministry of the environment.

The two developments of the film industry and the placement on the SNI list, made the municipality decide to update the master plan. The master plan was created together with engineers from the municipality, architects from the municipality, ARPA (regional environmental agency), the province of Terni and the region of Umbria. Environmental aspects and urban strategies were both taken into account in the master plan. The main difference with the first master plan of 1997 was the inclusion of the film industry into the master plan.

Round 2: research and analysis

After the nomination of the brownfield on the SNI list, reclamation activities took place in the area. Research and analysis were conducted and plans in regard to remediation were made during the period of 2002-2004. These activities were performed through regional environmental agency ARPA Umbria (L'Agenzia regionale di protezione ambientale) in cooperation with the municipality. During this research it was found that the land underneath the football field, at the site of the landfill, was contaminated. The municipality had to close the football field in 2003. From this moment on the inhabitants of Papigno came into the process. The municipality started to communicate about the contamination and the reasons to close the football field.

The same year, the municipality decided to buy the ex-hydroelectric power station, which was still owned by ENEL. The power station is located on the southern part of the Papigno site, which is the most historic part of the site and therefore of historic value to the municipality.

In the mean time, film productions were made in the film studios. However, in 2005 Benigni and Cotone decided to discontinue their personal- and business relationship. Now, Benigni had to look for a new partner in the Melampo company. He found a new partner in Cinecittà Studios²⁵. Cinecittà bought 60% of the Melampo company and the name of the company changed into Cinecittà- Papigno. They enlarged the area rented from the municipality, by renting part of the former landfill with the function of backlot and the ex carbide storage for entertainment (Comune di Terni, SvillupUmbria & Umbria film commission, 2011).

In 2008, the region of Umbria placed the Papigno site on a second list. The resolution Cipe 2007 provided a programme for the revitalization of economic production of polluted sites (Regione Umbria, 2008). However, the programme has never been implemented and subsidy was never made available due to a change in Italian government and priority changes due to the financial crisis.

Round 3: crisis

In 2008, the film production stopped. This was caused by the crisis of the cinema, the financial crisis, the crisis of the movie industry in Italy and the lack of incentives from the region. The lack of incentives was explained by the respondent of Cinecittà:

“You have regional and national incentives. Starting in 2008, when the ratio between euro and dollar was negative and international production stopped to shoot its films in Italy and other European countries. For this reason some European countries like England, France, Hungary, Malta, and Germany tried to attract international production by creating incentives. It is normally a fiscal incentive, but this differs from country to country. In Italy next to national incentive there are regional incentives. The main important regions were Piedmont, Sicily, Puglia, but not Umbria. The national incentives were very late introduced only in 2010 and Umbria has no regional incentives. This means that Papigno in this moment is not attractive to national and local productions” (Interview Cinecittà, 2012).

At the same time in 2008, the municipality of Terni and ARPA intensified their contact. They made plans about a research programme to investigate different techniques that could be used to remediate the soil. In 2009 they signed a contract in cooperation with a research institute (Istituto di Biologia Agro-Ambientale e Forestale del Consiglio Nazionale delle Ricerche; IBAF-CNR) and a university (Dipartimento di Scienze dell'Ambiente Forestale e delle sue Risorse dell'Università degli Studi della Tuscia; DISAFRI) to find techniques for the remediation of the former landfill (Comune di Terni, 2009). The municipality and ARPA are now waiting for the approval, by the ministry of the environment, on the proposed remedial plans.

In regard to the urban planning projects, some plans were already at the executive level. However, at the moment it is hard to find sufficient financial resources to implement these projects. Some of the buildings on the site could be recovered, others had to be demolished because they were not useful in the regeneration due to their size and / or contamination. Papigno is an industrial heritage site, so nothing can be demolished without the authorisation of the formal authority in regard to heritage, ‘Soprintendenza alle Belle Arti’. The municipality of Terni asked permission to the ‘Soprintendenza Alle Belle Arti’ to demolish a big building that was not useful. The municipality received permission

²⁵ Cinecittà is a company that owns production centres and provides production services like set construction, technical support etc.

around five years ago. However, this permission was valid up to five years and the municipality did not accomplish to demolition within this time period. Due to a lack of resources, security reasons and the lack of a manager, this specific project was not accomplished. So permission has to be requested again, what might give problems because the “Soprintendenza Alle Belle Arti” probably won’t give the authorization again, because of regional pressure to preserve industrial heritage.

At the moment the project is awaiting the permission of the ministry of the environment to start remediation activities on the side of the landfill. Executive plans are made in regard to some industrial reuse. However, at the moment there is a lack of resources and plans are postponed.

7. Analysis of the Terni-Papigno case study

This chapter contains an analysis of the regeneration process of the industrial site of Terni-Papigno. Analysis is based on the theoretical and analytical framework provided in chapter 2. In section 7.1 an actor analysis will be made to provide insight into the governance network and the interdependencies between the different actors in the network. Interests, authority and resources will be elaborated per actor. Section 7.2 and 7.3 provide an analysis on how actors deal with the complexity of the regeneration process. How do they demarcate the project mentally and subsequently how did they act in the governance network. Section 7.4 focuses on the governance capacity, reflecting on the actors' opinion. The chapter ends with an interim conclusion.

7.1. ACTOR ANALYSIS

The first sub question of this research is: *Which public and private parties take part in the regeneration of brownfields, what are their interests and what are their mutual dependencies?* To answer the first sub question of this research this section provides an actor analysis, which elaborates upon the interests, authority and resources. Resources can be divided into: financial resources, production recourses, authority, knowledge and legitimacy. Mapping resources and interests gives insight into the interdependencies of the actors in the field and is of explanatory power to the way actors behave (hinder or encourage the project). Table 7.1 sums up the finding per actor. The municipality of Terni is considered to be the problem owner in this research, as they are the authority that has the responsibility to regenerate the area.

Table 7.1: Interdependencies

Actor	Interest	Authority	Resource	Dependency (in relation to problem owner)
National government (ministry of public works, ministry of environment, ministry of infrastructure and transportation, ministry of economic development)	<ul style="list-style-type: none"> Environmental remediation 	<ul style="list-style-type: none"> Approving remediation plan 	<ul style="list-style-type: none"> Competency Financial resources 	<ul style="list-style-type: none"> High Large importance and low substitutability
Region of Umbria	<ul style="list-style-type: none"> Environmental remediation Urban regeneration 	<ul style="list-style-type: none"> Regional Territorial Plan (PTR) Selecting sites of national priority (empowered by the Ministerial decree n. 468 in 2001) 	<ul style="list-style-type: none"> Competency (in approving spatial plans & to select National priority sites) Financial resources (indirectly, these resources are provided by national government) 	<ul style="list-style-type: none"> High Large importance and low substitutability

Province of Terni	<ul style="list-style-type: none"> Integration of policy domains, sustainable development 	<ul style="list-style-type: none"> Providing Provincial Territorial Coordination Plan (PTCP) 	<ul style="list-style-type: none"> Knowledge Competency 	<ul style="list-style-type: none"> High Large importance and low substitutability
Municipality Terni	<ul style="list-style-type: none"> Environmental remediation Regeneration of the site 	<ul style="list-style-type: none"> Municipal Master Plan (PRG) Municipality 	<ul style="list-style-type: none"> Competency (only in relation to urban redevelopment) Financial resources Production resource (land) Knowledge 	<ul style="list-style-type: none"> Problem owner
ARPA Umbria (regional environmental agency)	<ul style="list-style-type: none"> Environmental remediation 	<ul style="list-style-type: none"> Providing research results to the municipality Advising the ministry of the environment and / or region on environmental issues 	<ul style="list-style-type: none"> Knowledge Competency legitimacy 	<ul style="list-style-type: none"> High Large importance and low substitutability
Cinecittà Studios	<ul style="list-style-type: none"> Profit 	<ul style="list-style-type: none"> - 	<ul style="list-style-type: none"> Financial resources 	<ul style="list-style-type: none"> Medium -high At the moment Cinecittà is one of the few investors in the area. Investors can be replaced. However, this is difficult at the moment
Comitato (residents association)	<ul style="list-style-type: none"> Protecting quality of life 	<ul style="list-style-type: none"> - 	<ul style="list-style-type: none"> Legitimacy (exert pressure) 	<ul style="list-style-type: none"> High Large importance and low substitutability
Research institutes and Universities (IBAF-CNR & DISAFRI)	<ul style="list-style-type: none"> Environmental remediation 	<ul style="list-style-type: none"> Research soil contamination and solutions 	<ul style="list-style-type: none"> Knowledge 	<ul style="list-style-type: none"> Low Knowledge could be gained through other organisation that also have knowledge on soil remediation
Civil groups (mainly protection of the industrial heritage “Soprintendenza alle Belle Arti”)	<ul style="list-style-type: none"> Protecting industrial heritage 	<ul style="list-style-type: none"> Grant authorization 	<ul style="list-style-type: none"> Knowledge legitimacy 	<ul style="list-style-type: none"> High This institution provides legitimacy in regard to the approach to industrial heritage.

The national government provides a legal policy framework concerning the regeneration and remediation of brownfields. However, this is not an integrated policy framework and redevelopment and environmental remediation are approached separately (Catney, Cianflone & Wernstedt: 2008:8). Ten years after the first law on SNI, the number of remediated areas is still limited (Ministero dell’Ambiente e della tutela del territorio del mare, 2009:97). With article 252-bis, the national government tries to speed up regeneration and remediation of contaminated sites. Remediation and

regeneration are supposed to be approached more integrated. However, integration has not taken place so far. This partly can be explained due to a governmental change in 2008 and the financial crisis. The provisioned five million euro was never provided to the project.

Because the Papigno site is placed on the list of SNI, it is under the direct responsibility of the ministry of the environment. The ministry of the environment has the decision-making power in regard to the remediation plans. They possess the resources of *competency* (decision-making power) and *financial resources*. Both resources are irreplaceable and of high importance, and therefore the municipality highly depends upon the national government in the governance network.

The region of Umbria has the interest of regeneration and environmental remediation of the industrial site of Papigno. First of all the region is involved in the spatial planning process. The region is the highest public body in regard to spatial planning, followed by the province and the municipality. The region provides the regional territorial plan (“PTR”). They have a coordinating role to align the spatial plans of the region province and municipality.

