Integration of transport- and spatial planning for realistic decision-making

Towards policy integration of transport planning (MIRT) and spatial planning (NOVEX regions) in the scarce space of the Netherlands

Master thesis

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Integration of transport- and spatial planning for realistic decision-making

Towards policy integration of transport planning (MIRT) and spatial planning (NOVEX regions) in the scarce space of the Netherlands

by

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Preface

Over the course of the last six months, I realized how important policy integration is and how the interaction of large-scale housing sites and the according transport planning will stay relevant. This still sparks my interest, and offered me great motivation during the writing of this research.

I would first like to thank my graduation committee. Dr. J.A. (Jan Anne) Annema, your down-to earth feedback and quick responses helped me to quickly decide on the hundreds of decisions I had to make during the past months. Dr. ir. Ellen Minkman, your constructive and elaborate feedback, in which you suggested ways I could tackle issues which emerged, guided me. Also, it gave me a critical point of view on the scope and perspectives chosen in this research. Ricardo van Breemen, thank you for the sparring sessions we had, everywhere in the Netherlands. A real-life expert greatly helps in creating a guiding tool for practice. Also, I would like to thank the Mobility & Infrastructure department of TwynstraGudde for providing me with possible interviewees on a short notice, and giving me an insight of what working life looks like on office Fridays.

Then, I would like to thank the interviewees for participating and creating meaningful conversations on the topic. Lastly, I would like to thank my family and friends, for encouraging me during my studies, and celebrating every milestone with me.

J.S. (Jasmijn) van Reeuwijk
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Summary

The housing crisis in the Netherlands urges decision-makers to establish large-scale housing sites, but finding sufficient space and ensuring appropriate accessibility are serious challenges in doing so. Otherwise, limited local traffic access to new housing developments and congestion can occur. Policy integration can improve decision-making and ensure that transport solutions and new housing allocations are better aligned in urbanized areas of highest need, where urbanization through large-scale housing sites is harder to reach due to current transport- and traffic clogs. However, in the Netherlands, an implementation gap in integrating these two policy domains is present. This gap is to be filled to mitigate policy fragmentation, which is unable to address public, complex and interconnected issues (Head & Alford, 2015; Peters, 1998). Policy coordination and cooperation are partly present in the Netherlands, but challenges such as urban sprawl hinder policy integration. The specific barriers and strengthening factors affecting the implementation gap between the two policy domains remain unclear. Therefore, the aim of this thesis is to examine strengthening possibilities in the relationship between transport planning and spatial planning in the Netherlands. The main research question of this research is:

How can the relationship between transport planning and spatial planning in the Netherlands be strengthened?

This research adopts a qualitative study approach, in which a comparative case-study and according semi-structured interviews present factors on the relationship between transport- and spatial planning. Four policy integration models are established, including behavioral and practical factors which influence the policy integration concepts of coordination, coherence, cooperation and manageability in a negative, positive or dual manner (May et al., 2006; Meijers & Stead, 2004). The case studies in this research are Oeververbindingen Rotterdam and Utrecht-Rijnenburg, in which the last one consists of both the transport planning investigation *A12-Rijnenburg* and the transport planning exploration *OV en Wonen*. Both policy advisors involved in the MIRT-investigations and -explorations, as well as spatial planning policy advisors of municipalities, provinces, ministries, metropolitan regions and consulting firms in the Netherlands are interviewed.

The scientific value of this research is that coordination, coherence and cooperation are established literature policy integration concepts. However, through conducting semi-structured interviews in two case-studies, this research finds that *manageability* can be added to these literature concepts. This important finding is a prerequisite in establishing desirable policy integration. Also, this research relates these four policy integration concepts to real-life factors influencing them, creating a bridge between theory and practice on policy integration.

In practice, analyzing cases based on desk research and semi-structured interviews, shows that *coordination* and *cooperation* are relatively well established in decision-making processes in the Netherlands and can serve as a basis for strengthening the integration between transport-

and spatial planning. However, *coherence* and *manageability* of the projects deserve more attention from regional decision-makers in these policy domains. Therefore, the newly found concept of *manageability* offers a strong policy integration concept.

Such integration by regional decision-makers can be performed at the start of decision-making processes in both policy domains, when (political) discussions on guiding principles and adaptable thinking can be applied. Similar guiding principles of both policy domains form a base for coherence, as well as when reasonable behaviour of administrators can be reached. Also, showing regional successes of coherence towards ministries helps in establishing this integration concept. Manageability can be reached by establishing long-term visions, including both the project plans of transport- and spatial planning. Then, the question is raised which parts of the projects to integrate first, and which ones at a later stage in the decision-making processes, to prevent the aim of wanting to unrealistically integrate every part.

Interviewees and desk research indicate that full policy integration is neither desired nor fully achievable. Maintaining quality in separate policy domains limits the wish for full integration. Also, integration is time-consuming and complicated, looking at the required consultations and cooperation between public and private parties in various governance layers. However, regional decision-makers seek overarching coordination and emphasis on coherence between policy domains. Cooperation between management groups should occur when necessary, ensuring a realistic project scope. Complete integration of transport and spatial planning is infeasible due to differing construction timelines of infrastructure and housing sites. Expanding integration requires analyzing project paces, adaptability, as well as stronger cooperation, which may extend project duration but enhances its success.

This research analyzed two large transport planning projects, interacting with large-scale housing sites, in different regions in the Netherlands. Within these case-studies, experienced interviewees were questioned. Therefore, the policy integration models serve as guiding tools for large transport planning projects in the Netherlands. Also, the semi-structured interviews highlighted both behavioral aspects and pragmatic influences in the integration of transport and spatial planning in other projects. This leads to generalization of the research towards similar large-scale housing sites interacting with transport planning for accessibility of the housing, and vice versa. Future research recommendations are focused on policy integration of other or similar policy domains in the scarce space of the Netherlands, a broader range of interviewees, a focus on one policy integration concept, or two combined, or on dual relationships in the established policy integration models.

This research shows that policy integration can strengthen the relationship between transport- and spatial planning within the Netherlands. The concepts of coordination, coherence, cooperation are established through policy integration literature. *Manageability* is to be acknowledged by regional decision-makers as an integration concept added to this literature.This can guide regional decision-makers towards effective decision-making processes in transport planning projects and spatial planning through related large-scale housing sites. Then, ensuring accessibility to large-scale housing sites remains realistic, even when increased traffic congestion occurs and additional housing is required in the scarce space of the Netherlands.

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0.1. Abbreviations

Abbreviation	Definition
BO	Administrative Consultation (or: Bestuurlijk Overleg)
MER	Environmental Impact Assessment (EIA)
MIRT	Multiannual Infrastructure Programme Space and Transport (Dutch: Meerjarenprogramma Infrastructuur, Ruimte en Transport)
(Ministry of) BZK	Internal Affairs
(Ministry of) I&W	Infrastructure and Watermanagement
(Ministry of) VRO	Housing & Spatial Planning; former branch of the ministry of BZK
(Ministry of) EZK	Economic Affairs
MRDH region	Metropolitan Region Rotterdam The Hague
NOVEX	National Environment Vision EXecution force
NoVi	National Environment Vision
NRD	Notitie Reikwijdte en Detailniveau
Urban sprawl	The outgrowth of urban areas caused by uncontrolled and uncoordinated urban growth (Sudhira et al., 2009)
WoMo	Programme Housing and Mobility

1

Introduction

1.1. Problem introduction

For some years, various regions in the Netherlands encounter difficulties in the local congestion of access roads towards newly built housing, negatively impacting both residents of established neighborhoods and newcomers(Halsema, 2024; Streekstad Centraal, 2024; Van Vliet, 2023). These issues need to be addressed through a closer relationship between transport planning and spatial planning. One potential solution is policy integration, which can create synergies and improve policy coherence (Rode, 2019).

Since 2015, the urban Sustainable Development Goals (SDG 11) have influenced policy integration by advocating for the adoption and implementation of integrated policies and plans. This goal aims to make cities and human settlements inclusive, safe, resilient, and sustainable (Bertolini et al., 2005; UN environment programme, 2024). As such, the integration of transport and land-use planning has become essential.

Several factors shape the decision-making environment in both policy areas within the Netherlands. First, the country faces the challenge of operating in a space that is increasingly limited. This scarcity of space restricts the construction of both housing and infrastructure, with competing demands from other priorities such as the energy transition and economic development (Ministerie van Algemene Zaken, n.d.).

Additionally, the Netherlands is currently experiencing a housing crisis, making the construction of new housing and the provision of transport access to residential areas urgent. It is estimated that 981,000 new homes are needed between 2022 and 2030 to meet housing construction goals (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022b). Therefore, for example, at the end of 2024, a topmeeting with the prime-minister, minister of public housing and spatial planning (Volkshuisvesting and Ruimtelijke Ordening or VRO) and national administrators was held on the acceleration of housing construction site (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, n.d.-b). Another part of the response to the housing crisis has been the establishment of 16 NOVEX (Nationale Omgevingsvisie EXecutiekracht) regions in 2022. Within these 16 regions, 7 Urbanisation areas (Verstedelijkingsgebieden) are appointed, in which 17 large-scale housing areas are appointed. (Ministerie van Binnenlandse

Zaken en Koninkrijksrelaties, 2022a, 2024). This structure can be found in Figure 1.1.

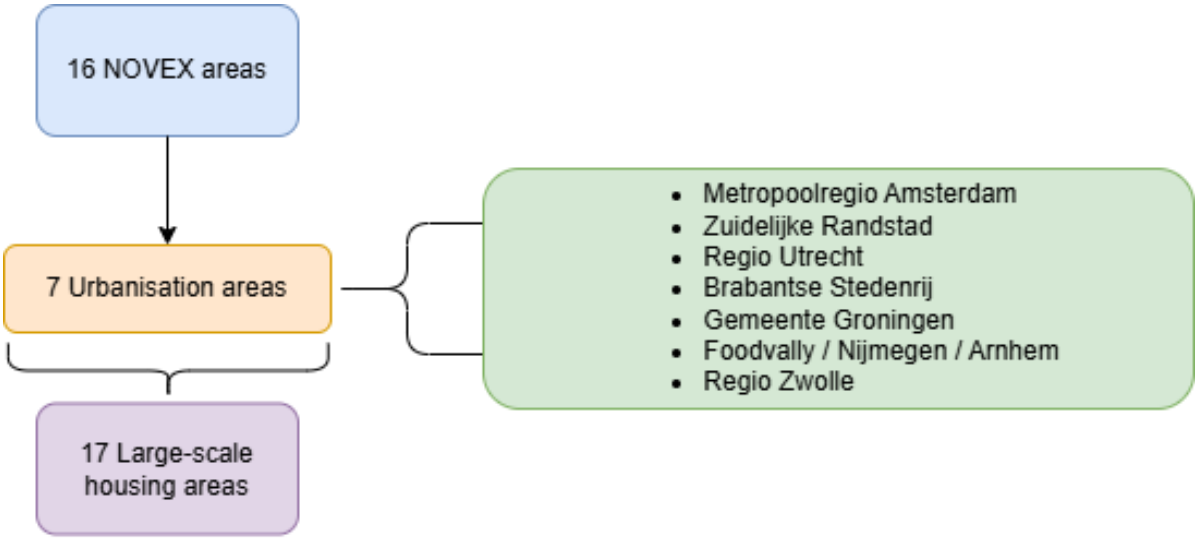

Figure 1.1: NOVEX and housing areas structure (Own work)

Whereas general NOVEX regions, part of the Nationale Omgevingsvisie (NOVI), include spatial planning visions, including greenery, harbour developments or employment, the 7 urbanisation areas and 17 large-scale housing sites focus on housing construction. These visions involve all three levels of government in the decision-making process, aiming at the development of a robust and sustainable spatial layout for the Netherlands (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b).

Within these visions of NOVEX regions, MIRT investigations and -explorations (Meerjarenplan Infrastructuur, Ruimte en Transport) are included, in which large-scale complex transport alternatives are being elaborated on. After a research and exploration phase, a preferred alternative is provided, in which external effects on both the environment as well as on residents- are thoroughly investigated (Rijkswaterstaat, 2018). This large-scale transport programme primarily focuses on public transport and car mobility, while walking and cycling are covered by more regional visions. Furthermore, MIRT is one of the various ways in which mobility issues can be dealt with, alongside for example regional mobility programmes (Samen Bouwen aan Bereikbaarheid, n.d.).

At the end of 2024, the Dutch national government has allocated 2,5 billion euros to invest in infrastructure networks which complement the access to (newly built) housing (Madlener & Jansen, 2024). This is a reaction to the former cabinet, in which a budget of 7,5 billion euros was vacated to be spent on ‘good’ accessibility and access to residential areas of 400,000 newly constructed housing up and until 2030 (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022b). Back then, it was stated that 46 % of this budget would be allocated to public transport, 37% to motorways, 10% to cycling paths and 7% to mobility hubs (Welther, n.d.). This shows the urgency appointed to housing construction, including its accessibility, by the Dutch cabinet.

Lastly, the establishment of the Programme Housing Construction and Mobility (Woningbouw & Mobiliteit, or: WoMo) in 2023 is an attempt to integrate both policy domains, by focussing on the accessability (transport planning) of newly constructed housing (spatial planning). This is done by aiming at integration of the ministry of Infrastructure & Watermanagement (I&W) and the ministry of the Interior and Kingdom Relations (BZK) (Rijksoverheid, 2024a). The budget of 7,5 billion euros, of which 2,5 billion euros is dedicated to the accessibility of newly constructed housing, is managed by the programme of WoMo, and is part of the Mobility Fund of the ministry of I&W (Rijksoverheid, 2024a). This programme is elaborated on in Appendix A. Therefore, the urge of the relationship between transport planning and spatial planning is evident in the decision-making processes, including funding, within the Netherlands.

These aims for policy integration highlight the societal relevance assigned to both the housing crisis and congestion on access possibilities towards newly built housing, in the context of scarce space. One way to deal with these problems, is the integration of both policy domains early in the decision-making processes. Furthermore, according to literature, the existence of the relationship between transport- and spatial planning is of importance. However, there is a gap in the implementation of integration in the Netherlands. It remains unclear how this relationship can be strengthened towards effective policy integration.This gap underscores the scientific relevance of the topic, which is elaborated on in Paragraph 1.5.1.

Moreover, as will be discussed in Chapter 3, literature also shows that attempts to integrate policy domains have been ongoing for decades. However, because transport planning and spatial planning have distinct characteristics, it is essential to investigate the existing relationship between these two policy domains in the Netherlands. Specifically, it is unclear to what extent spatial visions and transport decision-making processes are aligned. This research therefore aims to provide recommendations for enhancing the relationship between transport planning and spatial planning. Additionally, it will be examined which challenges regional decision-makers face when applying these two types of planning in practice.

The ultimate objective of this research is to identify the relationship between spatial planning in large-scale housing sites in NOVEX regions and transport planning in MIRT projects, to ensure accessible newly developed large housing sites within the Netherlands. In doing so, a stronger relationship between these two policy domains can be established.

1.2. Problem statement

In the Netherlands, transport planning and spatial planning are closely linked as new dwellings require sufficient transport accessibility. The housing crisis adds pressure to the coherence of transport- and spatial planning, as sufficient housing is to be constructed, including equitable access towards this housing (Rijksoverheid, 2024b). Within the context of limited space and financial constraints, decision makers face the challenge of selecting the appropriate transport and spatial projects and locations. Failure to make these decisions effectively result in congestion and limited access to new housing developments (Halsema, 2024; Streekstad Centraal, 2024; Van Vliet, 2023). Such unexpected and unwanted environmental consequences are not taken into account in fragmented policy-making (Meijers & Stead, 2004).

Therefore, integrating transport- and spatial planning into decision-making processes is crucial. However, to reach this policy integration, the current coordination, coherence and cooperation of policy areas in the Netherlands needs to be strengthened. In addition to studying these integration concepts, further research is needed to identify and incorporate possible additional integration concepts. This can bridge the implementation gap towards policy integration between transport- and spatial planning within the Netherlands (Duffhues & Bertolini, 2016). Therefore, it is essential to investigate the current relationship between transport planning and spatial planning, along with the challenges regional decision-makers face in aligning them. Such integration can improve decision-making and ensure that transport solutions and new housing allocations are better coordinated in areas of highest need, where traffic urbanization is barriered by the housing crisis as well as transport- and traffic clogs.

1.3. Research objectives

This section presents the research objectives that can be raised from this thesis, within the aim of strengthening the relationship between transport planning and spatial planning. First of all, a practical and theoretical approach in the decision-making process will be used within separately transport planning and spatial planning, as well as in the case of domain overlap. Here, insight is provided on the theoretical concepts that form a base in the current decision-making process in the Netherlands or in similar situations. Secondly, factors influencing the relationship between transport planning and spatial planning are revealed. These factors are assessed on their importance within the selected case-studies, in which these actors participate. Thirdly, challenges within the decision-making process within both transport planning and spatial planning are deducted from the factors found through the method of conducting interviews. The relationship between the policy domains is evaluated and strengthening opportunities are found, whilst keeping in mind the challenges encountered by actors in the decision-making process.

1.4. Main research question and sub questions

Originating from the introduction and problem statement as elaborated on above, the main research question answered within this thesis is as follows:

How can the relationship between transport planning and spatial planning in the Netherlands be strengthened?

Here, transport planning is defined as the establishment of a MIRT (Meerjaren Infrastructuur en Transport) research- and exploration phase, which is related to the construction of large-scale new housing construction in the Netherlands. Also, spatial planning is defined as the construction of a large-scale new housing site in a NOVEX-region focussed on urbanisation in the Netherlands (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b).

