FUTURE OF CITIES: SUSTAINABLE AREA DEVELOPMENT

A research for the optimisation of the application of instruments within a municipality to increase sustainability in area development

In collaboration with

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Research Paper

THE FUTURE OF CITIES: SUSTAINABLE AREA DEVELOPMENT

A research for the optimisation of the application of instruments within a municipality to increase sustainability in area development

Research paper

By

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Preface

This study has been conducted to finish my academic career. At the end of seven years of studying I wanted this last research to conclude it perfectly. And what better way to finish your academic degree than to study one of the most recent problems in cities: climate change.
With the combination of my interests in the building environment and sustainability, a study combining these two aspects could not have fit better. I really enjoyed working on this study (most of the time anyway). I have to thank my professors for helping me to strive for what has become this thesis. Without their enthusiasm from the start I would have never made such a relevant and challenging thesis. Throughout the whole thesis they supported me tremendously and always pushed me to reach just a bit further. I never had a dull conversation with you and I highly appreciate all your time. Arjan van Timmeren, Marleen Hermans, Leon Hombergen and Lizet Kuitert definitly deserve credit for helping me to create this study.

Credit must also be given to the municipality of The Hague for their support. Without this great opportunity, this thesis wouldn't have been an enjoyment. I would like to thank all the colleagues who have brainstormed with me and have made me feel more than welcome.
A special thanks needs to be given to Machiel Broeren. He helped with the setup of the subject and gave all the space for my preferences.
An enormous appreciation must be shown to Annemiek Stroosma. She supervised my thesis and helped me with all my questions. Without her commitment, the interviews could not have been conducted the same. Our meetings and your feedback were appreciated greatly during the whole thesis. Also, after working from home became standard, the help of Annemiek did not change.

Next to the professional help I also received so much help from my friends and family. I need to thank everyone for the support and the confidence they gave me.
The wine and coffee meetings talking about the hard life of a graduate intern helped a lot to blow off steam. Without all the support and the fun times, in between, this research would not have been the same. Talking about your doubts and insecurities is the best way to overcome them and I had so much luck I had friends in the same position. An extra appreciation must be expressed to Ashyla. She put so much time in proofreading my paper, this was extremely helpful! I think the most appreciation needs to be given to Jorn. He not only had to deal with my thesis but also with my stress. Especially during the lockdown this must not have been easy all the time. Without his support, his patients and his acceptance of my rattling on and on about the subject, it would have been impossible. I don't understand how he set through it, but there is one positive aspect: he now also knows how to use instruments to develop an area sustainably.

I enjoyed the writing of this thesis more than expected, I hope you enjoy reading it as well!

Nadine Schmidt
The Hague, July 2020

Executive summary

Currently the world is dealing with a pandemic. The world has stopped, and people are distancing from each other. However, this large crisis is not the only crisis the world is currently dealing with. Climate change is affecting the world drastically since the last century. Our current way of development must stop to deal with this change. This is the ideal time to stop and think about the future. How can we provide a future-proof city that is still attractive to our grandchildren?
Regardless of the crisis, more people want to live in cities, and therefore more features are needed within the same space. Cities must continuously adapt to new needs and demands (Franzen et al., 2011). This fast-changing environment makes it even harder to continue our current development, while adapting to the needs and demands. A future-proof city starts with a sustainable development of new plans. It is time to improve the involvement of sustainability in area development. This study will look at this overdue change in area development. It acknowledges this problem and aims to advice how sustainability can be better embedded in spatial planning.

Spatial planning in the Netherlands is regulated by the local government. These municipalities oversee and directly influence these developments (Janssen-jansen, 2016). Therefore, this is the ideal actor to start with the optimisation of sustainability in area development. A municipality is provided with multiple tools to stimulate sustainability. These tools must be used by any municipality to stimulate the achievement of public values. The most important public values can be seen as: honesty, transparency, efficiency, effectiveness and sustainability (Bruijn and Dicke, 2006).
The objective of this study is to find an optimisation of the application of instruments to enlarge the sustainability in area development. Therefore, following research question is addressed in this study:

"How can a municipality optimise the application of instruments in order to achieve sustainable area development?"

The roles, the controlling and the implementation of sustainability in area development are further elaborated, in order to answer this research question.

Knowledge gap
A knowledge gap can be found in the literature between the process of a public party and the optimal application of this process (Janssen-Jansen, 2016). It is still unclear how a municipality can optimally use its instruments to ensure sustainability (Schutte, 2018). At the same time the research in network governance just started to develop (Klijn, 2008).
From a municipal perspective, the understanding about instruments and sustainability can be improved as well. Therefore, this is study tries to fill this knowledge gap.

Method
This study uses a desk research and interviews to answer the research question and to fill the literature gap. Interviews within a case of the municipality of the Hague have been conducted. Within this municipality multiple interviews were conducted, spread out between almost all departments involved in spatial development.
A theoretical framework was used as a lens to explore the use of the instruments to support sustainability in practice. The semi open structured interviews allowed the researcher to find more information than solely provided by the theoretical framework.
The combination of a desk research and the interviews resulted in an optimisation model. This model includes the optimisations needed within a municipality to improve sustainability. This

model was discussed with some experts from the municipality of The Hague to validate it. First of all, the theoretical framework will be shortly explained. This framework is the result of an extensive desk research, including internal documentation of the municipality of The Hague.

Theoretical framework

In each development a balance needs to be found between the different aspects, features, actors and their interests (de Zeeuw, 2017, Voorn, van Genugten and van Thiel, 2019). To find this balance each development will include some sort of collaboration and participation. Therefore, the process of area development is seen as a complex process (Klijn, 2003). A government has various options when it comes to decision making. In order to optimally influence the complex problem of area development, the process should involve networks and rounds of participation (Franzen et al., 2011; Teisman, 2000). It can be seen as a historical trend to move from a government with strict steering towards governance with networks (Klijn, 2012). The latest area development should include extensive collaboration and participation. This participation is optimally done with the use of rounds. In each round other interested parties are involved, with other interests (Teisman, 2000). At the end of the process all the parties had the opportunity to influence the process.

The process of area development should be organised integrally for sustainability. When developing one single plot, implementing sustainability is hard, because of their large financial aspect. With an integral approach, more plots are being developed and sustainable requirements can be integrated easier (Vigar, 2009; de Zeeuw et al., 2011). Therefore, integral area development is advised to use when sustainable aspects need to be integrated.

Specifically, for municipalities there is a range of options to steer area development. Most importantly, every municipality has multiple options in the use of instruments. The following six instruments are used in this study (Verheul, Daamen, Hobma and Heurkens, 2017; Heurkens and Adams, 2015):

- **Legal instruments**
  - Private law
  - Public law
- **Covenants**
- **Financial instruments**
- **Municipal instruments**
  - Active policies
  - Passive policies
  - The Hague specific
- **Soft instruments**
- **Sustainable instruments**

Within the near future a new law becomes available for municipalities. This change in the Environment and Planning Act (EPA) gives more room for sustainability in the area development.
The public party (e.g. municipality) sets the rules with these instruments and wants to ensure that the public values are met. Sustainability as one of the public values has grown in all aspects of our society, in recent years. Sustainability is also more embedded in the fast-changing environment of spatial planning and area development.
However, sustainability is a popular and diverse term. Currently the term is used opportunistically and without engagement (internal communication). As previously stated in literature, sustainability should move 'beyond rhetoric' towards real, efficient, practically embedding sustainable development (Waas, Hugé, Block, Wright, Benitez-Capistros and Verbruggen, 2014). At the same time, area development has been given multiple definitions. De Zeeuw (2007, page 7) defines area development in general as "the art of connecting features, disciplines, parties, interests, and cash flows, in the face of development or transformation of an area". This study will build upon this definition.

This study uses this definition as well as the sustainable goals of the case municipality of The Hague. The following four aspects are used as a scope for sustainable development:

- **Energy**
- **Climate adaption**
- **Mobility**
- **Circularity**

These four sustainability aspects need to be embedded in the process of area development. Implementing these aspects is most important for sustainability. However, this implementation continues to be a problem for municipalities (Runhaar, Driessen and Uittenbroek, 2014). The following aspects need to be involved for successful implementation (Uittenbroek, Janssen-jansen and Runhaar, 2013; Schutte, 2018; Uittenbroek, Janssen-Jansen, 2013):

- Inclusion - to what extent is sustainability involved in municipal policies?
- Consistency - to what extent is there cohesion between the different municipal policies?
- Weighting - to what extent does sustainability have priority in area development?
- Reporting: to what extent are sustainable strategies followed and reported?
- Resources - is there enough money, knowledge and time available to implement sustainability?

The implementation of these instruments concludes the theoretical framework. This framework will be cross referenced with the findings from interviews. With this cross reference the theoretical framework has been optimised. During the interviews it was found that some additional theory is necessary. Besides initially found, interviews showed that the organisation has a large impact on the outcome for sustainability in area development.
Combining the whole interview analyses some recommendations can be made. This study has found multiple results for the use of tools, the use of governance and the organisation. Some general recommendations will be discussed as well as recommendations specifically for the municipality of The Hague.

General recommendations

The combination of interviews and literature has led to some general recommendations. Even though the study was conducted within one municipality, these recommendations can be applied by similar Dutch municipality as well. These recommendations can be divided into recommendations for three aspects: tools, governance and organisation. The latest aspect has been additionally found in the practical research. For all these three aspects the general recommendations will be discussed shortly.

First of all, the optimisation of the tools is explained. The main aspect of the instruments is the use to ensure sustainability. Sustainable agreements should be checked both during and at the end of the process. This guarantee is the most difficult aspect about improving instruments for sustainability. For each instrument, an example, the guarantee (hard or easy), weak points and the opportunities are shortly explained in table XI.1.

Municipal instruments, covenants and the EPA have shown the importance of the integration of the instruments. The instruments can be optimised per instrument, separately. However, this study has concluded that this approach will be ineffective for sustainability.

The implementation of the instruments should be mutually optimised, with a clear implementation. This will ensure a good integrated approach for all the sustainable aspects. This implementation should optimise the inclusion, consistency, weighting, reporting and the resources. The optimisation of these five aspects will be elaborated further in table I.2.

Table I.1: List of instruments

Instrument	Example	Guarentee?	Weak points	Opportunities
Soft	Education of employees Seducing	Difficult	Can only be used with willing parties.	Training employees
Covenant	Climate adaptive Zuid-Holland	Difficult	Embedding in the process	Collaboration with other municipalities
Legal **Public** **Private**	Land-use plan Anterior agreement	 Easier Difficult	Including requirements about the building decree	Public instruments should have priority
Financial	Subsidies	Easier	Investment in single plot development	Sufficient investments for sustainability
Municipal	Policy document ‘Sustainability’	Easier	Integration of the sustainability aspects	Integration between the aspects and actors involved
Sustainable	NIB	Only when not included in the building decree	Separate instrument, not being included in policies	Include these in the other instruments
EPA	Environmental plan	Easier	Introduction date is still unown	Not yet introduced, integration is important in the development of the environmental plan

Table I.2: Implementation of the instruments

Aspect	Details of the aspect	Included in which instrument	level taht should ensure the aspect	Phases mostly involved
Inclusion	Sustainability should be included in all instruments	All instruments	All levels	Pré phase and initiation
Consistency	The involvement of sustainability should be consistent.	Municipal Legal Soft Covenant	All levels	Pré phase and initiation
Weighting	A clear weighting process should be done for each area. Sustainability should be a priority in most of the areas.	Municipal policy documents	Strategic level	Pré phase , before starting any development
Reporting	An evaluation should be included at the end of an area development process.	Legal Municipal	Operational level	Operation phase End of the process
Resources	The resources must be exploited and used more to support sustainability.	All instruments	Integration of the sustainability aspects	All phases

Secondly, the governance of a municipality can be optimised. Network governance should be the starting point for all developments. This network governance involves upfront participation. As many interests as possible should be included in the considerations, internally and externally. However, for sustainability these interests are rarely automatically positive. Therefore, a municipality should use traditional steering manners to set minimum sustainable ambitions for all area development. This traditional steering is more effective for spatial quality aspects like sustainability. The balance between the two governance types is very important, especially for sustainability.

Thirdly, the organisation can be optimally managed. Uniformity is very important in the organisation. There should be one organisational model used throughout the whole organisation. The use of different roles should also be clear in the municipality. These should be clearly separated between the levels. The different levels, authorities and departments should be included upfront in the process. Upfront engagement will align the different interests of the departments and later changes will be avoided during the process.

The recommendation for any municipality is to make sure sustainability is embedded in the process. One option for this embedding is a separate department for sustainability. This will ensure the early involvement of sustainability and the guarantee that the requirements are involved in the process. Without one responsible department, sustainability will most likely never receive full attention in an area development.

Recommendations for The Hague
Besides the general recommendation, this study also concluded some recommendations specifically for the municipality of The Hague. The same three aspects will be shortly discussed: tools, governance and the organisational recommendations.

Optimise the use of the single instruments
First, the municipality of The Hague must optimise the use of their instruments. The internal communication about what instruments can and must be used is lacking. Soft instruments and covenants are made but are unknown in the rest of the organisation. Financial instruments are currently rarely used to influence sustainability. This should be done more often. Investments are needed in order to optimise sustainability, without these investments will only increase in the future. The municipality should quickly start to build future-proof areas. A strict separation in the use of private or public legal instruments is dividing the employees of The Hague. This study recommends to mostly use the public instruments. When not using the public instruments, this choice should be clearly made with legit arguments. The municipal instruments can also be largely optimised. The same level of sustainable requirements should be involved in all the municipal policies.

Optimise the implemenation of instruments
Most important to optimise is the implementation of these instruments. Therefore, five aspects need to be optimised in the municipality of The Hague. In order to optimise the implementation some actions need to be taken. Some optimisation seem quite easy, while other might take some more efforts. Table XI.2 shows a general optimisation based on the types of instruments, the levels that should apply them and in which phases. This general recommendation, however, is especially useful for the municipality of The Hague, as this research showed a lack of implementation in all the five aspects.
It can be concluded from table XI.2 that the optimisation of the implementation should mostly be done with the use of municipal instruments. These instruments should be optimised upfront, including consistent and a clear weighted balance aspects, like sustainability.

Optimise the governance
Secondly, the governance of The Hague should be optimised. The municipality should knowingly use their full range of steering options. Stakeholders should be involved in rounds. A network governance steering type will help to establish this stakeholder involvement in the process. An integral approach of area development is key. The upfront involvement of the different interests will result in lower conflicts later on in the process. For sustainable requirements the municipality should use traditional steering methods as well. Sustainability is one of the aspects that the market does not automatically improve. Therefore, the municipality should strictly steer towards this public value. The balance between the two governance types is very important.

Use a clear organisation structure
Thirdly, multiple aspects of the organisation can be optimised. One clear organisational structure should be used in the whole organisation. This will lower the current communication problem of the municipality of The Hague. Main issue for sustainability is the lack of embedding in the process of area development. The best recommendation this study can provide for the municipality of the Hague is to have one department responsible for sustainability. This will always ensure the involvement of the sustainable requirements in the processes. Having an integral approach will benefit sustainability greatly. Plans should not only be made for one plot, but a whole area should be involved. Combined area development will also lower lack of cohesion between the different ground layers, currently present in The Hague.

To sum up, working integrally within the municipality will help solve most of the current problems for sustainability. This integral working process should start at the highest level of the municipality. They must provide clear sustainable ambitions, that must be embedded in the whole organisation and in every policy document. This, however, is also a political reality that will change quickly, but cannot be influenced easily.

Conclusion
This study found three aspects to be most important to optimise: the tools, governance and the organisation. These aspects will be used to answer the main research question:

"How can a municipality optimise the application of instruments in order to achieve sustainable area development?"

To conclude, the implementation of the instruments is found as the most important aspect to improve. Inclusion, consistency, weighting, reporting and the resources should be optimised to improve sustainability. Furthermore, this study has shown that not only the instruments but also the governance and the organisation will influence sustainability in area development. For the application of the instruments a ranking has been made below to show the most important aspects to optimise first. Any municipality should apply the optimisation in this order. Some municipalities might already comply with some of the steps, in which case that step can be skipped.

In order to have a clear overview of the optimisation of the application of instruments (tools, governance and organisation) a roadmap has been made. This roadmap gives an overview of the application of instruments to optimise sustainability. Due to the fact there is some overlap between the different optimisations this roadmap gives a clear overview of the optimisations per phase and per level of the organisation (see figure I.1). Most of the optimisations will overlap and will follow quickly or automatically after each other.

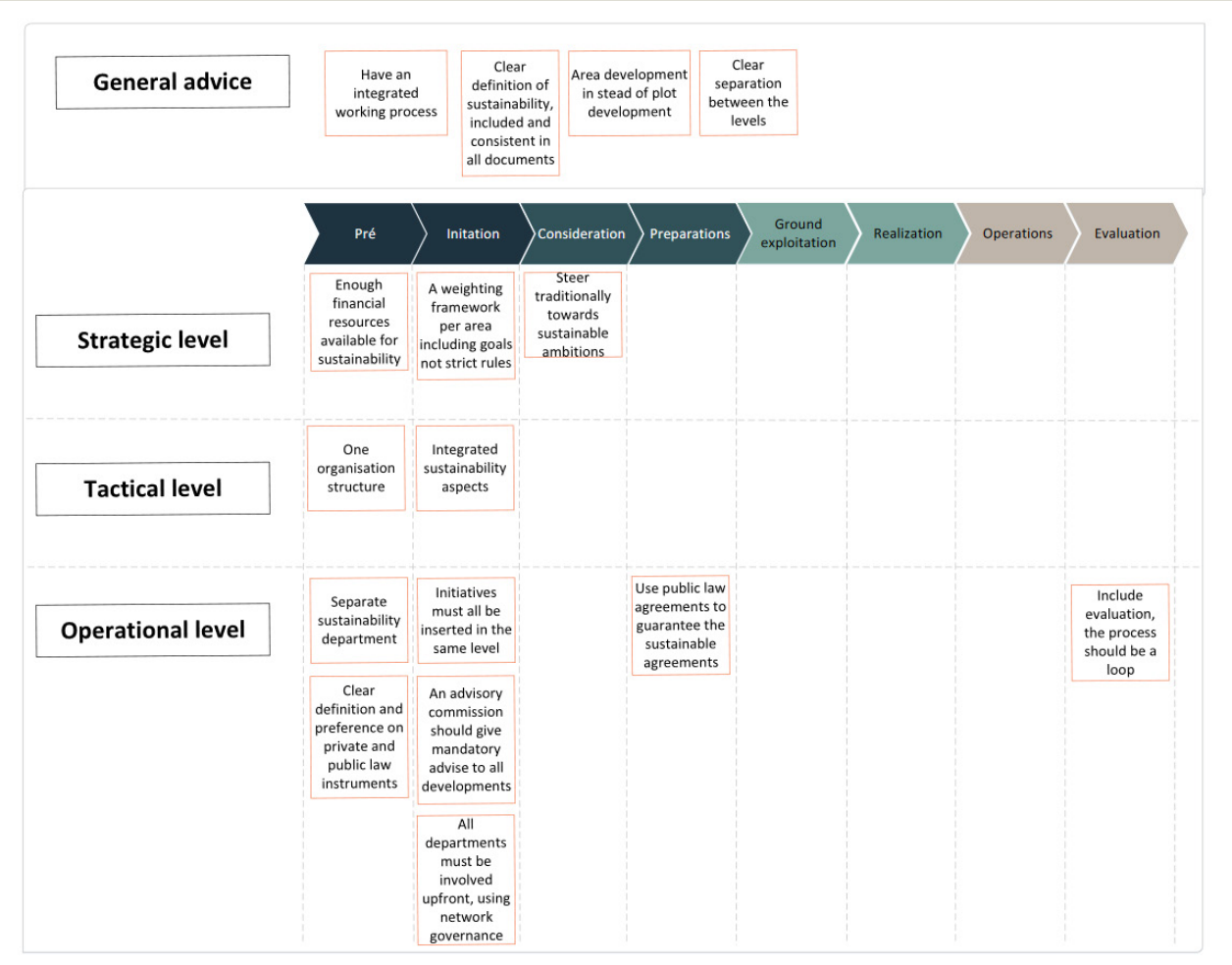
1

First, the balance between the aspects in area development should be optimised. This should be done with a clear weighting for each area, including bare minimums for sustainability. Some options must be left for the market to innovate, stating goals not strict sustainable rules. The making of these sustainable ambitions should be done by the strategic level of a municiaplity.

2

Secondly, after the weighting process,sustainability should be consistently included throughout the whole organisation. The sustainable ambitions of the first step should be included by the tactical and operational level in their working process, especially in the instruments.

Figure I.1: Roadmap



3

4

Thirdly, the different instruments (or resources) should be optimally used by the operational level. The instrument can also be ranked on their effectiveness to support sustainability. A distinction can be made between main instruments and supporting instruments. The main instruments will implement the sustainable goals and the supporting instrument will try to achieve extra sustainability.
The municipal, public legal and financial instruments should be used as main instruments. The soft, public legal instruments and covenants should be used as supporting tools, to achieve extra sustainable wishes of a municipality. The lack of guarentee of these instruments is the main reason they should only support the sustainable ambitions.

After these three optimisation, the process should evolve into a loop, with a evaluation at the end. The evaluation will find aspects to improve, which should go through these four steps. The evaluation should be applied by the operational level in collaboration with the tactical and strategic level, who might need to change the ambitions.

This study showed the most important optimisation for the isntruments of municipalities. The best application of these instrument can be made with the use of an integrated working process. Figure I.2 shows this integral working process and the optimisations needed to improve sustainability throughout the process.

Further research

This study was conducted within the Municipality of The Hague. Most of the results can also be applied in other large municipalities in the Netherlands. The Hague can be seen as a representative for other cities. The sustainable goals are comparable to other larger cities in the Netherlands.

This study had a compact scope to research. Therefore, some recommendations must be made for further research. First, the use of legal instruments should be researched more closely. How sustainability can best be adapted in these instruments is still unknown. Also, the exact guarantee and how this is optimally processed did not become clear in this study.

Secondly, when the introduction of the EPA is known, this should be researched further as well. More possibilities will become available for sustainability and how this is optimally implemented is still unknown.

National and international collaboration would be another good aspect for further research. A lot of laws and regulations are created on this (inter) national level. The effect of these instruments and if and how they can be changed is not known yet. This research has found the national building decree to be of large influence, and mostly restriction the municipality in their sustainable goals.