Next to the spatial planning the region is also involved in the remediation process. The region has the authority to select the sites of national interest (empowered by the Ministerial decree n. 468 in 2001) and to select sites of relevant public interest for industrial reconversion (empowered by Art 252-bis within the legislative decree 4/08). They intermediate between the municipality and the national government, when it comes to subsidies and other financial support. The region gives advice to the Ministry of environment in regard to the remediation, this happens once a year during the ‘Conferenze dei Servizi’. (During these meetings the region, province, municipality and both the ministry of the environment and economic development discuss the remediation plans provided by the municipality & the regional environmental agency, ARPA)

The region possesses the resources of *competence* and *financial resources* (indirectly). Both resources are of large importance and of low substitutability. This creates high degree of dependence.

The province of Terni has interest in both the regeneration as well as the remediation of the industrial site. As a public authority, the province provides the Provincial Territorial Coordination Plan (PTCP) in regard to spatial planning. In regard to the remediation the province has an advisory role in the ‘Conferenze dei Servizi’, like the region. This means that they possess *competency* and *knowledge*. The level of dependency is high as the municipality depends on their advice in the ‘Conferenze dei Servizi’. The province is also an important partner in the PRUSST project. So the level of dependency is high.

The municipality of Terni is seen as the problem owner in this research. They are the landowner of the site and as a public institution, they are concerned with the regeneration as well as the remediation. In regard to the regeneration of the site, the municipality is concerned with developing policy concerning spatial planning. The municipality provides the municipal master plan (PRG). In regard to the remediation the municipality is occupied with researching the contamination and remediation possibilities in close cooperation with ARPA Umbria. Their public interest is to improve the environment and to redevelop the site.

Their main resources in regard to the redevelopment of the site are: *knowledge*, *financial resources* (though limited), *competency*, and the production resource of land. In relation to remediation these resources are the same, except for one. Competency, as in decision-making power towards remediation, is in the hands of national government.

ARPA Umbria (Agenzia regionale di protezione ambientale), the regional environmental agency of Umbria is involved in the remediation process of the Papigno site. Their main interest is to remediate the site, especially the former landfill. The agency is supervised by the region of Umbria. They have a consulting role, conduct research on contaminated sites and provide technical-scientific support to public bodies (Ministry of environment, region and municipality) (Comune di Terni, 2009).

Their main resource is *knowledge*. Their expertise of soil and their experience with research are important resources in the regeneration project. Because they have the *competency* to advice the region of Umbria and the ministry of the environment, they can also create *legitimacy* to the project. The level of dependency is qualified high, as the municipality depends upon these resources, which are hardly irreplaceable. Knowledge could be replaced (or extend) by other actors, but competency and legitimacy cannot.

Cinecittà studios is one of the few private investors located on the site. Their main interest is to make profit. Because Cinecittà is not the owner of the site, their interest is not so much on remediation and maintenance of the site. They have a rental contract with the municipality of Terni and they are renting the filming location. In the past the film company (then called, Melampo) has invested in the reconstruction of three industrial warehouses. However, now it is over to the public bodies to take care of further remediation and redevelopment.

Cinecittà possesses *financial resources*. They are renting the film studios and when the studios are used this leads to financial impulse. The municipality dependency on Cinecittà is medium-high. They can look for other investors, but this is a difficult task at the moment.

The Comitato's main interest is to be able to use (part of) the site again, as a public space. The resident association of Papigno is not closely involved in the regeneration process. They are more or less observers and try to exert pressure towards the municipality. They have the important resource of *legitimacy*, which is hard to replace.

And last but not least **research institutes and universities** (IBAF-CNR & DISAFRI) and the **civil groups** (mainly protection of the industrial heritage “Soprintendenza alle Belle Arti”) are actors in the governance network. They are experts, the former on the level of soil and contamination the latter on industrial heritage. The interest of the research institutes is mainly on environmental remediation. They are connected to ARPA, and no efforts are made to study the combination of urban redevelopment and environmental remediation. The ‘Soprintendenza alle Belle Arti’s’ main interest is to preserve the industrial heritage.

Both actors possess an important resource in the governance network, namely *knowledge*. The ‘Soprintendenza alle Belle Arti’ also can give or withhold legitimacy to the project in regard to the approach towards industrial heritage.

7.2. BOUNDARY JUDGEMENTS

The second sub question of this research is: *how do parties involved in the regeneration process demarcate the regeneration project?* To answer this question the theoretical concept of boundary judgements is used, as elaborated on in section 2.3. This section provides an analysis of substantive boundary judgements (demarcation of the policy domain(s)) and structural boundary judgements (division of responsibility between the subprojects). Table 7.2 sums up the main findings of the analysis. Boundary judgements are qualified as small / relatively small / relatively wide / wide in accordance with the specification underneath table.

Table 7.2: Boundary judgements

Actor	Substantive boundary judgements (policy domain(s))	Structural boundary judgements (responsibility)
Municipality Terni	Wide Economic development Social issues (quality of life) Environmental issues Cultural-historic issues	Small Separation of responsibilities and tasks between urban development subproject and environmental subproject
Province of Terni	Wide Economic development Social issues Environmental issues Cultural-historic issues	Wide Connecting programmes along the Nera river
Region of Umbria	Relatively wide First focus on environmental issues Later also inclusion of economic development, cultural-historic aspects	Small Separation of responsibilities and tasks between urban development subproject and environmental subproject
ARPA (regional environmental agency)	Small Environmental issues	Small Separation of responsibilities and tasks between urban development subproject and environmental subproject
Cinecittà Studios	Small Economic development	Small Separation of responsibilities and tasks; the municipality is responsible for regenerating the area
Comitato (residents association)	Relatively small Social issues Cultural-historic issues	Small Separation of responsibilities and tasks; the municipality is responsible for regenerating the area

small demarcation: focus on one domain
 relatively small domain demarcation: focus on two domains
 relatively wide demarcation: focus on three domains
 wide demarcation: focus on four or more domains

The municipality of Terni takes into account a wide spectrum of domains. The main objectives of the master plan are: economic improvement; touristic development; ecological and sustainable development to recover the site; development of industrial heritage (Interview municipality of Terni, 2012).

Furthermore, the project is devised into subprojects, which are strictly separated in budget and steering. The different domains are not approached in an integrated way. Responsibilities are separated within the municipality between

the urban planning department and the environmental department which each have their own subprojects. The environmental department is responsible for the remediation process whereas the urban planning department is responsible for the regeneration of the industrial site. “No there is the project to clean-up the site and this is the responsibility of the environmental department, we are from urban planning and make the master plan concerning the area development” (interview municipality of Terni, 2012).

One can tell by this analysis that essentially the project is approached from wide range of policy domains, therefore the *substantive boundary* can be qualified *wide*. In spite of the wide substantive boundary judgements the *structural boundary judgements* made by the municipality are *small*. Responsibilities are strictly divided between the several subprojects, especially between the remediation and redevelopment projects.

The Province of Terni is taking into account a variety of domains. They provide the PTCP (Provincial Territorial Coordination Plan) and regeneration of dismissed areas receives a lot of attention in this plan. One of the programmes included in the PTCP is the Nera River contract (‘Contratto di Fiume per il Nera’). “The River Contract is an agreement that allows you to adopt to rules in which the criteria of public interest, economic efficiency and social value, environmental sustainability are given priority in the search for effective solutions for the redevelopment of a river basin”(provincia di Terni, 2010: 16).

Another programme connected to the regeneration of the site of Papigno is PRUSST (Programmi di Riqualificazione Urbana e di Sviluppo Sostenibile: programme for urban renewal and sustainable development). With this programme the province tries to connect different programmes in the area to share knowledge about regeneration and the development of areas along the Nera river. They do not separate the programme from its environment and approach the project as a broader area.

Because the province is including a variety of domains and do not separate the project from its environment, one could qualify the *substantive- and structural boundary judgements* of the Province as *wide*

Region of Umbria approaches the project in the beginning mainly from an environmental point of view. In 2001 the region nominated the site as site of national interest (SNI). The money made available by the ministry of the environment was intended for the remediation of soil and the recovery of asbestos buildings. They have prioritized the industrial site of Papigno based on the environmental problems of the site. In 2008 the site was also nominated by the region for revitalisation and economic development of polluted sites. The domains of economic development and cultural aspect of the reuse of industrial heritage came into sight as well. However, the segments of remediation and economic development (regeneration) are not integrated and approached as separated responsibilities.

The substantive boundary judgements of the region are *relatively wide*, however because the domains are separately approached within the organisation the structural boundary judgements could be approaches as *small*.

ARPA Umbria is concerned with ecological problems of the site, therefore they approach the project from an environmental point of view. “Our main objective is the remediation of the landfill site of Papigno” (Interview ARPA Umbria, 2012).

They mainly focus on their formal task of doing research and providing plans in regard to the remediation and providing plans in relation to the remediation of the site. “The urban planning of the municipality provides a zoning plan and we take care of the remediation solutions” (Interview ARPA Umbria, 2012). It has to be said that ARPA takes more responsibility than usually in other projects, they go beyond their role of monitoring and reporting. However the responsibilities between remediation and regeneration stay separated.

In accordance with foregoing, both *substantive- and structural boundary judgements* can be qualified as *small*.

Cinecittà Studios approaches the project mainly from the perspective of economic development. They are one of the private actors located on the Papigno site. In the beginning they have invested into the development of the Papigno site; in the recovery of the warehouses and so on. It has to be noticed that Cinecittà rents the studios and is not the owner of the studios neither of the adjacent land. They state that maintenance of the site and remediation are the main responsibility for the municipality. “Remediation is the responsibility of the municipality, at the moment the site is not attractive, partly due to pollution. We consider remediation as the responsibility of the municipality and at the moment we are not willing to invest in this” (Interview Cinecittà, 2012).

The main objective of Cinecittà is the economic development of the site (to make profit) and they consider the further development of the site as the responsibility of the municipality. *Substantive- and structural boundary judgements* made by Cinecittà studios can be qualified as *small*.

The Comitato (residents association) isn't really aware of the environmental problems. Their main concern is that they get their green area back and a common space for the villagers to enjoy. They focus most on social aspects like the unattractiveness of the site and they feel isolated. They also think that it is important to preserve the industrial buildings. However the buildings should not be used as an excuse “We want to preserve industrial archaeology, but it should not be used as an excuse not to redevelop the area. Something has to be done as nothing is offered on the site for the community” (Interview Comitato, 2012).

The responsibility to regenerate the site is mainly deposited to the municipality. “We are kind of worried that with the financial situation right now, solutions will have to wait longer. For some parts of the site there is no specific plan. The municipality should take responsibility to do something with the site” (interview Comitato, 2012)

In accordance with the above the substantive boundary judgements made by the Comitato are *relatively small* and the structural boundary judgements are *small*.