A focus is laid on the research- and exploration phase of the MIRT programme, since these phases include an integrated problem analysis, after which possible solutions are investigated (van Geet et al., 2019). Therefore, the project is scoped towards these phases, which offers possibilities to integrate spatial planning within transport planning phases.

Furthermore, a focus is laid on the accessibility possibilities at a local level, since the cases conducted include this type of infrastructure. For example, a case can include a bridge over a river, in order to connect two neighbourhoods, dedicated as large scale housing construction sites. Here, the overarching goal of connecting two cities is left out of scope. This leads to case studies that have performed or are performing the phases of investigation or exploration on a local level (Hondelink & van Dijk, 2024; Oeververbindingen, n.d.). Therefore, a practical research through a case-study can be conducted. The following sub questions, together answering the main research question, are established:

1).What types of policy integration are relevant when analyzing the relationship between transport planning and spatial planning?

2).What unique and overlapping characteristics are found in Dutch transport- (MIRT) and spatial planning (NOVEX programme) and what are their current decision-making processes?

4).What do decision-makers and experts consider vital factors in the current integration between transport- and spatial planning and what ideas do they have to further strengthen this integration, based on the case-studies of Utrecht-Rijnenburg and Oeververbindingen Rotterdam?

1.5. Research relevance

The relevance of this thesis can be subdivided into its scientific relevance found by knowledge gaps in literature, as well as in societal relevance found within the housing crisis and according accessibility possibilities occurring in the Netherlands. Lastly, there is a clear connection between this thesis and the master's studies of Complex Systems Engineering and Management (CoSEM) at the TU Delft.

1.5.1. Scientific relevance

As mentioned in Chapter 1, the existence of the relationship between transport planning and spatial planning is considered important within literature. However, next to the literature concepts of *coordination, coherence* and *cooperation* defined in Chapter 3, the integration concept of *manageability* is crucial for policy integration as well. This integration concept, together with the three concepts established in literature, can fill the implementation gap of policy integration between transport- and spatial planning in the Netherlands, adding to this field of literature. Also, the implementation gap of policy integration in the Netherlands can be bridged by looking into which factors for practice are related to these literature concepts. Furthermore, the roles, behaviors and interactions of key stakeholder in both policy fields add to scientific knowledge on policy integration in the policy domains of transport- and spatial planning.

By informing the interviewees on the research conclusions and recommendations for improvement, practical implementations, originating from theory, can be executed within both policy fields. This can help decision-makers navigate through a complex and interconnected environment in the field of planning, whilst considering both types of planning.

1.5.2. Societal relevance

The societal relevance of the relationship between transport planning and spatial planning in the Netherlands is heightened by the ongoing housing crisis, which has led to increased house sharing, longer waiting lists for social housing, and rising housing costs (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2024). Addressing this issue requires the construction of sufficient housing, while ensuring equitable access to these new housing developments, all within the context of the country's limited space. The scarcity of space, coupled with financial constraints, necessitates smart decision-making in both infrastructure and mobility planning alongside large-scale housing projects. As a result, the integration of transport and spatial planning is essential in the decision-making processes of both fields.

Recommendations in this field are relevant to regional decision- makers in the fields of MIRT-projects, interacting with large-scale housing sites. Also, regional decision-makers in the process of constructing of large-scale housing sites, encountering accessibility issues towards the housing sites, are a target group of this research. Both groups can include policy decision-makers or project managers, involved in the management groups of transport- and spatial planning projects. Here, municipalities, provinces or metropolitan regions function as a target group.

Changes proposed for administrators affect regional decision-makers such as project- or programme managers of large-scale projects in these policy domains. On the other hand, proposed changes in communication and behavior have a more significant impact at the regional level of municipalities or provinces.

The results and conclusions will be shared with the interviewees after the research is fulfilled, which leads to sharing of knowledge in the field of relating transport planning and spatial planning. This helps stimulate or deepen discussions on strengthening the relationship between the two planning domains in the Netherlands, possibly integrating them.

1.5.3. CoSEM relevance

This thesis can be applied in the masters programme Complex Systems Engineering and Management for various reasons. First of all, the MIRT programme can be seen as a socio-technical system, in which transport infrastructure is decided on by taking into account external effects. Such external effects on society can include the amount of carbon emissions or nuisance released in the air when constructing a specific transport infrastructure project.The complexity of the large-scale transport infrastructure projects is increased by the amount of public and private stakeholders included, both internally and externally, in the decision-making process. These stakeholders arise from different (governmental) levels and collaborate with each other.

From a governmental point of view, ministries, provinces and municipalities take part in the MIRT decision-making process. Furthermore, lobbying by private companies, as well as by transport and infrastructure parties is present in this decision-making process. In addition, the socio-technical system of the MIRT method shows institutions and regulations, since the Ministry of I&W (Infrastructure and Water Management) put up a legal and regulatory framework for infrastructural and spatial planning, which consists of the several phases of the MIRT process.

Besides, the large-scale, complex infrastructural projects explored in the MIRT process influence mobility and accessibility of residents throughout the Netherlands, through which uncertainties in the exploration and interdependencies can play a considerable role in this decision-making process. Within NOVEX regions, the direction and effects of the establishment of the regions is yet uncertain, as the construction of housing in such a composition is newly found in the Netherlands. Also, as stated in the introduction, a clear interdependency is present between the policy domains of transport planning and spatial planning, which can be present in for example stakeholders opinions and behaviour, as well as in the practical interdependency between accessibility and the possibility to rent or buy a house in the Netherlands.

1.6. Report structure

This thesis is structured as follows. Chapter 2 starts with a research approach and the research methodologies, applied per sub question. This includes the data collection, the case selection, data analysis, the last one including the coding process and the case study protocol. Then, Chapter 3 employs a literature study, in which policy integration and policy redesigning are elaborated on, partly in the fields of transport- and spatial planning. This leads to the identification of a knowledge gap in literature. Chapter 4 looks into defining the relationship between transport and spatial planning, especially focusing on similarities and differences in characteristics. Also, this chapter provides an elaboration on the decision-making processes of both the MIRT process (transport planning) and NOVEX program (spatial planning). In Chapter 5, the chosen case-studies are described and a stakeholder analysis is performed per case. Chapter 6 focuses on the results of the semi-structured interviews. Chapter 7 interprets these results and shows possibilities on how to strengthen the relationship between the two types of planning. These are based on factors found in the semi-structured interviews performed. Finally, chapter 8 discusses, concludes and recommends based on these results. Also, implications and limitations of the research are elaborated on in this chapter. The appendices include Appendix A, Appendix B, Appendix C, Appendix D, Appendix E, Appendix F, Appendix G, Appendix H and Appendix I.

2

Research approach and methodologies

This thesis employs a qualitative research approach, in which the methods of desk research and semi-structured interviews are of this nature. Furthermore, several literature studies are conducted. In order to answer the main research question: *'How can the relationship between transport planning and spatial planning be strengthened in the Netherlands?'*, the following sub-research questions are constructed:

1). *What types of policy integration are relevant when analyzing the relationship between transport planning and spatial planning?*

Being based on a literature study, this sub research question focusses on theories and concepts that stand out and have been applied in order to integrate transport planning and spatial planning. General theory is aimed at, as well as policy integration of the two domains in the Netherlands. This theory serves as input for the second sub research question, in which the actual specific relationship is further specified by looking at similarities within the two domains.

2). *What unique and overlapping characteristics are found in Dutch transport- (MIRT) and spatial planning (NOVEX programme) and what are their current decision-making processes?*

This sub research question uses both desk research and a literature study, in order to gain theoretical and practical knowledge on the current strength of the relationship between transport planning and spatial planning. Therefore, similarities are discovered and discussed, leading to a Venn-diagram showing unique and similar characteristics of the policy domains. These similarities aid in identifying overall characteristics, which can withhold in current decision-making processes. The unique and similar characteristics of the domains are applied in the questions prepared for the semi-structured interviews conducted.

Also, desk research performed in this sub research question and explores the two relevant transport- and spatial planning programmes and visions which are later compared to each other in case-studies. First, a description is provided of the MIRT process and its phases, after which the concept and visions of NOVEX regions are elaborated on. This practical ap-

proach serves as a context introduction of decision-making in the two policy domains within the Netherlands.

3). *What do decision-makers and experts consider vital factors in the current integration between transport- and spatial planning and what ideas do they have to further strengthen this integration, based on the case-studies of Utrecht-Rijnenburg and Oeververbindingen Rotterdam?*

A description of the case-studies and the conduction of semi-structured interviews leads to practical factors on the relationship between transport planning and spatial planning. These factors shape the possibilities of strengthening this relationship. Based on factors from the semi-structured interviews, as well as desk research on future improvements and visions within both domains, factors can be related to policy integration concepts established. These factors can cover for example behavioural, political and practical aspects of the programmes and visions researched.

2.1. Data collection

Various data collection methods are applied in this thesis. This ranges from desk research, a literature study to semi-structured interviews, the last performed within a comparative case-study. The next paragraphs describe their (dis-) advantages and application within this thesis.

2.1.1. Desk research

The second sub research question within this thesis applies the research method of desk research. This is done in order to collect secondary data as primary source, or as a backup for results from literature study or semi-structured interviews. In this research, the desk research consists of reports from the according ministries and Dutch institutions which are involved in the MIRT programme or NOVEX regions. Here, the policy objectives and visions can be looked at, as well as at characteristics of both policy domains. Furthermore, specific governmental analyses and reports are evaluated which focus on the two case-studies carried out. The data and policy documents found are thoroughly checked on their source, dates and type of governmental institution providing the information. In that way, the context and writing style of the document make more sense to the researcher, and possible bias can be filtered out.

Using the research method of desk research makes sure that the conducted research has not already been performed (Stallard, n.d.). It therefore 'fact-checks' the found results. In addition, uncomplicated access to the sources is present in a time-saving manner, compared to primary data searching. However, the data found can be inaccurate if there is bias, if dubious methods are applied or if different perspectives of the source are applied (Apelo Consulting, 2022; Owa, 2023). Therefore, the researcher is wary of the extensive use of secondary data, and checks comparable sources to check whether the right data is found.

2.1.2. Literature study

Two literature studies are conducted within this master thesis.The first one in Chapter 3 is focused on general scientific theories and concepts related to the combination of policies, whereas the one in Chapter 4 focuses on the similarities in characteristics and procedures of both transport planning and spatial planning. The first literature study also discusses the knowledge gap which can be derived from literature and will be researched within this thesis. The search strategy of the literature study can be found in Appendix B. Both literature studies lead to an assessment of the current research available in the field of transport planning and spatial planning, as well as the identification of key questions about topics that need future research (University of North Florida, n.d.). In order to carry out this qualitative research approach, the databases of Web of Science and Google Scholar are used.

Literature studies are limited by the fact that an information overload on the topic can overwhelm the researcher in choosing which elements are relevant. Therefore, the first literature study is focused on several literature concepts, of which some are left out of scope in order to reach overview in the study. Furthermore, in the literature study on characteristics of the similarities between the two policy domains, the output of a Venn-diagram with several characteristics as an outcome are kept in mind.

Bias and subjectivity of the researcher is to be prevented, as the researcher can look at studies which align with one's own perspectives and less with the contradicting ones (Scribd, n.d.). Therefore, in both literature studies conducted, the researcher pays attention to opening up to contradictory views, which can add to the strength of the argumentation.

2.1.3. Comparative case-study

Two qualitative case-studies are conducted, which are supported by semi-structured interviews. These case-studies are located in different regions of the Netherlands, and are compared in order to offer comprehensive recommendations on the relationship between transport planning and spatial planning. The comparative case studies are conducted in an exploratory way, since the 'market' of integration of specific dwellings in relationship to its transport connections is examined for the first time.

Creswell, 2009 states that when using qualitative research, *"the researcher seeks to establish the meaning of a phenomenon from the views of the participant" (p.16)*. At the moment, the boundaries between phenomena and context of the types of planning are not clearly evident, which shows the relevance of a case-study (Zaborek, 2009). This thesis can therefore study real-life phenomena within the context of their environment (Halkias et al., 2022). Furthermore, by conducting semi-structured interviews, the meaning of the relationship between transport planning and spatial planning can be determined. Here, the experiences and viewpoints of the interviewees are highly relevant and will be discussed in a separate research question.

A comparative case study analysis is applied in this thesis. The purpose of this analysis is to understand the similarities and differences between the cases, and to explain the causes and consequences of these variations (Baxter & Jack, 2015; Stake, 1995). This is applicable when similar or contrasting results are expected, according to Yin (2003). Within this research, contrasting results are expected within policy integration, based on first-hand experiences of project members of the selected cases, whom the researcher spoke to when selecting the

cases.

In this thesis, comparing and contrasting of the two cases selected leads to identification of success factors and barriers in policy integration. Also, a refinement of existing integration concepts or a possible new framework on policy integration can be constructed (Linkedin, n.d.). Additionally, comparative case studies facilitate cross-case learning, where lessons from one case can inform decision-making in another. This is particularly useful in complex policy fields such as transport- and spatial planning within this thesis, where integration depends on various stakeholders, institutional settings, and local conditions.

The external validity of the compared case-studies is not too high, as these two cases are not generalizable towards a population (Yin, 2006). Nevertheless, the researcher has a deeper understanding of the explored subject than in a single case-study (Dyer & Wilkins, 1991).Since political influences were expected within a single-case study, a comparative case-study was selected. This leads to awareness on the presence of political influences or behavior in the cases.

The conduction of exploratory semi-structured interviews and therefore primary data is powerful due to its possibility to acquire in depth information and evidence from interviewees, also considering the focus the study. In this thesis, the collaboration between transport- and spatial planning is mostly not formally written down in policy documents. Therefore, semi-structured interviews help in especially identifying practical experiences within the two cases.

In addition, a relative advantage of a semi-structured interviews compared to an unstructured interviews is the flexibility and adaptability to hold track of the interview (Ruslin et al., 2022). This is done by preparing interview questions, but also leaving space for extra answers or other directions of conversation. However, the researcher acts careful with its personal biases and assumptions, which can influence the conversation, as well as within the coding and interpreting of responses (Creswell, 2007; Williams & Morrow, 2009).

During this thesis research, 10 semi-structured interviews of 45-60 minutes are conducted, either online or in real-life. These interviews are done among:

- Decision-makers / projectmanagers / advisors involved in the MIRT research and exploration phases of the case-studies Oeververbindingen Rotterdam and Utrecht-Rijnenburg.
- Decision-makers / projectmanagers / advisors involved in the NOVEX-programme establishment or implementation in the regions of Utrecht Amersfoort, Zuidelijke Randstad and Zwolle.

The interviewees are found by the network of the graduation internship company TwynstraGudde. By approaching the interviewees by emailing and calling, a network of interviewees is established.The predetermined questions will be based on their background, experiences and knowledge on the relationship between transport planning and spatial planning. By interviewing experts having connections to the same case-studies and performing similar roles in the overlapping policy field, the validity of the interviews is increased. Reliability is proven by constructing similar pre-determined questions per interview. The protocol of the interview and a list of interviewees, including their role, can be found in Appendix C.

After conducting 10 semi-structured interviews, saturation of answers was reached. Therefore, this amount of interviews was stated to be sufficient to conclude on the factors. A saturation graph of the new codes -processed in Atlas.ti- found per newly conducted semi-structured interview is shown in Figure 2.1.

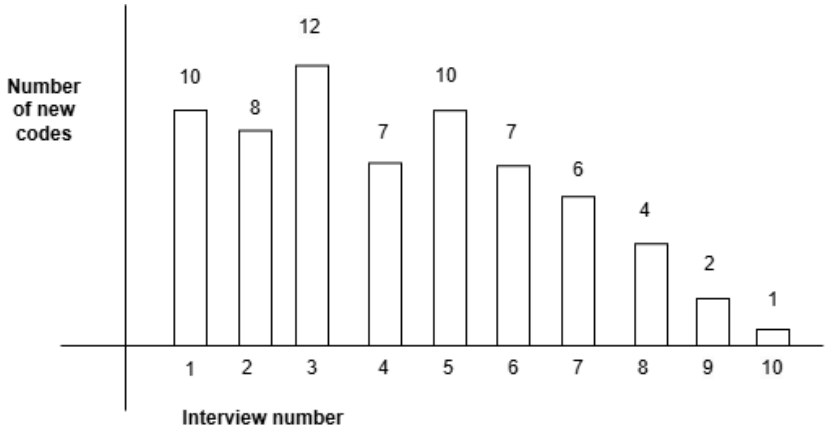

Figure 2.1: Saturation graph semi-structured interviews (Own work).

2.2. Case-study selection

The selection of cases in this thesis is based on MIRT-researches and -explorations which have been executed or are currently executed. This leads to available information for desk research and interview questions. Furthermore, the construction of a large-scale housing site is to be nearby the MIRT-research / -exploration, as then integration is expected to be more feasible. Also, contacts of interviewees are to be available at the internship graduation company.

However, the most important criterium is the presence of strengthening opportunities in the relationship between transport planning and spatial planning. Since this relationship is expected to be strong in the Oeververbindingen Rotterdam and less strong in the case of 'OV en Wonen' (with regard to Utrecht-Rijnenburg), these two cases are selected to perform the qualitative case-studies. Therefore, both cases can be compared, in order to research the difference in approaches and outcomes of policy domain integration. An elaborate description of the comparative case-study selection can be found in appendix B. The main documents consulted in defining the case-studies can be found in Appendix D.