Figure I.2: Integrated working process

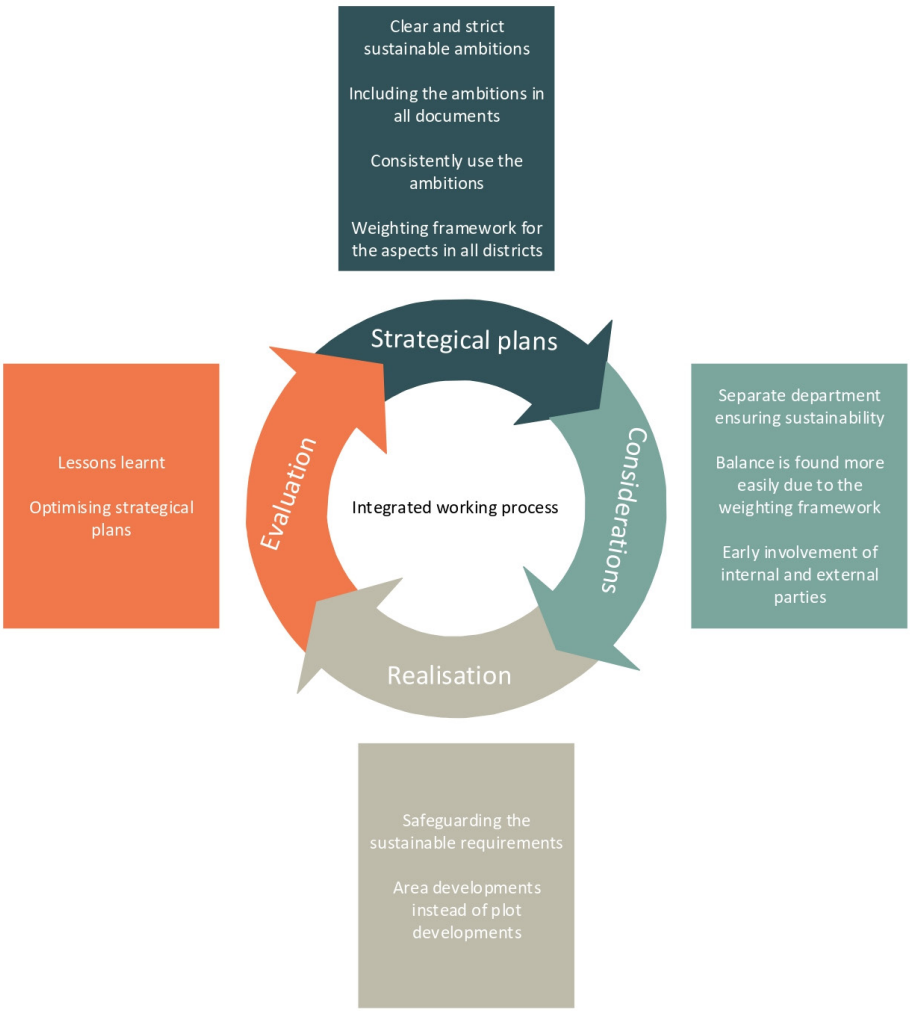


Table of Contents

Executive summary 6
Table of Contents 16
Definitions and abbreviations 18

I. CONTEXT OF THE RESEARCH 19
1. Introduction 20
1.1 Context explanation 20
1.2 Problem statement 20
1.3 Thesis outline 21
2. Research Design 22
2.1 Research definitions 22
2.2 Research objective 24
2.3 Research scope 24
2.4 Research questions 24
2.5 Research method 25
2.5.1 Desk research 25
2.5.2. Case study 25
2.5.3. In-depth interviews 25
2.5.4. Analyses of the interviews 26

II. THEORETICAL FRAMEWORK 27
3. Desk Research 28
3.1 Area development 28
3.1.1 Process of area development 28
3.1.2 Plot vs area development 29
3.2 Decision-making process in area development 29
3.2.1 Historical trend 29
3.2.2 Interaction in the network 30
3.3 Decision-making by a municipality 30
3.3.3. Tools of a municipality 31
3.3.4. Revision of Environmental and Planning Act (EPA) 32
3.4 Sustainability 35
3.4.1 Historical background 35
3.4.2 Definition of sustainable development 35
3.4.3 Sustainable development in area development 36
3.5 Conclusion of the theoretical framework 38
4. Conceptual Model 39
4.1 Instruments 39
4.2 Application of the tools 43
4.3 Conclusion of the conceptual model 43

III. EMPERICAL RESEARCH 44
5. Case Study Results 45
5.1 Interview design 45
5.2 Interview results 47
5.2.1 Tools 47
5.2.2 EPA 48
5.2.3 Collaboration (internal) 48
5.2.4 Interaction (external) 48
5.3 Conclusion of the interviews 48
6. Interpretations of the Results 50
6.1 Tools 50
6.2 Governance 52
6.3 Organisation 52
6.4 Conclusion of the interpretations 53
7. Validation 54
7.1 Conclusion of the validation 55
8. Final Model Description 56
8.1 Tools 56
8.2 Governance 60
8.3 Organisation 60
8.4 Conclusion of the final model 61
9. Recommendations 62
9.1 General recommendations 62
9.1.1 Tools 62
9.1.2 Governance 64
9.1.3 Organisation 64
9.2 Recommendations for The Hague 64
9.2.1 Tools 64
9.2.2 Governance 66
9.2.3 Organisation 67
9.3 Conclusion of the recommendations 67
10. Conclusion 68
11. Reflection 80
11.1 Importance of the results 80
11.2 Limitations of this study 80
11.3 Recommendations for further research 81
11.4 Some other notable points 81

Definitions and abbreviations

EPA	Nieuwe omgevingswet	Environmental and Planning Act
SDG	Duurzame ontwikkelingsdoelen	Sustainable development goals
DSO	Dienst stedelijke ontwikkeling	Authority on urban development
DSB	Dienst stedelijk beheer	Authority on urban operations
NIB	Natuur inclusief bouwen	Nature inclusive building
NAS	Nationaal adaptatie strategie	National adaptation strategy
KO	Kleinschalig opdrachtgeverschap	Small-scale development
PUK	Planuitwerkingskader	Projectplan realisation frame
NVU	Nota van uitgangspunten	Policy document of the project requirements
HDT	Haags duurzaamheidsteam	Sustainability team for The Hague
IVA	Integraal verantwoordelijke ambtenaar	Integral accountable civil servant
GARO	Grond afname en realisatie overeenkomst	Land purchase and realisation agreement
ACOR	Advies commissie openbare ruimte	Commission giving advice on public space
SOK	Samenwerkingsovereenkomst	Collaboration agreement
VOV	Vooroverleg over verkeerszaken	Pre-conciliation about traffic issues
HIT	Haags initiatief team	Initiative team of The Hague

I. CONTEXT OF THE RESEARCH

1. Introduction

1.1 Context explanation

Our cities are constantly developing. More housing, more infrastructure and more public services are needed due to the increase in people. At the same time there is a need to realise sustainable developments.
Our climate is rapidly changing, and worldwide action is being taken to prevent worse from happening. In August 2015 all countries of the UN, including The Netherlands, signed a new agreement on sustainable development. In this agreement the sustainable development goals for 2030 were set for 193 counties. These goals include 17 different items which all countries will try to achieve (UN, 2016). The Netherlands needs to implement these sustainable goals before 2030. To obtain these goals, sustainability needs to be embraced better.
The real estate sector together with the building environment is responsible for 36% of the total energy consumption in the Netherlands and 25% of the CO_2 emissions (RVO, 2018). In 2018 nearly 75% of all the public tenders were held without sustainability playing any role during the process (Bouwend Nederland, 2019).
This leaves the process of area development as a perfect starting point. To obtain real sustainability a practical view on sustainable development must be researched. As previously stated in literature, sustainability should move 'beyond rhetoric' towards real, efficient, practically embedding sustainable development (Waas, Hugé, Block, Wright, Benitez-Capistros and Verbruggen, 2014).

One party consistently involved in area development is the municipality. The municipality will always be involved in the development of public spaces. Infrastructure, water, parks and other public aspects are relevant in almost all area developments. This involvement leaves the municipality with the large task to ensure the embedding of sustainability in development. In order to influence sustainability a municipality has a broad range of instruments available. The implementation of the different instruments is a very important aspect of the decision-making process (Heurkens, Adams and Hobma, 2015; Janssen-Jansen, 2016).

The global and national agreements about sustainability increases the importance to undertake urgent action. At the same time the national government has set the introduction for new legislation in the near future. At the start of this project this new legislation would be introduced in January 2021. However due to current developments this has been postponed to an unknown date. This legislation change shows the quickly changing environment, which area development and the decision-making process are a part of (I&M, 2019).

1.2 Problem statement

To meet the future demands of sustainability, the area development processes need to be optimised. This study will look at this decision-making process and an optimisation will be explored. This optimisation should involve an increased embedding of sustainability.
The embedding of sustainability is strongly linked to the use of the broad range of instruments.
This study will try and answer the question on how the instruments in the decision-making process of a municipality should be applied in order to increase sustainability in area development. The application in this question looks at the decision-making process of a municipality involving governance and organisational optimisations. The use of instruments will be evaluated to answer the questions on how that could be optimised.

With the help of this study, municipalities will be able to optimise their area development to increase sustainability. The main goal of this study is to find the optimisation of the decision-making process in terms of instruments, governance and organisation.

1.3 Thesis outline

In order to find an answer for the problem statement, this study will walk through several steps. First, the research will be explained further in chapter 2, involving the research objective, the scope, the questions and the methods which have been used. This chapter will provide the research questions which this thesis will try to answer.
In chapter 3, a desk research will try to answer the first few research questions. The decision-making process (of municipalities) will be explained further and sustainability in area development will be highlighted. This chapter will result in a conceptual model on how to develop areas more sustainably in chapter 4. This framework will be tested in practice, which will be explained in chapter 5. The results of chapter 5 will be interpreted in chapter 6. After this interpretation is done, a validation will be used to control the results in chapter 7. Including the advices and the validation, recommendations for general use of instruments and specifically for The Hague can be found in chapter 8. This thesis will end with an answer to research questions in chapter 10. These answers will be reflected upon in chapter 11, finalising this thesis.

2. Research Design

Before examining the objective of this research, a scientific background will be given. This chapter will be a short introduction on the theory of area development (chapter 2.1) and sustainability (chapter 2.2). The theory will lead to the scope of this research (chapter 2.3), followed by the research questions (chapter 2.4). Furthermore, the relevance of the research, as well as the method (chapter 2.5) to answer the questions, will be explained.

2.1 Research definitions

Before looking at the objective of this research, first some general definitions are needed. Some general information about area development and about sustainability will be provided in this subchapter.

Area development

When introducing area development, a couple of aspects must be mentioned. First of all, a definition of area development must be given. De Zeeuw defined (2007, page 7) area development in general as "the art of connecting features, disciplines, parties, interests, and cash flows, in the face of development or transformation of an area". This research will build upon this definition.

Area development consists of multiple features. Van Rooy, 2009; VROM, 2009; Van Dijk, 2011 and PPS, 2008). In these studies, the following features of area development can be found:

- Certain values are achieved within area development.
- Different interests are combined in area development of public and private parties. Also, other disciplines, risks, the project organisation and other actors are involved.
- The process of area development is always unique due to the differences in time constraint and the integration of the planning process.
- Area development leads to a new interpretation of spatial quality

"the art of connecting features, disciplines, parties, interests, and cash flows, in the face of development or transformation of an area".

A balance needs to be found involving all the different features. Lately, this balance is becoming increasingly complex. Multiple aspects, features, actors, interests, involved levels and a longer duration increase the complexity (de Zeeuw, 2007). Therefore, area development can be seen as a multiple principle problem: multiple collective problems that organisations face when balancing the interest of the involved stakeholders (Voorn, van Genugten & van Thiel, 2019).

Some of the actors try to influence the process to have input on the final decision. Other actors may rather see the process stopped. Therefore, a collective decision will involve consultation and negotiation (Bueren, Klijn and Koppenjan, 2003; Bruijn and Ten Heuvelhof, 2002). The stakeholders are forced to negotiate in order to solve the complex problem. They use strategic games and work in networks (Koppenjan and Klijn, 2004).

Local authorities apply active intervention in area development in order to balance the multiple features and actors. In the Netherlands the municipalities have this central role. Municipalities draw legally binding local land use plans, which prescribe what is allowed on each plot in a specific area. Next to these legal instruments, the municipality can also apply a broad range of other instruments to influence area development.

The mentioned values are negotiated in networks. The public party sets the rules of the collaboration and wants to ensure that the public values are met. The most important public values can be seen as: honesty, transparency, efficiency, effectiveness and sustainability (Bruijn and Dicke, 2006). These public values are applicable at this moment, however they do change over time. This research considers sustainability as the most important public value at this time. Therefore, some more

context about sustainable development is needed. In order to actively intervene in area development this research will look at the instruments that can be used by the Dutch municipalities.

Sustainable development

Area development has led to new interpretations of spatial quality. The interpretation of spatial quality differs with each process. A clear definition of spatial quality does not exist.

Spatial quality is built up from three values: 'use' value; 'experiencing' value; and 'future' value (Khan and van den Broeck, ND). This research will focus on the sustainability aspects related to future values and use values of spatial quality.

This study prioritises sustainability as one of the most important focuses to secure in spatial planning. But what exactly is sustainable development?

Sustainability can be seen as one of the quality aspects in area development. This large aspect, involving the whole life cycle, has a broad view on the development.

Bouwfonds Ontwikkeling (2009) distinguishes the following themes that play a part in almost all sustainable developments:

- Ground
- Water
- Urban green
- Nature
- Energy
- Mobility
- Safety and Health
- Identity and history
- Transformation and use of space
- Economic vitality
- Flexibility
- Social vitality
- Operations

Not all aspects can be taken into account in this research. A further narrowing of the aspects will be made in the literature chapter of this research (chapter 3.4).

The most difficult aspect of sustainable area development is the implementation of sustainability. The executive agency, which is obligated to implement public values, is tasked with this implementation.

The decision-making process must be applied, consisting mainly of policies. The highest strategic level makes policies. The lowest operational level applies these policies. However, policies are not simply preserved through the process. Pressman and Wildavsky (1984) show that the process of implementation dominates the outcome.

The roles, the controlling and the implementation of sustainability in area development will be further elaborated in this research.

2.2 Research objective

Theoretically, sustainability has been accepted as one of the most important issues to overcome this decade. However, this importance does not yet have priority in practice.

The objective of this research is to find an optimisation of the application of instruments to enlarge the sustainability in area development. Not only will the used instruments be looked at, but also the application of these instruments and how they could be optimised. The optimisation will try to achieve a better result for sustainability in area development.

2.3 Research scope

In a decision-making process there is always an executive agency, obligated to execute the policies. In the Netherlands this power has been given to the municipality. When looking at area development this is a good start. This research takes a municipality as a case study.

From this point onwards the municipality, and its roles related to the main objectives stated, will be taken as the focus of this research, including the research questions. This will be limited to the authorities that have active involvement in spatial planning within the municipality. The case study will take place in the city of The Hague, where the spatial planning departments involved are DSO[1] and DSB.

The decision-making process will be assessed on its sustainability and where this could be optimised in the process. This process involves phases as early as project planning to building completion.

This research considers optimisation in terms of the instruments available for the municipalities. Also, the application of these instruments will be considered in this research.

This application involves the implementation of sustainability and the use of the different tools available for the municipality.

Laws and regulations changeable by a municipality will be taken into account. Other national made laws will be seen as a given in this research. The laws will be assessed on their effectiveness, however, there will not be a recommendation on how to change them.

In the definition of area development, transformation is also mentioned. However, in this research only the development of new areas will be considered.

1 DSO: dienst stedelijke ontwikkeling. Authority of spatial development
DSB: dienst stedelijk beheer. Authority of spatial maintenance

2.4 Research questions

In order to achieve the research objective, some questions must be answered. The main research question of this research is:

> "How can a municipality optimise the application of instruments in order to achieve sustainable area development?"

In order to answer this main research question, the following five sub-questions will be answered.

Sub-question 1: What instruments can a municipality apply to influence area development? This sub-question will result in general information about area development. This information will be focussed on the municipalities and their abilities to influence area development.

Sub-question 2: What aspects of sustainability are most relevant for the spatial domain within a municipality in area development?
Similar to the first sub-question, this sub-question will generate general information. This specific information will be focussed on sustainability. Also, sustainability in area development and the implementation of sustainability will be assessed.

Sub-question 3: What instruments can be applied by the municipality to influence sustainability?
This sub-question will look at the possible instruments municipalities can apply to influence sustainability in area development. A list of instruments will answer this sub-question.

Sub-question 4: How does the case study municipality currently apply the instruments to influence sustainability?
This sub-question will look at the case study in more detail. The result will answer how the case municipality applies their instruments to influence sustainability.

Sub-question 5: How can a municipality optimise the instruments on sustainable area development?
After assessing how sustainability is influenced by the case municipality, some optimisation options will be explored in this sub-question. In order to answer the main research question, this sub-question will be the last step.

2.5 Research method

Data needs to be gathered to answer the research questions. This gathering will be done with the use of different methods. These methods will be described in this subchapter. Figure 1, at the end of this chapter, is a visual display of the method.

2.5.1 Desk research

The desk research will gather information with the use of online academic search engines. Essential sources for academic literature are Google Scholar and the TU Delft repository. Internal documents of the municipality will be used to enlarge the amount of information. The total desk research will generate better insights on the possible instruments of municipalities and their application. Furthermore, the understanding on sustainability, generally speaking and more specific in area development cases, will be improved. The desk research will provide more knowledge on what has already been researched and will contribute to the understanding of the research problem and questions (Fink, 2019).
The evaluation of the literature should be a summary of the different sources. The literature must be compared to each other, critically evaluated and the sources must be discussed on its knowledge (Western Sydney University, 2017). At the end of the desk research a conclusion will be given combining all found literature. This conclusion will also include a model considering the instruments.

2.5.2. Case study

A case study will be used to find more information through the analysis of an existing case. This practical information will test the conclusion from the desk research. This method will allow the researcher to investigate within a real-life context. Yin (1987) describes a case study as 'an empirical study that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident.' The case study, therefore, is a perfect way to investigate a real-life case on how the municipality handles sustainability in their area development.

In this study the municipality of The Hague will be taken as a case study. The research will be conducted with the collaboration of this municipality. The choice for the municipality of The Hague involved two considerations. First of all, the research should be conducted within a larger municipality. Larger municipalities are more complex and involve more stakeholders in their communication. Secondly, the chosen municipality should want to optimise the sustainability in area development. The research preferably helps the municipality to achieve more sustainable goals. In The Hague the urge for more sustainability is visible and at the same time the municipality has high sustainable ambitions. This makes The Hague the ideal case study for this research.

In order to find the optimisation of the application of instruments used in this municipality multiple in-depth interviews will be conducted. Within these interviews different departments of the spatial domain will be questioned about their work on standard projects and on a pilot project involving the EPA.

2.5.3. In-depth interviews

In-depth interviews will offer a more complete picture of practice. The interviews will be used to gather perspectives on the issue. An advantage of this method is that the provided information is much more detailed than through any other data gathering method. A disadvantage of this research type is that the interview responses might be biased. Effort will be taken to ensure minimal bias in the interviews. Another negative aspect is the time-consuming point. To conduct, transcribe and analyse the results a lot of time will be used. Considering the sample size, the general rule is that when there is repetition in the themes, stories and issues a sufficient size has been reached (Boyce and Neale, 2006).

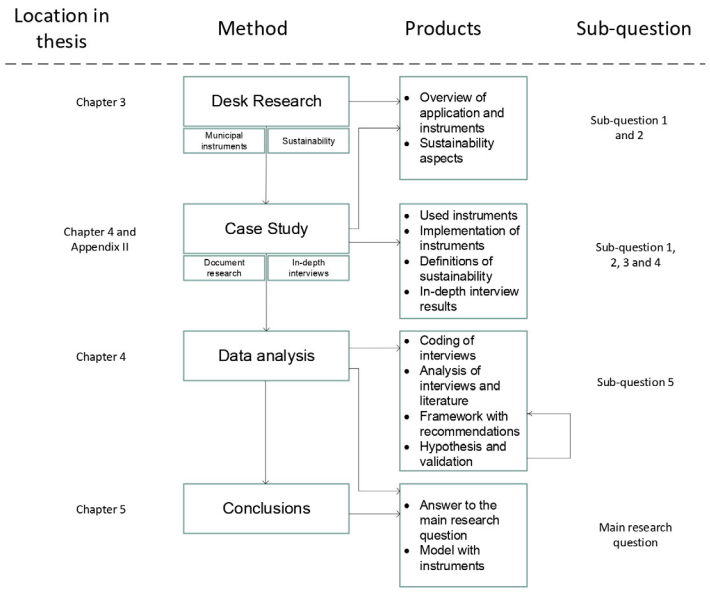
Immediately after the interview the key data will be summarized. Most of the interviews will be captured with the help of memo's and transcriptions (Birks et al., 2008).
The semi structured interview will allow the interviewer to react to answers of the interviewees and be more reactive than with a structured interview. The interview will not be completely open in order to maintain some consistent data of all the interviews. The face to face aspect of the interview will ensure that emotions and body language can be read.
Preferably the interviews are conducted at the workspace of the interviewee, where they are in a comfortable environment. When this might not be the case, the interviews can also be conducted at the TU Delft or in a room at the city hall of The Hague.

In Appendix I an overview of the interviewees and the interview questions can be found. The list of interviewees involves people from almost every department within the spatial domain of The Hague. This involves DSO and DSB. The involved interviewees are directors of these departments, program managers and employees on the work floor.

2.5.4. Analyses of the interviews

The interviews will be analysed through the grounded theory method. First, the interviews will generate quotes, involving the most important aspects of the interviews. These quotes will then be linked to general codes. The grounded theory is an iterative process (Glaser and Strauss, 1967). The linking of the codes to the quotes will also be an iterative process. After re-reviewing these codes, final categories will be made to answer the research questions. The categories will gather the broad range of answers given in the interviews. These categories will then be compared to the theory found in literature. After the first conclusions are found, these will be checked by a second round of interviews with experts. These experts of the municipality will be checking the feasibility of the conclusions. After the validation, one last iteration will result in answers to the research questions.

Figure 1: Research method (own illustration)



The research scope, questions, relevance and method have been explained in this second chapter. As a first step the literature study will be conducted in the next chapter.

Research relevance

In literature a knowledge gap can be found between the process of a public party and the optimal application of this process. (Janssen-Jansen, 2016) At the same time the research in network governance is just starting to develop (Klijn, 2008).

This development in combination with sustainability is a perfect new asset for the literature.

Also, this research will have a practical relevance for public organisations in the Netherlands. This research will give a recommendation on how the application of instruments in a decision-making process can be optimised to gain more sustainability.

Not much research has yet been done towards the optimisation of the process and sustainability within this process. Uittenbroek, Janssen-jansen and Runhaar (2014) encourage other researchers to research cases in order to find a larger understanding of possible stimuli for climate adaptation in cities.

From the municipal perspective, there is a demand for better understanding of their processes and sustainability within these processes. National and international laws require more sustainability, however it is still unclear how. This research will contribute to the understanding of the application of municipal instruments for sustainable area development.

This research contributes to area development and decision-making in two ways. First of all, it identifies all the possible instruments which are available for a public organisation. Secondly, it focuses on the optimisation of these instruments and how this practically could work.

II. THEORETICAL FRAMEWORK

3. Desk Research

This chapter will include the study of literature. Academic literature as well as internal documents of the municipality of The Hague will be used. A framework will be made to be tested in practise after this chapter. This framework will consist of theoretical advice on how to involve more sustainability in area development.
Area development is a complex process. Some more general information of area development is needed to understand the aspects (chapter 3.1). Governmental influence is needed in order to implement all these aspects. How this influence works and the available options need to be understood before sustainability in area development can be discussed. Therefore, this chapter will give an overview of how a government (chapter 3.2) and municipalities specifically (chapter 3.3) should operate.
Afterwards, the focus will be on sustainability (chapter 3.4). A general and a more focussed definition will be given in the next chapter, resulting in the explanation of sustainability in area development (chapter 4).

3.1 Area development

To start, a more clear explanation of area development will be made. As mentioned earlier, area development consists of multiple features. For clarity this study takes the following definition of de Zeeuw (2007) of area development into account: "the art of connecting features, disciplines, parties, interests, and cash flows, in the face of development or transformation of an area". This subchapter will further elaborate on the process of area development (chapter 3.1.1), area development versus plot development (chapter 3.1.2) and will elaborate on the layers in area development (chapter 3.1.3).

3.1.1 Process of area development

The art of area development is never really finished. An area will develop further over the years. However, every area development process will go through several distinguishable phases (Franzen et al., 2011). Figure 2 shows the different phases of area development. This study takes these phases into account, together with one more phase: the pré-phase. This pré-phase comes before the initiation phase and therefore influences all area development, not just one specific development (Kenniscentrum PPS, 2006, van Dijk, 2011).

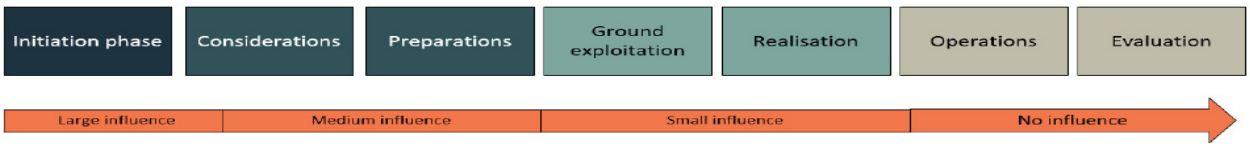


Figure 2: Phases in the decision-making process (own illustration)

3.1.2 Plot vs area development

Considering the initiation phase, different starts can occur. In the initiation phase the municipality can initiate a project of an area development. Also, a private party can approach the municipality with a plan to develop (van Dijk, 2011). This private initiative will be focused on the plot and not necessarily on the area surrounding or involving the public space. This public space development is the responsibility of the municipality, also with a private initiative.

These two options results in a large difference in how the area will be developed. If the initiation starts with a private party mostly the plan will only consider their own plot and the preferred houses or businesses in that small area. However, if a municipality has an initiative for an area development, also the public space will be looked at. This difference in project development and area development is quite important (Vigar, 2009). It is recommended to always look at the area as well as at the plot. Only developing with the focus on one plot will result in an overcrowded public space which has to fit all the other needed features (de Zeeuw et al., 2011). Figure 3 visually shows the difference in plot development and area development.

Figure 3: Plot development versus area development as indicated here in the Laakhaven area in The Hague

3.2 Decision-making process in area development

The process of area development involves private and public parties. The Netherlands has one of the most regulated area developments in Europe (Janssen-Jansen, 2016). The government is always involved in the area's development. This involvement mostly applies to the public area that needs to be developed. The government can influence the decision-making process of area development in different ways.

This chapter will explain how this influence used to take place and what this involves currently. It will explain the historical trend (chapter 3.2.1), today's processes (chapter 3.2.2) and the safeguarding of public values (chapter 3.2.3). After this general information, more focus will be placed on the municipality (chapter 3.3).

The decision-making process within the Dutch municipalities can be organised in different manners, with different roles, steering options, and tools. These aspects will be elaborated in this subchapter.

3.2.1 Historical trend

The government needs to steer the area development. Lots of aspects and stakeholders try to influence the land in the Netherlands and therefore this national steering is needed. The steering needs to make sure the land is optimally used, not scattered and fairly distributed. In the Netherlands this task to secure rightful area development is with the government.

The government has four options to steer. These are either value or result oriented. And are used from the outside to the inside or the other way around (Franzen, Hobma, Jonge and Wigmans, 2011; Klijn, 2012).