7.3. STRATEGIES TO DEAL WITH COMPLEXITY

Next to mental demarcations made by actors, actors also act and react in a certain way to complexity. The strategies are discussed in the theoretical framework and one can distinguish two main strategies. A more closed **conservative strategy** and a more open **adaptive strategy**. The former strategy refers to actors that make few connections to other actors and especially not to actors with a different background, are closed to new solutions and inflexible. The latter strategy refers to actors that connect to other actors (from different backgrounds), are open to new ideas and are able to react to changes in a flexible way. This section provides an answer to the sub-question: *which strategies are followed by the*

actors in the governance network to deal with complexity of the regeneration process? Table 7.3 gives an overview of the strategy followed by each actor in the governance network, which is analysed on the base of three variables: connection made with other actors, openness to new ideas, flexibility. These variables are sometimes interrelated.

Table 7.3: Strategy

Actor	Strategy
Municipality Terni	<p>Conservative</p> <ul style="list-style-type: none"> • Limited connection to others: the municipality starts to connect the fragmented policy sections within the organisation. Communication with the residents was established in the latter part of the project, however the municipality did not really open up the process to create dialogue with the residents. Decisions and solutions were mainly managed by the public bodies. • Solution focus on film industry (path dependency). • Path dependency lessens flexibility.
Province of Terni	<p>Adaptive</p> <ul style="list-style-type: none"> • Connects to all kind of actors • Open to new solutions, things that Papigno should find another focus • Developing programmes to promote flexibility in reuse. However not really applied on the project of Papigno yet
Region of Umbria	<p>Conservative</p> <ul style="list-style-type: none"> • Mainly cooperates with public actors
ARPA (regional environmental agency)	<p>Conservative</p> <ul style="list-style-type: none"> • Mainly connects with actors active in the environmental policy domain. They try to combine knowledge. No connections are made with actors from outside the domain of environment. • Variation in solutions and flexibility are lessened because soil and land use are not combined
Cinecittà Studios	<p>Conservative</p> <ul style="list-style-type: none"> • Little flexibility towards solutions (incentives from the region are the only solution)
Comitato (residents association)	<p>Alternates between conservative and adaptive</p> <ul style="list-style-type: none"> • Limited connection to municipality, partly due to the limited possibility to participate • Open to new solutions

In the beginning of the process **the municipality** acts mainly self-referential. There is little communication between the segmented departments of the municipality (urban planning department and environmental department) and few connections are made to actors outside the organisation. The first master plan is established in 1997 and created by the municipality without outside influences. However, to create the second master plan other parties are involved, and together with engineers from the municipality, architects from the municipality, ARPA (regional environmental agency), the province of Terni and the region of Umbria, environmental aspect and urban strategies are all taken into account in the master plan. “The first approach was only made by the municipality, later we connected to several other parties, engineers and architects, ARPA, the region, and the province to make the second master plan” (Interview municipality of Terni, 2012).

Besides the public actors, the environment and the local inhabitants are involved in a very modest way. The municipality hardly communicates about the contamination on the site to the inhabitants of Papigno. Neither do they ask the

inhabitants how they feel about the future function of the brownfield. Decisions and solutions are basically formed within the field of formal public bodies. After the closure of the football playground in 2003, residents were informed now and then. However, the residents do not feel involved as they are not empowered in any way by the municipality and they do not receive feedback on their input. “The municipality never asks us to involve. They do communicate to us now, but they inform us instead of giving us the possibility to cooperate” (Interview Comitato, 2012).

In regard to the solutions the municipality seems to be rather flexible at first sight. Tourism and the film industry are prioritised. Although the film industry is not really productive at the moment, the main focus is on the film industry. “Cinecittà is urged to fulfil its commitments. We cannot let go of the site, given the investments already made and the commitments of the region” (Sandro Piccinini, 2010). This basically implies that the investments in the film studios created path dependency to a certain extent. The respondent of the municipality also confirms that the main strategy is directed to the cinema.

“The touristic plans continue, but they are more connected to the river; the rafting and canoeing. The touristic plans are not so relevant now; our strategy is now directed to the cinema. We have made a big work with the regional authority in another area in Terni we made a multimedia centre (area ex officino bosco). We want to connect these two projects as it is all related to the film” (Interview municipality of Terni, 2012).

The municipality make some good attempts by connecting to projects like PRUSST and the River Nera Contract. These projects connect the project to its environment and to integrate urban planning and remediation. However, until now this is not brought into practice. Although communication is established in the latter part of the project, the municipality does not really open up the process to create dialogue with the residents. Decisions and solutions are mainly managed by the public bodies which resulted in distrust and frustration at the part of the residents. In accordance with the above, the strategy of the municipality is mainly **conservative**.

The province of Terni has taken the initiative to connect to actors from the various regeneration projects in the province of Terni. This is done through the project of PRUSST and the Nera River Contract. The province is open to new solution and thinks that additional solutions should be sought for the Papigno site. “This moment there is no focus on the solution of the problem. And we have to find other solutions for this area” (Interview province of Terni, 2012).

The province takes into account short-term and long-term goals. They create new knowledge on how to increase the flexibility of buildings. For the moment, their role in the Papigno project is a bit at a distance. So the ideas on how to use buildings in a flexible way is not applied on the project yet. However in the PTCP provided by the municipality they promote and encourage flexibility.

The province connects to other parties and wants to find new solution for the area. Flexibility is promoted, however not implemented at the moment. Overall, the province follows an adaptive strategy.

The Region of Umbria connects to the other public parties in the governance process. Interaction is quite limited as they only take part in the formal meetings in relation to remediation once a year (‘conferenza di servizi’). The region participates in the regeneration process but from a distance. They act in accordance with their formal role of selecting the

sites of national interest and providing advice in the ‘conferenza di servizi’. Therefore, one can say that the region follows a rather *conservative* strategy.

ARPA Umbria does connect to other research institutions to share knowledge and to find new solution to remediate the soil. However, these institutions are all focused on the environmental domain and no combinations are sought with actors from different backgrounds. Soil and land are not connected to each other to see which remediation techniques are feasible and / or needed in relation to the future land use. Or could the future land use be adapted in order to lessen remediation costs and time consuming activities? “We have a regulatory plan that provides, that this should be a public green area. So, we did not think of other solutions or remediation” (Interview ARPA). However, it has to be noticed that ARPA Umbria plays a very proactive role in the Terni Papigno case in regard to the remediation of the landfill. They have gone beyond their role of monitoring and reporting with the agreement with the municipality in 2009.

So ARPA made connection with actors in the environmental policy domain. They try to combine knowledge. No connection is made with actors from outside the domain of environment. Variation in solutions and flexibility are lessened because soil and land use are not combined. Despite the effort of ARPA in regard to the remediation of the landfill we could say that ARPA followed a **conservative** strategy. They act self-referential within the environmental domain.

Cinecittà Studios connects to the municipality and the region to find solutions to make the film industry productive again. However they are a little rigid, as they state that incentives provided by the region of Umbria are the only solution to make the film studios productive again. Cinecittà has invested in the site in the past, by regenerating and remediating the film studios. However, nowadays they do not live up to the agreements they made with the municipality. Cinecittà states that the only way to meet up to these agreements is to introduce incentives, provided by the region of Umbria. So Cinecittà is rigid to new solutions and therefore follows a *conservative strategy*.

The Comitato’s main contact is the municipality of Terni. However, little communication takes place. The people in Papigno don’t see the contamination as their biggest problem they have lost a public and green area. However, they are very open to new solutions and are willing to support (with legitimacy) all kind of solutions

“When the studios were operative, the situation on the site was quite good. We don’t have anything against the film studios, but maybe the cinema could be present together with other functions. We prefer a public space, because so far nothing has been done for the community. So, we are open to all kind of solutions provided that there is a public space”

The Comitato is willing to communicate, but does not feel invited to actively participate. Therefore the Comitato alternates between a *conservative and adaptive* strategy.

7.4. PERCEIVED GOVERNANCE CAPACITY

“The term *governance capacity* is the ability of actors in the governance system to collectively come to legitimate and effective collective action. So, governance capacity is about the ability to solve problems and the ability to connect” (Van Buuren et al., 2009:7). This section answers the last sub question of this research: *How do actors in the governance network perceive the governance capacity?* Governance capacity is divided into three variables, progress (process indicator), problem

solving capacity (substantive indicator) and legitimacy. The perceived governance capacity of the Terni-Papigno case is measured by asking the concerned stakeholders to score the following statements:

- I: I am satisfied with the progress and continuation of the project so far.
- II: The current solutions that are presented, do tackle the actual problems.
- III: Current plans are widely supported by all organisations involved in the regeneration process.
- IV: All parties communicate with each other in a transparent way.

To create an average score stakeholders are asked to give their opinion and score the statements on a five point Likert-scale (totally agree / agree / neutral / disagree / totally disagree). One has to take into account that scores are not objective, but opinions and experiences of the actors. To broaden the analysis the researcher’s opinion on the current realised outcomes is also included. The project is still in progress, so governance capacity can change over time, this is however not included in this research. Five actors filled out the short list with statements. Table 7.4 summarises the findings in relation to the governance capacity. The final row gives an overview of the perceived governance capacity of the actors in sum. The qualification for the perceived governance capacity in sum is inspired by the research of Edelenbos et al. (2010:16-17).

Table 7.4: perceived governance capacity

	Outcomes realised	Actors	Progress	Problem solving capacity	Legitimacy	
					Support	Transparency
Terni-Papigno	Brownfield is partly regenerated with a film studio and sport facilities. Remediation plans are not executed for years now and the film studios are not operative	<i>Managing actors</i>	<ul style="list-style-type: none"> • neutral • agree 	<ul style="list-style-type: none"> • disagree • agree 	<ul style="list-style-type: none"> • disagree • neutral 	<ul style="list-style-type: none"> • disagree • strongly agree
		<i>Remaining public actors</i>	<ul style="list-style-type: none"> • agree • disagree 	<ul style="list-style-type: none"> • neutral • agree 	<ul style="list-style-type: none"> • agree • agree 	<ul style="list-style-type: none"> • agree • agree
		<i>Remaining private and civil actors</i>	<ul style="list-style-type: none"> • disagree 	<ul style="list-style-type: none"> • agree (dismissed landfill) and strongly disagree (dismissed plant area) 	<ul style="list-style-type: none"> • strongly disagree 	<ul style="list-style-type: none"> • strongly disagree
In sum			average (+/-)	average (+/-)	negative (-)	positive (+)

- ++ very positive (all actors agree or strongly agree)
- + positive (more than half of the actors agree or strongly agree)
- +/- average (half of the actors agree or strongly agree)
- negative (less than half of the actors agree or strongly agree)
- very negative (one actor agrees or strongly agree)

In relation to the first variable, *progress*, actors responded to the statement in the following way. In regard to the progress and continuation of the process two out of five respondents are satisfied with the progress. They express that executive plans are there and we connected to some programmes.