2.3. Data analysis

2.3.1. Analyzing and coding process

The qualitative data found through the performance of 10 semi-structured interviews with parties (partly) involved in the cases, are analyzed. The aim of the analysis is to find factors on the strengthening possibilities of the relationship between a MIRT-project and large-scale housing sites, working towards policy integration. In this thesis, a thematic data analysis method is applied through coding. Here, bodies of data from the interviews are gathered and ordered according to their similarities. In this way, themes are established (Warren, 2023).

Within this research, the semi-structured interviews are transcribed from audio into Atlas.ti. Afterwards, inductive coding is applied, in which no preconceived notions on codes are used, but the raw data is gathered, coded and from there on, codes are grouped (Delve, 2024).This can show surprising themes and concepts. Then, deductive coding is applied in order to combine established characteristics, literature study and research questions into the analysis. Here, a set of codes is defined beforehand and the researcher sticks to these (Delve, 2024). Within Atlas.ti, both the established and non-established set of codes can be included. Then, the similarities and differences between perspectives within both transport planning and spatial planning can be found. A more detailed description of the coding process can be found in Appendix E. The steps taken in the data analysis, after conducting the interviews, are shown in Table 2.1.

Table 2.1: Thematic analysis steps

Step	**Content**
Step 1. Familiarization with data	Transcribing audio in Atlas.ti, reading through the text multiple times
Step 2. Coding of the interviews in Atlas.ti (inductively)	Coding both codes and quotes (separately) within the transcribed text
Step 3. Generating themes	Creating themes within the separate codes (merging)
Step 4.Generating code groups (deductively)	Creating larger code groups, with sub code groups (e.g. experiences of a case-study)
Step 5. Reviewing themes	Checking if all themes are present in data and if theme names can be altered
Step 6. Specifying themes	Refining theme names for understandability
Step 7. Writing of data analysis	Elaborating on the results in the results chapter

2.3.2. Case study protocol

In order to let the semi-structured interviews comply with ethical standards, several considerations are to be made. First, a consent form is established, which shows possible interviewees the purpose, methods and objectives of the study. Also, this consent form states that participation is voluntary and one can withdraw from the interview at any point, without needing a reason. This form is shown to and signed by every interviewee participating in the semi-structured interviews.

Secondly, a data management plan is established, in which the storage of the raw and personal data gathered is discussed. Special focus is laid on the fact that names are anonymized and roles are generalized within the thesis report, so that personal views and perspectives cannot be traced back by the reader to the interviewees participating.

Lastly, this ethical plan included a Human Research Ethics Committee (HREC) checklist. The main focus of this checklist for this thesis was on possible internal pressure or hierarchy within the company or organisation the interview was conducted as, as well as on the non-identifiability of participants, as explained above. All three elements (consent form, data management plan and HREC checklist) of the ethical plan are approved by the HREC.

The various steps taken in the research process can be found in Figure 2.2. It shows the consistency of the written chapters, as well as the research methods used and the research questions established by these chapters.

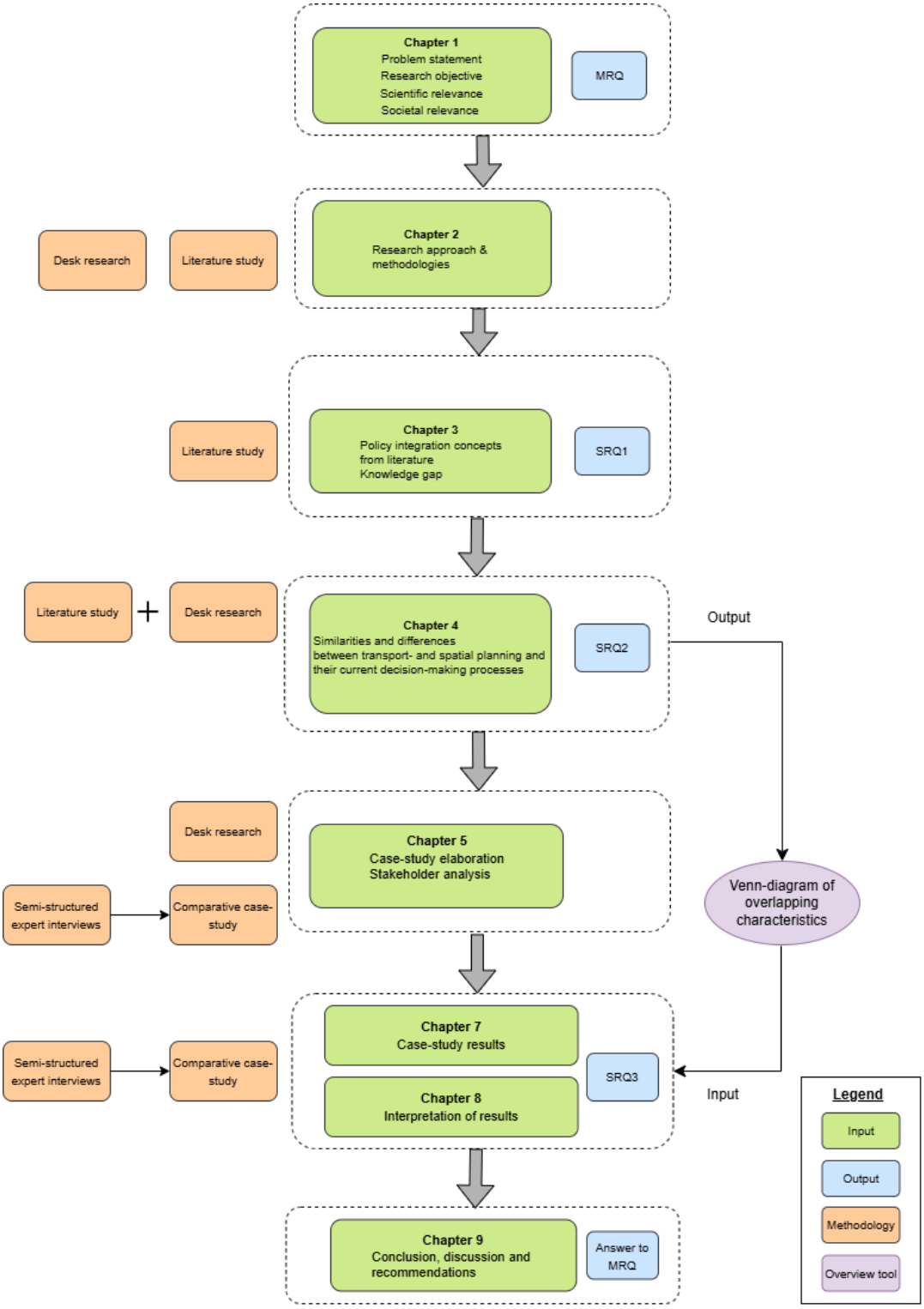

Figure 2.2: Research flow diagram (Own work).

3

Literature study on policy integration

This chapter presents a state-of-the-art literature study on the background of policy fragmentation, the factors leading to the policy integration contradicting this fragmentation, and literature on the relationship between transport planning and spatial planning, both theoretically and in practice. The aim of the literature study is to identify a knowledge gap. The according systematic search strategy can be found in Appendix B.

First, literature search was conducted with relevant search queries used as input, after which a manual selection was conducted. Here, the search engines of Scopus and Google Scholar were used, after which a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach led to the final amount of used articles. This approach identifies, screens and includes a number of studies (Erasmus University Library, n.d.). Next to the PRISMA approach, the snowball method was applied. This process searches for references and / or citations in order to identify other relevant studies (Cranfield Libraries, n.d.). Both methods lead to the collection of relevant articles for the conducted literature study.

3.1. Fragmentated policy-making

In the 1980's, the principles of New Public Management (NPM) were applied in governments, in order to tackle complex public problems.This was done to break from the bureaucratic paradigm of public administration, by favouring a business-like approach within governmental policy-making (O'Flynn, 2007; Vigoda, 2007). This comprised the public choice belief that governments were irresponsible, inefficient, monopolistic and unable to reach formal goals, according to O'Flynn (2007). Therefore, this would lead to a more efficient, responsive and accountable government, leading to fragmented policy-making (Cejudo & Michel, 2015).

Persson and Westrup (2009) state that such fragmentation is caused by a lack of performance in information sharing between actors. This occurs when various divisions, functions and hierarchical levels are present. Laws or policies which serve as input for large public sector organizations are typically divided among specialized units that operate independently. Therefore, responsibility is fragmented among policies, agencies, ministries and levels of government (Briassoulis, 2004; Christensen & Lægreid, 2007; Peters, 1998). This leads to an incomplete

fulfillment of needs by the provision of public goods and services (Cejudo & Michel, 2015).

This type of fragmentation occurs because large public sector organizations are usually split into specialized units that work independently to carry out tasks assigned to them by laws or policies. (Berry et al., 2008; Lagreid & Rykkja, 2015). However, this philosophy of management turned out to be unable to address (public), complex, interconnected issues (Head & Alford, 2015; Peters, 1998). This is especially due to competition, limited resources, conflicts between individual demands and public interest, the erosion of accountability and responsibility, and increased risk-taking (Minogue, 2000). Both policy incoherence and policy failure are commonly viewed as effects of this policy fragmentation approach (May et al., 2006; Peters, 2015). Therefore, a change towards policy integration is shown to be relevant (Briassoulis, 2004). Policy integration involves managing issues that span across multiple policy areas, going beyond the boundaries of traditional policy fields (Meijers & Stead, 2004).

3.2. Policy coordination, -coherence and -cooperation

Several concepts are strongly related to policy integration in literature, namely policy coordination and policy coherence. These concepts can serve as a solution to policy fragmentation (Cejudo & Michel, 2017). Coordination can be presented as:

"The instruments and mechanisms that aim to enhance the voluntary or forced alignment of tasks and efforts of organizations within the public sector. These mechanisms are used in order to create a greater coherence, and to reduce redundancy, lacunae and contradictions within and between policies, implementation and management" (Bouckaert et al., 2010).

According to Flanagan et al. (2011), coordination ideally means that mutual adjustments are acted out between actors and systems within a larger system of systems. Within such coordination, both vertical coordination and horizontal coordination can be distinguished. Vertical coordination refers to unilateral top-down adjustments proposed towards lower levels in hierarchy, whereas horizontal coordination is based on bilateral adjustments between lower levels (Sting & Loch, 2016).

Furthermore, rules and responsibilities, as well as information and knowledge exchange among all actors is relevant when trying to reach coordination (Cejudo & Michel, 2015). In addition, coordination adjusts policies of sectors to make them mutually enforcing and consistent, whilst policy integration aims at one joint policy for the sectors, with a higher scale objective than within coordination (Meijers & Stead, 2004). Then, what is to be coordinated is laid down in responsibilities, and it is therefore necessary to establish rules or procedures on how actors should collaborate with each other. This collaboration leads to the necessary information sharing (Cejudo & Michel, 2015). Also, collaboration by finding the basis agreement on the nature of the problem, as well as possible means to address this problem, can be performed through networks and hierarchy between layers of governance (Peters, 2018). Lastly, central agencies, such as a ministry of finance, budget offices or personnel offices can be seen as such (Dahlstrom et al., 2011). Generally speaking, a larger number of actors, diversity within networks, the closed nature of networks, conflicts of interest, a lack of leadership and commitment power are stated to make working towards policy coordination harder (Meijers & Stead, 2004).

When relating terms, part of literature states that policy coordination influences policy (in-) coherence (May et al., 2006). On the other hand, some authors state that incoherence in policies or responsibilities can hinder coordination (Peters, 1998; Weitz et al., 2017). Therefore, there is no clear direction of dependence of one concept on the other.

Nevertheless, effectiveness in approaching complex problems needs policy coherence. This is because every policy occurs within a policy domain. These domains are similar in their overarching public policies, in which interrelated problems are addressed (Majone, 1992). Policy coherence can be found when policy 'A' enhances policy 'B' in its objectives and implementation components, with a different target population and with different, but complementary tools within the public problem (May et al., 2006). Both policies achieve an overall policy goal, as shown in Figure 3.1.

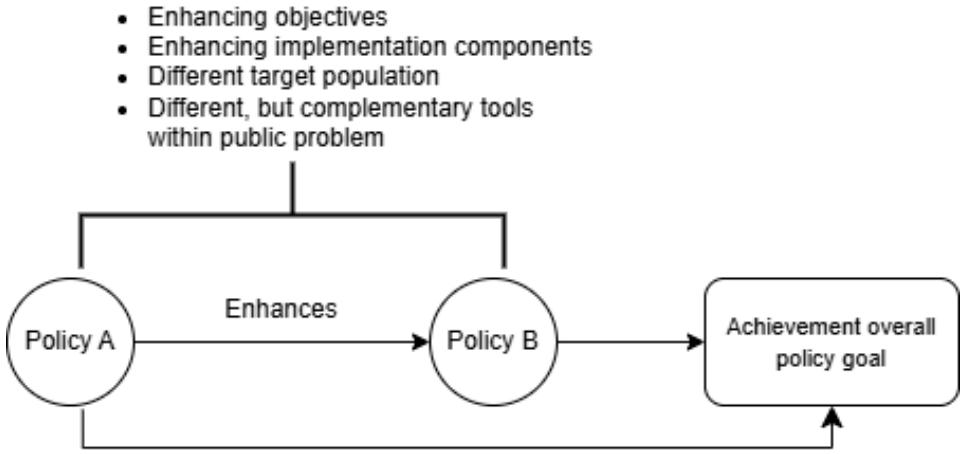

Figure 3.1: Definition of policy coherence, own work based on (Cejudo & Michel, 2015; May et al., 2006)

Furthermore, Browne et al. (2023) states that policy coherence should be seen as a political process in which actors seek advantage in their own interests, mostly vested in current policy-making. In order to reach coherence, commitment by the political leadership is required. As a result, a strong strategic capacity at the core of government is essential. Organizational flexibility and the need for effective information-gathering and processing systems are also necessary to increase policy coherence (Ashoff, 2005).

However, Meijers and Stead (2004) states that integrated policy-making is based on both coordination and especially cooperation, replacing the concept of coherence. Several factors, shown on the left in Figure 3.2, lead to a higher degree of integration within policy-making. Cooperation here leads to more efficient sectoral policies, which are adjusted by coordination and integrated at the top of the triangle, as shown in Figure 3.2.

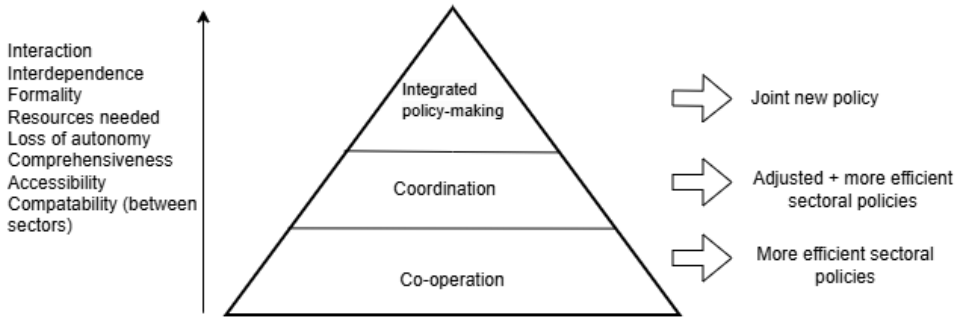

Figure 3.2: Integrated policy making, policy coordination and cooperation (Meijers & Stead, 2004)

Overall, a hurdle towards the assembly of the types of policy integration of policy coordination, -coherence and -cooperation towards the integration of policies is the fact that a larger number of actors is involved in policy processes nowadays. This is caused by the formation of the information society, as well as a larger emphasis on public participation. Non-governmental organizations, pressure groups and agencies have also received a larger role in the decision-making process (Geerlings & Stead, 2003). These factors bring more actors 'around' the decision-making table, leading to more complex decision-making processes, in which integration is harder to achieve.

3.3. Re-designing decision-making processes

When reaching for at least policy coherence, the re-design of decision-making processes within various policy domains can also serve as an outcome. Then, institutional change can be reached. There are several reasons why re-designing of policy measures is found to be relevant. First, *'layering'* consists of policy arrangements based on instruments and programmes that are incrementally added over a long period of time, and in which previous measures are not discarded (Hacker, 2005; Thelen, 2003). This leads to incoherence among goals and inconsistency of instruments in policy-making (Howlett & Rayner, 2007; Kern et al., 2017).

Furthermore, *'drift'*, replacing old policy goals with new ones, without changing instruments used to implement them, can lead to incoherence and therefore the re-design of policy measures. Moreover, in *'conversion'*, a new policy mix is created, but old goals remain. If these goals lack coherence, then the instruments are unlikely to succeed. Lastly, *'replacement'* refers to the full replacement of a policy mix (Kern et al., 2017). This can be seen in seen in Figure 3.3. Here, consistency is defined as: *'the ability of multiple policy tools to reinforce rather than undermine each other in the pursuit of individual policy goals'* (Howlett & Rayner, 2013). From this perspective, *'replacement'* is seen as a consistent and coherent policy instrument.

In order to create various types of re-design of policy measures a *'policy mix'* is needed, which refers to the incremental development of complex arrangements of multiple goals and means over the years, consisting of both policy aims and policy instruments (Kern et al., 2017). By overcoming challenges with coherence and coordination in the policy mix, a 'balanced' policy mix can be established (Flanagan et al., 2011).