- Public administration is value oriented and faced from the inside to the outside. This type must be seen as the traditional steering type.
- New public management is result oriented, faced from the inside to the outside.
- Network steering is result oriented but is faced from the outside to the inside.
- Social resilience is value oriented and faces from the outside to the inside.

In the last couple of years, a trend can be seen from traditional, top down, management towards a more network type of steering. This trend has been made visual with orange arrows in figure 4.

However, traditional management is needed in some cases. In traditional management the government takes the lead and steers with a strong leadership role. This results in an effective way to achieve the goals of the government. However, this steering mechanism does not leave much room for other parties to be involved in or influence the process. In a democracy, such as the Netherlands, this type of steering might not be desirable. However, to accomplish certain aspects the traditional steering mechanisms could work. Especially if they are not automatically implemented by the market. Figure 4 shows the change in government steering. A more detailed explanation of this change in style can be found in Appendix II.

In complex situations the network type of steering helps to combine the scattered interests in projects by combining them. These complex situations lead to unknown processes with the use of network steering. In case the municipality surely wants to develop an area with certain requirements, this network type might not work as efficiently as proposed in literature (Franzen, Hobma, Jonge and Wigmans, 2011; Klijn, 2012).

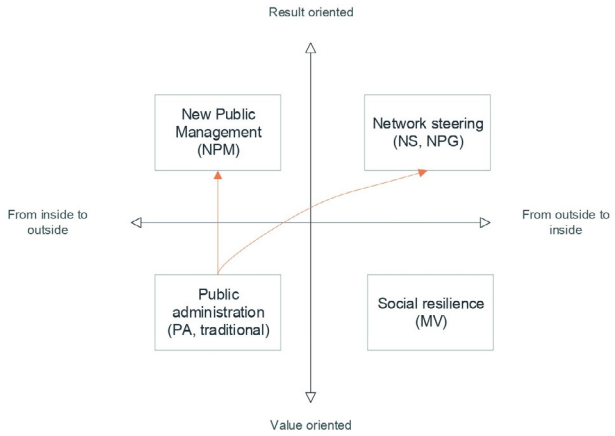


Figure 4: Trend from government to governance (Klijn, 2012)

3.2.2 Interaction in the network

Earlier this study stated that the decision-making process of area development is not done by one single party but consists of multiple dependent actors in a network. Next to this, the initiation of the process does not always come from the public party, but often from an external stakeholder. The main role of the public party in area development projects is to facilitate and collaborate. They do not row but steer the boat. Obstructions need to be avoided and the involved actors need to stay satisfied. All this calls for a dynamic process which keeps evolving.

The interaction between the actors can be described with the Round model of Teisman (2000). In complex decision-making, such as area development, the decision-making is never finished. An area is never done developing, it is only fixed for a period of time. Therefore, the decision-making process must be seen as a process with different rounds.

Each round will lead to interactions between different actors. The result of the decision-making process is a mutual alignment of interests. A good result is not just depending on the individual decisions but is about the interaction between the decisions of the different stakeholders (Teisman, 2000). Figure 5 shows the process rounds in the round model.

This study will use the Round model of Teisman as a standard for the processes in area development. A public party should apply this concept in order to achieve the intended, collaborated, results. As Pressman and Wildavsky (1984) stated: networks are needed for implementation to function accordingly. The use of the round model could possibly benefit this implementation (Franzen et al, 2011).

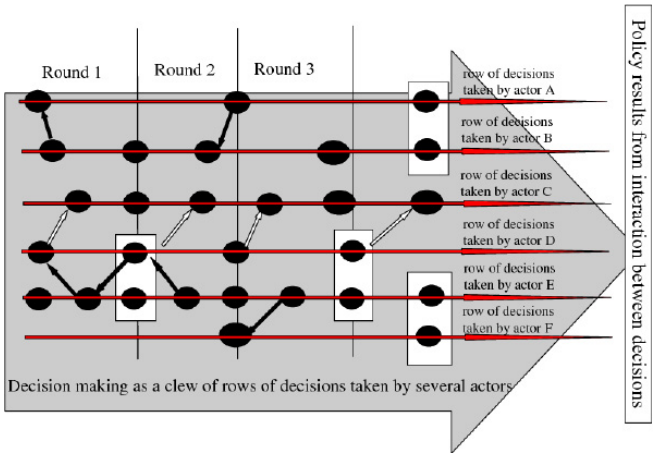


Figure 5: Round model of Teisman (2000)

3.3 Decision-making by a municipality

In order to examine the decision-making process of a public party, one specific Dutch municipality will be taken as an example. The municipality of The Hague, a large city in the Netherlands, will be used in this study. This municipality has a lot of internal and external actors involved in their decision-making process. At the same time The Hague strives for sustainable development. This makes it an excellent example and case for this study. This subchapter will explain the roles within this municipality (chapter 3.3.1), the steering in a municipality (chapter 3.3.2) and the tools of this municipality (chapter 3.3.3).

3.3.1 Roles of a municipality

The municipality is organised in different sectors (see table 1). Three different levels can be diminished in every municipality. First there is a strategic level, which provides frameworks of the total policy. The second level is the tactical level, which can be considered as policy makers.

Lastly there is the operational level, at this level the implementation of the frameworks and the policies take place (Zwaal, 2013).

As a fourth level the controllers should be added. This level checks the other three levels and it does not influence the decision-making process as such. However, this last level does check if the public values in the decision-making process are met. The fourth level is not considered as a

Table 1: Levels of a municipality (own distinction)

Level	Actors involved	
Strategic level	Local council	Controlling level
Tactical level	Alderman	
Operational level	Civil servants within the departments	

decision-maker but is important in the process as well. Table 1 shows the different roles of the municipality of The Hague.
These roles must be seen as the roles within the whole muncipality. Within a specific project(team) the strategic role means something different than how this study takes this role into account.

In order to steer an area development process, it is important for the municipality to understand not only the process, but also the different collaboration options, the municipal wishes and their possible instruments (Van der Veen, 2005). The tools which are available can impact the outcome of the process. The use of these tools can be steered in a desired direction. Therefore, the possible tools of a Dutch municipality will be examined next.

3.3.3. Tools of a municipality

A municipality has multiple tools available to regulate their spatial planning. One important steering mechanism is the land policy, which gives the municipality multiple options. Appendix III will give the total overview of the land policy options. The most important aspect is the difference between active- (municipality owns the land) and passive- land (municipality does not own the land) policy. Only active and facilitating policies are used in practice. The municipality is either the owner of the land or the facilitator for the (private) owners of the land.
Only these two options are considered in this study. Passive land policy will not be considered, because the municipality has minimal to zero influence in this option. Current area development always need collaboration. Therefore, the passive land policy is not commonly used.
Literature has given different distributions of municipal tools (Verheul, Daamen, Hobma and Heurkens, 2017; Heurkens and Adams, 2015). This study considered these distributions, found in Appendix IV.

The following list of tools will be used in this study:

- **Soft instruments**: a municipality can use soft instruments to convince external parties to implement more sustainability than minimally needed. Using this soft instrument requires the other party to be willing and enthusiastic about sustainability. At the same time soft instruments can also be used to educate the employees. An example of a soft instrument is the training of personnel to convince external parties to implement more sustainability.
- **Covenants:** these are agreements with external parties and the municipality to both achieve certain goals. This can also be applied to sustainability. Positive effects of covenant is that both parties can use common information on a complex topic. This can for example result in the fact that not each municipality has to create a new climate adaptation plan.
- **Legal instruments (public / private)**: a distinction needs to be made between public- and private legal instruments. Public legal instruments can only be used by public organisations, like local governments. This instrument gives the municipality publicly more power than any private organisation can have. Next to these public agreements, a municipality can also use private legal instruments. In this case a municipality can make agreements just like any other private party can make. The use of public instruments by a municipality is preferred. An example of a public legal instrument is the land use plan. An decleration of intent can be seen as an example of a private legal instrument.
- **Financial instruments:** a municipality has public money available. E.g. this resource can be used to build or maintain roads. But also, sustainability can be optimised with the use of financial instruments. Budgets and sustainable funds are examples of financial instruments. These instruments can optimise sustainability by stimulating the investments. Important financial difference is energy lowering measures and non-regaining investment. In the first the investment is earned back during the lifetime of the building. In either scenario

high investments are necessarily upfront.

- **Municipal instruments (active, passive):** the municipality has some specific instruments available only to them. For example, a municipality must provide a land-use plan for the whole city. These instruments must also involve sustainable aspects. As earlier explained, there is a difference in the use of active or passive land policies, which create other municipal instruments.
- **Sustainable instruments:** some instruments that the municipality can use solely benefit sustainability. E.g. the NIB from the municipality of The Hague. This instrument makes sure that a developer takes nature fully into account with the development.

For this study two extra types of tools are added. Also, specific policies of The Hague will be taken into account, because this study is conducted in this specific municipality.
Other separations lack the involvement of soft instruments as well. Tools such as education, networking and knowledge preservation, can support more sustainable area development. A more extensive list of instruments can be found in Appendix V.

Public and private law should be used separately, according to internal documents of the municipality of The Hague. The advice (completely visible in Appendix VI) of the internal documents is to use public law whenever possible. Private law has its restrictions, especially regarding safeguarding. Sustainability is one of the quality topics for which the municipality cannot simply ask anything. The national building decree restricts municipalities to ask anything. However, some options are still available to steer towards more sustainable than general. Appendix VI shows these options and further down this study these opportunities will also be discussed.
Legal instruments can change over time. New legal instruments will become mandatory for the municipality to the revision of the environmental and planning act (EPA). This new legislation will most likely be implemented in 2021. The changes will be further elaborated in this next subchapter.

3.3.4. Revision of Environmental and Planning Act (EPA)

Area development is filled with changes over time. Legislative changes in one example of this fast-changing environment. An important example of this legislation change is the revision of the EPA, which will most likely be introduced sometime in 2021.
The main change with this new legislation is the bundling of previous laws and regulations for space, living, infrastructure, environment, nature and water. This should lead to an integral approach of the spatial domain. This approach will become a balance between protecting and utilizing this domain. The plan of the EPA should make the process more comprehensible for governments, market parties and citizens. The amount of laws will be reduced and more space will be given to initiatives.
For the municipalities there will be more options to differentiate for each district. This can generate more flexibility. This flexibility does, however, ask for more time and resources.
The integral approach of this new legislation will include more active participation of stakeholders. The involved stakeholders include the civilians, companies, government directors and social organisations. An extensive stakeholder analysis for the municipality can be found in Appendix VII. As a short conclusion the stakeholder analysis showed that many stakeholders are involved. A PI-grid has shown that most of these stakeholders have a high interest in the developments of the municipality. Some also have high power to influence the developments. This leaves it necessary for the municipality to include most of the stakeholders in the area development.

Participation must be comprehended, before a municipality can actively use participation in their planning process. In 1969 Arnstein proposed a ladder of participation to show the significant gradation in citizen participation (see figure 6). This model shows the different levels to the extent participation can take place. The top three levels of this ladder must be used, with the new EPA. Placation mostly takes place in the municipalities at this moment. There is some room to participate, however the municipality always keeps the upper hand in negotiations. The EPA strives to have at least a degree of citizen power, with partnerships. Complete citizen control might not be possible in area development. Mainly because the municipality must always safeguard the public values.

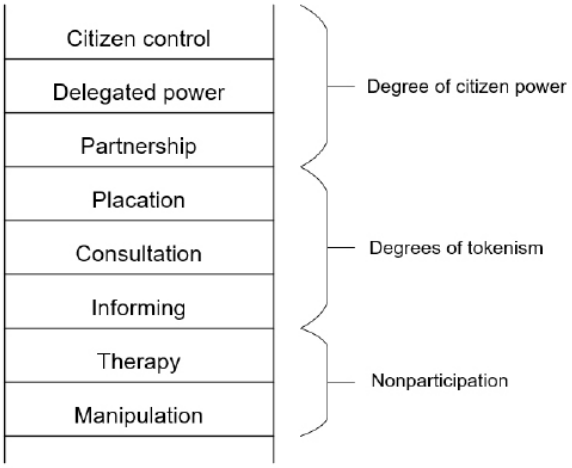


Figure 6: Eight rungs on a ladder of citizen participation (Arnstein, 1969)

Also, the instruments of the municipality will change with this new legislation. The core instruments of the EPA are (Ministerie I&M, 2019):

- Environmental plan: a coherent strategic plan about the physical environment
- Program: a combination of draft plans and measures to achieve environmental values in the spatial domain
- Decentralised regulations: municipals environmental plan, waterboards regulations and the provincial environmental rules. This involves the total of general rules and obligations for permits
- Environmental permit: initiative should obtain this permit for the activities, via an application
- Project decision: general arrangement involving projects with a public interest according to the 'faster and better' approach

The main change due to the new legislation is the urge for an integral working method. The participation and the stakeholder involvement are the start for a total integral working process. In integral area development all stakeholders are involved, all interests are integrated and a collaborative solution will be found.

This subchapter could conclude that a municipality has a broad spectrum of possible roles, structures and tools. A municipality needs to make a good consideration on how each of these instruments will be used in practice.
New legislation might ensure more possibilities for sustainability in area development. There will be new legislation available in the near future. This should result in an easier and more organised progress, including better participation. An important benchmark of the participation approach is the broad implementation of sustainability in the spatial domain (VNG, 2018; Hobma, personal communication). Figure 7 gives an overview of the changes due to the new legislation.

The goal of this study is to find the optimisation for sustainability considering the tooling, governance and organisation. However, sustainability as a concept has not been researched yet. Therefore, more information on sustainability is needed. The next chapter will go further in depth about sustainability.

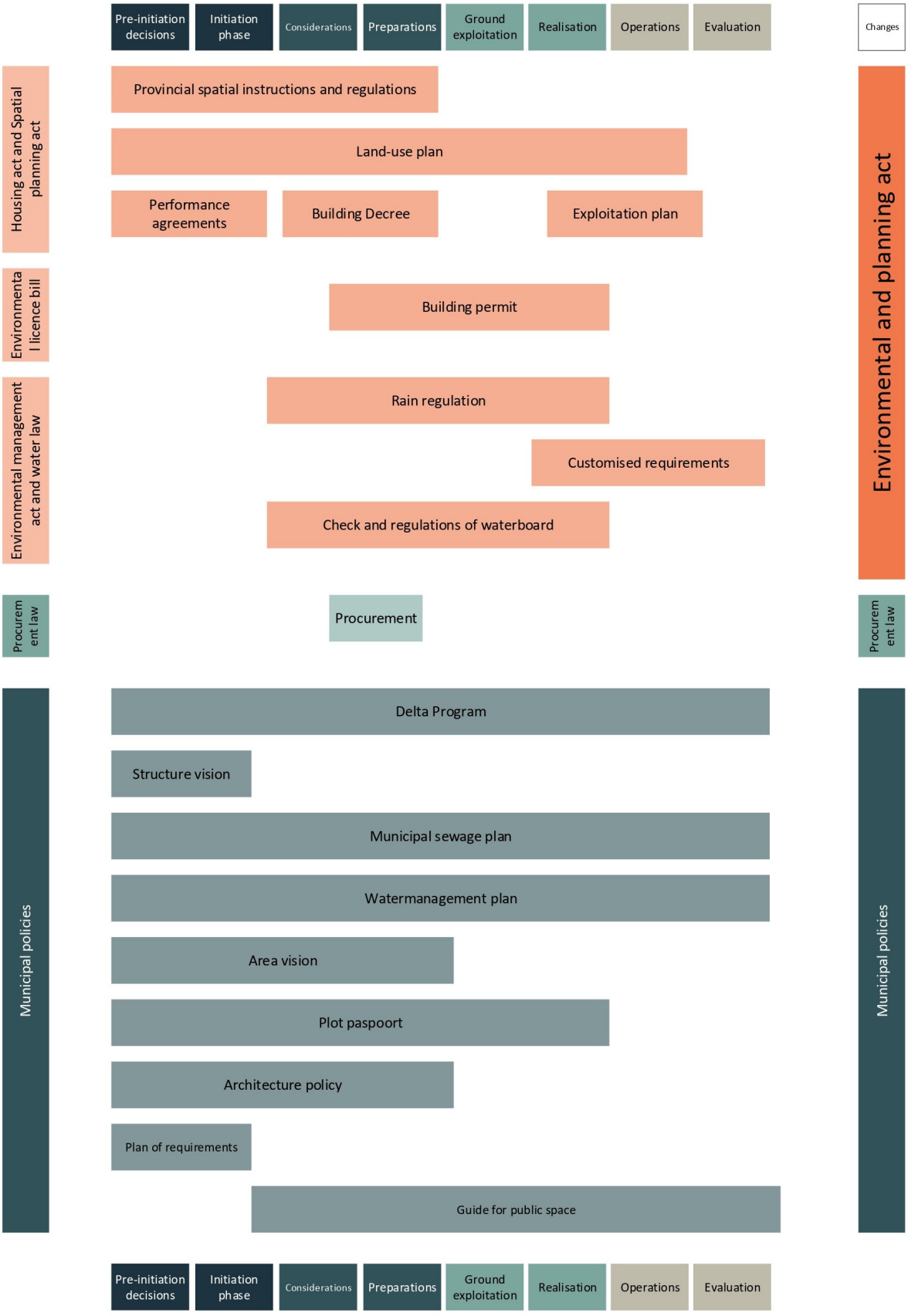


Figure 7: Law changes due to the revision of EPA (Ambient, 2019)

3.4 Sustainability

While a common definition is widely adopted, still the interpretation of sustainability has a broad and often diverging scope, with different interpretations and delimitations. This subchapter will zoom in on sustainability and will focus on the most important aspects of sustainability. First a short historical background (chapter 3.4.1) will be given, together with the definition of sustainability (chapter 3.4.2), in general and for the municipality of The Hague. Sustainability aspects used in this study will be explained (chapter 3.4.3), followed by a list on how to optimally integrate these.

3.4.1 Historical background

The first known principles of sustainability were from the Club of Rome. Meadows et al., (1972) wrote about these sustainable principles. The main purpose of this report was to show that the exponential growth of the earth would collapse at some point in time. They concluded that in order to prevent this collapse from happening a global equilibrium must be found. This introduced the finite supply of resources and the connection between economics and population.
Later, the social aspect was connected to the economics and population when talking about sustainability.
In 1987 the United Nations Brundtland report provided one of the most used definitions of sustainable development:

> "to meet present needs without compromising the ability of future generations to meet their needs"

The concept of Elkington (1998) of Planet, People and Profit, agrees with the above-mentioned sustainability aspects. This concept stressed the importance of a harmonic cooperation between the economic, environmental and social aspect of development. If a development is sustainable, the 3P's are in an equilibrium.

All these different terms and definitions of sustainability are used simultaneously. The missing link in all these sustainable definitions is the overlap between countries. In order to achieve common sustainable development goals around the world, a global climate top took place in 2015. There an agreement was signed to limit global warming to a threshold of 2°C by 2021 (COP21, 2015).
A global compass has been made to deal with the current world spread challenges in the recent years. The Sustainable Development Goals (SDG's) of 2030 must provide a global urge and agreement to work towards these 17 development goals. The importance of the SDG's has two reasons. First, the SDG's will make sure more integration is implemented on sustainability. Secondly, the global goals will ensure one consistent measurement and interpretation of sustainable development. This global urge and agreements make the SDG's a good start of sustainability for this study. Therefore, the SDG's can be seen as the starting point of this study.

3.4.2 Definition of sustainable development

A clear definition of sustainable development is still needed for this thesis. This study will consider the SDG's as well as the People, Planet, Profit concept. This results in the following definition of sustainable development:

> "Having enough for all, forever"

This study will focus on the SDG's, in order to steer on more specific goals. However, some of these goals are almost achieved in the Netherlands. At the same time not all the SDG's are completely applicable for the physical domain.
According to the VNG (2018) there are seven SDG's which are applicable to the physical domain, namely (see figure 8):

- SDG 6: Clean water and sanitation
- SDG 7: Affordable and clean energy
- SDG 11: Sustainable cities and communities
- SDG 12: Responsible consumption and production
- SDG 13: Climate action
- SDG 14: Life below water
- SDG 15: Life on land

Figure 8: Sustainable development goals of the spatial domain (own illustration)

The use of the SDG's also involves some limitations. One limitation of the SDG's includes the lack of cohesion between the different goals (Smits and Eding, 2015). This study will try to solve this by integrating some aspects into one.

To have more integration between sustainability aspects, the ambitions of the case municipality will also be taken into account. The sustainable ambition of The Hague consists of four elements (see figure 9). These goals are closely linked and will overlap at some points (Gemeente Den Haag, 2019a). These four aspects will be focused on by the municipality for the upcoming years. This focus also applies to the area development processes.

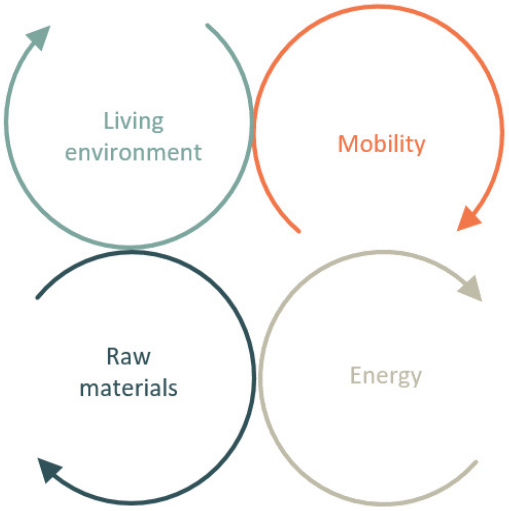


Figure 9: Sustainable goals of the municipality of The Hague.

The goals of the municipality overlap with the SDG's at some points. Energy and raw materials overlap with SDG7 (clean energy) and SDG12 (responsible innovation). Living environment is a more complex aspect involving multiple SDG's, 6 (clear water), 11 (sustainable cities), 14 (life below water) and 15 (life on land). For the mobility aspects of the municipality of The Hague SDG 11 (sustainable cities) comes closest, however this does not overlap completely.
The municipality uses its policy documents to express their ambitions, as well as the four sustainable goals.
In some of the policy documents of the municipality the SDG's can be (partially) found. Table 2 shows an overview of the SDG's in some of the Municipal documents.

The municipal goals are typical goals for The Hague. All the municipalities in the Netherlands have the free choice to consider their sustainable ambitions. Other larger cities in the Netherlands have comparable sustainable goals as The Hague. In Appendix VIII the sustainable goals of some other cities are mentioned. Most of these goals have an overlap with the goals of the municipality of The Hague.

3.4.3 Sustainable development in area development

As previously shown, the integration between the different use of sustainability is important. The lack of integration was one of the reasons to introduce the SDG's. At the same time, multiple SDG's are used within municipal policies. Due to the time constraint, not all SDG's can be taken into account in this study. Therefore, some goals will be combined into one and some aspects will not be elaborated further.
Due to the overlapping aspects, this study will consider sustainable area development to at least involve the following four sustainability items:

Energy
We must ensure we avoid using fossil fuels in the near future. For the energy consumption only green energy should be used. The energy consumption should be considered during the construction and during the execution phase.
This new way of using energy calls for a transition. In this transition the whole industry should become energy efficient. In policies the Energy Performance Coefficient (EPC) is mostly used (RVO, 2020). This energy performance measurement is broadly used in policies and within the building industry. Also, national laws involve the EPC. It is agreed to minimally have an EPC of 0,4 in housing in the Netherlands.
Within 2021 all municipalities should have planned the energy transition. This makes this subject quite important to most municipalities. A lot of resources have been set to research this energy transition.

Table 2: SDG's in Municipal policy documents

Policies → SDG's ↓	Policy document 'sustainability'(main used policy)	Circular The Hague	NIB	Eyeline, Skyline	Agenda for housing	Housing vision	Agenda green for the city
SDG 6							
SDG 7	X			X	X	X	
SDG 11	X			X		X	X
SDG 12	X	X		X	X		
SDG 13	X				X	X	X
SDG 14	X		X	X			
SDG 15	X		X	X		X	X

To support this transition, integrated policy making is necessary, next to awareness and financial steering instruments like investment (Stoeglehner, 2020).
In the Hague there is a separate department made for the energy transition. This department is placed within the DSB authority.

Climate adaptiveness
This aspect includes having a living environment that is future-proof (Williams, Crespo and Abu, 2019). It should be a nice living environment, with attention to the environment, water and heat waves (Siders, 2019). Nationally there is a climate adaptation strategy and currently the municipality is creating a city-wide strategy. This aspect of sustainability is most unclear in its definition. A lot can be seen as a good living environment. Therefore, a clear definition of this aspect is necessary.
In the Hague the department of S&P mainly works on climate adaptiveness. S&P is one department of the DSO authority.

Mobility
Also, sustainable mobility should be part of a sustainable development. This means having sustainable mobility with low to zero emissions (RWS, 2020). Sharing mobility is one alternative to lower the emissions. Also, more bike riding and walking can be seen as sustainable mobility.
Mobility has its own department with The Hague. This department is part of the DSO authority.