The two actors that disagree and the one actor that is neutral give bad cooperation between the different parties as one of the main explanations for their opinion. Overall the satisfaction towards progress can be scored average (+/-).

Secondly, the *problem solving capacity* was measured. In regard to the question if the current solutions tackle the actual problems three out of five respondents agreed. One of them however explained that he only thought that the solutions provided for the landfill did tackle the actual problem and not in regard to the dismissed plant area. The actors explained that they agreed on this statement because communication has improved and it goes in the right direction of solving problems, another explanation is that the area is becoming livelier.

Two out of five actors disagreed (from which one actor is the same that agreed upon this statement in regard to the former landfill, but they disagree about the former plant area) and one is rather neutral. This results in an average score (+/-) towards the problem solving capacity.

In relation to the *legitimacy* of the project actors were asked to give their opinion on the support to and transparency of the project. Asking the respondents whether all parties widely support the plans of the project two out of five actors agree. One actor is neutral, one actor disagrees and another completely disagrees.

In regard to transparency two out of five actors agreed and another actor heads more toward strongly agree that they communicate with each other in a transparent way. Communicating with each other plays an important role. The other two actors strongly disagree, due to the lack of communication.

7.5. INTERIM CONCLUSION

Chapter 7 analysed the way actors in the regeneration project Terni-Papigno deal with complexity, in terms of boundary judgement and the followed strategies, and the overall perceived governance capacity is analysed. This section relates the three variables and provides an interim conclusion on the case study of Terni-Papigno. This interim conclusion provides a partial answer to the main question of this research: *How do parties involved in the regeneration process of brownfields deal with complexity and how does this influence the perceived governance capacity of parties in the network in terms of progress, problem solving capacity and legitimacy?*

Studying the boundary judgements made by the actors in the regeneration process shows that the municipality of Terni makes wide substantive boundary judgements and includes a variety of policy domains into the master plan. However, they strictly demarcate the subprojects of urban redevelopment and remediation. Plans in relation to urban planning and remediation are the responsibility of different sections within the municipality. Looking at the strategy that the municipality follows one sees that they follow a rather conservative strategy. The project develops relatively closed to its context and a conservative strategy is followed. Also the region has relatively wide substantive boundary judgements and small structural boundary judgements and follows a conservative strategy.

Both actors are aware of the fact that brownfield regeneration involves multiple policy domains. However, their organisations are institutionally fragmented and this is reflected on the project. The project is divided into subproject and remediation and reuse are approached separately by different departments. So they have a broad assignment but do not have the possibility or the experience (due to long history of fragmented policy domains) to connect to the other actors in other domains. In the theoretical framework this is also stated: “Managers who manage a project with a rather

broad project scope (with many aspects and domains included) can apply a rather conservative strategy within this broad scope and exclude signals from outside” (Edelenbos et al., 2010).

The other actors ARPA Umbria and Cinecittà studios have both made small boundary judgements and follow a conservative strategy. Also the province shows a clear connection between the boundary judgements they make and the strategies they follow. The province makes wide substantive and structural boundary judgements and follows an adaptive strategy.

The Comitato is another exception in this case study. They have made relatively small substantive boundary judgements and small structural boundary judgments. The Comitato has made small boundary judgements but is willing to connect to the municipality and cooperate and flexible to all kind of solutions. However due to the closed strategy of the municipality the residents do not have the possibility to cooperate.

The conservative strategy of the municipality results in a project that develops relatively closed from its context. To see whether the followed strategies influence the perceived governance capacity, actors are asked to give their founded opinion on the progress of the project, the problem solving capacity and legitimacy (transparency and support). Each variable scored average (+/-). Support as part of legitimacy stands out from the other variables as it was scored negative.

8. Two case studies compared

This research is a comparative study which provides insight into the way the actors deal with complexity in two case studies. Although the cases are compared with each other the cases are not always comparable. There are many differences between the cases that emphasise the uniqueness of each case. This chapter elaborates upon the differences and similarities between the two cases discussed in the previous chapters. Table 8.1 gives an overview of the way actors deal with complexity in the regeneration process, in terms of boundary judgements and strategies, and sums up the perceived governance capacity of the two cases. Section 8.2 elaborates upon the differences and similarities of the context factors of the two case studies.

Table 8.1: Overview; two cases compared

		Substantive boundary judgements	Structural boundary judgements	Strategy	Governance capacity
STORK-HENGELO	<i>Managing actors</i>	<ul style="list-style-type: none"> • Municipality of Hengelo: wide • Van Wijnen: wide 	<ul style="list-style-type: none"> • Municipality of Hengelo: wide • Van Wijnen: wide 	<ul style="list-style-type: none"> • Municipality of Hengelo: adaptive • Van Wijnen: adaptive 	<ul style="list-style-type: none"> • Progress positive (+) • Problem solving capacity positive (+) • Legitimacy Support positive (+) + Transparency positive (+) = Positive
	<i>Peripheral actors</i>	<ul style="list-style-type: none"> • Province of Overijssel: relatively small • Foundation 'Hart voor Zuid': small • Dutch institute for cultural heritage: relatively small 	<ul style="list-style-type: none"> • Province of Overijssel: relatively wide • Foundation 'Hart voor Zuid': small • Dutch institute for cultural heritage: wide 	<ul style="list-style-type: none"> • Province of Overijssel: alternates between conservative and adaptive • Foundation 'Hart voor Zuid': conservative • Dutch institute for cultural heritage: adaptive 	
TERNI-PAPIGNO	<i>Managing actors</i>	<ul style="list-style-type: none"> • Municipality of Terni: wide 	<ul style="list-style-type: none"> • Municipality of Terni: small 	<ul style="list-style-type: none"> • Municipality of Terni: conservative 	<ul style="list-style-type: none"> • Progress average (+/-) • Problem solving capacity average (+/-) • Legitimacy Support negative (-) + Transparency positive (+) = average (+/-)
	<i>Peripheral actors</i>	<ul style="list-style-type: none"> • Province of Terni: wide • Region of Umbria: relatively wide • ARPA small • Cinecittà: small • Comitato: relatively small 	<ul style="list-style-type: none"> • Province of Terni: wide • Region of Umbria: small • ARPA small • Cinecittà: small • Comitato: small 	<ul style="list-style-type: none"> • Province of Terni: adaptive • Region of Umbria: conservative • ARPA conservative • Cinecittà: conservative • Comitato: alternates between conservative and adaptive 	

8.1. RELATION BETWEEN BOUNDARY JUDGEMENTS, STRATEGIES AND GOVERNANCE CAPACITY

Table 8.1 shows that the managing actors in the two cases deal with complexity in a different way. Looking at boundary judgements of the managing actors in the case Stork-Hengelo, one can conclude that Van Wijnen and the municipality of Hengelo both make wide boundary judgements. They both follow an adaptive strategy and therefore the project develops closely related to its context. By constantly involving the actors in the environment, the municipality and van Wijnen create commitment to the project. Phasing the project creates flexibility and at the same time the project remains (financially) manageable.

Studying the boundary judgements of the peripheral actors participating in the regeneration process of Stork-Hengelo, the province of Overijssel makes relatively small substantive boundary judgements and relatively wide structural boundary judgements. This actor's boundary judgements are in the middle and the province balances between a conservative and adaptive strategy. The foundation 'Hart voor Zuid' makes small demarcations for both substantive and structural boundary judgements. The foundation acts in a conservative way. The last peripheral actor is the Dutch Institute for Cultural Heritage that makes relatively small substantive boundary judgements and wide structural boundary judgements. However, their strategy is adaptive. The relation between the boundary judgements and strategy of the Dutch Institute for Cultural Heritage might not seem clear at first sight. However, the adaptive strategy of the Institute for Cultural Heritage can partly be explained by the covenant that they have signed with other actors in the process. The covenant contains agreements on the approach towards cultural heritage and stimulates cooperation between the actors and flexibility.

The managing actor in the case study of Terni-Papigno, the municipality of Terni, makes wide substantive boundary judgements and small structural boundary judgements. However, they follow a conservative strategy and the project develops relatively isolated from its environment. Limited connections are made outside the public sphere, which results in limited commitment. Initially, the task of brownfield regeneration is regarded as being an issue of different policy domains. Therefore they have a broad assignment but do not have the possibility or the experience (due to long history of fragmented policy domains) to connect to the other actors in other domains

Analysing the boundary judgements made by peripheral actors participating in the regeneration process of Terni-Papigno one sees that the province has made relatively wide substantive and structural boundary judgements. The strategy they follow is adaptive. The other peripheral actors, ARPA Umbria and Cinecittà make small boundary judgements and follow a conservative strategy. The Comitato is an exception, as they make small or relatively small substantive and structural boundary judgements but alternate between a conservative and adaptive strategy. The correlation between small boundary judgements and a conservative strategy seems to be weak here.

The project of Stork-Hengelo develops in a rather adaptive way, whereas the project of Terni-Papigno develops in a conservative way isolated from its environment. The perceived governance capacity of the two projects slightly differs. Where progress, problem solving capacity and legitimacy are all scored positive (+) in the Dutch project, these variables are ranked as average (+/-) in the Italian project. The biggest difference is found in one of the variables used to measure legitimacy, namely support. Support is scored positively in the Dutch case, whereas it is scored negatively in the Italian case.

8.2. DIFFERENCES AND SIMILARITIES IN CONTEXTUAL FACTORS

One can see the managing actors in the two cases deal with complexity in a different way. The managers in the project 'Hart van Zuid' embrace complexity and the project develops in close relation to its environment. The managing actor in the project Terni-Papigno tries to reduce complexity by separating the project from its environment. The differences between the cases can partly be explained on the basis of various contextual factors. The following paragraphs compare the social and political context of the two projects and explain what dissimilarities imply for the findings in two unique case studies.

Both cases deal with the task of regenerating a brownfield. Both brownfields are located in an urban area and groundwater and soil were contaminated by industrial use in the past. These physical conditions of the sites are quite similar. One of the major differences in the physical conditions of the brownfields is the fact that the brownfield of Stork-Hengelo was only partly abandoned and the brownfield of Terni-Papigno was completely abandoned at the start of the regeneration process. This has resulted in different dynamics in both cases.