	Instruments	
Goals	**Consistent**	**Inconsistent**
Coherent	Replacement	Conversion
Incoherent	Drift	Layering

Figure 3.3: Relationship between policy development processes and the expected coherence and consistency of a policy mix (Kern et al., 2017)

Within these policy mixes, several types of influence or confluence can be found, as shown in Figure 3.4. Here, especially interactions and tensions across policy areas and domains have not been mentioned before. The interactions between policy areas and domains are needed, but can lead to tensions between the domains, since the roles played by actors can be different from the expectations and demands of other actors or the constraints of institutions (Flanagan et al., 2011).

Increased intensity of policy intervention	Multiple instruments targeting *a specific actor or group* of actors
Integration of multiple instruments into one interactive process between government and target groups	Multiple instruments targeting different actors/actor groups involved *in the same process*
Instruments and actions at different levels of governance	Interactions between instruments and actions taken at *different levels of multi-level governance*
Competition and co-operation between different but interdependent policy fields	Interactions and tensions *across policy areas/domains*
Mutual strengthening or weakening of the effects of interventions at different points of action in the broader system	Interactions mediated through processes in a broader system

Figure 3.4: Five forms of influence or confluence in policy instrument 'blends' or mixes (Flanagan et al., 2011)

3.4. Re-designing through policy mixes

Several ways of implementing policy mixes are available in literature. A first strategic re-designing approach is policy packaging, which looks at the wide range of policy measures to address a policy problem and implementing them in coordination. Therefore, policy packaging refers to: *'a policy design process in which previous policies are discarded and a new policy package is introduced (replacement)* (Howlett & Rayner, 2013).' This refers to an implementation measure of the consistent and coherent policy instrument as discussed before.

The relationships between policy measures must be clearly identified and addressed to maximize synergies and prevent contradictions (Givoni et al., 2013). Such synergies relate to the synergetic or facilitation linkages between policy measures. Here, the measure can perform in isolation, but the functional capacity of a policy measure is enhanced by the presence of another measure (Givoni et al., 2013). A focus should be on the net effectiveness of a policy package, in which primary direct effectiveness upon specified objectives, as well as collateral or secondary effectiveness upon exogenous objectives is taken into account (Givoni et al., 2013).

Challenges that are derived when implementing disruptive policy packages, are a lack of public acceptance for more restrictive policies, leading to a lack of political willingness and finally an implementation gap (Banister & Hickman, 2013; Cohen et al., 2016). Also, there is need for political courage in order to implement rather controversial policies. Here, the acceptance by the public can be higher when people have experiences with the new measures. In addition, a limited budget and high costs can lead to competition between different interest groups Thaller et al. (2021) , which makes it harder to implement the policies. Lastly, Flanagan et al. (2011) states that no ideal or 'good' policy mixes exist, leading towards a policy package.

When designing a policy package for sustainable mobility, Thaller et al. (2021) states that sustainable transport policy packages need to be disruptive and implementable, the last one referring to social acceptability and a cost perspective. Disruptive in this context means a high-level of and a rapid effectiveness. At the basis, such a policy package consists of infrastructure provisions and revised spatial planning. Also, according to Taeihagh et al. (2009), a framework in packaging consists of primary policy measures, as well as supplementary measure that can be added to improve the package. Such supplementary measures can consist of feasibility or effectiveness.

A second type of policy mix, is 'policy patching', in which governments can regularly change plans based on local information during the implementation of policy measures (Veeraraghavan & Pokharel, 2024). Then, they can correct flaws or adapt to changing circumstances (Kern et al., 2017). Within policy re-design, this refers to changing policy goals and instruments towards a changing (local) environment. To achieve a cohesive and consistent policy mix, policymakers can find strategic policy patching a more viable option than creating entirely new policy packages, as suggested by research (Howlett & Rayner, 2007; Kern et al., 2017). This is especially present when policy mixes are integrated into a broader policy context, such as future mobility (Park et al., 2024). Furthermore, patching is better related to the practical, chaotic world of policy-making, as continuous adaptation of policy goals and instruments is made possible (Kern et al., 2017).

3.5. Transport planning and spatial planning

In the policy domains of transport and spatial planning, it is stated that these policy fields contain a loop between transport planning and the intensification of land use around it. Therefore, a mutual relationship is present between both policy fields. However, in the Netherlands, this loop is not occurring due to increasing capacity and reach of high-speed networks, leading to sprawl. Urban sprawl- the outgrowth of the urban areas caused by the uncontrolled and uncoordinated urban growth- is to be prevented (Sudhira et al., 2009). This urban sprawl is evoked within a lack of planning regulations and leads to external costs in various fields, such as road infrastructure and transport (Gordon & Wong, 1985). Urban sprawl is driven by various other factors, such as developments in the housing market, a lack in green and open spaces in cities, the availability of transportation possibilities, and the regulatory framework (Kulmer et al., 2014). In addition, slow modes and mixing of land-use are not given enough attention in order to create this loop. Therefore, an implementation gap is present (Duffhues & Bertolini, 2016).

However, there is policy coordination present between these types of planning in the Netherlands. This is because dialogue or information exchange are present, which avoids conflicts between projects. Nevertheless, this does not seek to establish similar policy goals (Stead et al., 2005). This coordination is also present in regional agendas, in which intensification of the urban area is a main aim, improving accessibility. Since similar objectives are outlined in various development strategies, coordination can occur either horizontally between regions or vertically through national government oversight of all regions (Duffhues & Bertolini, 2016).

Next to urban sprawl, another factor shows the necessity of the relationship between transport planning and spatial planning. Namely, both domains address similar geographical areas and common issues. This can be seen in the development of the transport planning process nowadays, which gives attention towards overarching societal concerns such as liveability, sustainability and participation. On the other hand, spatial planning proposals also look into the expected amount and types of mobility modes generated in the area (Boussauw, 2020). Therefore, it can be seen that transport planning and spatial planning are to be combined in order to emphasize their relationship.

In the Netherlands, several forms of plans have been proposed and implemented regarding this relationship. First, Sustainable Urban Mobility (SUM) plans have been implemented. These plans look at the effects of passenger and freight transport in cities, including congestions, environmental pollution and a decrease in quality of life (Kiba-Janiak & Witkowski, 2019). This is an example of how spatial planning characteristics have been applied within transport planning processes.

Secondly, Transit Oriented Development (TOD) looks at the integration of spatial planning - in the locations and density of living and working- and the development of public transport networks.These networks consist of which lines, their locations and the amount of stops and frequencies. Often, TOD is implicitly applied in location policies. However, it is hard to implement due to the different domains in which various actors are active, of which the relevant ones are to be included (Ibraeva et al., 2020).

3.6. Knowledge gap

From literature, it can be defined that policy fragmentation is unsustainable, leading to the willingness to work towards policy integration. Here, important pillars are coordination, cooperation and coherence. In order to achieve such pillars, policy mixes, in the form of policy packaging, which regards bundling complementary policies and policy patching, which regards adjusting existing policies to improve alignment, are present. The three policy integration concepts of coordination, coherence and cooperation are regarded important in literature, and therefore considered in defining a knowledge gap.

When delving into the relationship between transport planning and spatial planning, literature emphasizes its necessity for effective policymaking. Although policy coordination exists between these domains in the Netherlands, an implementation gap remains due to challenges such as urban sprawl, which hinder full policy integration. It is especially unclear what barriers and strengthening factors currently exist hindering the implementation gap towards policy integration within the two policy domains in the Netherlands. Also, the current structure of this relationship at national and regional levels is unclear, making it difficult to determine how integration can be practically enhanced. Additionally, literature does not sufficiently address the roles, behaviors, and interactions of key stakeholders within and between these policy fields. Since these dynamics contribute to the success of policy integration, further research is needed to explore perspectives that can reinforce integration efforts.

The semi-structured interview guide incorporates key policy integration concepts from literature.This is done to find practical implementations of the overarching concepts from literature.

4

Characteristics and decision-making processes of Dutch transport- and spatial planning

In Chapter 3, the implementation gap in policy integration between transport- and spatial planning in the Netherlands is elaborated on. To create an understanding of possible characteristics barriering or strenghtening the integration, this chapter elaborates on the unique and overlapping characteristics of both the MIRT process and NOVEX programme. These regard objectives, focus and the design of the project or programme. This analysis, based on both literature and desk research, helps define the current relationship between the two policy domains and highlights their coherence. The most relevant characteristics, based on the results of the semi-structured interviews, of this research are elaborated on in this chapter, and the other researched characteristics can be found in Appendix F.

Also, this chapter examines how transport and spatial planning intersect in practice by analyzing decision-making processes and stakeholder interactions. Together with the characteristics, this chapter creates a context on the case-studies explored and jargon applied. To explore factors on this relationship, semi-structured interview questions address the current and ideal decision-making processes of MIRT and NOVEX. Key aspects of the decision-making processes include governance levels, stakeholder roles, and funding sources. The two main processes discussed are the MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport) process and the establishment of ‘spatial arrangements’ through the NOVEX program. The Netherlands follows a three-tier governance system—national, provincial, and municipal—all involved in both MIRT and NOVEX. An elaboration of this chapter can be found in Appendix A.

4.1. Interconnectedness MIRT process and NOVEX programme

MIRT project or -programmes are included in the NOVEX programme when mobility plays a role. This is for example the case in the NOVEX-region Zuidelijke Randstad, where the MIRT results are used to define a strategy for the accessibility of new urban developments (Mobiliteit en Verstedelijking et al., 2019). MIRT projects are prioritized during BO-MIRT (Board meeting on the MIRT-projects in a region) meetings based on criteria (without ranking), including their contribution to housing construction and general accessibility (Madlener & Jansen, 2024). Therefore, significant attention is given to how MIRT projects enhance access to (newly) constructed housing in the Netherlands. However, defining the relevant area, especially in urban settings, remains a challenge.

As noted in Chapter 1, the WoMo program (programma Woningbouw en Mobiliteit) aims to integrate housing and mobility policy by introducing key MIRT elements to the housing sector, including its procedural framework (Rijksoverheid, 2023). This highlights the interconnectedness of the two programs and facilitates the housing sector's engagement with MIRT processes, including within NOVEX regions. All characteristics found through desk research are shown in Figure 4.1.

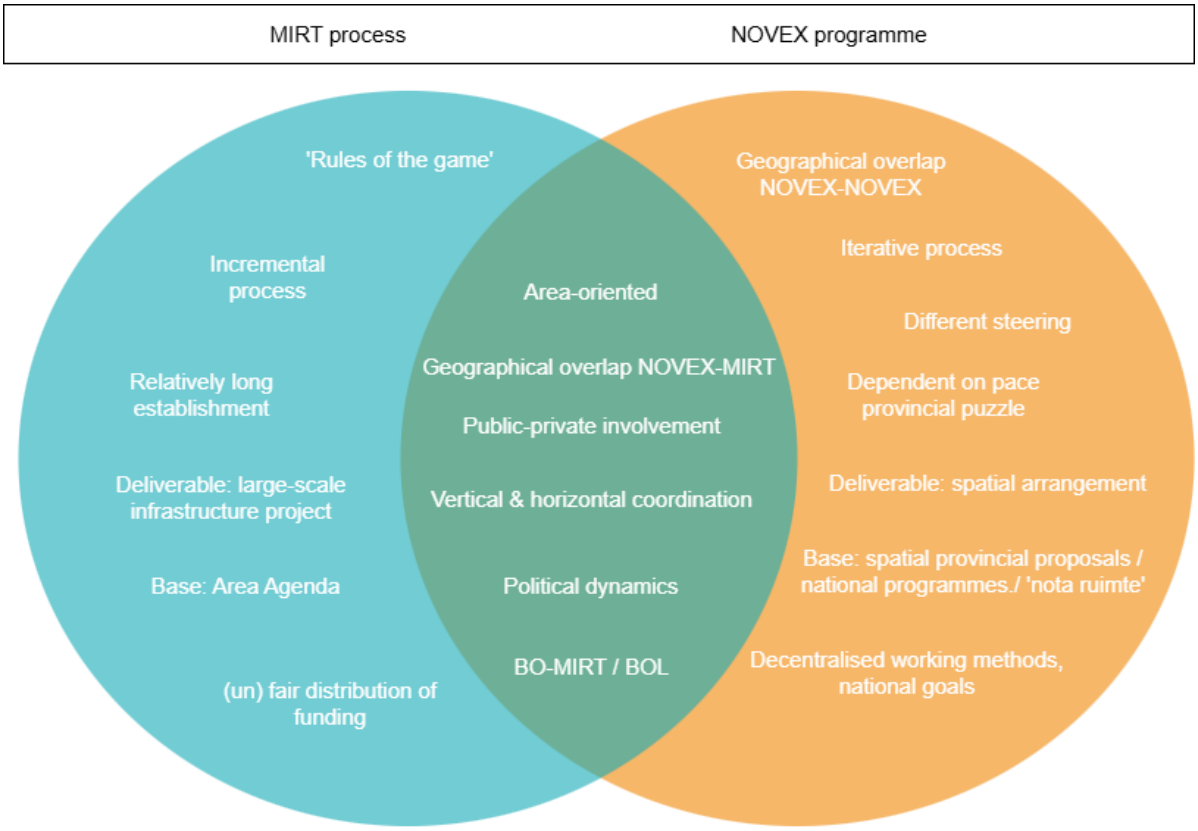

Figure 4.1: Unique and overlapping characteristics of the MIRT process and NOVEX programme (Own work).

4.2. Overlapping characteristics MIRT process and NOVEX programme

First of all, in both the MIRT process as the NOVEX programme, both public and private actors are active, as elaborated on in Chapter 4. Therefore, during the implementation of MIRT-projects, possible public-private partnerships can develop (Ministerie van Infrastructuur en Waterstaat, 2022b). Furthermore, in the NOVEX programme, Regional Investment Agendas are public-private collaborations, applied as instruments in NOVEX regions (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b).

Likewise, within the decision-making processes, both take into account the Administrative Meeting (BO-MIRT) or the Administrative Meeting of BOL (Living Environment Administrative Consultation). Within the MIRT process, the role of the BO-MIRT is larger, since this meeting discusses the Prince's Day proposals of MIRT-projects, being part of the yearly cycle agenda of the MIRT process (Ministerie van Algemene Zaken, 2023). Within the NOVEX process, the BO-MIRT is included by referring to it as a 'official table' (Ambtelijke tafel). Therefore, the conclusions are referred to in Development Perspectives of regions, as well as in established provincial directions for spatial planning. The BOL meeting refers to the living environment, in which housing developments are relatively more included.

Furthermore, both processes are influenced by political dynamics within the Netherlands. Within the BO-MIRT meetings, both ministers of Internal Affairs and I&W (Infrastructure and Water Management), as well as regional administrators are present. All parties are (partly) controlled by the perspectives of their constituency, as well as lobbyists. Within the NOVEX programme, the strategy of discussion for the various types of 'tables', as explained in chapter 4, exert influence on visions and perspectives of policy-makers in the process.

Every four years, a new Dutch cabinet is formed, potentially shifting political priorities and MIRT project funding. However, ongoing MIRT projects are more likely to continue due to sunk costs in investigations and explorations. This is especially true when a MIRT-project aims at broader goals, for example including accessibility of housing construction, rather than on specific accessibility projects (Ministerie van Infrastructuur en Waterstaat, 2024).

4.3. Characteristics NOVEX programme

A key feature of the NOVEX program is its region-specific governance, varying based on participating parties, primary tasks, and decision-making pace. Steering is led by the appointed minister and regional director (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b). Notably, NOVEX is initiated by the Ministry of VRO, while MIRT projects fall under the Ministry of I&W (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a). Historically, Dutch spatial planning has emphasized decentralization, shifting authority to regional and local governments while the central government focuses on large-scale infrastructure and strategic policy targets (Louw et al., 2003).

In NOVEX programs, the national government sets the framework, while provinces and, to a lesser extent, municipalities handle implementation. However, due to the urgency of the housing crisis and accessibility needs, the national government retains a significant role. One example is the practice manual 'Building fast and well together' (Samen snel en goed bouwen),

which outlines principles to accelerate housing construction (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, n.d.-c).

4.4. MIRT process characteristics

As the MIRT-process is divided into phases, an incremental process, taking dedicated steps and funneling towards a preference alternative and implementation, is established (Hartogs & van Dijk, 2013). Also, the MIRT process has been established since 2007, and been adapted several times. Therefore, the process is less prone to changes in environment as well as to mutual contradictions between policy-makers on the form of the process than a NOVEX programme. Unlike the NOVEX-programme, MIRT delivers concrete large-scale infrastructure projects focused on transport, incorporating environmental considerations through Marginal Cost-Benefit Analysis and Environmental Impact Assessment (EIA) (Hartogs & van Dijk, 2013).

4.5. Transport planning through the MIRT decision-making process

After elaborating on the characteristics of the domains of transport- and spatial planning, the rest of this chapter elaborates on their specific decision-making processes, namely the MIRT (Multiannual Program Infrastructure, Space and Transport) programme and the NOVEX (National Environment Vision EXecution force) programme.

The MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport; Multiannual Program Infrastructure, Space and Transport) is a programme made up of projects and programmes in which the national government aims at accessibility, safety and spatial planning (Rijksoverheid, n.d.-a). Within the spatial physical domain coherent (governmental) investments are clarified here, including large-scale, complex infrastructure projects (Ministerie van Infrastructuur en Waterstaat, 2022b; Ministerie van Infrastructuur en Waterstaat & Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2024).