Circularity
Circular economy is mostly used with this term. The overall aspects are to reuse materials and to make development future-proof (Schroeder, Anggraeni and Weber, 2019). Future-proof can involve either reusable or changeable materials. This sustainability aspect currently has the least number of national rules or guidelines.
In The Hague only a few employees work towards more circularity. These employees all work within the DSB authority.

The sustainable aspects are shortly explained. However, some more information and tips can be given for each of the aspects. This can be found in extensive elaboration in Appendix IX.
Between the four different sustainable aspects there is some overlap. For example, within sustainable mobility the sharing of a car can be placed. However, the sharing of materials can also be seen as part of a circular economy.

These different aspects of sustainability are of importance in area development. However, the implementation of sustainability aspects continues to be a problem for municipalities (Runhaar, Driessen and Uittenbroek, 2014). The local governments are urged to include the environment into their policy documents, plans and budgets. To effectively implement sustainable development, mainstreaming is seen as one of the key mechanisms (Nunan, Campbell and Foster, 2012). Mainstreaming helps with environmental policy integration. The more climate adaptation is integrated and linked in policy documents, the higher the chance the region will become climate proof (Uittenbroek, Janssen-Jansen, 2013). This integration must be done during the whole development process.
Mainstreaming can be measured with five factors (Uittenbroek, Janssen-jansen and Runhaar, 2013; Schutte, 2018):

- Inclusion - to what extent is sustainability involved in municipal policies?
- Consistency - to what extent is there cohesion between the different municipal policies?
- Weighting - to what extent does sustainability have priority in area development?
- Reporting - to what extent are sustainable strategies followed and reported?
- Resources - is there enough money, knowledge and time available to implement sustainability?

Mickwitz (2003) added the fifth factor to the list. This study will also consider this last factor. It will assess these five questions on the integration of environmental aspects. The four mentioned sustainability aspects will be considered.
A first start to show the consistency of energy and climate adaptive policies is made visual in a scheme (see Appendix X). This will be further elaborated later in this study.

3.5 Conclusion of the theoretical framework

Theoretical information has been gathered on the topics involved in area development. First, area development, including its process, has been explained. Also, some general information about decision-making process in the Netherlands has been given. This decision-making has also been explained specifically for a Dutch municipality. Certain tools have been listed that can be used by any municipality. Besides this process, also sustainability as an aspect was explained. The four most important sustainable aspects in area development has been further examined. Main problem for sustainability is the implementation of these aspects.

To further conclude this theory, the following chapter will provide a conceptual model, based on the theoretical framework. This model shows the optimal way of area development, according to the literature.

4. Conceptual Model

Literature has shown how sustainable area development should be done. This subchapter will provide an overview of this literature.
The objective of this thesis is to find the optimisation of the application of instruments of a municipality. This theoretical framework will include the tools of the municipality (chapter 4.1) and the application of these tools (chapter 4.2). This application is mostly done with the steering options of a municipality. First, the found information about the tools will be explained.

4.1 Instruments

A municipality has a broad range of available tools which need to be optimised. The municipality should involve all instruments available. These instruments will be shortly described.

- **Soft:** theory tells that soft instruments should not be overlooked. These instruments can help to achieve sustainability goals.
- Covenant: covenants can support collaboration between two parties. Mostly these instruments are agreed upon with two public parties.
- **Legal:** legal instruments can cause friction if not correctly applied. The difference between private and public law should be clear and the use of either of them should be carefully considered. A preference has been found towards the use of public legal instruments.
- **Financial:** financial instruments should be sufficient. Without enough financial support, it is impossible to achieve the four sustainable aspects in the area development.
- **Municipal:** municipal instruments are the perfect start to implement the four sustainable goals. These should be clearly described and consistently used in the municipal policy documents. Awareness in these instruments is very important.
- **Sustainable:** sustainable instruments can be quite useful to support sustainable ambitions.

Most important about different tools is the correct use of the instruments. The implementation of different (in this case) sustainability aspects in these tools should be optimised. This implementation can be assessed with the use of mainstreaming literature, which describes the following five factors that should be ensured:

- Inclusion: sustainability should be included in all Municipal policies
- Consistency: within these policies there should be consistency in how sustainability is involved
- Weighting: sustainability should have a high priority in area development
- Reporting: there should be a good evaluation about sustainability in developments, in order to improve the policies
- Resources: there should be enough resources available, like finance, instruments and personnel

In order to reach a conclusion about the instruments of the municipality a model has been made to overview all the possible instruments by each department, in each phase of the process. This model includes all the possible tools of a municipality. This model is partly based on the desk study and partly on internal documents of the municipality of The Hague. The model is made to show which instruments are used by which department in which phase of an area development process. This model consists of two options: either active land policy or facilitating land policy.

Example of an municipal instrument

E.g. one active municipal instrument is a NVU. This instrument has multiple functions. For sustainabilty, the most important fuction is the determination of the municipal ambitions and preferred approach to develop the area. A NvU functions as an integrated translation of all the policy documents to a specific area. Also some opportunities of the area are described in the NvU, which should include sustainability.

Figure 10: Phases in the area development process of a municipality

The model consists of two axes: horizontal and vertical axes. The horizontal axis describes the phases of the process. These phases can be found in figure 10.
The vertical axis of the model describes the authorities and departments involved in area development. These departments are specifically used in The Hague. Only the involved departments in area development are included in the figure. Other departments might provide input, but this involvement is too small to include in the model. Figure 11 shows the vertical axis of the included internal parties.

Strategic level

Tactical level

Operational level

Direction DSO/DSB
DT & DT+

DSO

Project management

Land administration

Plan economy

Urban development and planning

Housing

Economy

Mobility

Permits and supervision

DSB

Policy department

Energy transition

Figure 11: Included parties in area development

A municipality can use the six previously described instruments. For these six instruments, shapes were created to use in the model. The different shapes represent the different types of instruments a municipality can use (see figure 12). Some instruments, the policy documents mainly, are not made within just one department. For visibility these policies are set at one department. However, it must be mentioned that all the policy documents are written with the use of other departments. At the same time some of the instruments will be used throughout the whole process but are only mentioned in one or two of the phases. This is true for soft instruments and covenants.

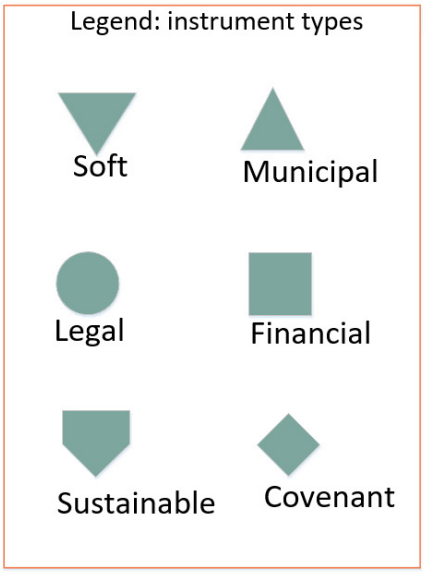


Figure 12: Legend of the different instruments used in the model.

Combining the horizontal and vertical axes with the types of instruments, results in the model. This model, given in figure 13, shows all the possible instruments of the municipality of The Hague, for each party in each phase of area development.

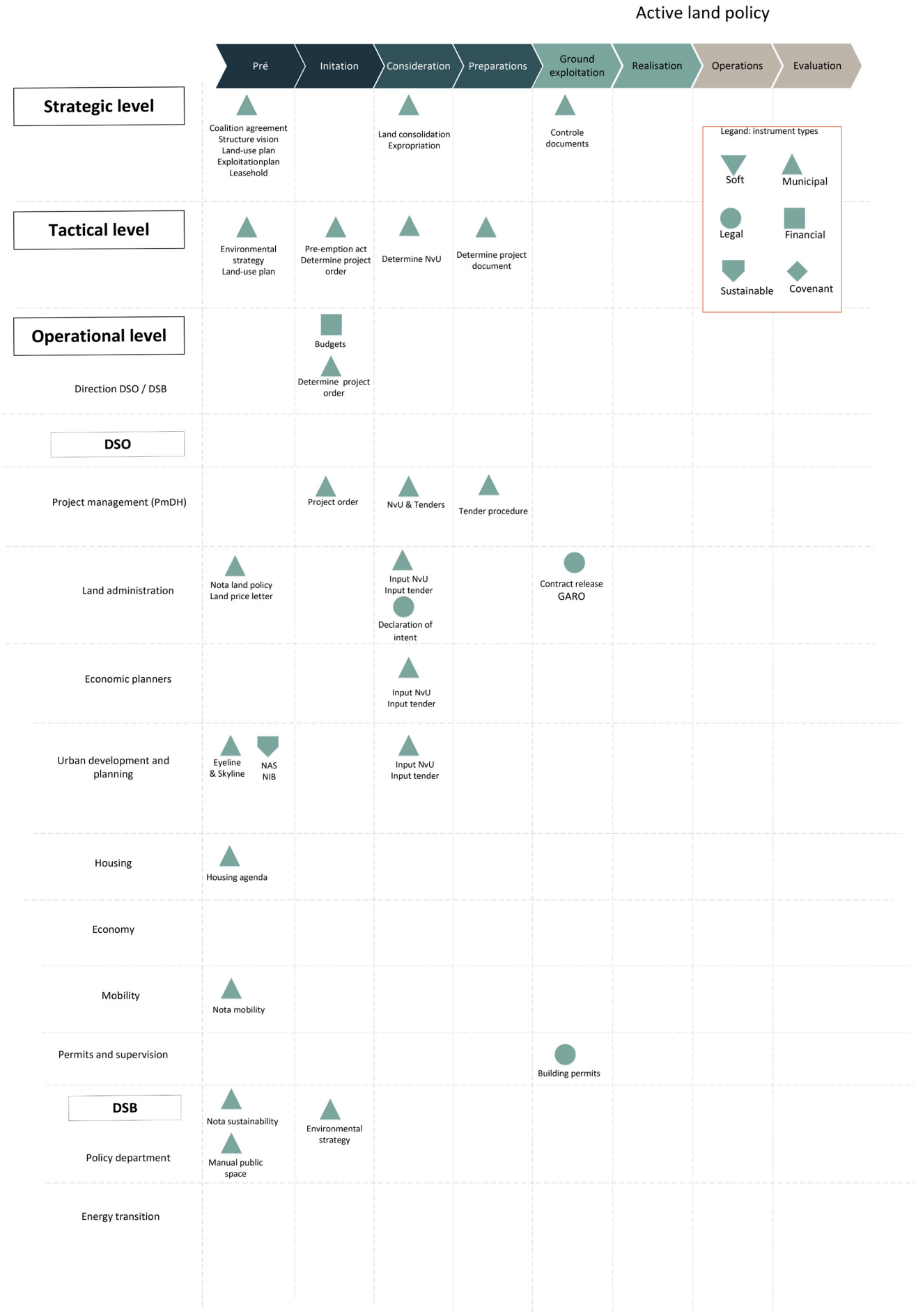


Figure 13: conceptual model of the instruments of a municipality

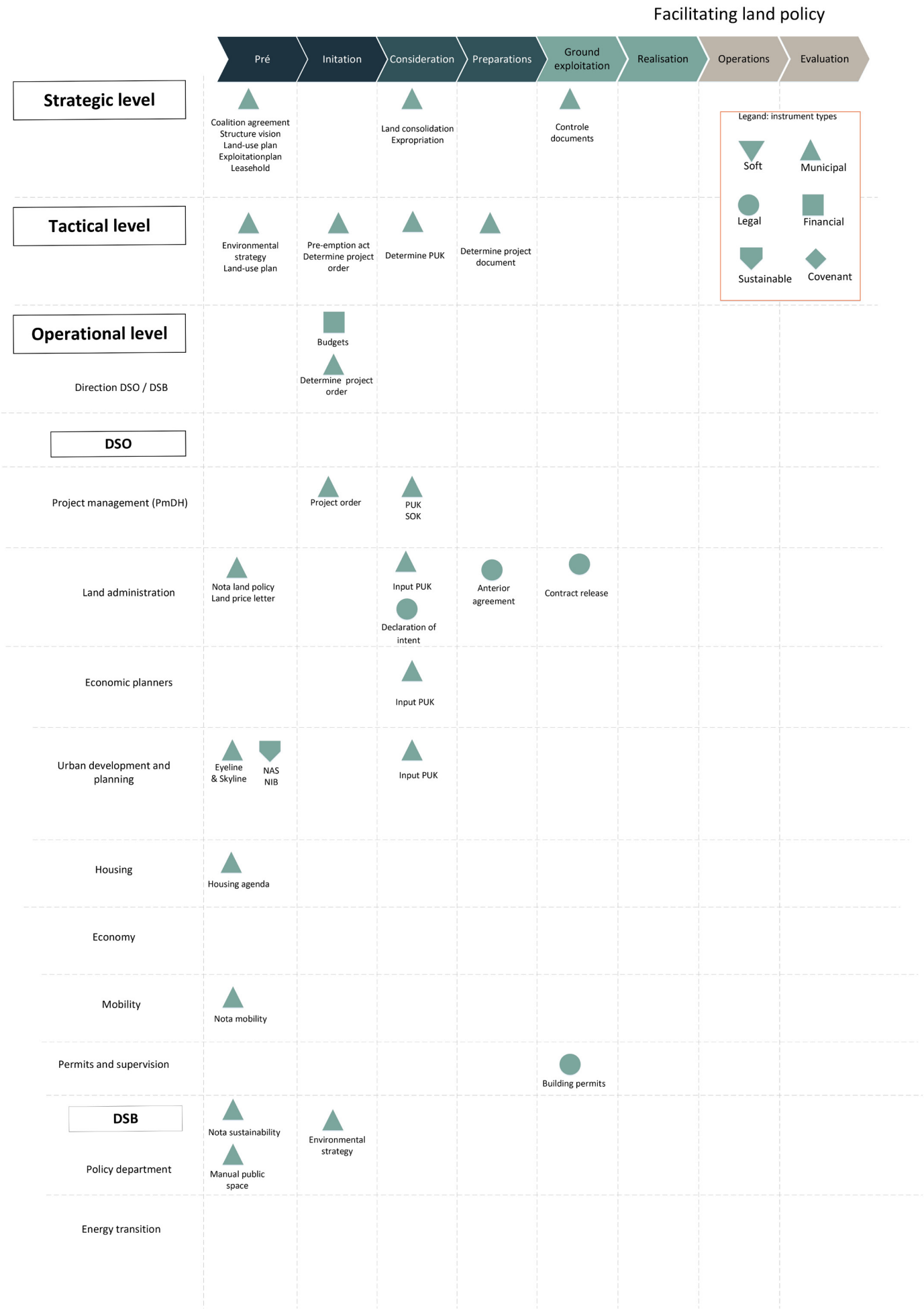


Figure 13: conceptual model of the instruments of a municipality

4.2 Application of the tools

Not only the tools of the municipality can influence the process of area development. Also, the way the tools are used will influence an area development. Literature showed that the type of steering, or governance, can also support sustainability. In this theoretical framework also takes general governance advice into account. A short overview of the advices on behalf of governance of a municipality will be given

There is a need for network governance and partnerships. These partnerships are key in a network collaboration. The Round model of Teisman could help to see the arenas of actors and their influence in the different rounds of decision-making. A network could also help to react to external changes. A good result in area development, thus sustainable, cannot depend on the interest of one single actor.
The steering can also be done in a traditional way as a governance style. This leaves more room for the municipality to steer in a strict way towards their most important public goals. This traditional way of steering should only be used when the market parties do not automatically implement these goals. Strict goals can be made by the municipality, to steer in this traditional way.
Optimally, a municipality uses all types of steering in specific situations, involving the whole broad range of options. The type of steering should be unique per project. The municipality must optimise the possible roles within their land policy. Preferably active land policy is used.

Furthermore, the municipality should strive for area development instead of small or single plot development. The bundling of opportunities will ensure a better result for area development instead of plot development. Also, the implementation of the tools will be easier in larger area development. For example, the financial options are larger when developing a larger area.

4.3 Conclusion of the conceptual model

Optimisations for the tools and the governance of a municipality has been given in this conceptual model. Figure 13 shows a model of the different instruments that can be used by a municipality, in each phase of the process, by each department.

The use of the tools, the model and the general governance information together completes this theoretical framework. However, this theoretical framework should be checked in a practical field. Therefore, the next chapter will further elaborate on the perspective of practice and how sustainability is involved in the area development within the municipality of The Hague. Also, more input for the model will be provided by practice.

III. EMPERICAL RESEARCH

5. Case Study Results

The theoretical framework has been provided in the previous chapter. In order to answer the research questions a practical perspective needs to be added to the data. The theoretical framework will be used as a lens to explore the application of the instruments in practice. The aspects mentioned in literature will be tested in practice, with the use of interviews. First the interview design will be explained (chapter 5.1). After the design, the most important results of the interviews will be discussed in chapter 5.2, concluding the results in chapter 5.3.

5.1 Interview design

The literature has provided a framework for sustainable area development. However, the questions remain how this is done in practice. Therefore, in-depth interviews will give more insights on the workings of the municipality of The Hague.

The advice found in the literature will be tested with the use of the interviews. In order to test the literature, the interview questions will be related to the literature aspects. In Appendix I, all the interview questions can be found. Furthermore, a picture shows the set-up of the interviews. All interviews have been recorded and transcribed, for full access the researcher can be contacted. The transcripts of the interviews can be found in Appendix XI.

The questions revolved around multiple topics. Due to the semi-structured nature of the interview, not all interviewees were asked the exact same questions. However, the discussed topics were always the same. The types of instruments used and an empty model were explained the same way in each interview. The interviews focussed on the decision-making process. The interviewees were asked to fill in an empty model about their work. Furthermore, the connection with other departments was discussed. The interviewees were also asked to indicate which instruments they could use in the same model.

Interviewees were asked what instruments were obstructing sustainability in area development were. They were asked whether the obstruction was caused by instruments of other departments or other involved parties. If applicable, the changes due to the EPA were walked through as well. The changes in used instruments and what could be challenging was discussed. Inclusion and consistency have been tested by asking the interviewees their definition of sustainability.

Throughout all the interviews the main topic was sustainability, therefore a lot of interviewees discussed that. At first the main aspects were seen as energy and climate adaptiveness. However, the interviews have shown that these two aspects of sustainability are too narrow. Therefore, the four different aspects of sustainability (given in chapter 3.4) are considered when analysing the interviews. The focus will not solely be on energy and climate adaptiveness anymore. However, some of the interviews might be biased towards these two original topics.

At the end of the interview the interviewees were all asked about opportunities, if they see any, for more sustainable area development.

In total fourteen interviews were conducted over 10 different departments within the municipality of The Hague. Figure 14 shows the different departments which have been interviewed for this study.

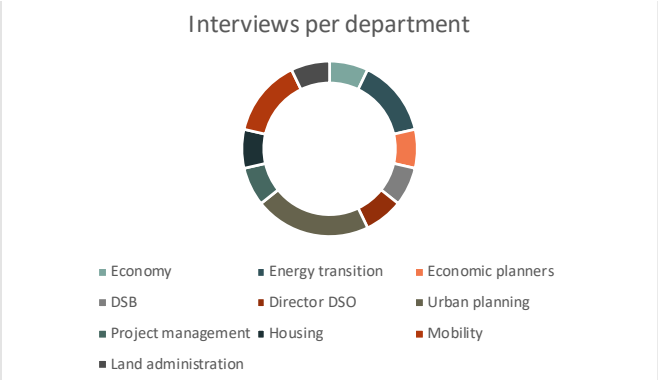


Figure 14: Departments in the first interview round

Table 3: interview analyses coding[1]

Coding 1	Sub coding	Times mentioned
Balance	-	19
Instruments	Total Legal Financial Municipal Soft Covenant Empty	150 38 21 18 37 17 21
Phases involved	-	57
EPA	-	93
Sustainability definition	-	49
Collaboration	-	50
Interaction	-	47
Organisation	Total Profiling Steering Sustainability Area development Department	107 12 53 11 15 16
Evaluation	-	11

The interviews have been transcribed, in order to minimise the loss of data. The transcribed interviews have been put into quotes and were combined afterwards. In order to combine all the quotes from the interviews, codes were created. These codes represent the main topics found in the literature review. All the quotes from the different interviews were given a code. Table 3 shows the coding which was given to the quotes of all interviewees. The total coding information can be consulted in Appendix XII. Not all the gathered information is needed to for this study. However, some remarkable subjects were discussed with the interviewees. In Appendix XII, the total of the quotes will be explained. This chapter will only consider the important quotes to answer the research questions of this study.

The coding was an iterative process. The codes itself changed, during the coding process. After the first coding round, some additional codes were needed in some cases. The second round divides the largest groups of codes into smaller groups. These smaller groups of codes were necessary to generate a conclusion on all topics.
Before comparing the interview results to the literature results, an overview of the interview results will be given. The different codes will all be discussed separately. The description of the following aspects only consists of the opinions of the interviewees.

1 Some quotes have been given multiple sub-quotes

5.2 Interview results

The most important codes of the interviews will be shortly discussed per coding.

5.2.1 Tools

Multiple interviewees stressed to use all the available tools. However, most of them stated that they don't use any or enough of the following tools. The six types of instruments will be explained consecutively.

Soft

Almost all interviewees have stated to use soft instruments in order to tempt developing parties to do more than stated in the building decree (Appendix XI.2,5,6,7,8,9,11,12,14). With these instruments most interviewees try to make more of the current situation. Some stress that it is necessary because hard requirements on some sustainable aspects are not yet possible (Appendix XI.7,8). Therefore, soft instruments can help to achieve the goals anyway.

Multiple interviewees also view soft instruments as important in area development (Appendix XI.1,2,4,7,12,14). When used correctly, soft instruments can get you far (Appendix XI.7). Reputation, networks and education are mentioned as used soft instruments (Appendix XI.2,4,8,12,14).

The energy transition department is not yet implementing soft instruments (Appendix XI.2,5).

Covenant

A large number of interviewees stated to use covenants and some even mentioned the number of covenants they use are increasing (Appendix XI.2,3,6,7,9,12,). One includes the covenants in the development of strategic policies (Appendix XI.12). However, there are also some departments which only follow the covenants and do not actively participate in them (Appendix XI.1,5,14). The energy transition department is not yet using covenants, they are not collaborating with partners yet (Appendix XI.13). A specified opportunity of covenant is that not all municipalities have to develop a solution to a common problem. Efficiency can be reached through collaboration (Appendix XI.7). Some examples of covenants mentioned are the Climate proof Zuid-Holland, City deal, 'Beton akkoord', (Appendix XI.2, 7, 12).

Legal

Legal instruments are often mentioned to be used (Appendix XI.1,2,4,6,7,8,11,12,14). The main issue of the legal instruments is the maximum of requirements stated in the building decree (Appendix XI.1,6,7,8). The standard practice is to use an anterior agreement in The Hague (Appendix XI.4). This instrument is used upfront as a guarantee. This instrument can be used to steer for more sustainable requirements than mentioned in the building decree. Also, other practices have been mentioned that might help to secure agreements, for instance a land use plan or a 'parapluplan' (Appendix XI.2,5,8).

A point of attention was given about the sustainable requirements; if too much is asked above the minimal requirements, a project might end up in the tender procedure (Appendix XI.8).

Financial

Most of the interviewees were either not using financial instruments or they are still busy developing the implementation of the instrument (Appendix XI.2,3,6,9,10,11). It became clear in multiple quotes that financial instruments are essential (Appendix XI.2,6,13,14). Some employees stressed the use of subsidies in area development (Appendix XI.2,6,10).

Municipal

Municipal instruments are used by every department (Appendix XI.1,3,6,8,10,11,13,14). Multiple instruments are mentioned to steer in the public space. For example, in tenders it is possible to state NIB as a requirement. Also, plot passports, policy documents and municipal frameworks are mentioned as municipal instruments that can be used for sustainable agreements.

One interviewee even stressed every municipal instrument should include at least some aspect of sustainability (Appendix XI.12).

Sustainable

One opinion on sustainability is that it is not implemented enough currently (Appendix XI.5,10,14). NIB and NAS were given as examples which are inadequately used (Appendix XI.3,7,8). Another view is that sustainable instruments are not available at all in the municipality (Appendix XI.14). Others stress sustainability is done quite well, with the use of NIB and netting (Appendix XI.4). Also, tenders are mentioned to have enough sustainability involved in them (Appendix XI.7,8).

5.2.2 EPA

Some interviewees stated that the use of the instruments does not change with the introduction of the EPA (Appendix XI.1,3). Having a clear environmental plan upfront is mentioned as one of the requirements for the EPA to work (Appendix XI.1,4,11,14). Within this environmental plan it is possible to guarantee sustainability quite well, as mentioned (Appendix XI.4). Others disagree and state that the requirements of the guideline is still the building decree, also after the EPA introduction (Appendix XI.8). Either way someone still has to address the subject of sustainability in order to implement this in the environmental plan (Appendix IX.14).