For the Stork Hengelo brownfield the presence of industry and companies makes it easier to attract new investors and users of the abandoned parts, because the business climate is still attractive. Especially internationally based companies like Siemens can serve as a boost for the area. At the same time, the established heavy industry on the site also hampers the regeneration process due to safety, noise and air quality rules. The displacement of industry to enable further development leads to extra costs and requires time.

In regard to the brownfield of Terni-Papigno the complete abandoned site leaves room to flexible land-use, because there is no industry that has to be taken into account. On the other hand abandoned land leads to a poor business climate, which makes it harder to attract investors.

These are only similarities and differences in the physical conditions that create different contexts, in which the brownfields have to be generated. Differences can also be found in the social and political context. The project 'Hart van Zuid' mainly develops bottom-up and the project of Terni-Papigno seems to develop more top-down. Both projects started at local level. For the project 'Hart van Zuid' the municipality came into contact with Stork. Later, they lobbied to get the project on the national agenda. Decision-making power on the project is concentrated on local level. The site of Terni-Papigno was initially bought by the municipality to regenerate the area. Later, national government asks the region to nominate the site as an SNI. The site was nominated on the initiative of national government and region. No lobby took place from the municipality. Consequently, both projects have been placed on the national agenda and included in a national policy programme.

However, by studying the national policy frameworks in regard to the regeneration of brownfields, one sees that both projects are approached differently. The project Hart van Zuid is included in the Dutch national policy documents of the 'Vijfde Nota Ruimtelijke Ordening' and the 'Nota Ruimte'. The former steers in the direction of combining living and working in one area, the latter steers towards integration of various policy domains. The project is listed as a 'model project' in the 'Nota Ruimte' in which quality of the human environment and the variety of area functions are required. The initial approach on brownfield regeneration in Italy is mainly focused on the environmental remediation of soil and groundwater. By listing the brownfield of Terni-Papigno as an SNI, the environmental issues of the brownfield are

highlighted. A later policy programme also focussed on integration of urban development and environmental remediation. However, this approach was never brought into practice, partly due to a change in national government in 2008 and the financial crisis.

Besides differences in national policy, dynamics on local level also differ per case. A noticeable difference is related to the ownership of the brownfields. In regard to the brownfield of Stork-Hengelo the area is in the hands of various landowners. They possess the important resource of land which is needed to enable regeneration of the area. One of the problems is the gap between the interests of the municipality and the interests of the landowners. Remediation is mainly in the interest of the public parties and is not the priority of the established companies. Therefore, debate between landowners and the municipality on the nature and seriousness of polluted soil and groundwater is not an exception.

In regard to the case study of Terni-Papigno the municipality is the landowner of the site. This makes the municipality responsible for the remediation of the contaminated soil and groundwater. Subsequently, they do not have to deal with conflicting interests of other landowners. However, it is their responsibility to remediate the brownfield and to pay the costs. A limited number of private users rent venues on the site, and therefore do not feel responsible for the site.

It is hard to trace why certain decisions were made in the past. Yet one can say that these decisions do influence the regeneration of the brownfield. The regeneration of the area of Stork-Hengelo is approached from a short-term as well as a long-term perspective. Acquisition of the brownfield in Terni, on the contrary, seems to be more impulsive, with a focus on short-term. This assumption can be illustrated by the following example: When determining the perimeters of the SNI, an as large as possible area was selected, because this would result in a higher amount of subsidy. They did not really think about the long-term implications of selecting a larger area.

A third remarkable difference is found in the coordination and organization of the two projects. Both cases are PPP's. In the project 'Hart van Zuid' there is a project agency in which the private actor Van Wijnen and the public actor, the municipality of Hengelo share responsibility and risk to redevelop the area. The project is coordinated and steered by this project agency.

The structure of the Terni-Papigno project is also defined as a PPP project. However, the project is not coordinated from a central project organisation. Moreover the municipality is the owner of the site and the risk-bearing actor. The private actors involved rent a venue on the brownfield. Each segment develops relatively separated from the others. There is no overarching management to the project.

All in all, whether the projects develop in relation to their context, seems to be influenced by the national steering philosophy towards brownfield regeneration. The holistic approach to 'Hart van Zuid' can partly be explained by the national steering philosophy which focuses on integration of policy domains. Nevertheless, the two managing actors (Van Wijnen and The municipality of Hengelo) that have been managing the project also have approached the project in an integral way. The dichotomised approach in Terni-Papigno can also partly be explained due to the national policy framework on brownfields. The national approach towards brownfields has a unilateral focus on environmental remediation. It does not steer towards integration of various policy domains. Furthermore, segmentation is strengthened due to the separation of decision-making power on remediation and regeneration. The national government has decision-

making power in regard to the remediation plans, whereas the local municipality has decision-making power in regard to the regeneration of the brownfield.

9. Conclusion

In the past decade awareness on the extensive soil consumption of our expanding cities has grown. Land is a scarce and finite resource. (Urban) brownfields would appear to be a great opportunity for re-use and limiting soil consumption. However, this is often easier said than done. Regeneration of these brownfields is a complex matter for several reasons. First of all, brownfield regeneration takes place in complex networks of actors, which can have contradictory interests and views on the issue. Brownfield regeneration does not take place in isolation from its environment, but rather in multiple interrelated contexts. The multi-faceted character of the regeneration of brownfields crosses domains such as the environment, safety, economics, spatial planning, all of which are concerned with brownfield regeneration. Partly due to this multi-faceted character, several layers of government are concerned with the regeneration of brownfields. And besides public actors, private and civil society actors are involved too. An additional aspect that makes regeneration a complex task is the fact that the processes are lengthy and therefore bring along uncertainty.

This research approaches brownfield regeneration as a complex task that must be addressed by actors in complex governance networks. This conclusion elaborates on the main question of this research: *How do parties involved in the regeneration process of brownfields deal with complexity and how does this influence the perceived governance capacity of parties in the network in terms of progress, problem solving capacity and legitimacy?*

To be able to answer this question two case studies that deal with the regeneration of brownfields are analysed in this research. The mental demarcations actors make (boundary judgements) towards complexity and the way they act towards complexity (strategies) are analysed. The perceived governance capacity is measured to study the effect of the demarcations and strategies on the perceived governance capacity.

Conclusion 1: The Dutch project of Stork-Hengelo develops in an adaptive way, while the project of Terni-Papigno develops in a conservative way.

The Dutch project 'Hart van Zuid' develops in close relation to its environment as the managing actors follow an adaptive strategy and have wide structural and substantive boundary judgements. Being open to other public, private and civil parties and providing them the opportunity to join the process increases complexity. Embracing complexity, by connecting to other actors, allows them to get feedback from the environment.

Moreover, the connection to other actors, the different policy domains of economic development, urban development, environmental improvement, social issues and cultural- historic issues are also connected. This seems to increase the complexity because the actors concerned with a certain domain need to adjust to actors from other domains. Connections between actors and domains require consultation, which is costly and time consuming. However, in the project 'Hart van Zuid' it often leads to progressive and legitimate action.

Time plays an important role in the project 'Hart van Zuid'. Dividing the project into different phases is one way through which the uncertainty of the lengthy regeneration process can be reduced in order to keep the project manageable. Furthermore, the division of the project into phases has increased its flexibility by protecting the project from long-term fixation. The master plan gives direction to the process, but is not result-oriented, which leaves room to deal with solutions in a more flexible way.

Analysis of the Terni-Papigno case shows that the managing actor, the municipality of Terni, mainly develops a conservative strategy. Its substantive boundary judgements are wide. However, the municipality has separated remediation and spatial planning in various subprojects as well as the responsibilities. The actors mainly act self-referential and do not connect to the other subsystems.

Decisions and solutions within the project are basically formed within the field of formal public bodies. By making limited connection to other actors the complexity, in terms of plurality, seems to be reduced. By doing so, limited signals from the environment are taken into account and consequently residents will grow angry and distrustful of the municipality.

The various policy domains concerned with the regeneration of the brownfield are not connected either. The municipality attempts to approach the project from various policy domains, but integration of the domains happens on an abstract level. The goals on remediation and regeneration are not integrated and the subprojects are separated in the implementation phase. The different policy domains are not synchronized with regards to their time, finance, let alone responsibilities. This is part of the current problem. Because remediation and urban redevelopment are separated it is not clear whether the future function of the area can cover costs of remediation and bring the site back into beneficial use. However, one cannot assume that all budget problems are resolved by intertwining remediation and redevelopment. Remediation remains an expensive procedure and it is a difficult task to find investors and users for the site. The reduction of complexity, by excluding civil and private parties and segmenting policy domains, does not reflect the complex reality where domains, and actors with separate interests and resources are intertwined.

Institutional differences between the Dutch and Italian case study and the contrast in the national steering philosophy can partly explain the way actors deal with complexity. In both cases, national government has steered the project in its own way. The adaptive and more holistic approach of the Stork-Hengelo case, can partly be explained due to the guidance of national policy and the integration of the site into the two national policy documents: 'Vijfde Nota Ruimtelijke Ordening and the 'Nota Ruimte'. The two policy programmes promote integration of different policy domains and over the years the institutional structure has become more integrated. However, it must be noted that especially the managing actor Van Wijnen already approached the project in an adaptive way from the beginning. The municipality has also acted adaptive from the moment they joined the project agency.

The conservative strategy and segmentation of the Terni-Papigno case can also partly be explained by the approach of Italian national government. By listing the Papigno-site as an SNI (site of national interest) the site was mainly approached from an environmental point of view. By doing so, other aspects like economic development and industrial heritage were underexposed and decision-making power became fragmented. The decision-making power of remediation is passed on to national authority when a site becomes of national priority. The decision-making power on spatial development remains in the hand of the municipality. Policy domains have been addressed separately for years and are by now institutionally fragmented. Attempts are currently being made to integrate policy domains further, but this is a gradual process that is not applicable to the Terni-Papigno brownfield regeneration yet.

Conclusion 2: There is a strong correlation between the boundary judgments made by actors and the strategies they follow in the case study of Stork-Hengelo. However, the case study of Terni-Papigno shows some exceptions.