Through this national perspective, collaboration between this national government and the region is aimed at through a MIRT-project or -programme (Rijksoverheid, n.d.-c). This MIRT-programme is an attachment to the budget proposal of the Ministry of Infrastructuur en Waterstaat (I&W). It gives an overview of government projects and programmes, which are funded by the Mobility Fund (Mobiliteitsfonds) or Deltafund (Deltafonds).

The proposed MIRT projects and programmes are yearly discussed in BO (Bestuurlijke Overleggen) MIRT consultations. In addition, a Marginal Cost Benefit Analysis (Marginale Kosten Baten Analyse) is mandatory to include, in order to estimate the positive and negative effects of the policy measure on the broad welfare within the Netherlands, including external effects (Ministerie van Infrastructuur en Waterstaat, 2022a). Furthermore, the effects on the environment are elaborated on in an Environmental Impact Assessment (Milieu Effect Rapportage) (Informatiepunt Leefomgeving, n.d.).

During fall, the BO (Bestuurlijk Overleg)-MIRT meeting takes place.This meeting includes the minister of Internal Affairs, together with the secretary of state and minister of I&W (Infrastructure and Watermanagement), in which investment agreements are discussed, together with regional administrators (provinces, municipalities and water boards) (Metropoolregio Eindhoven,

n.d.; Ministerie van Algemene Zaken, 2023). The consultation structure of the MIRT-process is shown in Figure 4.2.

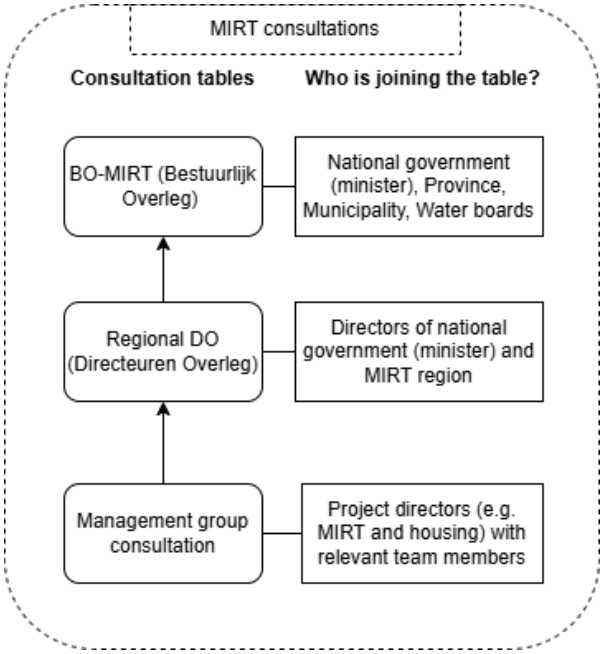

Figure 4.2: Structure in MIRT consultations (Own work)

The MIRT process consists of several steps, which are presented in Figure 4.3. The Area Agenda (Gebiedsagenda) is established by the national government and regional partners, in which commonly shared challenges within a region are identified. These challenges can simultaneously be investigated in a MIRT investigation, as shown in yellow in Figure 4.3. Next to the BO-MIRT meetings, an Administrative Meeting on the Living Environment (Bestuurlijk Overleg Leefomgeving, or BOL), takes place, which is initiated by the Ministry of VRO (Provincie Zeeland, 2022). This shows that both the Ministry of I&W and VRO initiate or have a strong interest in a specific type of boards meetings.

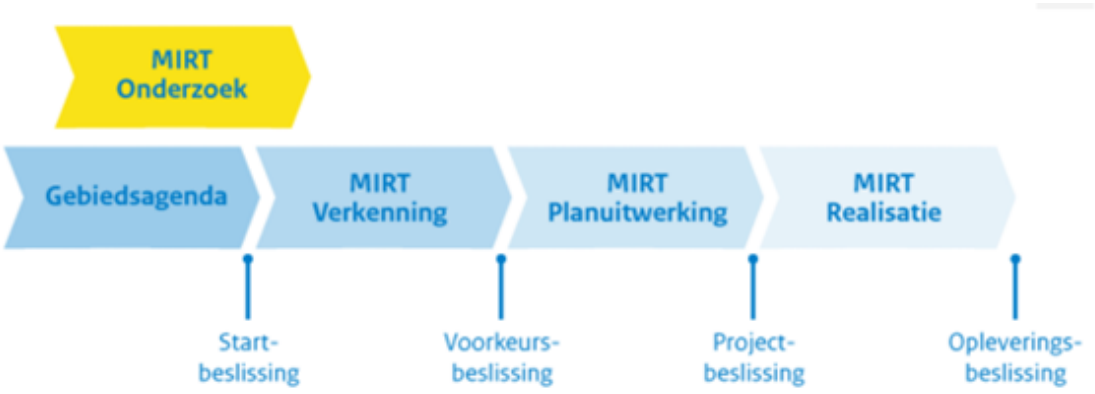

Figure 4.3: The MIRT process (Ministerie van Infrastructuur en Waterstaat, 2022a)

The MIRT-process consists of an investigation phase, an exploration phase, a plan elaboration phase, and a realisation phase. Also, the process works according to specially established MIRT 'rules of the game' (Spelregels). This documentation discusses the working method, roles and tasks of the concerned parties. Furthermore, the decision-making requirements of the national government are listed, which are needed to decide on financial funding on a national level, coming from the Delta fund or Mobility fund (Ministerie van Algemene Zaken, 2023). In addition, a 'manual MIRT and MER' (Handleiding MIRT en MER) is available, in which the general steps of the exploration- and planning phase are presented (Ministerie van Infrastructuur en Waterstaat, 2023).

4.5.1. Scoping MIRT phases research

In this research, scoping is applied towards the MIRT investigation phase (Onderzoeksfase), as well as the MIRT exploration phase (Verkenningsfase), a specific part of the MIRT process. Therefore, the focus of research will be from the point of starting with the Area Agenda and MIRT research phase up and until the Preference Decision (Voorkeursbeslissing).

4.5.2. Stakeholder involvement MIRT process

The Dutch Ministry of Infrastructure & Water Management (I&W) plays a key role in large-scale infrastructure projects, proposing budgets and managing the Mobility Fund, while the Ministry of Finance approves expenditures (Algemene Rekenkamer, 2024; Visser, 2024). Provinces and regional municipalities are involved since MIRT projects take place in their regions. Members of Parliament advocate for projects in their constituencies, while ministers and state secretaries influence decisions, often shaped by lobbyists (Mouter, 2016).

Behind the scenes, lobbyists hired by local governments push for regional projects, especially when costs are high or a negative Cost-Benefit Analysis raises doubts. The Minister of Finance plays a key role in such cases. The Prime Minister can influence decisions through coalition agreements, while top officials step in when ministers lack a clear agenda. Public opposition, including local residents and activists, can prompt further investigations and increase social pressure on Parliament (Mouter, 2016). The many stakeholders involved highlight the complexity of decision-making and communication within the MIRT process.

4.6. Spatial planning through NOVEX programme

4.6.1. Definition of spatial planning within the Netherlands

Currently, the NoVi (the National Living Environment Vision or NoVi) is shaped towards a *Nota Ruimte*, in which national spatial visions are shaped towards 2030, in rough lines towards 2050 and in an abstract manner towards 2100 (MooiNL, n.d.). Part of this *Nota Ruimte* is the NOVEX programme (Nationale Omgevingsvisie EXecutiekracht). This programme is established in 2022, and displays a sustainable vision for the layout of the Netherlands, set up to 'sharpen' the Nota Ruimte. In order to clarify terms related to NOVEX, the main definitions are shown in Table 4.1.

Table 4.1: NOVEX-related definitions

Term	Definition
NOVEX-programme	The NOVEX programme directs the establishment of a spatial puzzle (including housing, greenery, industrial activities etc.), in cooperation with provinces, municipalities and water boards. It ensures spatial policy coherence, connects the 22 national programmes and accelerates implementation by steering on clear conditions and concrete implementation agreements (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a).
NOVEX-area	One of the 16 areas in the Netherlands, designated to major spatial transitions, where a separate development perspective (Ontwikkelperspectief) is needed, and where strong cooperation between the state (Rijk) and region requires solutions for the limited space in the area (Planviewer, n.d.; Provincie Zeeland, n.d.).
Urbanisation area	7 out of the 16 NOVEX-areas, in which the focus is laid on urbanisation. This includes the establishment of 17 large scale housing construction locations, on which the focus is laid in this research.

Figure 4.4 shows a geographical map with the established NOVEX regions. These regions can partly overlap, as can be seen in the colour coding.

4.6.2. Decision-making process NOVEX programme

The 12 'start packages' align national and regional objectives, forming the basis for 'provincial puzzles' executed by provinces, as can be seen in Figure 4.5. This approach connects national and decentralized tasks through research, decision-making, and implementation plans.

The NOVEX program has two main pillars:

1). The provincial direction

2). The area-oriented direction in the 16 NOVEX-regions

Provinces integrate national tasks from the 'start packages' with their own responsibilities, ensuring alignment with spatial quality. The national and provincial governments then formalize agreements on implementation per province, using available instruments and resources (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b).

The area-based approach in the 16 NOVEX regions focuses on physical planning challenges, requiring prioritized, integrated development. This leads to reallocation or redevelopment while maintaining spatial quality. It results in development prospects, implementation agendas, and Regional Investment Agendas (RIA's) (De Zeeuw, 2022).

This process of decision-making is elaborated in Figure 4.5, in which the 'start packages' are discussed in governmental meetings, leading to the alignment of development prospects for NOVEX regions with the regional 'puzzle'. Together, this alignment leads to an arrangements phase, after which a 'spatial arrangement' (Dutch: Ruimtelijk Arrangement) is ideally reached. Therefore, as can be seen in Figure 4.5 by the rotating arrows on the right, a cyclical and iterative process of policy development and – implementation of the physical environment can

Figure 4.4: Geographical map NOVEX regions locations within the Netherlands (Pdok, n.d.)

arise.

Another main part of the decision-making process of the NOVEX program contains the meeting 'tables', such as 'Province tables', National goverment tables (Rijkstafels) and Managerial coordination (Bestuurlijke Afstemming). These various types of consultations are elaborated on in Appendix A and a short overview of the actors joining these tables is given in Figure 4.6.

4.6.3. Goals and progress NOVEX program

The goal of the NOVEX-program is to let the spatial puzzles of the provinces be part of the plans for the 16 NOVEX regions. This will lead to an implementation agenda per province and per NOVEX region. In such a 'spatial arrangement', a future-oriented vision of a region is translated towards concrete (agreements on) development steps. According to Blomaard (2024), such a 'spatial arrangement' can be defined as:

'A management agreement with mutual administrative agreements on policy, implementation and research in the short, medium and long term.' The main elements of the outcome in a 'spatial arrangement' are depicted in Figure 4.7.

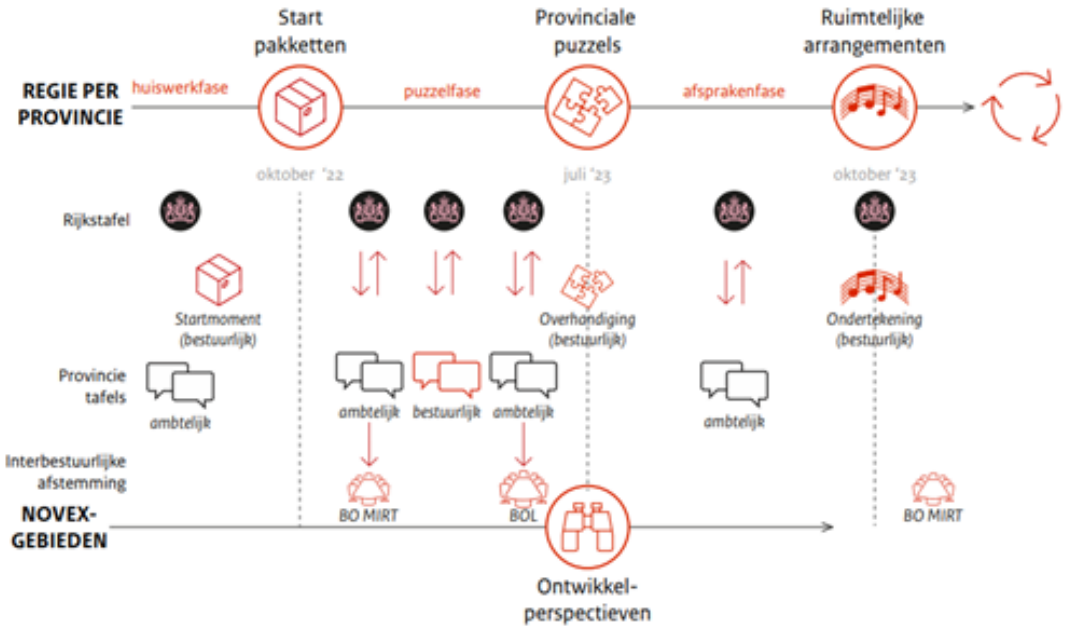

Figure 4.5: Schematic representation of the 'tables' in the NOVEX programme (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a)

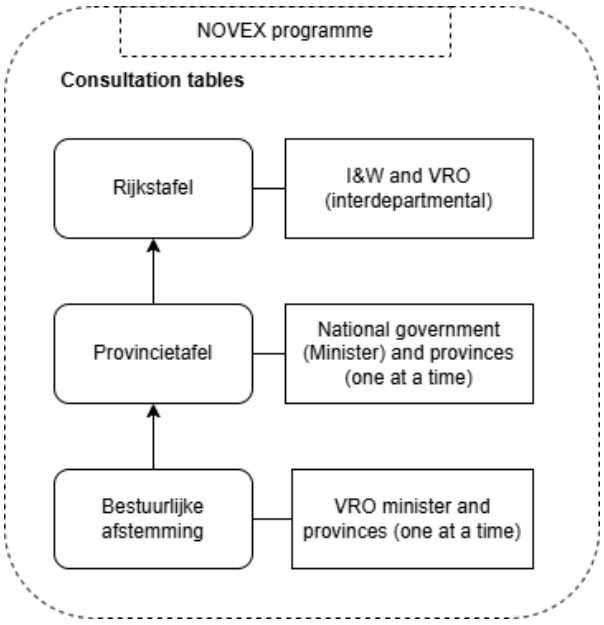

Figure 4.6: NOVEX consultations structure (Own work)

Overall, a reference can be made to the scientific literature of Chapter 3. The policy design of the NOVEX-programme can be regarded as a *policy package*, since one overarching programme with several policy measures is implemented as a decision-making process on tackling the housing crisis in the Netherlands. Within this process, the establishment of a *'spatial arrangement'*, which can be adapted to local information or circumstances at a later state, can be seen as part of *policy patching*. Both mechanisms can work towards the literature concept of policy integration. However, these literature concepts are left out of scope in the

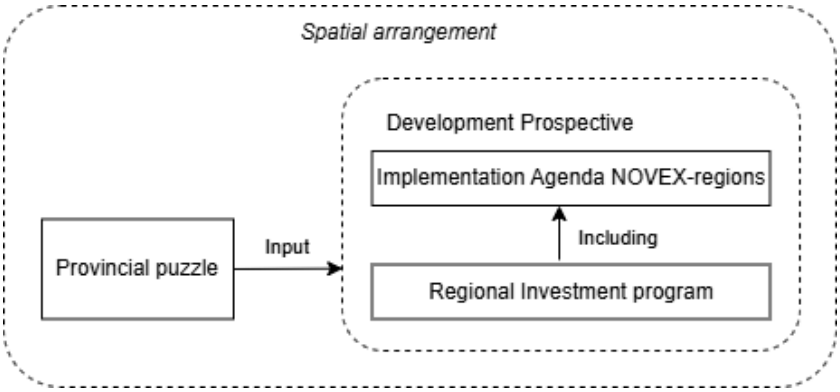

Figure 4.7: Policy elements of a 'spatial arrangement' within the NOVEX programme (Own work).

semi-structured interviews, as the focus is laid on the literature integration concepts of coordination, coherence and cooperation, keeping the scope of prepared questions and the research manageable.

4.6.4. Overlap between agendas provinces and NOVEX regions

The provincial and NOVEX regional directions are interconnected, as regions span multiple provinces, overlap, and influence each other's implementation. Provinces collaborate on 'start packages' and coordinate with relevant NOVEX areas during the 'puzzle phase' (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a). This interdependence necessitates cooperation between institutions.

In early 2024, provinces submitted regional proposals to the national government, outlining how national and local tasks align (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2024). These plans are developed in coordination with municipalities and water boards. The NOVEX program aims to enhance the implementation of national policies affecting spatial planning (Provincie Zeeland, n.d.).

The 16 NOVEX regions address major spatial transitions with tailored development strategies (Planviewer, n.d.). A key challenge is large-scale housing development, with 17 designated housing locations across seven urbanization areas (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, n.d.-a):

- Metropoolregio Amsterdam
- Zuidelijke Randstad
- Regio Utrecht
- Brabantse Stedenrij
- Gemeente Groningen
- Foodvally / Nijmegen / Arnhem
- Regio Zwolle

To maintain livability, a balance between work, housing, transport, and facilities is essential. Additional mobility investments are required, funded through the Mobility Fund and area budgets (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2024a).

4.6.5. Stakeholders involved in NOVEX-programme and execution

Various ministries oversee spatial planning in NOVEX regions. The Ministry of Housing and Spatial Planning (VRO) addresses the housing crisis, focusing on large-scale housing sites, while the Ministry of Internal Affairs (BZK) facilitates spatial arrangements through consultations (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a).