Some are still searching for the best use of the EPA (Appendix 10,12,13). It was mentioned that with the use of the EPA plot development will be less likely and more area development will take place (Appendix XI.6). Some interviewees advised the municipality to take more of a leading role with the use of the EPA (Appendix XI.8,11,4).

The EPA does not have an introduction date at the moment, which makes the future uncertain. The overall opinion says that the period up until the introduction of the EPA will be the most difficult (Appendix XI.12).

5.2.3 Collaboration (internal)

Some interviewees were very negative about the collaboration and view the integration between the different departments as minimally existing and time consuming (Appendix XI.3,9,12,13). Many interviewees did stress the importance of integration between the different departments in order to have a good area development (Appendix XI.7,8,9,11,12,13).

Some interviewees stressed that currently there is more collaboration and some stated that the integration is okay (Appendix XI.4,7).

An outstanding quote is that one interviewee customizes the work accordingly to specific departments (Appendix XI.13). Another interviewee mentioned that not all departments take sustainability into account in the decision-making process (Appendix XI.14).

A colleague mentioned that within the policy document Sustainability there is no integration between the four sustainability aspects (Appendix XI.12). Another quote stated that collaboration can be found in some policy theme, but definitely not with all. It was questioned if the collaboration got enough effort at all Appendix XI.3,12,13).

Also, an opportunity was mentioned in one of the interviews that within the levels of the municipality, the top level should work integrally before the other levels can collaborate integrally as well (Appendix XI.9).

5.2.4 Interaction (external)

It is mentioned that sustainability does not have priority when involving external parties (developers, citizens, housing corporations etc.) (Appendix XI.4,12,13,14). However almost all interviewee indicated that the market will involve more sustainability if the municipality requires it (Appendix XI.2,4,11,13). The interviewees do not soon see the market involving more sustainability, without more frames from the municipality. Subsequently, the legal instruments are currently blocking the developers in their sustainable goals (Appendix XI.1).

Most mentioned that they see the market is lacking requirements or clear laws and regulations from the government (Appendix XI.1,2,4).

Also, a couple interviewees specify the communication towards the external parties should be regulated in one place. One interviewee stated the communication with the external parties in total is missing (Appendix XI.6,9). More municipal instruments are needed for clear communication with external parties (Appendix XI.1).

The need for covenants is mentioned, because one municipality cannot solve the total problem of sustainable developments (Appendix XI.10).

An interviewee stated that when involving participation this is done too late in their opinion (Appendix XI.4). The higher levels in the organisation do not like the early participation. This participation currently only takes place when plans are finished.

5.3 Conclusion of the interviews

Results have been found about the use of the instruments, sustainability and about the internal and external communication.

However, without asking most of the interviewees have stated friction in the organisation structure. The instruments solely have not been mentioned as most obstructing to implement sustainability, but the organisation is mentioned to cause the most friction. In the next chapter, this aspect about the organisation will be further explored. Next to providing more information about the instruments and the governance. The next chapter will further interpreted the results of the interviews.

6. Interpretations of the Results

In order to implement the results from the interviews, a comparison must be made between the literature and the practice. The comparison will walk through three parts. First, the tools will be discussed. After the tools, the organisation and governance aspects will be compared. The theoretical framework, introduced in chapter 4 will be used to compare the results found in the interviews.

6.1 Tools

Literature showed the importance of using all the available tools, including legal, financial, municipal, soft, covenant and sustainable instruments. The interviewed employees have shared their experience with all these instruments. Some of the instruments are used frequently and some can be used more often in area development. A short comparison will be explained between the used instruments and the theory about these instruments.

Soft instruments

Soft instruments can be quite useful according to the literature. Also, the interviewees have stated to use these instruments to include more sustainable requirements. Soft agreements are made to mutually agree to these requirements. However, also reputation, networking and education of the personnel are used within the municipality to support sustainability. Soft instruments are not overlooked as the theory described. On the contrary, this instrument is broadly used in the absence of other useful instruments to include sustainable agreements.

Covenants

The benefits of covenants are acknowledged by theory as well as the interviews. It has the positive effect of combining the knowledge of more than one party. The Hague uses quite some of the covenants. However, many of the departments do not actively participate in the covenants. Practice has shown this implementation of the covenants is important to have an effect to the outcome of the process. The external collaboration works for this instrument, however the internal communication must also be optimised.

Legal instruments

Legal instruments mainly came forward as an issue, creating friction between the use of the two types of instruments. The literature shows that for legal instruments it is important to have a clear understanding and separation between the public and private legal instruments. The Hague has a preference to use private legal instruments, like a decleration of intent to ensure sustainable requirements. This is contradicting the advice from theory to mainly use public instruments as a municipality. A land use plan is the perfect example of an effective public instrument to support sustainable goals. Main issue for these types of instruments is the guarantee of the requirements. Both literature and the interviews showed this friction.

Financial instruments

Financial instruments are seen as important in theory. In the municipality of The Hague only a few employees use this instrument. Most of the time this instrument is overlooked. However, theory explained that this instrument is important to achieve sustainability. Without the necessary investments sustainable adjustments cannot be made. Subsidies can help to stimulate these investments.

Municipal instruments

Municipal instruments are broadly mentioned as a perfect tool to stimulate sustainability. Also, the municipality extensively uses these instruments. Within tenders sustainability can easily be included. The theory agreed that these active types of steering is very beneficial for

sustainability. The Hague has a unique tool, the NIB, that guarantees nature is included in the area development. This tool does not conflict with the building decree and can be perfectly used in all developments. However, also in plot passport and policy documents sustainability can be embedded. A new municipal instrument can also be used, an environmental plan, with the introduction of the EPA. This instruments is shown in theory and practice showed possibilities for this instruments. However, a good implementation in the process is important for this instrument to work.

Sustainable instruments

Some sustainable instruments can be found within the municipality of The Hague. NIB, NAS and netting[1] are used to optimise sustainability. However, the use of these instruments is not done by all interviewees. Tenders are mentioned to include the most sustainable aspects. Practice stressed the other instruments should include sustainability and separate instruments should not be necessarily. This integration is important for the embedding of sustainability in the whole process.

1 netting is used in a project to give the developers some slack. If any of the requirements in e.g. the environ mental plan cannot be met, the developer may compensate for this. For example not having enough social housing (in percentages) can be compensated by adding more sustainability requirements, like having a green roof.

Municipal instruments as well as soft instruments showed the importance of implementing the instruments. In order to effectively use these instruments, the implementation is most important. Five topics must be included in the process for the implementation to work optimally, according to the literature. The literature and quotes of these five topics will be analysed.

Inclusion: first, sustainability should be included in all the instruments of a municipality. Besides some sustainable instruments, only municipal instrument include sustainability. Most of the municipal policies of the municipality do involve sustainability, however the degree of involvement differs greatly. As table 2 showed, all the different policies of the municipality involve other aspects of the SDG's. Some aspects like energy are frequently involved while for example water rarely mentioned. The interviewees also showed a preference for energy as a sustainability aspect. Sustainability should be included evenly in all policies and working processes, according to the literature. This, however, is not the case for the Municipality of The Hague, at this moment.

Consistency: secondly, the policies should be consistent about the sustainability requirements. This is not the case in the municipality of The Hague. Appendix X gives a broad overview of the involved aspects of sustainability in each policy. It must be concluded from this appendix that not one of the policies has the exact same definition of sustainability.
Also, the definition of sustainability differed tremendously during the interviews (see Appendix XII). Some only mention energy, some mention the four pillars of the municipality and some mention completely different aspects like social sustainability. This shows the lack of consistency in the use of the term sustainability.

Weighting: thirdly, the sustainability aspects should have a high priority in area development. The interviewees have mentioned this is not the case. Sometimes it is not important at all, while sometimes it does have a medium high priority. It all depends on the employees and their interest. The weighting does not get the needed attention in some projects. When weighting takes place, this often includes only quantity, leaving minimal space for spatial quality.

Reporting: fourthly, it is important to effectively evaluate the sustainability in area development and to have an improvement loop. The interviews have shown that the municipality is now starting to integrate this evaluation. However, sustainability is currently hardly evaluated after the operation phase. The approval of building permits only checks the national requirements, stated in the building decree. Extra, private, agreements are not checked with this process.

Resources: lastly, the municipality should use all the available resources towards sustainability. As stated above, especially sustainable instruments are not used by all departments. Also, considering the model (figure 13 in chapter 4) some of the instruments are not used within the municipality at all. For example, a 'paraplu plan [2]' is not used in The Hague, although this instrument has proven to be effective in other cities. The interviews have given some more information about the resources and in which phases these are used. This information is further implemented in the model and will be included in the optimised model in chapter 8

2 a 'paraplu plan' can be seen as a land-use plan which will apply to the whole city at once. This will ensure a total use of the specifc requirements, like parking norms or EPC.

A municipality cannot only use instruments to influence the process of area development. Especially for sustainability also the organisational structure and the governance options can have an influence.

6.2 Governance

The theory advises to work in network governance and with partnerships. The round model of Teisman (2000) has given a clear concept of how this networking could be working. The interviewees have not indicated this type of network governance to exist at this time. The communication was recommended to be updated by the interviewees, to have more clear and early communication towards the external parties.
When looking at the internal communication the interviewees have stated that the vertical departments are not optimally communicating. Some more information about the vertical organisation will be explained in chapter 6.3.
The same can be said about the different sustainability aspects, which are separately integrated in the process at this moment. At the same time, the round model of Teisman has suggested it is better to involve the stakeholders (external, department and sustainability aspect in this case) in rounds. As stated earlier, a good process does not rely on individual decisions but is about the interaction between the decision of the different stakeholders. Especially sustainability could benefit from using the round model and working in networks and rounds.
The steering type is another important aspect of governance. Having a clear steering mechanism is important according to the literature. The spread in the use of steering mechanisms shows that the municipality is not consistent with the implementation of their steering mechanisms. This, however, does not have to be a negative aspect. Using the full range of possible steering options can be effective for sustainability.

How will traditional steering be effective?

The use of multiple steering techniques can work effectively for a municipality. Some aspects might have the need for traditional steering mechanims. For example parking places; inhabitants would like as many as possible, however the municipality must look at the larger picture of using public space for parking. From a sustainable point of view, lesser parking places have a positive influence on the city. However, other participants in the process will not have this public value in mind during the discussions. This results in a preference for traditional steering when public values, like sustainability, might be looked over.

6.3 Organisation

As an important aspect, the interviews have pointed towards the organisation. Currently The Hague has a vertical organisational structure. The different departments can be seen as vertical columns, all with other parts of development as their responsibility. All these departments have to implement sustainability. Each department should take sustainability into account in their developments. However, the interviewees have stated this results in minimal sustainability aspects in the area development. Currently only the interested employees consider sustainability in their projects. The departments are not held responsible for sustainability as an aspect at the end of the process. The responsibility only lies with the goals of the specific department, resulting in minimum effort for sustainability.
DSB, however, has a separate section for sustainability. They have no other responsibility to ensure except for sustainability. Their focus, however, consists of the future of the entire city and not only the nearby future of area development. The focus of DSB is mainly long term, while the focus of DSO is short term.

There are different organisation structures visible within the municipality of The Hague. Hybrid organisation structures will cause more complexity in what already is a complex problem. Appendix XIII shows the different organisational models of The Hague.

The interviews have also shown that the involvement of the department should be done early in the process. This slightly overlaps with the round theory. The collaboration should be done upfront with all the important stakeholders, including departments. However, the commitment of the departments is not always done upfront within The Hague. Some of the interviewees have mentioned to only be involved later in the process. However, they want to be involved earlier to make the collaboration easier. The early involvement is also non-existing for the external parties within the municipality. The participation is mostly done later on in the project when most collaboration and concessions have already been made. This leaves minimal room for the external parties to influence a plan to their standards or wishes. According to the participation ladder, mentioned in the literature study, the involvement of the stakeholders should be done with a degree of citizen power. In practice the participation consists of a degree of tokenism currently, it does not consist of real participation. Participation,

however, is seen as one of the requirements for the introduction of the new EPA. The participation should involve a level of citizen power to influence to process. For sustainability this might conclude to conflicts, leaving an important task for the municipality to guide the discussions.

An important point of friction, seen by the interviews, is the lack of clear defined levels. The strategic level should not be involved in the workload of the operational level and vice versa. However, multiple interviewees have mentioned that the other levels do influence the operational work with politically important aspects. Projects become influenced by the tactical level. Sometimes the projects are provided by this level, resulting in a total lack of early involment of other departments. This involvement is mostly stated towards single projects.

6.4 Conclusion of the interpretations

The use of the separate tools mostly overlaps with the theoretical framework. Frictions mentioned in theory can also be found in practice. However, how these instruments are embedded differs greatly. The implementation is not done according to the theory. The same must be said about governance. The municipality does not consistently use the broad range of steering options. Reverse, the theory does not include the organisational options as an important aspect to improve. However, the interviews have shown that the organisation has a large effect on the outcome of a process. The use of one clear structure and the early involvement of interested parties must be seen as an important aspect for an area development to succeed in sustainability.

The interpretations are seen by the view of the researcher. Before a final model and recommendations can be given, the interpretations need to be validated. The findings of this chapter can be put in a list of twelve advices. These advices will be checked with experts in practice on their feasibility.

1. The definition of sustainability must be clear and used identically.
2. The four sustainability goals should be involved in area development in an integral way. This should be done throughout the whole municipality, from strategic to operational levels.
3. There must be a clear weighting framework with priorities for area development in general.
4. Area development should be used instead of plot developments.
5. The vertical organisation works sub-optimal. Specific people should become responsible for sustainability in area development.
6. The Hague should profile itself more towards sustainability. An iconic project could work for this and for its reputation.
7. The steering must be more strict for sustainability. The municipality should give more directions towards sustainable developments.
8. The communication towards external parties should be more clear
9. When possible, the municipality should apply active land policy. When using facilitating land policy, public contracts should be used.
10. Legal agreements should be ensured better.
11. A municipality should implement the evaluation of area development.
12. It should be clear what can be done for sustainability up until and after the introduction of the EPA.

7. Validation

The theory and the practice have provided information on how to optimise the instruments of a municipality to support sustainable area development. Comparing the theory and the literature, some advices have been created for any municipality (and The Hague specificly) in order to improve sustainability. However, these advices need to be validated to check whether they are at all possible in practice. In order to test the advices, a second round of expert interviews have been conducted. The interviewees have been given several of the 12 advices mentioned in chapter 6.4. Four or five statements were asked per person and the opinion on these subjects was discussed. Main questions for the interviewees involved the feasibility and if they saw how the statements could be implemented within the municipality any time soon. In Appendix I the specific advices asked to each interviewee can be found.
The following departments have been interviewed about the 12 advices in chapter 6.4 (see figure 15).

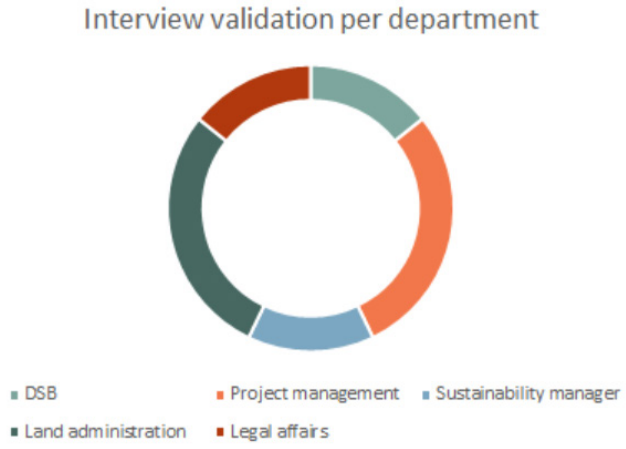


Figure 15: Validation interview departments

Some of the opinions on the advices were alike. This analysis only takes new views into account. These new insights will be discussed in this subchapter. The whole validation analysis per statement can be found in Appendix XIV. The four most important insights from the validation will be discussed in this subchapter.

First, the framework stated to use a weighting process to prioritise the aspects involved in area development. The experts have given some more insights on the practicality of such weighting processes. A weighting of the entire city at once is seen as impossible (Appendix XIV.1,3). A weighting process for each area is a more practical approach to find a balance between all the aspects (Appendix XIV.1,3). For each weighting process other aspects will be of importance (Appendix XI.4,3). Therefore, the weighting process should become more area dependent, than originally stated. Other aspects will have priority in different areas. However, sustainability should always be included with a bare minimum. The municipality should clearly communicate about the minimum ambitions for each area. Upfront area specific weighting will result in a more clear process, decreasing the discussions and friction about this weighting.

Secondly, there is a large difference between the employees who use private contracts and the employees who are convinced public law should be used (Appendix XIV.2,5,6).
It became clear that the private contacts are mostly used, due to the time efficiency (Appendix XIV.2,6). It is also stated that private contracts have the opportunity to involve more custom work in each project, steering optimally for sustainability (Appendix XIV.2,5,6). With the use of active land policy, or in tenders, sustainable requirements can be imposed more easily (Appendix XIV.2,5).
On the other hand, it is also mentioned that the department responsible for the permits and supervision does not check the private contracts

(Appendix XIV.5). This is not a part of the application process to start building. Therefore, all the sustainability agreements made besides the public law or the building decree are not tested during with the permit application.
A possible solution is the use of the Crisis- and Recovery Act, which publicly allows the municipality to ask for more sustainability than stated in the Building decree (Appendix XIV.2). With this act the municipality can specify certain areas where greater requirements should be allowed. This can also be done for the whole of the city with the use of a 'parapluplan'. However, these important instruments are barely used in The Hague at this moment (Appendix XIV.2,5). These instruments are also seen as unlikely to be implemented (Appendix XIV.5).

Thirdly, A clear ambition upfront is seen as important, however it is also mentioned this ambition should not be too strict (Appendix XIV.3,4,6). Sustainability ambitions should be a framework in which the developing parties still have freedom to develop in their way. An integral working process is seen as a condition to have a clear ambition (Appendix XIV.3,7). At the same time working in an integral way is seen as very difficult. Politics, management, direction and the whole governance should be changed in order to achieve an integral process (Appendix XIV.1,7). Another interviewee mentioned that doing everything in an integral process will only take up a lot of time and will not get you further (Appendix XIV.4).
The vertical organisation structure of The Hague is also seen as one of the reasons that working integrally is difficult (Appendix XIV.6,7). The communication between the different department does not always work optimally.
Nevertheless, an integral working process will ensure aspects are not included too late in the process. Clear common ambitions upfront will result in less friction, discussion and lower costs of change (Appendix XIV.7).

Fourthly, some additional tools have been mentioned to optimise sustainability in area development. The municipality is currently developing multiple options to better secure sustainable requirements in the process. The project managers have frequently pointed towards being the best position to change the implementation of sustainability (Appendix XIV.3,4,6,7). One new instrument of the municipality is the introduction of an IVA (an integral responsible civil servant) (Appendix XIV.3,6). This IVA is introduced to ensure the integration between the different departments and to let the sustainability aspects go more smoothly. However, this introduction has just recently taken place, therefore, a conclusion cannot be formulated currently.
At the same time HDT[1] is developing a tool for the project managers (Appendix XIV.6). This tool will help to communicate consistently and clearly towards external parties. However, this tool is also still in development. The use of this instrument could work positively towards sustainable area development.
Not only the tool for project managers is being developed. Also, for the improvement of sustainability the project managers have assigned so called 'sustainability realtors' (Appendix XIV.6). These realtors are to some extent experts in sustainability. The employees can be helped by these realtors with their sustainability problems. This again, is still in development.

7.1 Conclusion of the validation

The validation made sure the statements were put into the perspectives of the practice. This has led to some modification of the advices. These new insights will be used to further optimise the conceptual model of chapter 4. Also the recommendations in chapter 9 and the conclusion in chapter 10 will include the results of this validation. Main finding from the validation is that the weighting process cannot be done in general. This should be done separately for each area. The other important finding is the effect of personal interests on the development.
Even though the current development might lack sustainability, the municipality of The Hague is taken recent action to achieve more sustainability in the near future. The new instruments, that are currently in development, have to be tested to check whether these have the intended effect on the process.
The following chapter will give a description of the final model, based on the conceptual model of chapter 4. The advices and the validation will be added to the theory to conclude to a final model.

1 Haags duurzamaheidsteam (Sustainable team of The Hague)

8. Final Model Description

The results of the interviews have given some insights. These insights will enlarge the conceptual framework introduced in chapter 4. This framework aims to optimise the application of instruments of a municipality towards sustainable area development. Improving sustainability includes three aspects. First of all, the new insights on the tools of the municipality will be discussed. These instruments have been put in a model. This model will visually explain the optimisations. Secondly, the new insights on governance and organisation optimisations will be discussed. These three aspects must be considered in order to optimise sustainability in area development. The new insights together with the conceptual framework of chapter 4, will result in a roadmap. This roadmap shows the optimisations needed per level for sustainability in area development.

8.1 Tools

The use of the six separate tools has been changed slightly with the information provided by theory and practice. The changes of the tools will be shortly discussed, compared with the conceptual model of chapter 4.

- **Soft** - some additional soft tools have been added to the conceptual model. Also reputation, networking and education must be seen as soft instruments that can support sustainability in area development. Compared to the conceptual model, this insturment is not overlooked, but instead used quite often to obtain some level of sustainability.
- **Covenant** - for covenants it must be added that the implementation in the process is important.
- **Legal** - private legal instruments must be seen as more practical instruments, than public legal instruments. However, some options have been gathered to support sustainability with public legal instruments. Most important instrument currently is the land-use plan. With the introduction of the EPA, the environmental plan will also be an important public tool to use. Again, the implementation of these instruments must be added as a very important aspect.
- **Financial** - contradicting the conceptual model stated, not the soft instruments, but the financial instruments are easily overlooked. However, this instrument should be seen as important to achieve sustainability.
- **Municipal** - a large number of municipal options were added. Unique tools (like NIB), tenders en the policy documents are good tools to support sustainability. One condition must be added to the conceptual model, the implementation should be done correctly.
- **Sustainable** - compared to the conceptual model, the sustainable instruments are not seen as important support. These instruments should not be singly used, but must be integrated in the other instruments.

Looking at the different instruments some ranking can be given in the importance of the instruments for sustainability.
First of all the involvement of sustainable ambitions in municipal instruments should be clear and consistently used. Second most important instrument is the use of public legal agreements. These should be used to guarantee the ambitions in the municipal instruments. Financial instruments must also be sufficiently provided, in order to achieve these sustainable ambitions.
These three instruments should be used as main instruments to steer towards sustainable area development. The minimum ambitions for sustainability should be integrated in these three instruments.
Soft instruments, private legal instruments and covenants can be used to support the development even further and achieve extra sustainable goals. However, these instruments should not be used as the main instruments.

How to include sustainable requirements?

Sustainability requirements can be made with strict requirements (like the housing act or a land-use plan) or with policy requirements (policy document sustainability, housing policy ect.). The main instruments (municipal, financial and public legal) should include the strict requirements, with bare minimums. The supporting instruments (private legal, covenant and soft) should mostly be used to achieve the policy requirements. The strict requirements should not be guartenteed with the use of the supporting instruments.

Strict requirements	Policy requirements
e.g. Housing act	e.g. Municipal policy document on housing
Criteria e.g. EPC 0.4	Wishes e.g. EPC 0.0
Use main instruments	Use supporting instruments

Earlier, the implementation of these tools has been stressed as important. This implementation must be done the way it was presented in chapter 4. The inclusion, consistency and the use of the resources are clear as it is. However, some additional information about the weighting and reporting will be provided.

Rather than stated in chapter 6, the weigting process should be included differently. Look at weighting, the best option for sustainability is to have an overarching commission to decide these priorities. The balance of aspects does not need to be found during each initiation phase, but should be establised upfront. The requirements for all the aspects, including sustainability, should be kept open. The market should be able to shift and innovate to achieve the requirements. When the requirements are too strict this will be impossible. At least bare minimums must always be provided for sustainability. Important for these bare minimums is that they should be established for each area in the city. For each area specific ambitions should be made to steer towards. These ambitions cannot be the same throughout a whole city.

The reporting of an area development should include an evaluation (see figure 16). An evaluation at the end will ensure lessons can be learned. These lessons can be implemented in the municipal instruments or processes, ensuring a better process in the future. Without this evaluation the process will continue to be linear.

Figure 16: Loop of a development process

How to weight aspects in different areas?

As an example the parking norms will be taken. These are rather low in for exmaple the city centre of The Hague. However, in other areas, the amount of parking places is still high. With the combination of low cost of parking, this leads to a inefficient use of the public space.

When weighting for each area, the amount of parking places is always part of the discussion. In areas close to public transport and e.g. a large amount of student housing, a large amount of parking places will not be needed. However, in areas farther away from public transport with a large amount of family homes, the demand for parking places will be higher. This will result in other parking norms for the different areas of a city.

Nevertheless, the parking norms should have some maximum level which cannot be exceeded. This requirement will be used in all areas. Specifically to the needs of an area, specified norms should be created, keeping this maximum level into acocunt.