The findings of the case study of Terni-Papigno show a clear relation between the boundary judgements and strategies of actors. The actors with wide boundary judgements follow an adaptive strategy and the actors with small boundary judgements act conservatively. The province of Overijssel balances in the middle of small and broad boundary judgements and therefore balances between a conservative and adaptive strategy. The Dutch Institute for cultural heritage is an exception and makes relatively small substantive boundary judgements and relatively wide structural boundary judgements. This actor has an eye for the integrated project objective and follows an adaptive strategy. This is partly stimulated by the covenant on the approach of industrial heritage that has stimulated cooperation and an integrated project objective. This correlation between the boundary judgements and strategies has also been observed by other researchers (Edelenbos et al., 2010; Van Meerkerk et al. 2010; Van Buuren et al., 2010; koppenjan en Klijn, 2004).

For the case study of Terni-Papigno the relation between boundary judgements made by actors and the strategies they follow is more diffuse. The municipality makes wide substantive boundary judgements and small structural boundary judgements. The project develops in relative isolation to its context and a conservative strategy is followed. The region also has relatively wide substantive boundary judgements and small structural boundary judgements and follows a conservative strategy. In short, they have a broad assignment but do not have the possibility or the experience to connect to the other actors in other domains. This fragmentation is reflected on the project due to long history of fragmented policy domains.

For the province of Terni, Cinecittà and ARPA Umbria a clear connection is found between the boundary judgements and strategies. The Comitato is an exception, they make relatively small substantive and small structural boundary judgments, but alternate between conservative and adaptive. The Comitato has made small boundary judgements but is willing to connect to the municipality, cooperate and be flexible to all kinds of solutions. However, due to the closed strategy of the municipality the residents do not have the possibility to cooperate.

These findings imply that the relation between wide boundary judgements and adaptive strategy and small boundary judgements and conservative strategy are not obvious for each actor in the Terni-Papigno case study. The starting point of the project is an integral assignment of regenerating a brownfield and taking all aspects into account, however the current institutional fragmentation complicates integration. The theoretical framework also elaborated on the possibility of a discrepancy between boundary judgements and management strategies: “Managers who manage a project with a rather broad project scope (with many aspects and domains included) can apply a rather conservative strategy within this broad scope and exclude signals from outside” (Edelenbos et al., 2010).

Conclusion 3: For the adaptive project of Stork-Hengelo perceived governance capacity is scored slightly more positive than for the conservative project of Terni-Papigno. The strongest correlation has been found between the strategies employed and support to the project.

As explained in the theoretical framework previous research determined there is a positive effect between the adaptive strategy and project outcomes and a negative effect between a conservative strategy and project outcomes (Edelenbos &

Klijn 2009; Kickert, Klijn & Koppenjan 1997). The outcomes in this research are specified as progress, problem solving capacity and legitimacy (support and transparency) and unified under the term governance capacity.

The case study of Stork-Hengelo evolves in an adaptive way, whereas the project of Terni-Papigno evolves in a more conservative way. Where progress, problem solving capacity and legitimacy (transparency & support) are all scored positive (+) in the adaptive Dutch project, these variables are ranked as average (+/-) in the conservative Italian project. Hence, the perceived governance capacity is higher in the case study that developed in an adaptive way, than in the case study that developed in a conservative way.

Despite the clear distinction in strategies, the difference of the perceived governance capacity is limited in the two cases. Though, there is one variable that pops out. *Support* is scored negative (-) in the conservative Terni-Papigno case where it is scored positive (+) in the adaptive Stork-Hengelo case. The strategies followed seem to have the biggest effect on the support to the project. The large number of connections made with other actors and the openness to other actors' interests and objectives has led to wide support to the project 'Hart van Zuid'. The limited number of connections made with other actors and the closed process to participation has led to little support to the project of Terni-Papigno.

Though the other variables of governance capacity score more positive when an adaptive strategy is followed than when a conservative strategy is followed, the difference is limited. Research of Edelenbos et al. has found similar findings: 'most of the projects that show large satisfaction with stakeholders show also a dissipative (adaptive) managerial style, the reverse is less clear' (Edelenbos et al., 2010). Other research is not really explicit about how big the difference in outcome would be when applying a conservative or adaptive style. As discussed previously in the theoretical framework both strategies have their pros and their cons. The perceived governance capacity measured in the two cases is time bound. Both projects are still in progress and perceived governance capacity can change over time. The small number of actors that gave their opinion on governance capacity can also partly explain the limited difference between the cases. A larger N-study among the stakeholders of the project could lead to more precise findings.

9.1 LESSONS LEARNED AND RECOMMENDATIONS

This section shortly summarises what went well in the case studies and what could have gone better. The lessons learned are specific to each case. Because each case study is seen as a unique case study recommendations to improve or perceive the current governance capacity are given per case study.

Stork-Hengelo

What went well

- Time pressure (partly due to the role of 'model project' in the Nota Ruimte) in combination with guarding the quality of the project (supervision team, and Foundation Hart voor Zuid)
- Connecting the project to other projects in the region to overcome competition and create a helicopter view over the entire region.
- Phasing the process resulted in commitment and support to the project
- Master plan gives direction which ensures that the project remains not too vague. However, it is not a blue print and parties committed more to the process than to the final results.

What could have gone better

- Considerable attention to flagship projects to put the project on the agenda. Less attention to the programme and smaller initiatives like catering industry. (not supported by municipality and owners of the hospitality industry in the city centre).

Recommendations towards the project of Stork-Hengelo are mainly to perceive the current governance capacity. The project is heading towards the second phase of implementation and is progressing despite of dynamics like the financial crisis.

Facilitate transfer of project files with the retirement of the municipal project director Wil Bohnen.

Until now a stable management has equipped this project. However, project director Wil Bohnen will retire. Therefore it is important to secure knowledge on the project by transferring the project files. This enables the new project director to form an objective opinion about the current status of the project and past events. Only personal transmission could lead to a biased view on the project. Besides, by transferring the project files the memory of the project will not be lost.

Continue to celebrate (small) successes.

One of the comments to the current status of the project is that not all prestigious projects from the beginning proceed. To show that the area is developing and action is still taken it is important to celebrate and / or highlight successes. Even if successes are small it will show the project is still in progress and can keep involved actors enthusiastic.

The following recommendations are towards the regeneration project of Terni-Papigno and are meant to improve the governance capacity. This research elaborates on three specific ways to intensify the governance capacity.

Terni-Papigno

What went well

- Connections to projects like PRUSST and the river Nera contract.
- Cooperation between ARPA Umbria and the municipality in relation to the landfill area

What could have gone better.

- Limited time pressure
- Absence of central management
- Brownfield regeneration is mainly approached from the environmental aspect and is not integrated with other values.
- Investors do not feel responsible for the site as the ownership of the site is in the hands of the municipality

Create a platform where public, private and civil actors can connect to each other, exchange information and learn from each other.

One of the comments from the actors on the project is that there is limited cooperation and limited communication between the actors. By improving this governance capacity could be increased. One way to intensify communication and cooperation is creating a platform.

One of the limitations of the project is that there is no actual management to the project. It is important to create a platform from which the regeneration project can be managed and actors can deliberate with each other. This platform

should be a way to communicate with each other but also stimulate the progress of the project. It needs to be taken into consideration whether this managing party should be an external manager or one of the established parties. An external manager could have the advantage of being neutral which might provide legitimacy. However, an internal manager might already have a lot of knowledge about this specific project.

Communicate and manage expectations

To improve the legitimacy of the project, communication should be intensified. At the moment there is little communication to third parties about the project and the plans. Communication seems an important aspect to improve connections and mutual understanding. Communication can take place within the before mentioned platform in a more interactive way. This way the municipality can show its intentions to the residents and other civil parties (e.g. Soprintendenza alle Belle Arti).

There might as well be a small information centre where actors can find information on the project (this is also the case for the project Hart van Zuid). To limit costs one of the already renovated buildings on the brownfield could be used to locate a small information centre. If this is not possible due to contamination or limited accessibility of the site, one could also consider locating a small information centre on the already regenerated brownfield area of 'ex officino bosco' in Terni.

Intensify (local) lobby activities to generate commitment and awareness

To improve the problem-solving capacity and progress, more connections to similar projects should be made to share knowledge. At the moment the regeneration project of Terni-Papigno is connected to some interesting programmes like PRUSST and the River Nera contract. However, Papigno seems to be a bit neglected and other projects, like regeneration in Narni, receive more attention from the involved actors in the programme. The province of Terni is leading these programmes and admits that Narni is receiving the most attention at the moment. The municipality should lobby for more affiliation to these programmes. For example, the plans to create a biking and walking lane along the Nera River should be seen as an incentive to speed up the rest of the regeneration process. Of course this is a chicken-and-egg debate (first the area would probably need to be remediated and made accessible for public) but the municipality and the province need each other's resources to implement the bike and walking lane project. The municipality should try to create more momentum to the regeneration project of Terni-Papigno. This might not immediately lead to financial resources, but it might help the project head in the right direction.

9.2 REFLECTION

This research compares two case studies that have to deal with regeneration in a completely different social and political context. International-comparative research is often subject to discussion. Is it useful to compare two case studies that are not comparable? This research has focussed on two different European countries, partly to fit into the European project of Hombre. The cases are compared to the research variables while at the same time the differences in contextual factors are taken into account. In my opinion these differences do not weaken the findings of this research, but are of explanatory power. What is important to keep in mind is that due to the unique contextual factors of each case, findings are difficult to generalise. The findings of this research are case bound, but at the same time enable the researcher to provide targeted recommendations to empirical case studies.

A remarkable finding of this research is the correlation between boundary judgements and strategies followed in the Italian case study. In the Dutch case the correlation between small boundary judgements and a conservative strategy, and wide boundary judgements and an adaptive strategy is clear. For the Italian case on the other hand findings show that actors with wide substantive boundary judgements can act rather conservatively. The project assignment of these actors is rather broad, but they do not have the possibility or the experience (due to long history of fragmented policy domains) to act in accordance. This is a remarkable finding because most research has shown that the correlation between boundary judgement and strategies is strong. This research shows that in order to follow adaptive strategies, organisational / institutional aspects should also allow this.

Another noticeable finding is that the results show a limited difference between the governance capacities, despite of the big differences in style. Due to the limited contrast in governance capacity it is hard to generalise the finding that adaptive strategies lead to higher perceived governance capacity than conservative strategies. Research of Edelenbos et al. has found similar findings: 'most of the projects that show large satisfaction with stakeholders show also a dissipative (for this research adaptive) managerial style, the reverse is less clear' (Edelenbos et al., 2010). Other research is not really explicit about how big the difference in outcome would be when applying a conservative or adaptive style. As discussed previously in the theoretical framework both strategies have their pros and their cons. Furthermore, a more adaptive strategy does contribute to a higher perceived governance capacity in the case study of Stork-Hengelo, because this case is of complex nature. Previous research has shown that adaptive management (in their research also referred to as process management) mainly fits complex projects (Edelenbos & Klijn, 2009). To see whether a more conservative strategy leads to better outcomes in less complex cases additional research should be conducted which also takes into account less complex (spatial) issues.