The Board of Government Advisors (CRa) provides independent advice, emphasizing design research. Water boards play a key role in water-related planning, and metropolitan regions, such as Rotterdam-The Hague, contribute when mobility issues arise. Provinces lead spatial arrangements, coordinating regions, municipalities, water boards, and civil society. Acting as 'area directors', this stakeholder ensures collaboration across governance levels. Municipalities, particularly in NOVEX regions, partner with provinces and water boards, aligning broader spatial goals.

Civil society organizations help shape and accelerate development. The Netherlands Environmental Assessment Agency (PBL) evaluates spatial proposals based on NOVI-goals. Implementing organizations participate from the 'start package' phase to final agreements (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a).

The Consultation Body Physical Environment (OFL) brings together government, citizens, civil society, and private companies to discuss the physical environment (Overlegorgaan Fysieke Leefomgeving, n.d.). NOVEX governance differs from the MIRT process, with varying ministry involvement, leading to different collaborations and decision-making structures.

4.7. Conclusion on decision-making processes and characteristics

To conclude, the Multiannual Infrastructure Programme Space and Transport (MIRT) process of decision-making follows consecutive steps and delivers decision information at the end of the phases, after which a new phase can be started or reviewed. Here, especially the Ministry of Infrastructure and Water Management (I&W) and the Ministry of Finance exert power, leading to lobbying by the regions at these ministries. On the other hand, the National Environment Vision Execution Force (NOVEX) programme decision-making process emphasizes a *direction-based way of thinking* by aligning both a provincial direction and an area-oriented direction in 16 National Environment Vision Execution Force (NOVEX) regions, and therefore eventually in the 17 large-scale housing construction locations. Consequently, the timing of decision-making and coherence between the Ministries of Housing and Spatial Planning, as well as the Ministry of Internal Affairs, is of great importance. Additionally, the Ministry of Infrastructure and Water Management (I&W) plays a larger role in the Multiannual Infrastructure Programme Space and Transport (MIRT) process, whereas the Ministry of Housing & Spatial Planning (VRO) takes the lead in managing (with or without I&W) the National Environment Vision Execution Force (NOVEX) decision-making process.

Relevant unique features of transport- and spatial planning include the *incremental process*, relatively *long establishment period*, and *deliverables in large-scale infrastructure projects* within the Multiannual Infrastructure Programme (MIRT) process, whereas the National Environment Vision Execution Force (NOVEX) programme is unique due to its *different steering mechanisms* and *decentralized working methods with national goals*. However, both processes share *public-private involvement* and *the role of BO-MIRT*(Administrative Consul-

tation on large-scale infrastructure projects) or *BOL* (Administrative Consultation on Living Environment) *consultations* as decision-making points or inputs. Lastly, *political dynamics* will continue to influence both decision-making processes. The semi-structured interviews in Chapter 6 revealed these most relevant characteristics of the Multiannual Infrastructure Programme Space and Transport (MIRT) process and National Environment Vision Execution Force (NOVEX) programme in practice, providing further insights into the integration of transport- and spatial planning.

All in all, this chapter serves as input for Chapters 5 and 6, as context of the decision-making process can help understand the arrangement of the case-studies performed and the according factors on integration between transport- and spatial planning in practice.

5

Description of case-studies conducted

The unique and overlapping characteristics, as well as the current decisino-making processes, of the MIRT project and NOVEX-programme in Chapter 4 are queried in the semi-structured interviews following. However, in order to gain understanding on the cases questioned, a description is given on the key characteristics and goals of the cases, including their current state and participating stakeholders.

5.1. Case description Oeververbindingen Rotterdam

A significant public transport expansion is required in Rotterdam's eastern region to improve accessibility and connect new residential areas. The Rotterdam Oostflank, designated as a large-scale housing site, will see 19,000 new dwellings by 2030, expanding to 35,000 by 2040 (Gemeente Rotterdam et al., 2022).

Subsequent studies led to a Memorandum on Promising Solutions (NKO) in 2021, detailing specific measures. In 2022, the BO-MIRT meeting adopted the Preferred Alternative, which includes:

- A new bridge over the Nieuwe Maas (public transport: 15-minute link between Kralingse Zoom & Zuidplein)
- A permanent Stadionpark train station
- Capacity and intersection upgrades on the Algeracorridor (N210)
- A16 redesign with extra lanes in key areas (Oeververbindingen Rotterdam, n.d.-b).

Figure 5.1 illustrates the key transport changes. The MIRT study and planning phase began in 2024 and will take approximately four years (Langendoen, 2024).

5.1.1. Integration of MIRT phases in NOVEX-region Oeververbindingen Rotterdam

Gemeente Rotterdam et al. (2022) highlights that investing in sustainable mobility solutions addresses both accessibility and spatial planning in Rotterdam. The housing developments in the Oostflank have accelerated public transport improvements, reinforcing both initiatives.

Figure 5.1: Main adaptations in the Oeververbindingen Rotterdam(Bolder, 2024)

Since 2022, the MIRT research and -exploration have been part of the NOVEX-region Zuidelijke Randstad, where a spatial puzzle informs the region's Implementation Agenda (Provincie Zuid-Holland, n.d.-b). The NOVEX process aligns with MIRT phases, studying regional challenges and potential solutions to establish a preferred alternative, followed by implementation. Mobility and accessibility goals are further developed within the MoVe programme (programme Mobility and Urbanisation), integrating MIRT principles and the 'rules of the game' into infrastructure planning (NOVEX Zuidelijke Randstad, n.d.-b).

A Development Prospective for the NOVEX-region sets strategic planning choices, collaboration agreements, and process structures (NOVEX Zuidelijke Randstad, n.d.-a). Housing and mobility tables coordinate efforts across the region, with BO-NOVEX Zuidelijke Randstad meetings (2-4 times a year) allowing urban representatives to contribute (NOVEX Zuidelijke Randstad, n.d.-b). This approach integrates MIRT methodology into NOVEX-programme agreements, fostering cross-regional learning. Additionally, the Oostflanktafel brings together ministries (I&W and VRO), MRDH (Metropolitan Region Rotterdam the Hague), and Rotterdam Municipality, as shown in Figure 5.2. The table sets the agenda and advises on the integration of the MIRT project and Oostflank developments, ensuring alignment and addressing external factors impacting the project (Regiegroep Oeververbindingen Rotterdam, 2025). It can prioritize accessibility or housing when needed and incorporate external influences, such as political dynamics (back-room politics), into decision-making.

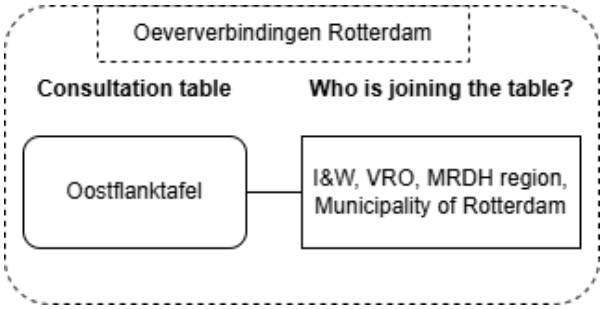

Figure 5.2: Participants of the Oostflanktafel, within the Oeververbindingen Rotterdam (Own work)

5.1.2. Stakeholder analysis Oeververbindingen Rotterdam

The MIRT-exploration of Oeververbindingen Rotterdam was initiated by various parties. These parties are elaborated on, after which relevant other parties in the decision-making process are discussed in Appendix G.

First of all, the Ministry of Infrastructure and Watermanagement (I&W) has an interest of funding a sustainable large-scale infrastructure project which ideally contributes to accessibility, the housing construction plans, and even connections between large cities. Furthermore, the province of South-Holland wants to maintain accessibility in the region of Rotterdam as a road manager (Provincie Zuid-Holland, n.d.-a). Then, the municipality of Rotterdam wants to maintain accessibility in the city of Rotterdam as a manager and maintainer of the 'bank connections' in Rotterdam (Oeververbindingen Rotterdam, n.d.-a). Lastly, the Metropole Region Rotterdam The Hague (MRDH) wants to improve accessibility in the region of Rotterdam the Hague as a consortium of 21 municipalities in the region (Metropoolregio Rotterdam Den Haag, n.d.).

These parties are shown as having higher power in the power-interest diagram in Figure 5.3, due to their role as official commisioner in the MIRT-exploration. Whilst the relevant stakeholders are stated to have overlapping goals, their ratio in power and intersest in the Oeververbindingen Rotterdam varies. Therefore, Figure 5.3 shows the power-interest diagram of the Oeververbindingen Rotterdam.

The diagram shows that the governmental organisations can act out most power. Furthermore, local stakeholders, such as residents, entrepeneurs and advocacy groups can have more interest in the MIRT-process, but do not have many means to change this process. When a change is made in the decision-making process of this MIRT-process, this will likely be established by governmental institutions. However, the impact will be found in smaller lower-level interest groups.

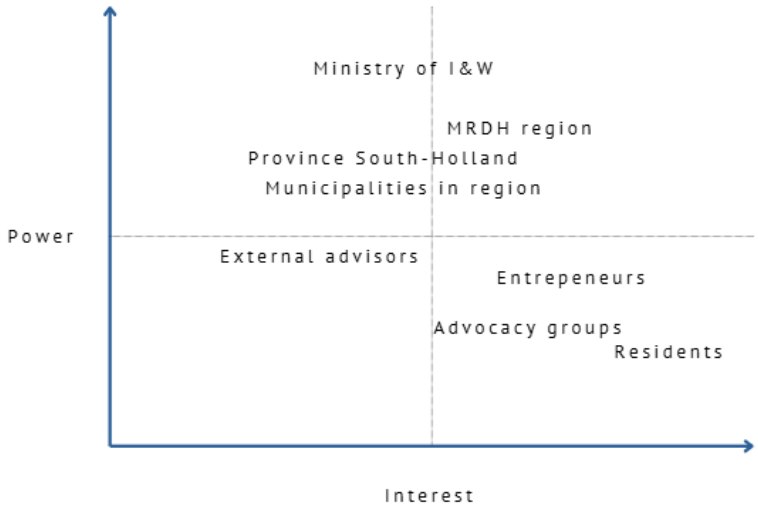

Figure 5.3: Power-interest diagram Oeververbindingen Rotterdam (Own work).

5.2. Case description Utrecht-Rijnenburg

The largest housing site in the Netherlands, Utrecht-Rijnenburg, lies on Utrecht's southwestern urban border. Initially, Groot Merwede was designated as a large-scale housing-site, with Rijnenburg later added (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2024a). Construction of up to 20,000 dwellings begins around 2035 (RTV Utrecht, n.d.). This contributes to 63,000–70,000 homes across Westraven and Galecopperzoom (Gemeente Utrecht, 2024a). The polder's location is shown in Figure 5.4.

Figure 5.4: Location of the polder Rijnenburg, seen from the south-west (Gemeente Utrecht, 2024b)

Whilst project developers see a future in creating an 'energy landscape', including wind turbines and solar fields, the municipality of Utrecht wishes for more construction of dwellings. From the perspective of the Cabinet-Schoof, dwellings should be given priority over energy generation (Kommers, 2024). Eventually, four wind turbines and 20.000 dwellings will cover the polder area. In this project, especially the dwellings are dependent on the extension of the Merwedelijn, a tramline which can connect Utrecht-Rijnenburg with the city centre of Utrecht.

Furthermore, the project is highly reliant on funding from the national governments, since 'affordable' housing types are to be constructed (RTV Utrecht, n.d.).

In the area of Utrecht-Rijnenburg, both a MIRT-research and -exploration are being performed. In 2020, the MIRT-exploration 'OV en Wonen' took off. This exploration aims at how the public transport system in the southwestern and eastern part of the city of Utrecht, and the northern part of Nieuwegein can be improved. This is done by a consortium of governments, called U Ned (Uned, n.d.-a), of which the members are elaborated on in Paragraph 5.2.2. The MIRT-exploration seeks after solutions in public transport for the issues of:

- Better accessibility of Utrecht Science Park
- Releasing pressure on Utrecht Central station and the city centre
- Enabling new living- and working locations in the Southwest of Utrecht and Nieuwegein, in an accessible way, ensuring the possibility to build extra housing (Rijksoverheid, n.d.-b).

The last objective clearly shows the urgence of the urbanisation issues and possibilities in housing construction site in the MIRT-exploration. Therefore, a strong focus is laid, within the MIRT-exploration, on housing construction goals.

In this exploration, five measures or lines are elaborated on, as can be seen in Figure 5.5. Especially the Merwede line (tramline) can act as an access line towards Utrecht-Rijnenburg. At the moment, no preference alternative is decided on, since relevant questions on the Merwede line are not answered yet, especially regarding budgeting and exploitation (U Ned, 2024a). Therefore, a so called 'in-depth phase' (Verdiepingsfase) has been started, aiming towards a specific trace of the tramline (Provincie Utrecht et al., 2024). This tramline can be seen as a prerequisite of the housing construction in Rijnenburg (Uijtewaal, 2023). Next to a tramline, the city aims at constructing cycling and walking connections under and over the highways (A12 and A2). In addition, mobility hubs are considered, which are connected to the highways as well (Weessies, 2024). In this thesis, the case performed will be called Utrecht-Rijnenburg, as this specific polder is regarded as the main focus in scope of the MIRT-exploration 'OV en Wonen'.

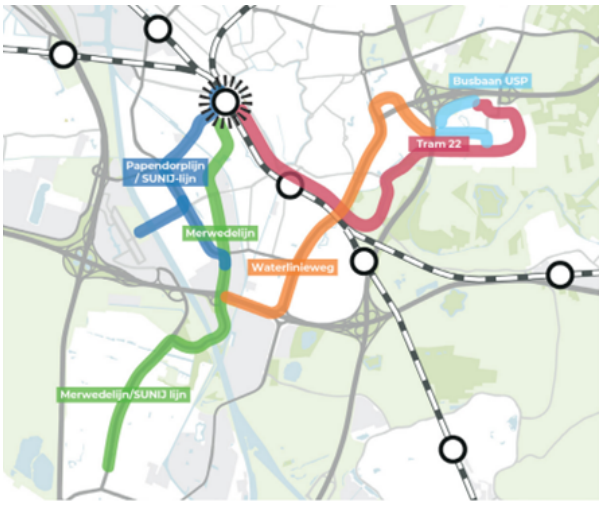

Figure 5.5: The five measures of the MIRT-exploration in Utrecht (U Ned, 2024a)

In 2023, a MIRT research 'A12 zone-Rijnenburg' has been started, in which again UNed researches what is needed in order to develop both Groot Merwede (A12 zone) and Rijnenburg into new districts of the city Utrecht (U Ned, 2024b). Beforehand, area development plans have shown that public transport is a prerequisite to develop such areas towards area developments (e.g. housing) in this area.

In a 'standard' MIRT process, the MIRT investigation starts and leads towards a MIRT exploration. However, in this case the main exploration is performed faster than the MIRT investigation. Therefore, due to the disagreement on a preference alternative, the in-depth phase will continue as an extension phase of the MIRT investigation. Therefore, currently, the two phases are performed at the same time. Both phases are coordinated by the consortium of UNed and investigated in this thesis.

Furthermore, an 'area alliance' (Gebiedsalliantie) has been established in October 2024, which focuses on prioritizing joint lobbying, aligning developments in the area, environment and region, as well as maintaining regional support (Freep, n.d.). This alliance can be compared to the established 'Oostflanktafel' in Rotterdam, since their focus points partly overlap. Henceforth, the case will be abbreviated towards 'Utrecht-Rijnenburg', as both the MIRT-investigation as MIRT-exploration are related to newly to be constructed large-scale housing site.

5.2.1. Coherence MIRT research, -exploration and NOVEX ambitions in Utrecht-Rijnenburg

The results and choices of the MIRT- exploration with respect to the future public transport system and the Merwede line are taken into account in the MIRT-research (U Ned, 2024a). This shows relevant coherence between the two phases of the MIRT-process. In addition, the ambition to build 20.000 dwellings in the polder of Rijnenburg depends on the measures of the MIRT-exploration (U Ned, 2024a). As alderman Eerenberg (of Utrecht) stated on the national broadcast *: 'No tram, no dwellings!'* (NOS, 2024).

Furthermore, the 2,4 billion euros needed to establish the Merwede line is partly funded by the national government, especially eager towards the large amount of housing which can be constructed in Rijnenburg. Therefore, local governments encourage ministries to provide funding for the construction of such 'affordable housing' (NOS, 2024). This shows that both the funding for the Merwede line, as well as for the dwellings in Rijnenburg, rely on large funding opportunities.

5.2.2. Stakeholder analysis Utrecht-Rijnenburg

In Utrecht and Amersfoort, a consortium launched the U-Ned research program, including the MIRT studies on A12-Rijnenburg and OV & Wonen in Utrecht. Key participants include the Ministries of Infrastructure & Water Management (I&W), Internal Affairs (BZK), and Economic Affairs (EZK), aiming to support urbanization, economic growth, and accessibility (Uned, n.d.-b).

The Province of Utrecht seeks to ease housing and mobility pressures, while U10 municipalities (municipalities in and around Utrecht) and Amersfoort focus on creating a livable, accessible region (Provincie Utrecht, n.d.). Rijkswaterstaat (Execution organisation of Ministry of Infrastructure and Watermanagement) manages national roads, ProRail (maintenance of railways) oversees rail infrastructure, and NS (Dutch railways) ensures reliable passenger transport. The other relevant stakeholders are elaborated on in Appendix G. A power-interest grid can be seen in Figure 5.6. The box around the three ministries indicates the (non-ranking) cluster of ministries present in this case.