The changes of the tools have also been put in the conceptual model of chapter 4. This model now includes the changes in the separate tools, but also the evaluation has been put in the model. Subchapter 8.4 will give an overview of the changes in the model. Figure 17 shows the changes in the model. The new instruments are visible in this figure. The instruments from the conceptual model have been made a lighter colour. The most important tools to optimise are given an orange colour in figure 17.

After this model has been showed, the changes based on the governance and the organisation will be discussed.

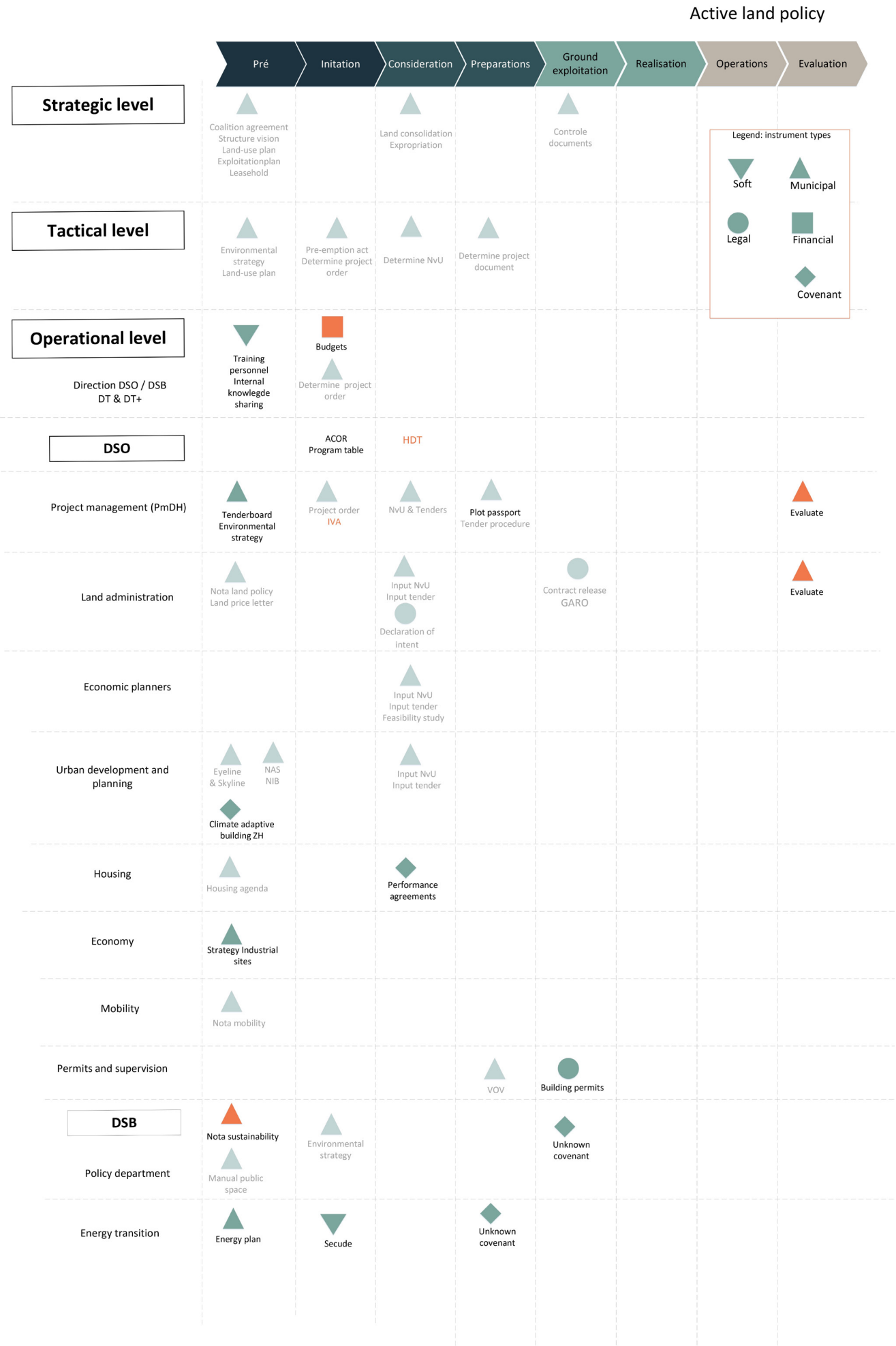


Figure 17: Changes in the conceptual model

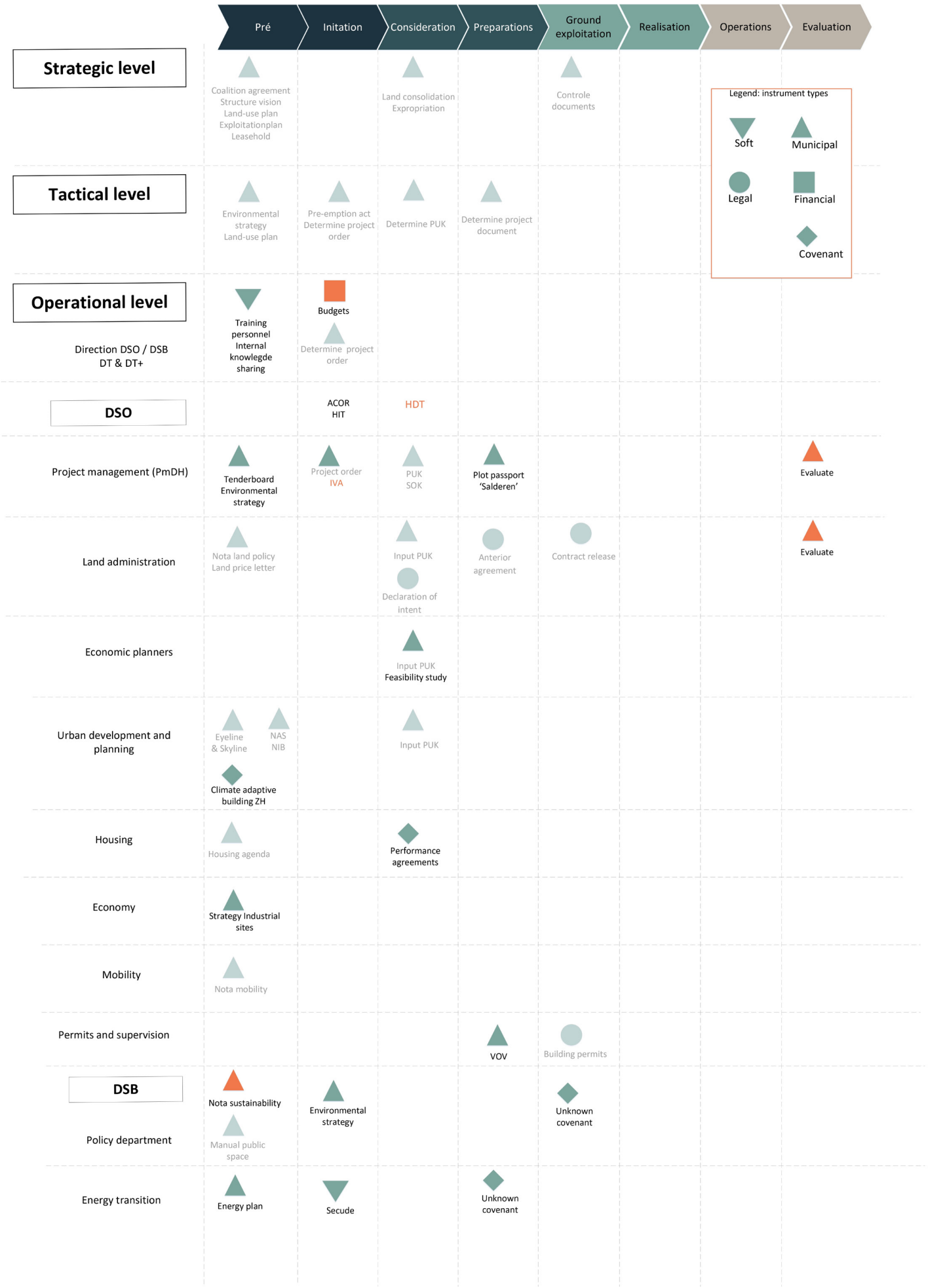


Figure 17: Changes in the conceptual model

8.2 Governance

Secondly, some changes to the governance need to be made. The conceptual model advices to use network governance as well as traditional steering mechanism to influence sustainability in area development.
Some rectification must be made to this conceptual model. The use of the two steering types should be used within different levels of a municipality. Optimally, the strategic level will steer traditionally on the topic of sustainability. As stated for a weighting process, sustainable ambitions or goals should be made for each area specifically. Contradictory, the operational level should apply network governance to steer sustainability in the process.
Integrating the sustainable aspects throughout the whole process will be optimised with the use of the traditional steering by the strategic level. Sustainable ambitions will be clear during the next steps of the process.

8.3 Organisation

The largest addition to the conceptual framework is the aspect of the organisation. Chapter 6.3 introduced some of these optimisations of the organisational aspects. The most important aspects will be shortly discussed in this chapter.
As stated in chapter 6.3, a hybrid and vertical organisational structure with sustainability scattered, does not optimally support sustainability. In order to optimise the organisation some options can improve sustainability. Either way there should be a specific party responsible for the outcome of sustainability in a process. This can be done by introducing another vertical column for sustainability. Or a mandatory expert commissie advice can help each development in the initiation phase. Another option is to have an integral employee responsible for sustainability. For the best result a equal organisation structure is used throughout the organisation, including the sustainability aspect as well. Equal structures will establish easier communication.

This communication can also be optimised when involving all the interested parties early in the process. This has been stated in chapter 6. However, when looking at the model in figure 17, the involvement of the different departments is scattered in the model. This shows there is no complete involvement of all departments upfront. The interests of all departments should be involved upfront in order to have an effective development process. Upfront the interests should be taken into account. A balance in all the involved interests will be found using rounds of discussions. When involving some departments later in the process, the involvement of the interests becomes too complex. Early involvement of all departments is a solution to decrease this complexity.

An integrated working process should be seen as a combining solution of most of the mentioned optimisation aspects. Developing areas instead of plots will be the first start to have this integrated process. The other mentioned optimisation can also be improved with the use of an integrated working process. The conclusion of this final model will further explain this integrated process.

Why early involvement?

The involvement of departments and sustainability aspects should be done early in the process and in rounds, according to the literature. In practice this would mean that at the start of a project, all the disciplines, including the four aspects of sustainability, should be involved in the meetings. In different rounds, or meetings, different aspects will be discussed. E.g. the percentage of social housing, the energy performance and the amount of parking places will have to be balanced. With the use of multiple rounds and the involvement of all the disciplines will make sure a good balance is found. Without this upfront balance of the aspects made with all the involved actors, the process will most likely have some friction along the way. This often leads to a change in the project plan, which takes a lot of time and money. This will be avoided with the early involvement.

8.4 Conclusion of the final model

In the conceptual model has results in a final model of the instruments given in figure 17. This model gives a clear overview of what instruments are possible in what phase of a development process. The amount of instruments and the difference between active and facilitating land policy, result in quite a maze of instruments, that might be unclear to some employees. Nevertheless, this model might give a more clear overview of the instrument that are used and instruments that might be missing (e.g. there are very little financial instruments visible in figure 17).

The combined advice from the model and from the three aspects (tools, governance and organisation) will help to achieve more sustainability in area development. This advice can be put in a diagram, to show which level should implement what advice. Figure 18 shows a roadmap for optimising sustainability in area development. It also shows some general advice, which applies to all the levels and to all phases.

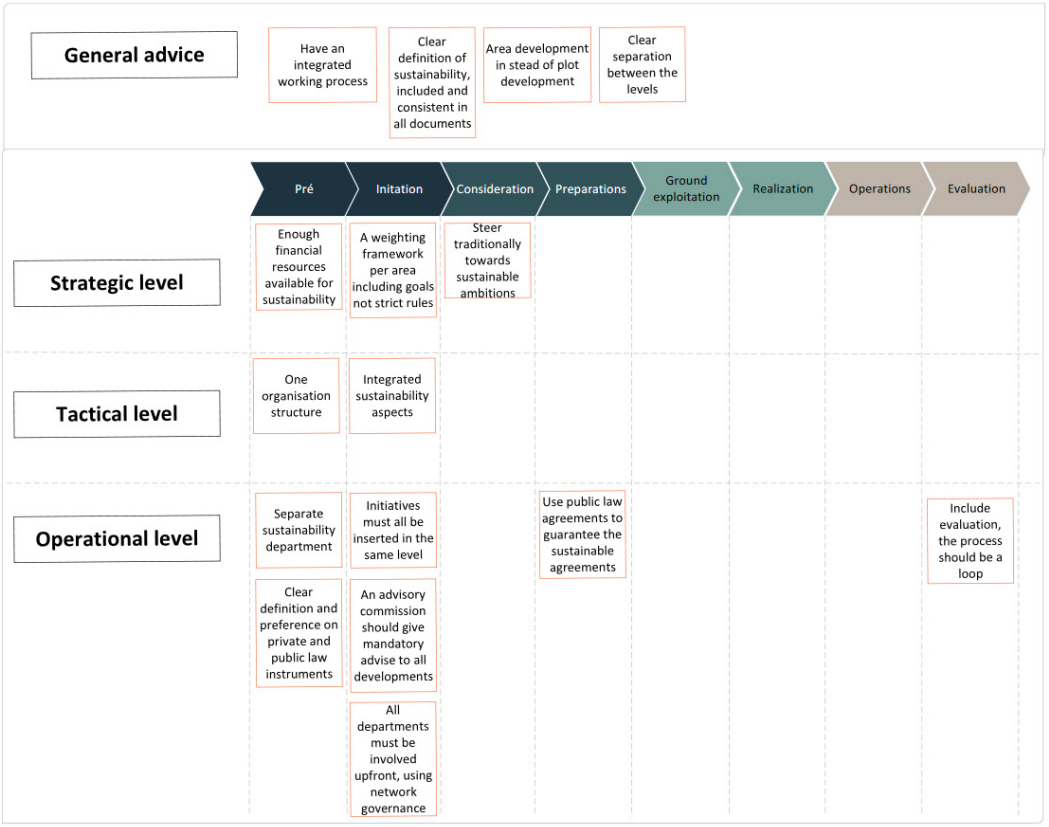
All the found optimisations can be gathered into recommendations, showed in figure 18. These recommendations can be made for the municipality of The Hague specifically and for municipalities in general. The next chapter will further explain the recommendations.

An integrated working process will ensure that sustainability is clearly and evenly used throughout the whole organisation and process. This should start with the strategic level, which should include sustainability as an integral aspect in their ambitions. With early involvement of all the interested parties involved in the area (not plot) development, the process will develop more integrally.

The amount of sustainable aspects involved in area development should not depend on personal efforts. Having clear and strict ambitions upfront will avoid this. These ambitions must be easily found and easily implemented. Employees should not have an overwhelming feeling of sustainability aspects in all the documents. One well organised overview of the musts and wants for sustainability is very important.

One person or committee should become responsible for sustainability and they should made sure the integration in included in the process.

Figure 18: roadmap for the recommendations



9. Recommendations

This study has combined a theoretical and a practical view to find an optimisation for instrument in area development. Recommendations will be given for the use of discerned tools, governance and the organisation by municipalities. Although this study was conducted within the municipality of The Hague, some general recommendations were found. These recommendations are applicable for all the Dutch municipalities. This chapter will start with these general recommendations for municipalities to optimise.

9.1 General recommendations

First, general academic recommendations for sustainability in area development will be given. These recommendations are applicable for all municipalities who want to improve sustainability in their are development. Tools, governance and organisation will be explained sequentially.

9.1.1 Tools

The list of tools will first be discussed separately per instrument. Afterwards, the optimisation of the implementation of these tools in the process of area development will be explained. A main issue found for the tools of a municipality, is the guarantee of sustainable requirements. According to the housing act article 122, a municipality cannot ask for more sustainability than stated in the building decree. This limits the options of a municipality greatly. However, a municipality can wish and strive to achieve more sustainability than minimally required in the building decree.
The separate tools and their options to involve more than the minimum sustainability requirements will be discussed sequentially.

Soft instrument

Soft instruments are hard to guarantee. However, they can be used to influence the sustainable outcome of a process in different ways.
First, the aspect of education should be used by any municipality. Employees should be educated on sustainability and the specific options that are wished for in their municipalities. An example for this education is to learn how to seduce other parties.
This seducing is the second soft instrument that can be used. Another party can be convinced of the importance of sustainability with communication and seducing.
Thirdly, the municipality can increase their reputation with soft instruments. When always communicating about sustainable developments, other parties will automatically assume a development must be sustainable in the future.
The options of the soft instruments work best with willing parties, who understand the importance of sustainability in area development. It cannot be used as a main instruments, but it can support extra sustainable requirements.

Covenants

Municipalities should bundle their information with others and strengths with the use of covenants. Not all problems have to be solved by each municipality separately, resulting in a lot of time and money saving. Covenant should only be used as a supporting instruments, the same as stated with the soft instruments. Also, the same as soft instruments, this instrument should only be used with willing parties.

How can covenants work more effectively?

As an example the water storage on a specific area will be considered. In the Netherlands, very heavy rainfall becomes more common. This leads to the need of a certain amount of storage of water for a longer time. However, how much water and for what amount of time, is not yet known to all municipalities.
In stead of all municipalities creating their own minimum requirement for water storage on a plot, it would be more effective to collborate on the specifics of this problem. This will create certainty for developers in these cities, which have the same requirements and will save the municipalities time and money.

Financial
Each municipality should ensure sufficient budgets to implement the sustainability ambitions in their working process. These budgets should include enough time for the employees to spend on optimising sustainability. Also, subsidies should be provided for sustainable measures, to stimulate these. This instruments is quite important, without sufficient budget associated with sustainability, sustainability will fail at the end of the process.

Legal
A municipality should optimise their private and public instruments to support sustainability. The most effort must be put in the use of public legal law planning instruments. The land-use plan is a perfect example where more strict requirements can be implemented.
Private legal law planning instruments should not be used as a main instruments, only to support. The voluntarity can always be questioned with these private instruments, again creating friction with the guarantee. With private instruments, it is possible to have some extra agreements with willing parties. However, the main public legal law planning instrument should be the primary used instruments.

Municipal
Another very important instrument are the municipal instruments. Unique municipal instruments can be used to influence sustainability, as long as it is not conflicting with the building decree. NIB is a good example for the municipality of The Hague that other municipalities could also use (an instrument alike the NIB).
Also the policy documents should include the sustainable goals, which are the start of each environmental permit. It is important to have clear and far-reaching sustainability ambitions. These municipal policies are the input for all the area development. Where and how sustainability should be implemented in area development should be clear upfront. The municipal instruments should be clearly understood and used throughout the whole organisation. The most important focus of sustainability should be the integration between different aspects and between all the parties involved. This should mostly be included in the municipal instruments

Sustainable
As stated in chapter 8.1, sustainable instruments should not be used as a separate instrument, but they should be integrated in the other five instruments.

To sum up the separate instruments, some should be used as leading instruments, while some should support these leading instruments. Public legal law planning instruments, municipal instrument and financial instruments should be used as the leading instruments. These can best guarantee the agreements made about the sustainable ambitions. Any further wish for sustainability can be established with the of soft instruments, covenants are private law planning instruments. These, however, will only support and provide extra sustainability and must not be used as main policy.

It is recommended to use the total range of instruments. The optimisation of these instruments has been described separately. However, the best way to improve sustainability is to implement the instruments collectively. The implementation of the sustainability aspects should be seen as the most important aspect to optimise. A full description on how to optimise these aspects can be found in chapter 6.1 and 8.1. The five aspects will be shortly discussed as general recommendations:

- Inclusion: sustainability ambitions should be clearly included in all the municipal instruments. Most important is to ensure the inclusion is embedded upfront in the municipal instruments.
- Consistency: the sustainability ambitions should also be used consistently. This must mainly by done in the municipal instruments. These should mention the same level of ambition.
- Weighting: upfront a weighting of the aspects involved should be made. A balance must be found for each area in a city separately. However, in all development some bare minimum requirements of sustainability must be applied. These minimum requirements can be embedded in municipal (public) instruments. Financial stimulus should also support the sustainable outcome.
- Reporting: a developing process should always include an evaluation at the end, creating a loop. This evaluation will mostly look at the municipal instruments and their effectiveness. When concluding the municipal instrument do not embed sustainability optimally, lessons should be learned and the instrument should be changed.
- Resourcing: as stated in the other tools chapters, the resources (or tools) should all be used to their maximum capacity. Most important resources to steer towards sustainability are: municipal, financial and legal (public law planning) instruments.

Not only the use of instruments will have an influence on the outcome of the process. Literature has provided some optimisation about the governance. And the practical study has shown that the organisational management can benefit sustainability greatly, if implemented correctly.

9.1.2 Governance

The steering of a municipality can be optimised as well, to support sustainability. As stated in chapter 6.2 and 8.2, it is important to incorporate the full range in governance opportunities by any municipality.
To conclude, the highest level of a municipality should incorporate traditional steering mechanisms to strictly steer towards their sustainability ambitions. These ambitions should not be too stricit, but should leave some room for innovation of the market. The execution of these sustainable ambitions should be done with the use of network governance, including participation of all the interested parties. The operational level of a municipality will mostly use this network governance steering mechanism.

9.1.3 Organisation

For any municipal organisation some recommendations can be given. A full description of the advices found in this research for the organisation can be found in chapter 6.3 and 8.3. A short generic overview will be given of the aspects that needs to be optimised to influence sustainability positively:
The same structure between different authorities in one organisation should be used. Having multiple structures will increase the complexity, in an already complex developing environment.
At the start of any development, all interested parties must be included. With early involvement a lot of friction will be solved upfront, saving a lot of time further done the process.
Any spatial planning should consider larger areas. One small plot should not be separately developed. Sustainability can only be optimised with the combination of plots and solutions. A financial business case can almost never cover one development.
For a complex aspect, like sustainability, it is recommended to have one part of the organisation responsible, this can either be one person, one department or a specific club.

With the use of an integrated working process, many of these organisational optimisation can be implemented.

Besides these general recommendations for municipalities, some recommendations can be given specifically for the municipality of The Hague. The next subchapter will further elaborated these specific recommendations.

9.2 Recommendations for The Hague

Not only general recommendations to improve the instruments should be mentioned. Also, some recommendations can be given for the municipality of The Hague specifically. These recommendations are solely based on the case municipality. In order to improve sustainability in The Hague the following subchapter will give recommendations, from the perspective of the researcher. First, separate recommendations per instrument will be given. Afterwards, the implementation of these instruments will be explained. Secondly, the governance and thirdly, the organisation will be discussed on their recommendations.

9.2.1 Tools

The Municipality of The Hague uses many instruments. Some of these instruments can be optimised to increase sustainability in area development. In particular for the Municipality, some recommendations have been made about the instruments. The same as for the general recommendation, the guarantee of the sustainability aspect is hardest to ensure.

Soft instruments

A lot of employees express the use of soft instruments. At the same time, it must be concluded that many use these soft instruments solely because they must. This is caused by a lack of other effective instruments. Therefore, it is recommended to keep using the soft instrument, however, more effort should be put towards the optimisation of the other instruments. A soft instrument preferably only supports the sustainability requirements.
Some soft instruments, e.g. training to convince the other parties, are used by some departments. However, after the training this advice is not applied. This is a large lack of sustainability. Soft instruments, when started, should also be applied throughout the whole process. Education and trainings can have a large influence on the process.

Covenants
Each department of The Hague uses covenants in some way. There are many covenants agreed upon in the last couple of years. However, after the agreement, the application lacks. Most employees follow the covenants but do not actively apply these instruments. The same general recommendation must be given to The Hague, as stated in chapter 9.1. The implementation of the covenants should be improved. When using this instrument, it should support the sustainable ambition.

Financial instruments
Sustainability can largely benefit from more financial instruments. The Hague does have some subsidies and other financial instruments. However, these are minimally used. Figure 17 also shows almost no financial instruments. As stated in chapter 9.1, the financial instruments are quite important and should be sufficiently used. For The Hague, there is an optimisation possible for the financial instruments to include more sustainability budgets.

Legal instruments
The municipality should have one clear preferred instrument, public or private. Either could be used to implement sustainability in the area development. However, the public instruments have a preference. Only with the public instruments the sustainable agreements can be guaranteed. The private law instruments do have some advantages, like a quicker process. However, for sustainability, the public instruments are the better option to use.
One large recommendation is to optimise the use of the land-use plan. One person, for example the Alderman of sustainability, should ensure this land-use plan include more strict sustainable requirements (e.g. a stricter EPC).

Municipal instruments
The Municipality of The Hague has a broad range of municipal instruments. Their list of policies is quite extensive. However, these policies are not linked together. The municipal policy documents are one of the most important instruments to optimise, as explained in chapter 9.1. Without this clear and early involvement of sustainability, the outcome will not be aligned with the sustainable ambitions. Especially municipal instruments, like the NIB will help sustainability tremendously. More of this unique types of instruments should be used (mandatory) in The Hague.
Also, the municipality of The Hague should invest enough effort to ensure the introduction of the EPA will go smoothly. More sustainability can be possible in the environmental plan, however, this can only succeed when the planning is done integrated. The embedding of this new municipal instrument is therefore very important.