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Appendices

APPENDIX A: PARTICIPANTS HOMBRE

R3 ENVIRONMENTAL TECHNOLOGY LIMITED	UNITED KINGDOM
DR. FERBER, UWE UND GRAUMANN, DOREEN PROJEKTGRUPPE STADT + ENTWICKLUNG	GERMANY
IRMINSKI WOJCIECH	POLAND
PN STUDIO DI FRANCESCA NEONATO E ENRICO POIASINA SOCIETA DI FATTO	ITALY
NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK – TNO	NETHERLANDS
FUNDACION TECNALIA RESEARCH & INNOVATION	SPAIN
AKADEMIA GORNICZO-HUTNICZA IM. STANISLAWA STASZICA W KRAKOWIE	POLAND
UNIVERSITA DEGLI STUDI DI ROMA TOR VERGATA	ITALY
DECHEMA GESELLSCHAFT FUER CHEMISCHE TECHNIK UND BIOTECHNOLOGIE E.V.	GERMANY
BUREAU DE RECHERCHES GEOLOGIQUES ET MINIERES	FRANCE
ACCIONA INFRAESTRUCTURAS S.A.	SPAIN
WAGENINGEN UNIVERSITEIT	NETHERLANDS
THE UNIVERSITY OF NOTTINGHAM	UNITED KINGDOM

SOURCE: European commission: Seventh framework programme

APPENDIX B: INTERVIEW

Regeneration

- 1) What were the incentives of regeneration? And which organisation / stakeholder came up with the idea?
- 2) What crucial decisions are made by whom?
- 3) In what way do you depend upon other organisations to realise regeneration of the brownfield? (capital, knowledge, landowners etc)
- 4) In the area certain part contain contaminated soil and or water, how is the relation between soil an spatial planning (future land use) organized?

Conservative strategy / adaptive strategy

- 5) Is there a strict time and financial planning or is this flexible?
 - What is the current time frame of the project? → changed?
 - Have (common) goals changed over time? Yes How?
 - Have new organisations / parties enter the process? Yes how did this change the process? Di you make any new connections?
 - Has there been scope changes in regard to solutions?
- 6) How were solutions managed? Was there space for input of others, where there variable options?
- 7) To what extent is the project steered by your organization?
 - How can we see this in the regeneration project?
- 8) Has there been situations that steering seem to be difficult due to (un)expected situations?
- 9) What kind of policy instruments are available for regeneration (Clean-up as well as future land use) (ask for information meetings, subsidy, juridicial or informal agreements (convenant).
- 10) Do you have the possibility to react on plans (inspraak)? / Do parties have the possibility to react on plans?
 - Did you make use of this possibility?
 - What happened with your reaction?
- 11) Are there any future strategies?
 - Is additional funding needed?
 - Is additional knowledge needed?
 - Are new connections made?
- 12) When, where and how often do you meet with other stakeholders and what is the subject (focus) of this meetings? (Local-regional-central public parties, private and civil parties)
- 13) Was there a stakeholder missing in this meetings which should have been participating?

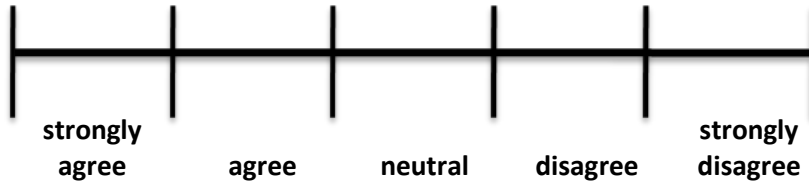
Boundary judgements

What was / is your main goal for the brownfield site in regard to the cleanup process and in regard to future use? → have goals changed, what was the incentive to change the goal?

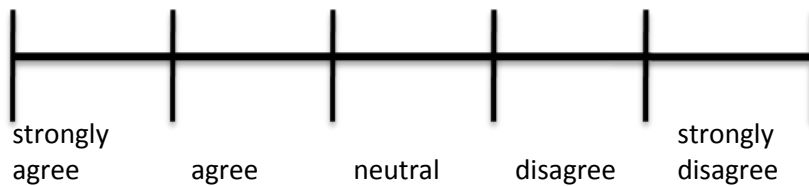
- 14) What is your main focus concerning the project?
 - What is your focus concerning solutions?
 - How do you approach the project?
- 15) Were there different interest expressed by different organisations / stakeholders and
 - how did you deal with this various interests?
 - How did it affect the process
- 16) How were (are) responsibilities divided? Does everyone act conform these responsibilities.

Governance capacity

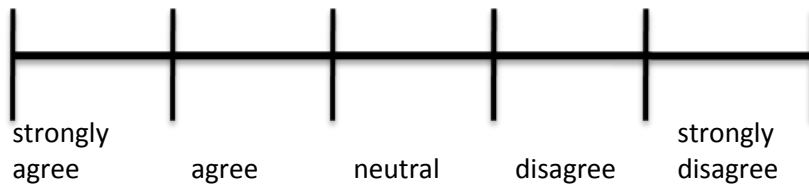
I: I am satisfied with the progress and continuation of the project so far



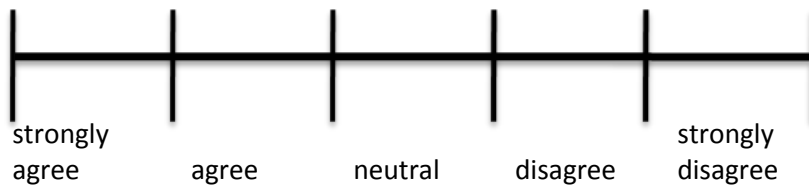
II: Current plans are widely supported by all organisations involved in the regeneration process



III: The current solutions that are presented, do tackle the actual problems



IV: All parties communicate with each other in a transparent way



APPENDIX C: RESPONDENTS CASE STUDIES

Project 'Hart van Zuid'		
Organisation	Respondent	Position
Municipality Hengelo / project agency hart van zuid	Wil Bohnen	Project director 'Hart van Zuid'
Municipality of Hengelo	Annemieke van ES- Boeren	Soil, Legal policy maker
Van Wijnen	Jan Nieuwenhuizen	Project director 'Hart van Zuid'
Province Overijssel	Cees Timmer	Programme manager Economic innovation
Foundation Hart voor Zuid	E.G. Wink	Secretary foundation 'Hart voor Zuid'
The Dutch Institute for Cultural Heritage	Peter Nijhof	Expert industrial heritage

Project "Terni-Papigno"		
Organisation	Respondent	Position
Comune di Terni (municipality, department of spatial planning)	Dott. Fioretti	Architect Urban planning
Comune di Terni (municipality, environmental department)	Dott. ssa. Petralla	Expert on remediation Environmental department
Regione Umbria (region)	Ing. Posati	??
Provincia di Terni (province, department of spatial planning and economic development)	Arch. Donatella Venti	Director of urban planning and economic development
ARPA Umbria (regional environmental agency)	Dott. Sconocchia	Employee waste and renovation
Comitato (resident association)	Sig. Sabatini	Chairman
Cinecittà studios	Maurizio Sperandini	Technical area Director

	Informant	Position
Terni-Papigno	Renato Baciocchi	Assistant Professor of Environmental Engineering, University of Rome, Tor Vergata
'Hart van Zuid'	Ernst Veenhoven	Programme Secretary

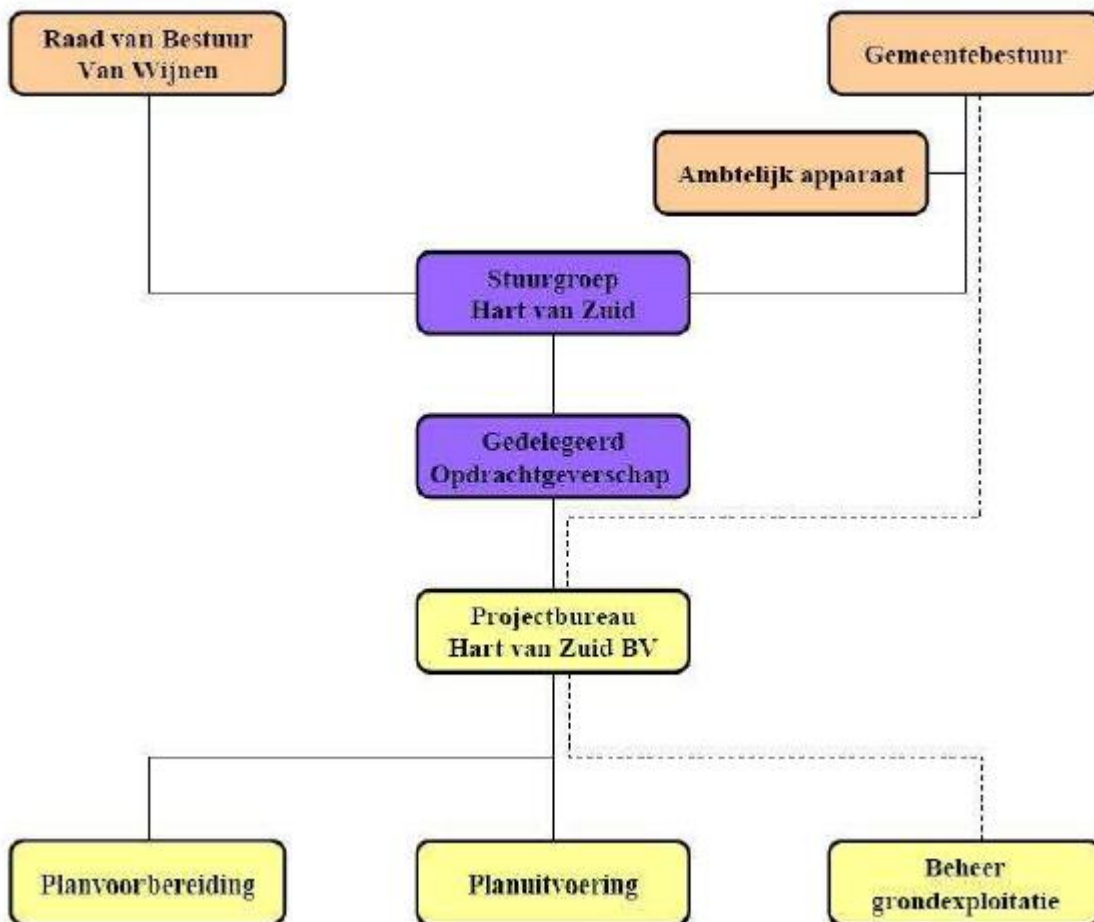
APPENDIX D: DEVELOPMENT OF HENGELO



Source: Projectorganisatie 'Hart van Zuid' (2002.) *Op Sporen van het verleden: industrieel erfgoed.*