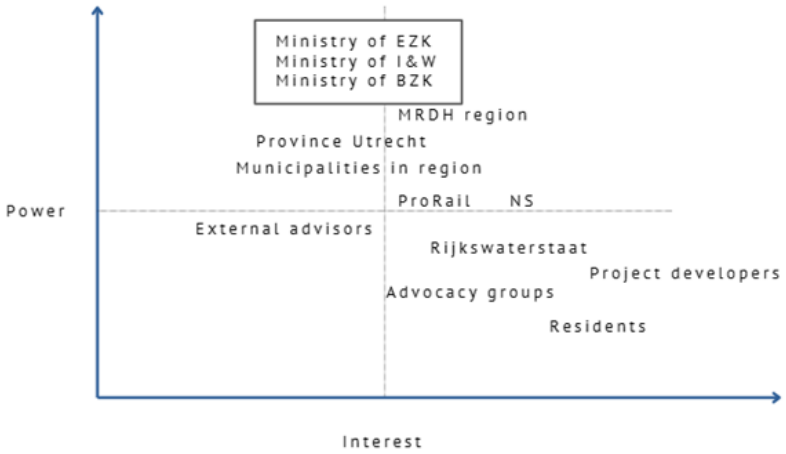

Figure 5.6: Power-interest diagram Utrecht-Rijnenburg (Own work).

The diagram highlights the transport-focused actors in the MIRT process, such as ProRail, NS, and Rijkswaterstaat, while higher government authorities maintain control. Decision-making is led by government institutions, with its effects felt at lower levels. Boundary stakeholders—ProRail, NS, Rijkswaterstaat, and project developers—are involved but hold less influence. These assumptions from the power-interest grid are examined further in the semi-structured interviews.

5.2.3. Funding new dwellings in the Netherlands

In December 2024, a ‘top’ meeting on housing, including the prime minister Schoof and the minister of VRO was held. Here, an emphasis was again laid on the urgence of funding for new housing projects throughout the Netherlands.At the housing top, an ’intention agreement’ for Groot Merwede-Rijnenburg and the region of Utrecht is reached on the construction of 63.000-75.000 houses. However, no specifications on the funding of the project are decided on yet (RTV Utrecht, n.d.). This meeting emphasizes the (political) urgency given to the housing construction acceleration, influencing an acceleration in the decision-making process of Utrecht-Rijnenburg.

5.3. Conclusion

To conclude, a difference in sequence of the Multiannual Infrastructure Programme Space and Transport (MIRT) investigation and MIRT-exploration can be found in the two cases, since Rotterdam followed a sequential approach, whereas in Utrecht, a more asynchronous order of decision-making and paces of Multiannual Infrastructure Programme Space and Transport (MIRT) projects is followed. Furthermore, the dependence of the large-scale housing locations on a specific infrastructure is evident in both cases. In addition, since Rotterdam finished its first two phases of the Multiannual Infrastructure Programme Space and Transport (MIRT) process, a public National Environment Vision EXecution force(NOVEX) Zuidelijke Randstad approach is established, and Administrative Consultations (BO) National Environment Vision EXecution force (NOVEX) meetings are expected to be held in the region. In Utrecht, the urge to build housing in a quick and affordable manner is a priority, but the question remains which accessibility measures will be implemented, and which parties will be responsible for the funding of both developments. After creating a context on the characteristics of a Multiannual Infrastructure Programme Space and Transport (MIRT) project and the National Environment Vision EXecution force (NOVEX) programme, on their decision-making processes and the specific context in which the cases are performed, Chapter 6 explores the factors found on policy integration, within these contexts, through semi-structured interviews.

6

Semi-structured interviews results

This chapter summarizes the findings of 10 semi-structured interviews, having analyzed policy domains through their characteristics, decision-making processes, and case studies. To structure this analysis, the literature integration concepts of coordination, coherence, and cooperation from Chapter 3, along with *manageability*, serve as guiding principles. The last integration concept is mentioned relatively much in the semi-structured interviews and is therefore an important scientific addition to the three policy integration concepts present in literature.

Analyzing the interviews led to factors influencing the integration between the MIRT process and large-scale housing sites in NOVEX regions. These are categorized under the four integration concepts of coordination, coherence, cooperation and manageability, based on their relevance in the interviews. For example, the factor *various budget streams* is discussed under 'coordination' as it emerged in that context during interviews.

The identified factors from the semi-structured interviews are labeled by the researcher and presented in italics. These findings are drawn from the cases of Oeververbindingen Rotterdam, Utrecht Rijnenburg, and broader experiences and opinions within the fields of transport- and spatial planning. References to the interviews appear as [R#], corresponding to respondent numbers. A background of the interviewees and a summary of the interview results are available in Appendix H.

6.1. Integration concept 1: Coordination

The first concept mentioned in the previous literature study in Chapter 3 is *coordination*. Various specific aspects are mentioned in the interviews in the field of coordination, which are included in the following definition of coordination in this thesis. Within MIRT-projects and large-scale housing construction sites, this concept is referred to as: *'Overarching consultations, hierarchy or institutions which create structure and/or overview of the relevant processes, members and rules applicable.'*

Table 6.1 shows the codes as elaborated on in this paragraph, including the number of times the code is grounded in the semi-structured interviews.

Table 6.1: Coordination codes and grounding

Code label	Grounded
Various budget streams ministries, reducing overview of financial sources	9
Coordinating role of the province	7
Relevance of transport or living environment related administrative consultations	4
Lack of 'R' (space) belonging to spatial planning (in Multiannual Infrastructure Space and Transport or MIRT programme)	2
Relevance of administrative consultation for National Environment Vision EXecution force (NOVEX)	6
Range in numbers of housing initiated at location, coordinating the Multiannual Infrastructure Space and Transport or MIRT process	3
Setting up a consultation table	8
Presence of overarching coordination programme	7
Performing adaptive programming as coordination	3
Digital integration, creating an overview of plans	2
Presence of asynchronous processes	5

According to interviewees, the *various budget streams from the Ministries of I&W (Infrastructure and Watermanagement) and VRO (Housing and Spatial Planning)* for accessibility and large-scale housing developments make it challenging for regions to secure funding for their plans. Whereas the Ministry of I&W focuses on large-scale infrastructure and mobility, the Ministry of VRO focuses on housing (acceleration). Regions must align their proposals with the appropriate funding sources at the right time, adding complexity to the process [R3, R6, R7, R8]. In the Oeververbindingen Rotterdam, project staff asked the director of the Oostflank to create action towards utilising released budget streams from VRO, so that no budget options were missed [R8]. Also, area budgets can be applied, in which subjects (e.g. greenery, nitrogen issues, deltamanagement) which touch housing combine their budgets to reach the similar goals of creating accessibility towards housing [R10].

"And Utrecht (Municipality) has a long way to go and receive funding. They want various options, namely the Merwede line and other plans. Here, they are trying to receive funding from VRO, and especially I&W to access this funding." [Interview R3].

In addition, *the role of the province* in the integration of transport- and spatial planning is one of being an 'area director' [R8]. However, this role can be adopted by for example a MRDH region (Metropoolregio Rotterdam Den Haag) [R9]. The distribution of these roles also depends on the size of the municipality and the level of importance assigned to provinces. Additionally, provinces may choose to participate selectively in MIRT processes based on regional developments and plans. An example of this is the Oeververbindingen Rotterdam, where the province initially played a coordinating role but withdrew after the MIRT exploration phase [R5].

The *relevance of BO-MIRT (transport) and BOL (living environment) administrative consultations* can be found in the fact that the structure of meetings, including a BO (Bestuurlijk Overleg), DO (Directeuren Overleg) and collaboration on a 'management group' base (Regiegroep) is judged well in the case of Oeverbindingen Rotterdam. Also, administrative consultations (BO's) are stated to lead towards integration of transport- and spatial planning [R5, R7]. Furthermore, such agreements do give guidance towards large decisions, but can be planned at an inconvenient time for the projects, as stated by interviewees [R5, R7].

Whereas the BO-MIRT consultation is stated to be relevant as a motivation to work towards a deadline of the MIRT-project, a separate BO NOVEX for housing can be performed, next to the BO-MIRT and BOL meetings. However, a *lack of the 'R' (space) of BO-MIRT belonging to spatial planning* is present [R3]. Therefore, *A BO NOVEX (administrative consultation for the National Environment Vision EXecution force meeting*), as initiated in the Zuidelijke Randstad, *is unnecessary*, as the *current BO-MIRT and BOL consultations* offer enough opportunities to integrate housing construction visions and plans. An extra administrative meeting on such an abstract level leads to administrative hassle as well [R5, R9].

From the perspective of spatial planning, *the range in numbers of housing initiated at a specific housing location* aimed at by the national government is important, as it can give direction towards the characteristics of an infrastructure project of a MIRT-project [R1,R2]. For example, in Utrecht-Rijnenburg, a scenario of housing numbers between 15.000-25.000 dwellings is taken into account by the MIRT-investigation OV en Wonen [R1]. This *number of houses* is also incorporated into the practical implementation of MIRT-project objectives in Oeververbindingen Rotterdam [R7].

According to interviewees, *setting up a consultation table (Dutch: Overlegtafel)* between the NOVEX large-scale housing project and a MIRT-project supports in advising the director's meeting in updating on (external) developments that affect one or both of the domains [R5, R8]. In Rotterdam, the establishment of the Oostflanktafel raises positive expectations, especially because external developments impacting one or both policy domains, such as net congestion, can be openly discussed [R8]. Such external developments are relevant to discuss, since housing issues are getting relatively less important in the plan study phase of the MIRT-process (after investigation and exploration), as then established agreements are to be guarded and preserved [R2, R5].

"In Rotterdam I was also talking about the fact that we maybe should set up, especially for the Eastern flank (Oostflank) a place where municipality and other parties negotiate about the area development. […]. Later in the plan study phase, housing has a less prominent role, except that agreements are to be guarded and preserved." [Interview R5].

Also, the established area alliance of Groot-Merwede and Rijnenburg, in the context of among others Utrecht-Rijnenburg, in which local and regional parties are included, acts as a consultation table, comparable to the Oostflanktafel [R4]. During the process, *the presence of an overarching coordination programme*, such as UNed (overarching programme in Utrecht), helps in creating an overview in the process, whilst exchanging information and decisions between MIRT-processes and housing construction processes. A regional alliance offers these features on a regional basis [R7].

In addition, according to interviewees, *performing adaptive programming as coordination* can be applied during the decision-making processes. For example, this implies later changes to the location of tram stops of the Merwedelijn in Utrecht-Rijnenburg, in accordance with the realisation of dwellings in the polder of Utrecht-Rijnenburg [R5, R7]. Then, during the development of both domains, the project groups adjust their infrastructure or housing to better accommodate the construction of the other domain [R4]. Area developments are namely subject to several economic turndowns and administrative periods during their establishment. Then, on the short term latching is possible, whereas on the longer term adaptivity is required [R5]. Also, *digital integration*, through digital twins or 3D models with VR glasses helps in combining and therefore creating an overview of separate plans of transport planning and spatial planning in a future vision [R8].

Lastly, at an operating level, *the presence of asynchronous processes* form a barrier. This can be performing a MIRT-investigation (e.g. focussed on housing) and -exploration (e.g. aimed at infrastructure) at a similar time. That is currently happening in Utrecht-Rijnenburg, which makes it harder to exchange knowledge and prepare outcomes which are (quickly) needed by the other project. [R4].

"[…] And in the interaction with the (MIRT) exploration, this was still quite laborious. A number of reasons, of which one is the fact that processes are asynchronous, so they don't run completely parallel to each other, right? So those are different." [Interview R4].

6.2. Integration concept 2: Coherence

The second integration concept touched upon in the literature study in Chapter 3 is coherence. From this viewpoint, coherence is referred to as one policy 'enhancing' the other policy, through its objectives and implementation components, sharing a similar goal. In the case of large-scale housing sites, the accessibility towards these housing sites supports the construction and availability of housing, both aiming at accessible large-housing sites. More specifically, in this thesis, one refers to *the separate projects of transport- and spatial planning as a 'a shell with interfaces', which touch each other and therefore create direct coherence*. This explanation is repeated several times as an outcome of the semi-structured interviews. Table 6.2 shows the codes related to coherence and their groundings in the semi-structured interviews.

First of all, ideally seen, infrastructure and housing are constructed at the same time and pace [R6, R9]. However, in general, the factor of *infrastructure taking longer to construct, hindering coherence* is present. In Utrecht-Rijnenburg, the construction of an (underground) tramline can take up to 10 years [R7]. Therefore, delays occur, in which housing is constructed without the proper infrastructure and accessibility [R9]. This does not motivate the usage of sustainable ways of transporting, such as public transport [R1, R9].

Consequently, *parallel paths or paces of both the MIRT-project and the housing construction* can strengthen the relationship between them, according to interviewees. This leads to the usage of the -from the perspective of the governmental client- preferred mode of transport towards the large-scale housing site [R3]. Furthermore, in both Utrecht and Rotterdam, the guiding principles of the MIRT-processes are well-formed and include housing accessibility. It is stated that a *lack of agreement on guiding principles in the MIRT-process* is thus to be prevented [R1,R2,R9].

Table 6.2: Coherence codes and grounding

Code label	Grounded
Infrastructure takes longer to construct than dwellings, hindering coherence	4
Parallel paths transport- and spatial planning	3
Lack of agreement on guiding principles MIRT-process	4
Negotiation attitude of administrators in consultations	2
Reasonable behavior administrators in consultations	4
Availability of 'window of opportunity' when transport- and spatial planning are cohering	2
Alignment in trade-off between cars and sustainable modalities	11
Showing regional successes of coherence towards ministries	2
Prevention of high-rise environment, leading to coherence in goals	4
Sharing progress and results of projects between transport- and spatial planning	4
Enabling housing content in guiding principles of a MIRT project	8
Alignment between transport- and spatial planning	16
Reciprocity between transport- and spatial planning	3

(From a MIRT-point of view): *"Then we assume that those houses, those developments, we are taking that into account and it will be a guiding principle"*. [Interview R3].

In the coherence between transport- and spatial planning, a *negotiation attitude of administrators in consultations* can barrier consultations and the progress of projects in both policy domains [R5, R6]. This behaviour can also enhance the *lack of agreement on 'guiding principles' of the MIRT-process* (uitgangspunten) of especially a MIRT-project [R9]. Opposing to this 'negotiating' mode, *reasonable behaviour of and between administrators in consultations* is shown in the Oeververbindingen Rotterdam. In general, when one project cannot reach its full potential due to another project being in its way, a reasonable outcome is to be provided from both sides, which creates feasibility of the separate plans [R3]. These *guiding principles of the MIRT-process can enable housing aims*. Especially in a MIRT-exploration, working towards objectives such as 'enabling urbanisation', was and is understood in the project teams as facilitating the new housing locations in the region of Rotterdam, of which the Oostflank is one [R2].

"So you need to have confidence and space as professionals to be able to explore that. And if you don't have that, and don't get out of that negotiating booth, then it's going to be nothing." [Interview R5].

In addition, according to interviewees, *the availability of a 'window of opportunity', when transport- and spatial planning are cohering,* can be taken advantage of. This is the case when policy ideas, the public opinion and political leadership come together (University of New Hampshire, 2020). For example, when both policy fields of transport- and spatial planning are cohering in government funding, then a larger 'window' is created to actually fulfill this coherence through policy measures.

This happened during the Oeververbindingen Rotterdam, when the minister of BZK (Internal Affairs; later VRO) allocated a large budget to accessibility of housing, elevating the topic to a high priority on the political agenda. In addition, the construction of the Oostflank received more political attention. This was mainly due to the 'zeitgeist' of the years (2019-2022) [R2, R8]. This led to an increased urgence in alignment of both processes and pressure of constructing the Oostflank. Part of this urgence came from the traffic and transport problems occurring in the region [R3].

(on Oeverbindingen Rotterdam) *"We also had a bit of the zeitgeist with us."* [interview R8].

"And what it especially was, yes that traffic and transport problem, so the need was there, the pressure was already there, so basically all the circumstances were such that you think: If it doesn't work here, then it won't succeed anywhere. So the circumstances were with it." [Interview R3].

Also, within the alignment of the trade-off between *using cars or sustainable modalities*, such as public transport, various governance layers prefer different modalities. Whereas the Ministry of I&W has a preference towards accessibility by car, regional governments aim at public transport [R2]. In both Oeververbindingen Rotterdam and Utrecht-Rijnenburg, this preference is felt [R1, R3]. Here, the alignment between a parking norm in a city or housing construction site is to align with the chosen mode of transportation [R3].

According to interviewees, integration can work when the *regions shows its successes of the coherence* of (part) of the projects of housing and MIRT towards ministries [R5, R8]. Furthermore, *prevention of a high-rise environment* is a common denominator within various governmental layers. During the construction of inner-city dwellings, this general aim is pursued. This common denominator was present in Oeververbindingen Rotterdam, where a highly-dense area wanted to create a large-scale housing site [R1, R2, R4]. In Utrecht-Rijnenburg, the municipality and region do not want to work towards dense high-rise housing locations, as the image of the city of Utrecht is one of a large 'village' [R1].

"This does not have to mean a New-York kind of city". [Interview R1].