Sustainable instruments
The Hague has some sustainable instruments available. The NIB for example can be perfectly applied in every area development, because this aspect is not part of the building decree. This is one of the easiest opportunities to apply for sustainability. However, as stated in chapter 9,1, these instruments are optimally embedded in the other instruments and not used separately.
A climate adaptation strategy, a mobility transitions plan and an energy plan are developed at this moment. Also more new sustainable tools are currently developed within the municipality. These new sustainable instruments can have a positive effect in the near future. However, it is important that these instruments are broadly applied in the other instruments.

Example of a private legal instrument

As an example the use of a private legal instrument will be shortly explained. In many development the municipality of The Hague uses declarations of intent to upfront agree on some topics. Most project managers prefer to use this type of private agreement, because of the short time it takes to use this instrument. Also, with willing parties, the outcome of the development can become more sustainable. However, the problem with this type of instrument is with the fulfilment of the agreements. When a building permit is requested with the department of permits and supervision, the private agreements are not checked. Only public law and national law is checked during the permit application. A project manager cannot easily check is the upfront sustainable agreements are met. And no other parties will also check these agreements. This leaves a huge risk in the use of these types of private agreements. Therefore, it is recommendated to only use this type of instruments for additional sustainable requirements.

This study has found that the municipality of The Hague is currently lacking in the implementation of the sustainability within the instruments. Therefore, it is recommended to improve all five of the implementation aspects: inclusion, consistency, weighting, reporting and resources. The recommendations given in chapter 9.1, also apply to the municipality of The Hague. However, some ranking can be given regarding the order of the optimisations.

1. First, the weighting of aspects area development should be optimised. WIth a clear weighting for each area, including bare minimums for sustainability. Leaving some option for the market to innovate, stating goals not strict sustainable rules. The making of this sustainable ambitions should be done by the strategic level.
2. Secondly, after the weighting process, sustainability should be consistently included throughout the whole organisation. The sustainable ambitions of the first step should be included by the tactical and operational level.
3. Thirdly, the different instruments (resources) should be optimally used by the operational level. The instrument can also be ranked on their effectiveness to support sustainability. As explained in chapter 8, some of the instruments should be used as main tool, while others should be used as supporting tool. The ranking of the instruments should be applied as follow:
    - First the municipal instruments should be optimised. Including the sustainable ambitions and unique tool to achieve these goals
    - Secondly, the public legal instruments should be optimised, for example by setting strict ambitions in the land-use plans.
    - Financial instruments must be optimised after the legal, making sure sufficient funds and budgets are available.
    - Soft instruments should be a supportive tool to achieve more than the minimum requirements achieved with the first three instruments.
    - For covenants the same applies as for the soft instruments. These can be used to combine knowledge from more than one municipality.
    - Also for the private instruments, the same applies. It should be used as a supporting tool, to achieve more sustainability with willing parties.
4. After these three optimisation, the process should evolve into a loop, with a evaluation at the end. The evaluation will find aspects to improve, which should again walk through these four steps. The evaluation should be applied by the operational level in collaboration with the tactical and strategic level, who might need to change some aspects.

Not only the instruments, but also the organisation and the steering will affect sustainability. Optimising these two aspects can positively influence sustainability.

9.2.2 Governance

The general governance advice, also applies to the municipality of The Hague. Optimally, the strategic level applies traditional steering mechanisms and the operational level applies network governance.

For The Hague the use of participation will improve the network governance greatly. This participation is done too late in the process currently. Participation should be done early and in rounds. These rounds will allow the interested stakeholders to effectively influence the process. This network type of steering allows all the stakeholders to understand each other's interests. This understanding will result in less conflict.

9.2.3 Organisation

The interviews has showed this study that many frictions are caused by a lack in the organisation. Some specific recommendation can be made to optimise these.

- The Hague has two structures in their spatial planning departments (DSO and DSB). These two structures result in inefficient communication between the two authorities. Therefore, it is recommended to have one organisational structure, to optimise the communication about the area development.
- When a development starts, this should always involve more than just one single plot. Currently in The Hague, some plots are singly developed, which leaves no room for optimisations of sustainability.
- As already stated in the governance part, participation is important. However, also internally the different department should be involved upfront. This early involvement of all disciplines is very important for a succesful process.
- DSO has a vertical organisational structure, with all the department responsible for sustainability in the area development projects. This however, has showed to work ineffectively. Main issue for sustainability is the lack of embedding in the process of area development. This lacking can be explained by the other responsibilities of the departments, besides sustainability. The best recommendation this study can provide for the municipality of the Hague is to have one department responsible for sustainability. This will always ensure the involvement of the sustainable requirements in the processes.

How can The Hague optimise the organisational structure?

The organisation of DSO currently exists of vertical colum of different disciplines. It is important to have one party responsible for sustainability in order to effecitvely implement this aspect in the process. When the aspects are balanced this responsible party will have to prove the importance of sustainability requirements.
One option is have a separate department created, that will ensure the implementation of the sustainability aspects in developments.
Another option is to have sustainability secured by a more integrated party, that is responsible for multiple departments.
For effectiveness and inclusion of sustainability the best recommendation of this study is to have a single department take responsibility for a sutainable outcome of area development processes.

The whole list of optimisations can be applied to better support sustainability. Having an integrated working process will include many of these optimisations. This integrated approach which is needed for sustainability should start with the strategic level in the municipality. Currently most energy, time and changes for sustainability can be found in the operational level. This besides, the alderman of sustainability, who also puts lots of energy towards sustainability. For quite some time the operational level and the alderman have tried to involve more sustainability. However, this is not working effectively. Therefore, the strategic and the whole tactical level (also the other aldermen) should put the same amount of energy in the sustainable transitions. This, however, is highly dependent on the political reality.

9.3 Conclusion of the recommendations

Some recommendations have been stated, regarding municipalities in general and specifically the municipality of The Hague. These recommendations will be included in the conclusion, gathered in the next chapter.

Most important recommendation for any municipality is to optimise the implemenation of the instruments, besides a better use of single instruments. This study has also found that besides the steering mechanisms, the organisation has a large impact of sustainability in an area development. The most important to improve for the organisation is to make sure one party has responsibility for sustainability as an outcome of any process.

10. Conclusion

Every municipality has the burden to achieve public quality in their city. Sustainability in area development is one of the important quality aspects for the municipality to achieve. In the complex situation of area development this task involves multiple sustainability goals and various other goals. Finding a balance in this complex situation is not easily done. Therefore, this study tries to find an optimisation of the decision-making process in terms of tools, governance and organisation towards more sustainable area development. The main research question was:

"How can a municipality optimise the application of instruments in order to achieve sustainable area development?"

Some sub-questions were established, in order to answer this main question. An answer to this main research question will be given after the answers to five sub-questions are explained. Some sub-questions will specifically apply to the case municipality of The Hague, however, the answer to this main research question will be generalised at the end of this chapter.

Sub-question I: What instruments can a municipality apply to influence area development?

Three aspects came forward as a result of the desk research and internal document research. A municipality can use these to influence area development: instruments, governance and organisation. These three will be discussed briefly on their findings in theory.

I. Tooling

A municipality has a broad range of possible instruments to use in area development. To clearly optimise the use of these different tools a distinction between different tools is needed. Literature has provided the following separation in instruments:

- **Legal (private and public),**
- **Financial**
- **Municipal (active and facilitating)**
- **Soft**
- **Covenant**
- **Sustainable tools**

Somewhere in the near future a new legal instrument will be introduced, the EPA. This can result in a better implementation of sustainability, however, the main issue with this aspect is what to do until the introduction of the EPA.

II. Governance

A municipality has different options when it comes to the governing. The steering can be done traditionally, with strict rules from the government, or with network governance. In network governance the steering is done in rounds with different stakeholders. There should not be a single party that decides.

III. Organisation

Also, as for an organisation there are multiple options a municipality can consider. A municipality can choose the organisation type, the roles within the organisation, the phases involved in an area development and the area development itself can also be organised differently. Literature shows that there is no optimal choice for all these aspects.
Even though, it is important to have a consistent choice, for example a municipality cannot work together optimally when having different organisational structures at the same time. Also, the roles of the different levels in the municipality should be consistent. The work of one level should not be influenced too much by other levels. As an example, the initiation of a development process should always start at the operational level, not at any other level.

Sub-question II: What aspects of sustainability are most relevant for the spatial domain within a municipality in area development?

When considering sustainability in area development the term 'sustainability' should be narrowed down. The SDG's are nationally set ambitions, which are used to create an integration between different countries and their development goals. Some of these goals apply to the spatial domain. These SDG's have been cross referenced with different sustainability aspects of large cities in the Netherlands, resulting in the following aspects which are most important for municipal area development, according to this study:

- Energy
- Climate adaptation
- Mobility
- Circularity

However, these four aspects are not the only involved aspects of sustainability. Even more important is the implementation of these aspects. If this implementation is done correctly the following five topics are optimised:

- Inclusion: sustainability should be included in all instruments.
- Consistency: the involvement of sustainability should be consistent.
- Weighting: a clear weighting process should be held to find a balance between all the aspects involved.
- Reporting: an evaluation should be included at the end of an area development process.
- Resources: the resources must be exploited and used more to support sustainability.

Sub-question III: What instruments can be applied by the municipality to influence sustainability?

The instruments and sustainability have been two separate subjects up to now. However, how the municipality can apply the instruments to influence sustainability must be understood as well. Considering the different instruments of the municipality, one important aspect is to use the whole range of tools.

- **Soft instruments** can result in higher sustainable requirements if the agreements are made with willing parties. Also education and reputation can be optimised, which will result in more sustainability in area development in the long term.
- **Covenants** can effectively support sustainability by combining knowledge and information from multiple public authorities. Combining the solution for sustainability will be more effectively than having all public organisation solve the problems themselves.
- **Legal instruments** can either effect sustainability positively by using private and public instruments. Public instruments are more effective to guarantee sustainable requirements than private instruments.
- **Financial instruments** can stimulate sustainable measures in area development. Most important, however, about this instrument is the application of sufficient internal budgets to support sustainability.
- **Municipal instruments** can be applied in different ways to support sustainability. First of all, the municipal policy document can include many sustainable ambitions. Furthermore, there are many unique tools that can be used to achieve these sustainable ambitions. As long as these unique tools are not mentioned in the building decree, these can be demanded.
- **Sustainable instruments** can be used, but this study advices to implemented these in the other instruments to be most effective.

An overview has been made of the different available instruments for the municipality of The Hague. Figure 19 shows the instruments for active and facilitating land policy separately. The instruments are placed in the phase in which they are used. The different phases of an area development can be found at the top of the model. On the left side the three different levels of the municipality are placed. The instruments are not only linked to their phase but also to the level or department which uses the instruments. The different instruments are shown in the figure using different shapes. Some instruments have been given an orange colour, these will be explained further in the next chapter. This model has been based on the case municipality of The Hague and some specific tools for this municipality are included in the model. Other municipalities should keep this in mind when using this model. Most of the instruments, however, can be applied by any municipality. Most municipalities use the same types of instruments. Furthermore, theoverview of the instruments can help to oversee the different types and phases where the instruments can be used.

Most important is the implementation of the instruments. The five mentioned aspects should be applied in order to influence sustainability (inclusion, consistency, weighting, reporting and resources). This implementation should involve a general used term of sustainability, which is implemented in the whole organisation. Sustainability should be found in all municipal documents, involving the same aspects. Also, sustainability should have a high priority in each development. Minimum requirements are necessary for the areas where sustainability cannot be the first priority. An evaluation is very important to assess the policy and change when necessary after the development has ended. There should be enough resources available in order to achieve this. Especially financial resources and personnel should be available for sustainability.

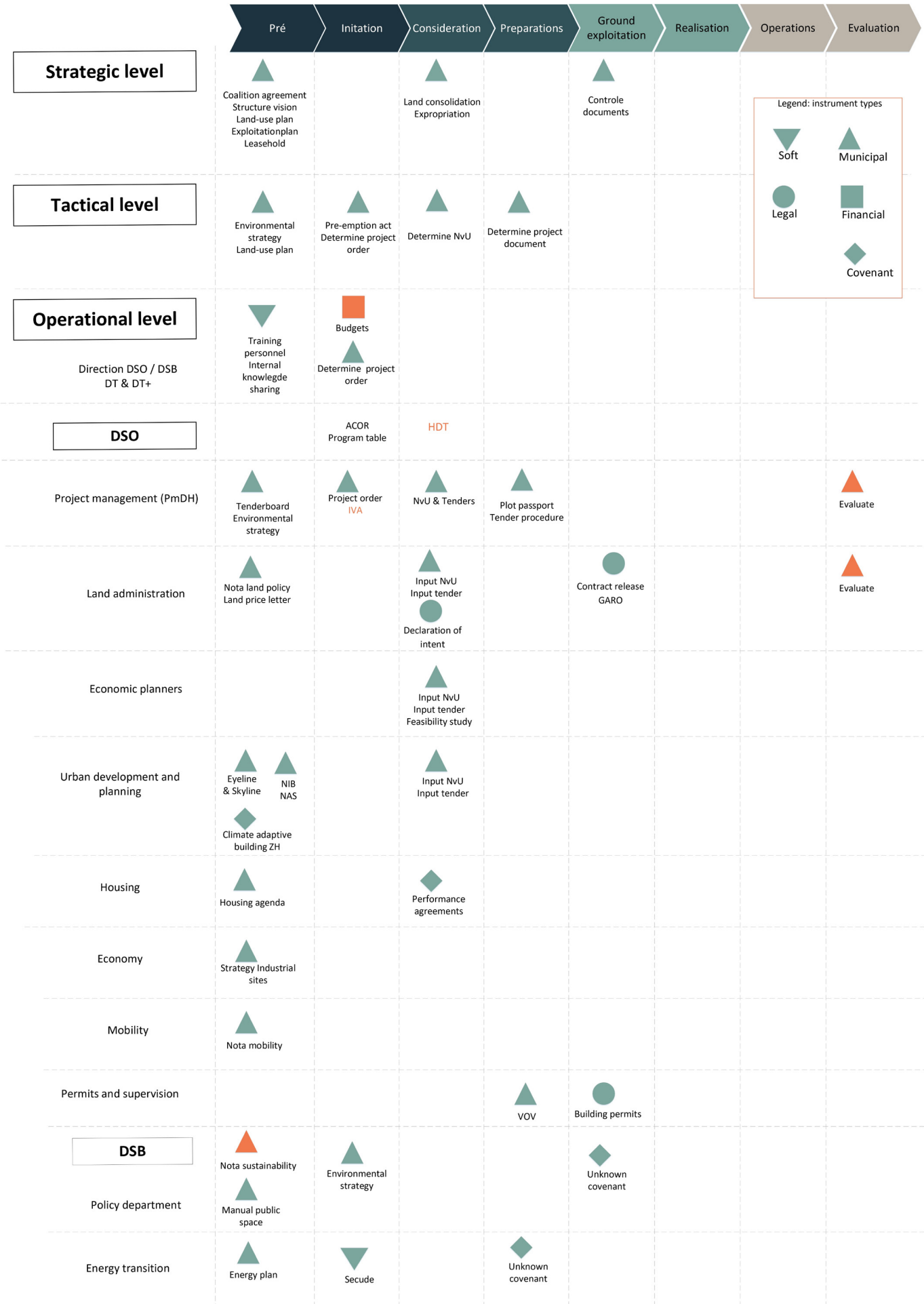


Figure 19: Final model of the instruments of a municipality

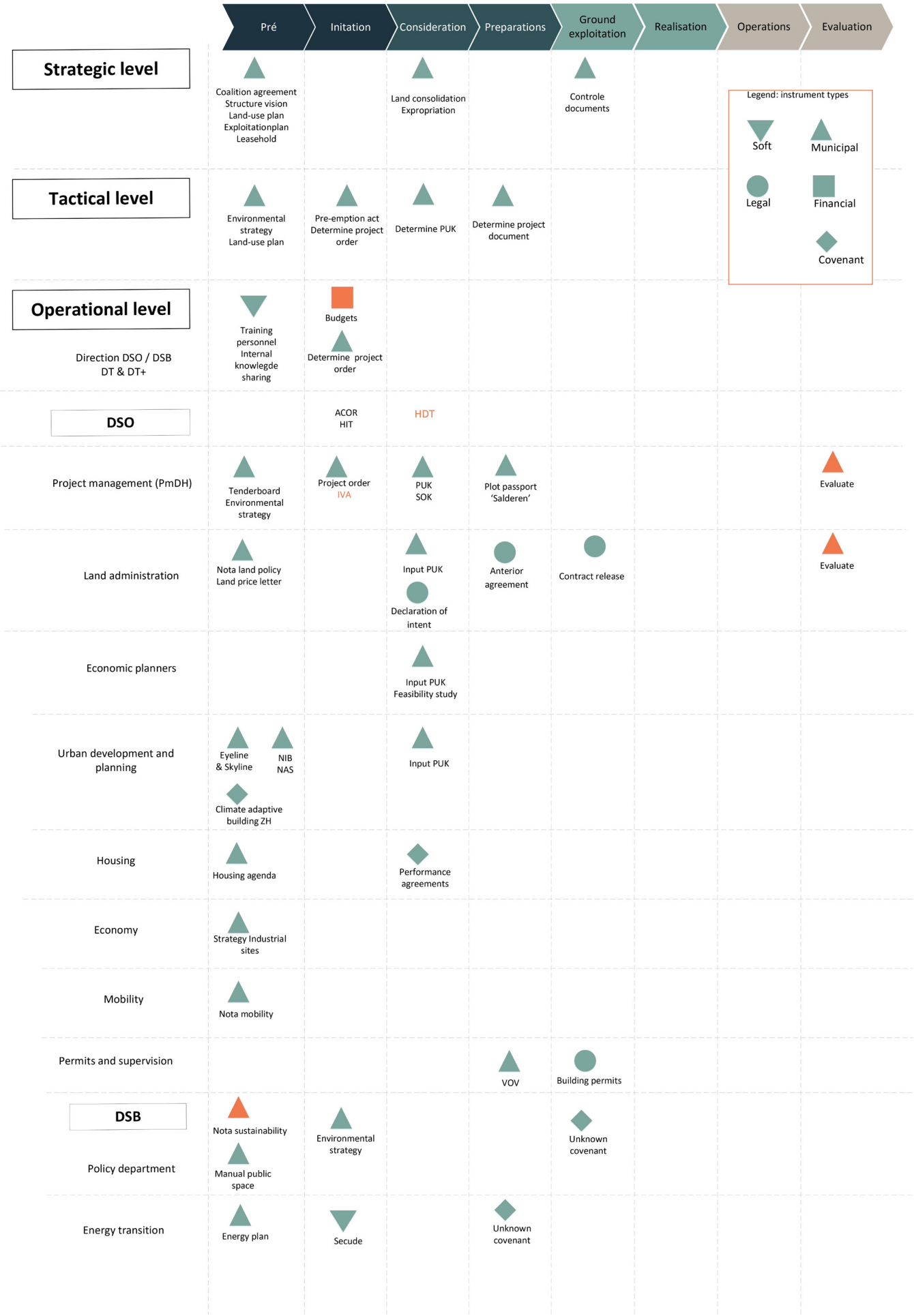


Figure 19: Final model of the instruments of a municipality

Sub-question IV: How does the case study municipality currently apply the instruments to influence sustainability?

This study took the municipality of The Hague as a case study. The current application of the instruments will be assessed for this municipality. For the six types of instruments, the applications will be shortly elaborated.

Legal instruments are often used to make agreements on sustainability aspects. In The Hague it is common to use private legal instruments to make these agreements. Public legal agreements are seen as time consuming by most employees in The Hague. The internal experts of The Hague prefer the public legal agreements. However, the routine of using private instruments is not easily broken. Sustainable agreements, like a stricter EPC norm, can be made in these private agreements. The problem with these agreements is the lack of guarantee at the end of the process. Private agreements rely on voluntariness, which is hard to prove with a large municipality that can be intimidating. This applies especially with smaller developers.

The municipal instruments in The Hague include many policies, documents and checks. These instruments are scattered along all the departments and across all phases of area development. The influence on sustainability in these instruments is rather small. Most documents do involve sustainability, however the extent of the involvement is scattered. This results in a very unclear situation for the employees of the municipality. The integration between the different municipal instruments is missing.

The soft instruments and the covenants are used the same in The Hague. There are some agreements made with the use of these instruments. However, after making these agreements, not much is done with them. The embedding of the agreements in the process is lacking.

Some financial instruments for sustainability are available in The Hague. However, these do not cover the needed financial resources to optimally influence sustainability. Subsidies alone cannot fully support sustainable adjustments. Mainly, internal financial resources (e.g. budget), will influence sustainability positively. The impact of financial stimulus, like subsidies, is still unknown.

Sustainable instruments (e.g. the NIB) should not be a separate type of instrument. The other four instruments should all include sustainability.

The implementation of sustainability aspects is even more important than the use of the separate instruments, as explained in sub-question II. In order to effectively implement sustainability, the process should include at least five aspects. Inclusion, consistency, weighting, reporting and the optimal use of resources. The municipality of The Hague does not apply any of these five aspects correctly, at this moment.

Inclusion of sustainability in all the policies cannot be found. Not all documents include sustainability as an ambition. Most of the internal documents do include sustainability, however, there is no consistency in the definition of sustainability. The policies all include other aspects of sustainability. Sustainability is not prioritised, when a balance is needed between all the aspects in an area development. In practice quantity seems to be prioritised above quality. The municipality does not include a clear weighting framework for the developments. All the developments have to start with a discussion on priorities. Sustainability is rarely one of them. Reporting about the process is very important at the end. An evaluation will help to learn. However, in The Hague this evaluation is almost non-existent. Some departments are starting to implement an evaluation at the end of the process. But, currently, this is done sub-optimally for sustainability. As stated before, different resources are used in the municipality. All the different instruments can be used more effectively. For sustainability mainly financial, legal and municipal instruments could be optimised in The Hague.

The municipality does not solely influence sustainability with their instruments. Also, the governance and the choices for the organisation will influence sustainability.

Unintentionally the municipality of The Hague uses multiple steering techniques. This steering is done differently by different levels and departments, without coordination. Network governance is barely used in the municipality. A fraction of the project managers involves participation early in the process. However, this does not take place in most of the area development. The same must be said of traditional steering. Incidentally hard requirements are demanded by the municipality. However, sustainable requirements are almost never demanded, internal and externally.

The application of the organisation does not always positively affect sustainability. First of all, the municipality of The Hague works more with plot development instead of area development. This makes sustainability more complex. In a plot development it is hardly possible to include all the sustainability aspects. A larger area with multiple developments is necessary for these aspects to be included optimally.
Secondly, the departments of DSO can be seen as vertical pillars, all with other responsibilities. These pillars do not effectively collaborate to improve aspects like sustainability. The integration between the different departments is lacking. Early communication about priorities is missing in the area development. Upfront involvement, with inclusion, consistency and a clear weighting will help to improve the involvement of sustainability in the process.
The municipality of The Hague does apply sustainability in some of the area development. Interviews showed that this embedding only takes place if the employees see this as relevant. Sustainability will not be included without the interest of the involved employees. This informal circuit of personal views will only improve sustainability in some cases. The application of sustainability should have the same relevance for all the employees.

These sub-questions focused on the current use of instruments. However, many of the lacking instruments can be optimised. The following sub-question will give an answer on how to optimise the instruments for sustainability.

Sub-question V: How can a municipality optimise the instruments on sustainable area development?

This sub-question will give some general conclusions on how instruments can be optimised. A municipality can optimise their instruments for more sustainable area development. This sub-chapter will discuss the optimisations of single instruments. The questions about how to optimally apply these instruments will be answered right after this sub-question.

I. Tools

First of all, the municipality can optimise the separate tools available. The main aspect to improve is the guarantee of the agreements about sustainability. The second important aspect is to involve as many instruments as possible in area development. The choice for certain instruments should be clear throughout the whole organisation.

Soft instruments can be optimised by any municipality in two ways. First of all, the internal soft instruments like education and reputation must be steered towards sustainability. Secondly, the external soft instrument of seducing should be optimised as well. This can help to achieve more than minimally required for sustainability.
Covenants can be optimised by combining the information between different municipalities. All municipalities strive to achieve sustainable requirements in the next couple of years and this instrument can help to bundle the efforts and outcomes.
Financial instruments are important to optimise in any municipality. There should be sufficient budget available to support the sustainability ambitions. At the same time, sustainable investment will increase when subsidies are given for sustainable measures.
Legal instruments should be optimised by mainly using the public instruments, instead of the private instruments. Public instruments, e.g. the land-use plan, can ensure stricter sustainable requirements. Private instruments should be used by municipality to support extra sustainable requirements, but must not be used as main legal instrument.
Municipal instruments have shown that they can be quite useful for a municipality. Most important is to have unique sustainable tools, that are not described in the building decree. These unique tools can ensure sustainable measures. Also the municipal policy documents are important to optimise. These should regard sufficient and consistent sustainable ambitions.
Sustainable instruments should not be singly used by a municipality. For a sustainable outcome of any development process, sustainable instruments work optimal when implemented in the other instruments. When these are used separately the use can be non consistent.