APPENDIX E: ORGANISATIONAL STRUCTURE 'HART VAN ZUID'

Organisatiestructuur in hoofdlijnen



Source: Gemeente Hengelo

APPENDIX F: PRINCIPLES MASTER PLAN 'HART VAN ZUID'

DEZE DOELSTELLING WORDT OP DE VOLGENDE WIJZE TOT UITVOERING GEBRACHT:

1. Al in een vroeg stadium participeren de gemeente en de marktpartijen beide risicodragend in de ontwikkeling van 'Hart van Zuid'. Daarbij wordt goed samengewerkt met de grondeigenaren, waaronder Koninklijke Machinefabriek Stork.
2. Beleid en planvorming sluiten bij elkaar aan om de benodigde concentratie van functies en waardevermeerdering mogelijk te maken voor de kwalitatief hoogwaardige invulling van het gehele 'Hart van Zuid'.
3. Meervoudig grondgebruik zorgt voor het efficiënt benutten van de ruimte. Ten zuiden van het spoor betekent dat dichte bebouwing en gedurfde bouwhoogten om een modern centrumdeel te creëren. Functiemenging van voorzieningen op het gebied van wonen, werken, recreatie en cultuur moet zorgdragen voor een continue dynamiek en levendigheid.
4. Het Community College van ROC Oost-Nederland wordt in Hart van Zuid gehuisvest, conform de afspraken tussen ROC Oost-Nederland en gemeente Hengelo. Hiervoor worden enkele vestigingen van ROC Oost-Nederland in Hengelo, Almelo en Enschede samengevoegd met een aantal commerciële en maatschappelijke functies en op een nieuwe wijze vormgegeven.
5. Om het eigen karakter van het terrein verder uit te bouwen wordt de historie van het gebied opgepakt en daar waar mogelijk industrieel erfgoed hergebruikt.
6. Ten behoeve van de ontsluiting van het zuidelijk stadsdeel en de transferiumfunctie van het Centraal Station Twente nieuwe weginfrastructuur aan te leggen.
7. Uitgangspunt is de grondexploitatie met het daarin opgenomen minimumprogramma van 6 oktober 2000 met een berekend tekort van 215 miljoen gulden. De gemeente heeft als richtgetal voor haar gefaseerde financiële bijdrage maximaal 50 miljoen gulden voor de duur van de planperiode. (Brief 8 & W d.d. 13-11-2000). Als belangrijke voorwaarde geldt daarbij dat ook andere overheden aanzienlijk bijdragen, waarbij uitgegaan wordt van een richtgetal van minstens 60 miljoen gulden. Uitgangspunt voor de gezamenlijke partijen is verder aanvullende subsidiebronnen aan te boren, de kosten te reduceren en de opbrengsten te maximaliseren. Deelplannen worden niet in exploitatie genomen als de dekking hiervan niet is verzekerd.
8. Het hoge ambitieniveau vereist van de samenwerkende partijen een creatief en probleemoplossend vermogen, alsmede een consistente beleidslijn door de jaren heen.
9. Er wordt gezocht naar een oplossing voor de verenigbaarheid tussen enerzijds de integrale aspecten van het veiligheidsvraagstuk en anderzijds de ambitieuze nieuwe invulling van het gebied.

Source: Stuurgroep Hart van zuid (2001) *Masterplan hart van zuid*.

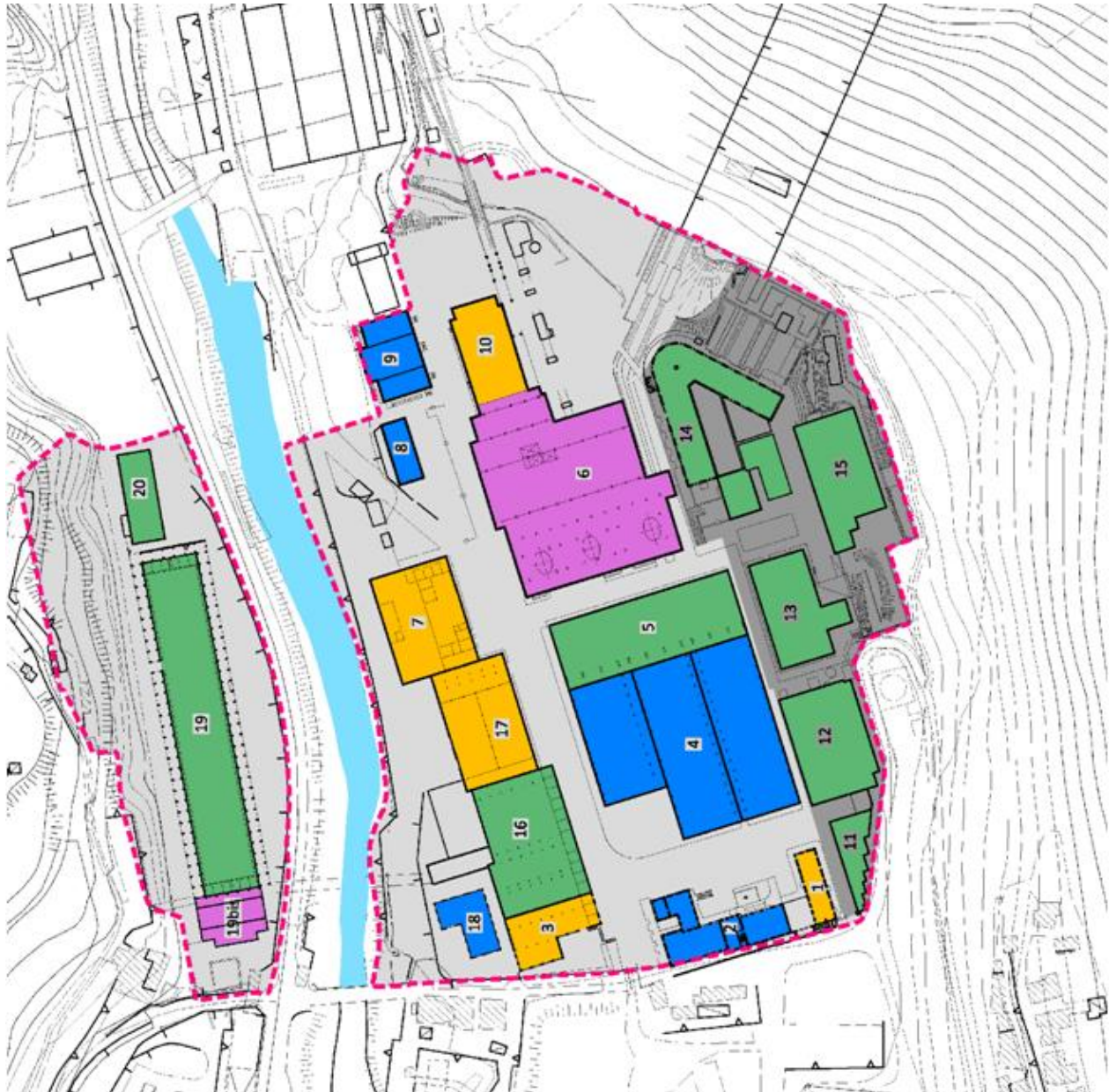
APPENDIX G: SCOPE CHANGES IN THE PROGRAMME OF ‘HART VAN ZUID’

Table: Scope changes in programme of ‘Hart van Zuid’

Source: To my own interpretation and with additional information on the earlier table provided by Doeschot (2003) and the updated masterplan by Gemeente Hengelo (2008)

	Programme master plan 2001	Elaborated programme (2003)	Programme updated master plan 2008
Housing (number)	900	2.034	1.500
Offices (m²)	100.000	75.000	75.000
Companies (m²)	70.000	7.000	90.000
ROC (m²)	55.000	45.000	Education
Community school (m²)		7.000	65.000
Health care & Welfare (m²)		2.500	3.500
Culture (m²)	5.000	14.500	20.000
Leisure (m²)		800	
Retail (m²)	2.800	7.500	9.000
Horeca (m²)		7.200	
Techno Centre (m²)	5.000		
Craft and Industry (m²)	5.500		

APPENDIX H: BUILDINGS ON INDUSTRIAL SITE OF TERNI-PAPIGNO



Source: Municipality of Terni

Legenda				
- - - Delimitazione PRG				
■ Edifici ristrutturati				
■ Edifici da ristrutturare				
■ Edifici parzialmente ristrutturati				
■ Edifici da demolire				
Capannoni ed edifici dell'ex stabilimento elettrochimico di Papigno				
Edificio n.	Denominazione	Superficie Lorda- mq	Numero piani compresi interrati	Sato di fatto
1	Edificio ex-portineria- bar – locali di servizio	300	1	Parzialmente ristrutturato
2	Edificio destinato a camerini	1900	2	In fase di ristrutturazione
3	Spogliatoi-mensa- servizi igienici	750	1	Parzialmente ristrutturato
4	Teatri di posa	6000	1	ristrutturati
5	Capannone ex sala raffreddamento colata	2500	1	Da ristrutturare
6	Capannone	---	---	Da demolire
7	Capannone lavorazione scenografie e attrezzerie	1800	1	Ristrutturato
8	Palazzina uffici	1500	5	Ristrutturato
9	Capannone sartor'a	800	1	Ristrutturato
10	Capannone falegnameria	1000	1	Parzialmente ristrutturato
11	Reparto compressori	440	1	Da ristrutturare
12	Sale Claude	1600	1	Da ristrutturare
16	Capannone	2300	1	Da ristrutturare
17	Capannone	1800	1	Parzialmente ristrutturato
18	Edificio locato a società rafting	450	1	Ristrutturato
19	Capannone ex depositi carburo	1600	1	Da ristrutturare
19BIS	Capannone ex depositi carburo	---	-	Da demolire
20	Capannone	500	1	Da ristrutturare
Cabine centrale idroelettrico di papigno				
13	Ex cabina 120.000 V	2700	2	Da ristrutturare
14	Ex cabina Velino Pennarossa	4000	5	Da ristrutturare
15	Ex cabina Anglo-romana	4300	3	Da ristrutturare