Not the isolated instruments are the most important to optimise, but the implementation of the tools is most essential. Five aspects should be embedded in the process of a municipality; inclusion, consistency, weighting, reporting and resources. These five will be shortly discussed on how they should be optimised. The application of this implementation will be explained a little further in this conclusion.

Sustainability needs to be included in all the municipal policies. Not only the inclusion of sustainability matters, but also the consistency. All the different policies should involve the same aspects of sustainability. The different aspects of sustainability should be consistently used with the same level of ambition throughout the whole municipality.

In order to deal effectively with all the aspects involved a weighting process should be used. This weighting should be done for all the aspects per district or area. Sustainability as one of these aspects should be a priority in most of these districts. For sustainability there should be a bare minimum sustainability for all developments. These minimum criteria should include sustainable goals and not strict rules, in order to leave some room for the market to innovate. Next to the demanding sustainability requirements, extra sustainability wishes should be made. These decisions should be made upfront for each area development. Having clear priorities upfront will make sure a balance is more easily found with each new initiative. One extra positive effect can be found when creating a weighting framework for all developments. Upfront, the aspect of a certain area development will be discussed. This will lead to a decrease of single plot development.

When a balance for all aspects is found, the development can start. After the development has finished it is important to look back at the process. The process and the sustainable requirements should be evaluated and reported. The lessons learned from one project are extremely useful for other upcoming developments. When evaluating sustainability, there might be a need to change the ambitions set at the beginning. Either more strict requirements or wishes can be strived for, or the requirements need to be loosened to receive the optimal result. Reporting at the end of the process will result in a loop instead of a linear developing process.

Throughout the whole process a municipality should use its resources optimally to support sustainability. Preferably active land policy is used. With this active development the municipality is the leading party. Strict requirements for sustainability can be more easily achieved in active land policy. Unfortunately, most of the land is owned by other parties. When developing these areas, the municipality is always the facilitating party. In facilitating land policy, it is extremely important to guarantee the sustainability requirements.

Most important for the resources is to apply the broad range of possible instruments, all including sustainability aspects. How this application can be done optimally will be explained shortly.

II. Governance

Secondly, the governance can be optimised by a municipality. Most effective governance is when municipalities use their broad range of possible steering mechanisms. Optimally, traditional steering is used to create sustainable ambitions. At the same time, network governance should be used for all the other aspects. Sustainability can only be optimally influenced with the use of strict steering, with clear ambitions. The network governance asks for early involvement of all departments and external stakeholders. During rounds of discussion with all the stakeholders, sustainability should be presented by one party. How should apply these types of steering will be further elaborated when answering the main research question.

III. Organisation

Thirdly, the organisation can be optimised to influence sustainability. Most optimally a municipality uses one organisational structure in the whole organisation. This will result in lower complexity. The complexity for sustainability in area development is already quite high.

Therefore, the organisation should not cause more complexity. For the same reason the different roles in the municipality should be strictly separated. Work from the operational level should not be surpassed by the tactical level.

Clear communication between the different departments and with the external parties is very important to deal with the complex environment of area development. This optimisation will have a positive effect on sustainability if the different departments are involved upfront. Having clear ambitions for sustainability upfront is very important for the outcome.

For sustainability it is important for the organisation to strive for area development and to let go of separate plot development. Having an integralted working process will ease this change towards area development.

All these optimisation should be included in the process of area development, however how this can be applied and by which party will be further explained in the next part.

After answering the five sub-questions an answer to the main research question can be given. The answer to this main question is based on the general results, that should be applied by any Dutch municipality. This question is:

"How can a municipality optimise the application of instruments in order to achieve sustainable area development?"

The instruments of the municipality can be optimised themselves. Sub-question V has answered the question how these instruments could be optimised separately. However, more important is the application of these instruments in the process.
First of all, the instrument can be separated between main instrument and supporting instruments. Municipal, public legal and financial instrument should be used as main instruments to achieve sustainable goals (at least the bare minimums). Covenant, soft and private legal instrument should be used as supporting instruments, when wanting to achieve extra sustainability.

The best optimisation to apply in the process is the implementation of the instruments. However, the application of this implementation still needs to be explained further. Table 4 shows the aspects of implementation and which instruments should embed them. Also the level within a municipality that should apply the implementation is mentioned. Last, the phase where the implementation should take place can be found in the table.

The single instruments and the implementation of these instruments should be applied in a certain order to achieve optimal sustainability in an area development. Table 4 has showed how and by who this implementation is optimally done. However, also some ranking can be given to the application of the optimisations for the tools. Besides this ranking, also the resources can be ranked on their effectiveness to support sustainability.

Table 4: Optimisation of the implementation of instruments

Aspect	Details of the aspect	Included in which instrument	level taht should ensure the aspect	Phases mostly involved
Inclusion	Sustainability should be included in all instruments	All instruments	All levels	Pré phase and initiation
Consistency	The involvement of sustainability should be consistent.	Municipal Legal Soft Covenant	All levels	Pré phase and initiation
Weighting	A clear weighting process should be done for each area. Sustainability should be a priority in most of the areas.	Municipal policy documents	Strategic level	Pré phase , before starting any development
Reporting	An evaluation should be included at the end of an area development process.	Legal Municipal	Operational level	Operation phase End of the process
Resources	The resources must be exploited and used more to support sustainability.	All instruments	Integration of the sustainability aspects	All phases

The ranking of the optimisation is based on the recommendation for The Hague, but can also be used by other municipalities. Some of the optimisations, however, might not be necessary in every other municipality.

1. First, the weighting of aspects area development should be optimised. With a clear weighting for each area, including bare minimums for sustainability. Leaving some option for the market to innovate, stating goals not strict sustainable rules. The making of this sustainable ambitions should be done by the strategic level.
2. Secondly, after the weighting process, sustainability should be consistently included throughout the whole organisation. The sustainable ambitions of the first step should be included by the tactical and operational level.
3. Thirdly, the different instruments (or resources) should be optimally used by the operational level. The instrument can also be ranked on their effectiveness to support sustainability.
    - First the municipal instruments should be optimised. Including the sustainable ambitions and unique tool to achieve these goals.
    - Secondly, the public legal instruments should be optimised, for example by setting strict ambitions in the land-use plans.
    - Financial instruments must be optimised after the legal, making sure sufficient funds and budgets are available.
    - Soft instruments should be a supportive tool to achieve more than the minimum requirements achieved with the first three instruments.
    - For covenants the same applies as for the soft instruments.
    - Also for the private instruments, the same applies. It should only be used as supporting, to achieve more sustainability with willing parties.
4. After these three optimisations, the process should evolve into a loop, with a evaluation at the end. The evaluation will find aspects to improve, which results in the same four steps, that should be walked through again. The evaluation should be applied by the operational level in collaboration with the tactical and strategic level, who might need to change some aspects.

This study can conclude that not only the optimisation of the instruments will affect sustainability. Also, the governance and the organisational choices a municipality makes will have an influence on the sustainability of an area development.

Governance

First of all, the governance should be applied effectively by the municipality. The best option for any municipality is to have the highest level strictly steer towards sustainability. The strategic level should create clear ambitions for sustainability. These ambitions should include a minimal and optimal level of involvement per aspect. They should be stated in goals that a municipality wants to achieve and not too specified. The other levels of the organisation can apply these ambitions further by including and consistently using the ambitions. For sustainability this strict traditional way of steering will be most effective. Without hard requirements, sustainability will not be applied soon enough. When waiting longer to apply sustainable ambitions, the investments will only increase.

For all the other aspects, besides sustainability, network governance can best be used by the operational level of a municipality. This networking allows stakeholders to participate in the process. Preferably stakeholders are involved early in the process. Throughout the process the stakeholders should be kept in the loop, with the help of rounds of participation. This will benefit the process by combining the interest of all the stakeholders.

Organisation

Multiple optimisations to the organisation could be applied in a municipality to support sustainability. The organisational structure should be used in one single way. Unity in the structure is important to lower the complexity of the communication. For sustainability clear communication in the organisation is important. Therefore, not only the organisational structure but also the different roles and levels should be applied uniformly. The different levels of a municipality should be strictly separated together with the roles within these levels. This separation can be applied more easily when involving all the different departments upfront in all area development. This will ensure the departments and the different levels can influence the process. During the process no sudden changes will be needed, due to the involvement of other levels.

The organisation will work optimally for sustainability, if sustainability has its own department of section within the municipality.

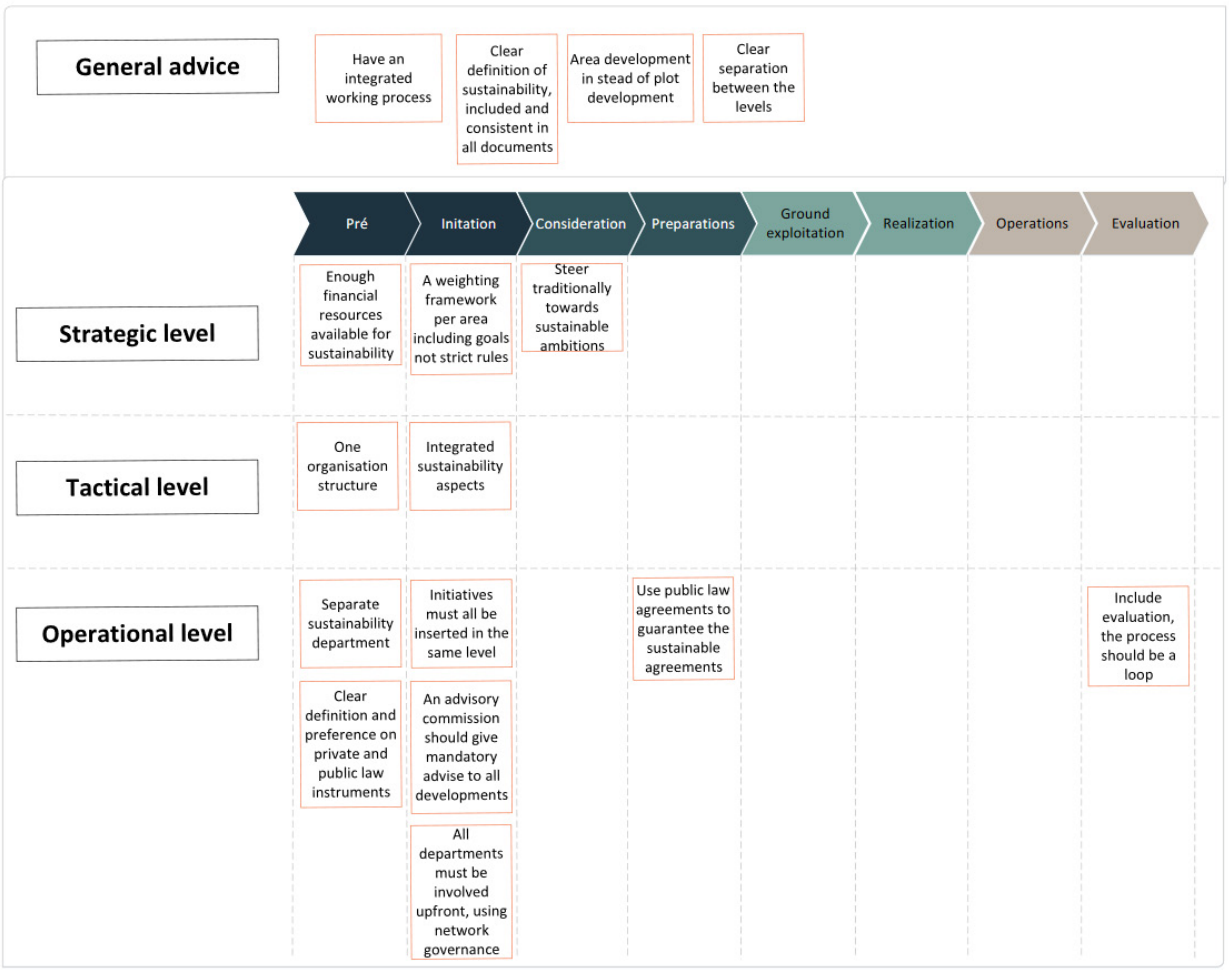
Sustainability should be embedded in the process of area development. Embedding is hard to ensure if not one party takes responsibility for sustainability. Therefore, this study concludes that one department should be optimally applied to represent the full range of aspects of sustainability. It will also ensure the integration between the different aspects is involved. Last but not least, such a department will guarantee there is an equal incorporation of the different aspects of sustainability.

In order to have a clear overview of the optimisation of the application of instruments (tools, governance and organisation) a roadmap has been made. This roadmap gives an overview of the application of instruments to optimise sustainability. Due to the fact there is some overlap between the different optimisations this roadmap gives a clear overview of the optimisations per phase and per level of the organisation (see figure 20). Most of the optimisations will overlap and will follow quickly or automatically after each other.

A lot of optimisations have been mentioned that a municipality should apply. One overarching aspect can be mentioned that involves almost all improvements.
An integral working process will help to achieve the optimisation of the instruments. The application of these optimisations will be simplified by an integral working process. Also, the implementation of the instruments will benefit from an integral working process. An integrated working way will increase the communication, participation, and the involvement of internal and external parties. Also, the inclusion, consistency of and the embedding of sustainability aspects will be increased more easily in an integral process.

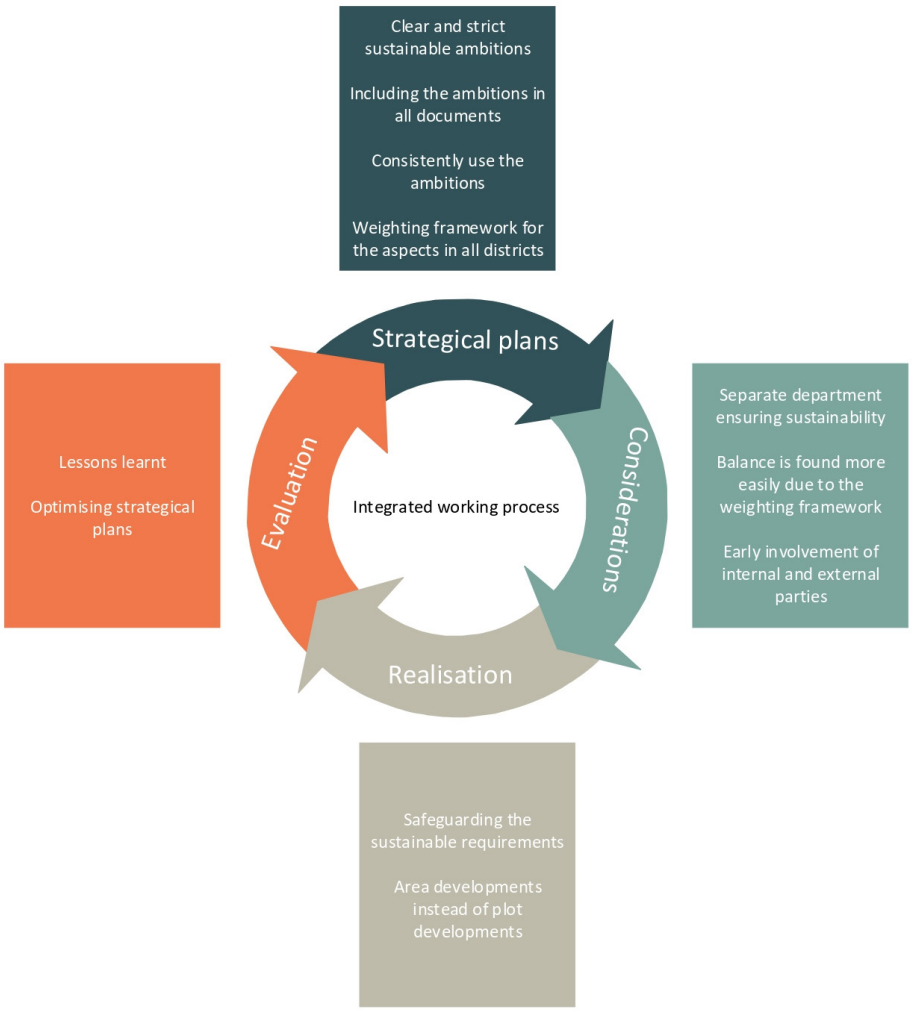
An integral working process has been made visual to show which optimisation should be used in which phase of the development. Simplified phases of the process phases are used in Figure 21.

Figure 20: Roadmap for the recommendations



To conclude this study the most important instruments to optimise will be presented. The same process shown in figure 21 will also represent the steps to take for any municipality. First of all the strategical weighting of aspects must be optimised, with extensive sustainable ambitions. Next this should be taken into account into the consideration, with including and constant use of the strategic ambitions. Afterwards, the instruments that are used mostly by the operational level should include these ambitions as well. Preferably guaranteed by the municipal or public legal instruments. After the instruments are used and the process has ended, sustainability should be evaluated. Ending up with the first step again, by optimising the strategic ambitions from the lessons learnt.

Figure 21: Integrated working process



11. Reflection

The study provided some recommendations on how to optimise the application of instruments in order to increase sustainability in area development. The importance of the results will be shortly discussed in this chapter (chapter 11.1). However, this study also knows some limitations, which will be discussed in this chapter as well (chapter 11.2).
Also, a couple of recommendations will be given for the implementation of the conclusions and for any further research (chapter 11.3) that can be based upon this thesis. Some final recommendations for The Hague together with some last notable points (chapter 11.4) will end this chapter.

11.1 Importance of the results

This study originally looked at the instruments of a municipality to increase sustainability in area development. The management of the organisation was seen as irrelevant at the beginning of this study. However, while conducting the research, the organisation was found as one of three main aspects to influence sustainability.
Therefore, this study contributes to the literature on the aspect of the organizational management. This research has shown the importance of a clear structured municipality. This organisation has a large influence on the decision-making process and has a large influence on the outcome of such a process. Sustainability can be increased in area development by optimising the organisation. However, it must be taken into account that this aspect was found during the study and was not researched from the beginning. Some additional theory can be found in Appendix XV. This literature can be used as a start for further research about the municipal organisation and the effect it has on sustainability.

To practice this study also contributes some insights. The model, introduced in chapter 4 and finally shown in chapter 8, shows all the possible instruments for a municipality to use. Such an overview has not been provided for a municipality in previous research. These insights mainly apply to the municipality of The Hague. However, other municipalities can also learn from the visible overview of instruments. The public legal instrument apply for all municipalities in the Netherlands. The same can be said about many of the instruments included in the model. However, when using this model by any other municipality, it must be checked if the instruments overlap between the municipalities. Also the conclusion that are made with the use of this model can be applied by other municipalites, besides The Hague. Besides the model, this study also provided the practice with recommendations on the instruments, the governance and on the organisation. These recommendations are never listed for a municipality, specifically for sustainability.

11.2 Limitations of this study

The study has been conducted within the municipality of The Hague. Within this municipality mainly DSO has provided input to this thesis. Also, DSB has provided information for the conclusions. However, the municipality consists of many other departments. These departments are not completely involved in area development. However, the involvement of these other departments could have provided an even better overview of sustainability optimisation in a municipality.
The same must be said about the different levels within the municipality. Due to their crowded agenda most of the tactical and strategic level employees have no time to contribute to this research. Due to all the measures of the national government around the COVID-19, the planned interviews with the tactical level were cancelled. The lack of inclusion of these two levels must be a limitation to this research. The input has been mainly given by the operational level.

At the start of this research sustainability was a broad definition which needed to be scaled back. Therefore, in the beginning and during the first interviews only energy and climate adaptiveness were taken into consideration. During the interviews it became clear also mobility and circularity needed to be involved in the conclusions. Some conclusions might help the last two aspects even more. This first scope, however, could have resulted in a focus of the interviews on energy and climate adaptiveness. This should be considered when reading this paper.

As found in Appendix V, sustainability is defined differently in other cities than The Hague. While this research is focused on the municipality of The Hague, the conclusions can also be implemented by other larger municipalities in the Netherlands. The Hague can be seen as representative for other cities. Although it is a large city, The Hague at the moment does have a complex situation around sustainability. The goals of The Hague are comparable with the goals of the other cities, some have more, some have less. Therefore, other municipalities can also learn from the advice for this specific municipality. The use of specific instruments, however, might differ between two cities. The four steps that are recommended to be taken by any municipality, might not by applicable for all other municipalities. In that case, some steps might be skipped. However, the process should be a loop, resulting in the same four steps in the optimisation. Sustainability is a fast changing problem, that calls for evaluation is all large cities every couple of years.
It must be taken into account that also other aspects might influence sustainability in other cities. This study only looked at the instrument and later added the organisation. This must be considered when implementing this study in other municipalities.

This study only included sustainability in new plans. However, an even larger task is to make the current building environment sustainable as well. With the building of new plans, the requirements can be made somewhat easier. However, when transitioning the whole current build environment, a lot more challenges will occur. These challenges will differ greatly from the challenges in new area development. This research, therefore, can only be applied to new area development.

11.3 Recommendations for further research

One important aspect of difficulty in this research is the use of legal instruments. A municipality has a large range of opportunities and a choice between public and private instruments. To increase sustainability, it has not become completely clear which of the legal instruments is most effective. Therefore, it is recommended to extend the research to search for the most optimal legal instrument to ensure sustainability in area development. One important aspect for this to be included is the exact opportunities the building decree has and its limitations.
For these legal instruments it is also very important to extend the research on the EPA. This new legislation will involve large changes in the working process of the municipalities. Sustainability could get a larger position in area development due to this lew legislation. However, to what extent this is possible or how is still unknown. Also, further research on the EPA and the benefits for sustainability within this legislation, is also recommended.

Circularity has been considered in this research. However, as explained in the limitation, this did not involve sustainability aspects upfront. This research concluded that the municipality has little to no circular policies or regulations. Therefore, this is an optimal new research opportunity. The use of circularity in area development should be researched further, especially on how this could be integrated in the current working process of municipalities. The same as in this research the possible instruments to optimise circularity should also be researched.

Literature on the specific instruments has been included minimally in this thesis. Mostly internal documents and the interviews have provided the information about the effectiveness of the instruments. Additional research about specific instruments could help a municipality to optimally implement sustainability in these instruments.

National and international collaboration would be another good aspect for further research. A lot of laws and regulations are created on this (inter) national level. The effect of these instruments and if and how they can be changed is not known yet. This research has found the national building decree to be of large influence, and mostly restriction the municipality in their sustainable goals.

11.4 Some other notable points

The semi-structured interviews have led to some noteworthy findings. Some of the interviewees gave information about aspects other than required for this study.
I have noticed some interesting things in the interviews that did not relate to this research specifically. These will be shortly reviewed.
On a significant number of topics, the employees of The Hague did not agree. There are contradicting views towards the use of the EPA, finding a balance between aspects, the steering and the profiling towards sustainability. For all these topics employees can be found with positive feelings and employees can be found with negative feelings towards these topics. In order to effectively develop the city, the employees should not have such large differences on so many topics. Good education or clear training about sustainability might help to overcome these differences.
Nevertheless, a lot of the interviewees have given positive notes towards sustainability. They have a positive attitude towards the future and see that sustainability will be involved better over time. They also mention that new projects will be done better and that the market will involve more sustainability if the municipality asks for it.
However, it must also be noted that currently it seem that sustainability is mostly involved when the specific colleagues are interested in sustainability. This should not be the case and it is advised to have the enthusiasm of some embedded in the whole organisation. This recommendation of this study will be a start.

One last advice for the municipality of The Hague is to stop being so humble. There are many operational employees who work very hard for sustainability. Some of the districts in the municipality are very sustainable. And the inhabitants are also establishing more and more for sustainability. The modest approach does not fit the effort that the municipality put in sustainability. A recommendation is to be prouder of the sustainable achievements and to show this as well.

List of figures

Figure I.1: Roadmap 13
Figure I.2: Integral working process 14
Figure 1: Research method (own illustration) 26
Figure 2: Phases in the decision-making process (own illustration) 28
Figure 3: Plot development versus area development as indicated here in the Laakhaven area 29
Figure 4: Trend from government to governance (Klijn, 2012) 30
Figure 5: Round model of Teisman (2000) 30
Figure 6: Eight rungs on a ladder of citizen participation (Arnstein, 1969) 33
Figure 7: Law changes due to the revision of EPA (Ambient, 2019) 34
Figure 8: Sustainable development goals of the spatial domain (own illustration) 35
Figure 9: Sustainable goals of the municipality of The Hague. 36
Figure 10: Phases in the area development process of a municipality 40
Figure 11: Included parties in area development 40
Figure 12: Legend of the different instruments used in the model. 40
Figure 13: conceptual model of the instruments of a municipality 41
Figure 14: Departments in the first interview round 46
Figure 15: Validation interview departments 54
Figure 16: Loop of a development process 57
Figure 17: Changes in the conceptual model 58
Figure 18: roadmap for the recommendations 61
Figure 19: Final model of the instruments of a municipality 71
Figure 20: Roadmap for the recommendations 78
Figure 21: Integrated working process 79

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