Sharing progress and results of projects between transport- and spatial planning through interdepartmental ministries or management groups is, according to interviewees, important to create coherence between transport- and spatial planning [R5, R7]. In Utrecht-Rijnenburg, this is aimed at between the two MIRT-phases, both related to the spatial planning of Utrecht-Rijnenburg. The questions that arise here are how different types of information can be shared with each other, uncertainty on the realism of plans originating from the other policy domain and how to strengthen coherence rather than piling delay on delay by sharing this information [R7].

"We (MIRT-exploration) sometimes already give feedback to the housing development, like: it is a nice idea but it's not that that you want that from the area development, but that's actually not feasible or that is so difficult that you shouldn't want that, so then they can quite quickly adapt to that as well by having those kind of ideas". [Interview R7].

"So we are constantly working on trying to prevent that, so that you do reinforce each other, but not hostage into delay upon delay" [Interview R7].

When *aligning both policy domains*, it is important that no single party unilaterally decides on a plan for execution, according to interviewees. Instead, individual procedures and scopes are to *align* with one another [R3]. In Rotterdam, the attention and participation of housing construction experts made its first appearance. This coherence led to a necessity to *align* both processes. It proved that alignment of procedures, scopes and inclusion of experts of both policy domains is relevant [R2]. Also, *reciprocity between transport- and spatial planning* can be seen as a 'starting point' in policy documents and integration, where consciousness is raised on the existence of both policy domains of transport- and spatial planning, which influence each other [R4, R7]. In the Oeververbindingen Rotterdam, this concept forms part of the basis of the design of the Oostflanktafel [R5].

6.3. Integration concept 3: Cooperation

According to interviewees, cooperation is a third relevant integration concept, as mentioned in the literature study in Chapter 3. This indicates how the two project groups of both a large-scale housing site and a MIRT-project can work together in an efficient manner. The definition is based on the basic definition of cooperation- or working together- in everyday-life, applied towards the policy domains aimed to be integrating. Table 6.3 shows the codes related to cooperation and their groundings in the semi-structured interviews.

Table 6.3: Cooperation codes and grounding

Code label	**Grounded**
Dependency (on other policy domain projects outcomes)	4
Superimposing plans transport- and spatial planning	8
Arranging (in-) formal strategic meetings	2
Political pressure, accelerating decision-making but creating nervosity in project groups	3
Urgence of housing, possibly diluting transport planning	10
Base of trust in management groups transport- and spatial planning	2
Generating and applying similar technical models	2
Maintaining pragmatic thinking in interaction transport- and spatial planning	4
Transparancy in showing boundaries administrators, creating easier cooperation	5
Acknowledging different 'languages' transport- and spatial planning	4

First of all, *dependency on the outcomes or results of one project, impacting the other project*, leads to delays in both processes [R5]. For example, in Utrecht-Rijnenburg the MIRT investigation and -exploration are performed asynchronous, seen from a traditional MIRT-phases perspective. Here, the dependency on outcomes of one project on the other is higher. Based on the outcomes of one project, feedback is to be delivered on the feasibility of the impact of these outcomes on the other project or policy domain [R7]. *Superimposing plans of both transport- and spatial planning* in a literal way leads to realistic cooperation [R2, R3, R6, R7, R8]. Then, the overlapping features of both plans can be compared to each other [R6].

In the Oeververbindingen Rotterdam, the 'lines' of the mapped out plan areas of the transport- and spatial plans are to be filled in tightly, so no gaps in spatial planning are left between these regions [R8].

Also, *arranging strategic (in-) formal meetings*, in which plans and agreements are superimposed and discussed, is important [R2]. In the case of Oeververbindingen Rotterdam, informal strategic meetings functioned as main communication between the 'management groups' of the Oostflank and the MIRT-exploration [R8]. In the case of the MIRT-exploration OV and Wonen, and the MIRT-investigation A12-Rijnenburg, the alignment of these two processes is pursued by organizing project management meetings including both MIRT phases [R7].

"We set up a kind of strategic consultation in which I said: well, we have to meet once a week or once every two weeks just to talk to each other." [Interview R8].

Furthermore, *political pressure* can on one hand accelerate the decision-making process or lead to urgency to tackle problems [R7]. On the other hand, this pressure leads to nervosity of the project groups implementing the policy, as being felt in Utrecht-Rijnenburg [R4]. In addition, according to interviewees, the influence of *political pressure* is relevant at the start of the decision-making processes, in order to gain funding and start quickly as well. However, during the implementation phase, this pressure can barrier decision-making by slowing down the process through political discussions or conflicts [R5].

Fast decision-making, such as the intention agreement of Utrecht-Rijnenburg, omits other important decision-making choices. This leads to a lock-in in which housing will be constructed, even though the construction is- from an interviews perspective- unfortunate at various other points [R6]. Therefore, during recent MIRT-projects, these projects are subject to *politicising* by governmental institutions, when investigated or explored in combination with housing construction sites [R9]. This is part of the, more general, *urgence of housing, possibly diluting transport planning*, referring to the housing shortage in the Netherlands. This urgence similarly adds acceleration towards decision-making, but also offers ill-considered (ondoordachte) decision-making during policy implementation, as it can dilute the transport infrastructure urgence it requires [R3]. In the Oeververbindingen, the necessity through a traffic problem and political pressure towards an infrastructure across the Maas was present. This led to an opportunity to start the MIRT-proces in alignment with the Oostflank [R3].

"Right before the elections in 2022, me and a colleague from the MIRT-exploration, went to the management, and told her that the decision-information would not lead to agreements. The national government had 7,5 billion euros to allocate and in order to receive this money, the team was to run for it." [Interview R8].

"That is something I'm quite worried about, that something like that gets a political fraction. A declaration of intent is signed, which makes a lot of people think there's going to be that, while that is actually a lock-in for later." [Interview R6].

Working on a *base of trust in management groups in transport- and spatial planning*, especially in investigating modality options, advances the working base of the project teams [R5]. Within the project- or management teams of both the Oostflank and the MIRT-exploration in Rotterdam, such transparency and openness were considered as highly relevant, as it opened up opportunities towards integration of the two policy domains [R5, R8].

Generating and applying similar technical models in different phases of the MIRT-process can show the outcomes towards the other policy domain. This helps in creating understanding and similarity in visions [R4, R8].

Interviews reveal that *maintaining pragmatic thinking in the interaction between transport- and spatial planning* during the decision-making processes leads to non-content related, political views to being placed at the background [R5, R6, R9]. Then, the BO-MIRT and BOL cycle get a full-fledged position in the decision-making process, as performed in the Oeververbindingen Rotterdam [R5]. This pragmatism can be followed when delays in construction between infrastructure and housing occur. Then, for example, an interim solution for accessibility (e.g. the operation of a different modality) is installed when the dedicated infrastructure takes longer to construct than expected or planned [R6]. Also, in the Oeververbindingen Rotterdam, *transparency in showing boundaries of administrators in transport- and spatial planning towards cooperation* was reflected, while not allowing these boundaries to directly dictate the work process [R5, R8].

A barrier present in cooperation is the fact that both MIRT-project project members and NOVEX-programme members *speak a different 'language'*, which can be acknowledged. Whilst the MIRT-project aims at describing and analyzing the project in a more technical way, its output being a large scale infrastructure project, the NOVEX-programme communicates in a more 'abstract' manner. Here, the focus is laid on housing visions and strategies, leading to a 'spatial arrangement' [R1, R2, R3, R7]. In Utrecht-Rijnenburg, this difference in languages is felt, as the MIRT-proces bases its plans on traffic models, whereas plans for Utrecht-Rijnenburg focus on spatial quality, based on more qualitative data [R7].

"Those are two very different projects, two very different types of projects." [Interview R3].

"In the NOVEX programme, a different kind of people, who speak a different language, work at a more abstract level, than in an MIRT-project, where the overarching goals need to be made concrete. " [Interview R1].

6.4. Integration concept 4: Manageability

Manageability is introduced as an integration concept in addition to those defined from literature in Chapter 3, as this concept was mentioned significantly more frequently in the semi-structured interviews than other newly identified factors. Therefore, a whole new integration concept is added, including its own characteristics and factors, based on the two case-studies performed. This is an important result of the semi-structured interviews, adding to the scientific relevance of this research.

Manageability is defined in this thesis as: *'Maintaining control over the decision-making processes of the MIRT-process and NOVEX programme process, leading to the large scale housing sites with responsible accessibility'*. This definition highlights the coherence and coordination of the two policy domains, but focuses on the extent to which the domains are to follow their 'own paths', or are to cooperate effectively towards integration. These aspects were mentioned in the semi-structured interviews. Table 6.4 shows the codes related to manageability and their groundings in the semi-structured interviews.

Table 6.4: Manageability codes and grounding

Code label	Grounded
Long procedures (both policy domains)	3
Piling claim upon claim (by region)	4
Establishing long-term visions, including both transport- and spatial planning	2
Splitting tasks and content (to integrate) into smaller pieces and subjects	2
Answer question *'what to integrate now, and what later?'* at start of decision-making process	4
Focus on economy of the region if scope stays manageable	4
Certainty on establishment and adaptability of infrastructure	2
Staying compliant, but in 'own' policy domain path of transport and spatial planning	5
Acceleration of decision-making, but maintaining quality of decision-information Multiannual Infrastructure Programme Space and Transport (MIRT) process	5
Flexibility of team members transport- and spatial planning	3

First of all, *long procedures of especially MIRT-projects, but also the NOVEX programme*, lead to a longer and more complex process to manage [R3]. Also, from a ministerial perspective, the *piling of claim on claim by the region* can act as a barrier in fast(-er) implementation of policy in both domains [R3].

"We have to go through 120 hoops before we can finally do anything". [Interview R3].

Within manageability, *long-term visions, including the other policy domain* (towards 2050-2060) can help towards *splitting tasks and parts to integrate into smaller pieces or subjects* [R3, R9] Long-term visions can therefore add a time-component towards this splitting approach [R2, R6]. The time horizon depends on the scale of the project, since a smaller scale benefits from a shorter time horizon plan. This reveals that the longer a project vision withholds, the harder it is to keep an overview of the process and to keep all parties onboard [R6].

"I think you have to differentiate in time horizon and scale then". [Interview R6].

According to interviewees, when splitting a transport or spatial planning project, a decision-maker is to decide *'what to integrate now and what to later?'*. This decision should be made early in the process to avoid a 'snowball effect,' in which efforts to integrate every aspect of the plan keep expanding uncontrollably. Instead, one integrates part of the plans whilst performing the project process [R4].

"It seems a bit like the desire for integrality causes it to kind of snowball that rolls all the way down, after which you then can move on again with individual measures. Yes, that is very crazy". [Interview R4].

Furthermore, the subjects of infrastructure and housing are to be accompanied by a *focus on the economy of the region* as well, as this is especially relevant in urban areas. Various interviews mention the fact that this aspect should not be forgotten when integrating transport- and spatial planning [R6, R9]. In the Oeververbindingen Rotterdam, the MRDH region (Metropolitan Region Rotterdam the Hague) wanted to strengthen the economic agglomeration power. Here, the guiding principle of chances for neighborhoods was interpreted by this party as an economic one, namely including for example job opportunities for various layers of the population of Rotterdam. Nevertheless, a dilemma arising here is the fact that discussing more elements leads to a project scope that can be too broad [R9].

Also, interviews reveal that *certainty on the establishment and adaptability of the infrastructure* is a discussion raised in Utrecht. The questions asked here are how many 'steps' area development can take, and how adaptable the established infrastructure is towards the area development [R5, R7]. Furthermore, *staying compliant, but in 'own' policy domain paths of transport- and spatial planning* is considered relevant. However, when trying to reach policy integration, this holding on to one's own project is to be loosened up [R3]. Here, similar goals and therefore *target range*(doelbereik) are a prerequisite [R6, R7].

In Utrecht-Rijnenburg, *acceleration of decision-making* is desired. Nevertheless, the *quality of decision-information of the MIRT-process is to be protected*, for which time to integrate is needed. This poses a dilemma towards policy integration of both processes [R7].

"[…] We have to speed things up and then the trade-off is: we can deliver this at that moment, can we then deliver the quality of information that is needed or should we then say: you want to make a decisions, but we need a little bit more time to provide quality information?" [Interview R8].

Lastly, whilst working in a MIRT-project which coheres with a large-scale housing site, *flexibility of team members within transport- and spatial planning* is desired [R7, R9] This withholds securing decisions on the short-term, but creating flexible plans on the long-term [R5]. Within the MIRT-process in Utrecht-Rijnenburg, this flexibility is aimed at, showing the necessity of a tramline, not knowing where and how many dwellings arise [R7].

6.5. Conclusion

To conclude, the semi-structured interviews reveal that the context of political dynamics and urgence of housing influence integration options. Furthermore, experiences from the Oeververbindingen Rotterdam and Utrecht-Rijnenburg show that in aligning both decision-making processes, trust and time can create space for integration. In addition, several barriers towards integration can be found in behaviour and attitudes of both administrators and team members of the projects. Process-related options, such as superimposing plans of transport-and spatial planning also impact integration opportunities between transport- and spatial planning. An interpretation of these results can be found in Chapter 7, and a conclusion and discussion on the results can be found in Chapter 8.

7

Interpretation of results

This chapter interprets the results found in the semi-structured interviews in Chapter 6. The factors influencing the literature concepts of coordination, coherence, cooperation and manageability are merged into four separate models. The first three concepts of *coordination, coherence* and *cooperation* are derived from the literature study in Chapter 3, whereas the fourth concept of *manageability* is derived from the semi-structured interviews. This scientific addition is elaborated on in Paragraph 8.3.1. The models indicate the direction of relationship between the factors and the integration concept, of which the most ambiguous ones are especially elaborated on. These ambiguous relationships are shown in the models with a question mark.

The models also indicate a guidance for decision-makers on how to act when a certain integration concept is to be followed. This guidance is confirmed by the interviews and includes (general) requirements needed to provide the type of integration desired by decision-makers. The interpretation of the results is based on the results of the semi-structured interviews of Chapter 6, as well as on the researchers own interpretation of the relationships and according guidance established, derived from policy documents and news articles. Through conducting semi-structured interviews, facial expressions of interviewees, as well as tones and emphasis laid on words and themes within the semi-structured interviews, factors are considered. An elaboration on the selection of codes, based on the frequency of grounding in the semi-structured interviews can be found in Appendix I.

7.1. Coordination model

Figure 7.1 shows the factors influencing coordination between a Multiannual Infrastructure Programme Space and Transport (MIRT) project and large-scale housing sites, as well as guidance and requirements towards establishing coordination within the decision-making processes.

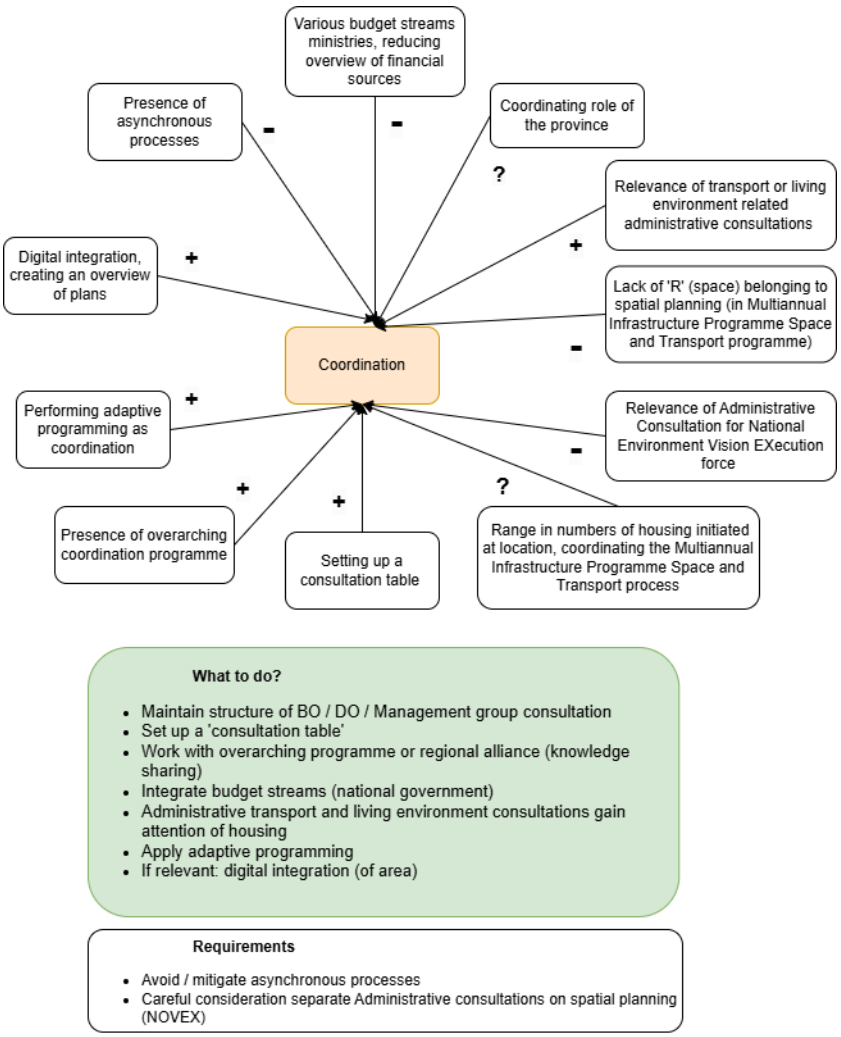

Figure 7.1: Coordination model, including decision-makers guidance (Own work)

The semi-structured interviews reveal uncertainty about the ideal *role of a province* in effectively coordinating the integration between a MIRT project and related large-scale housing developments. This is because national and regional governance levels- ministries and municipalities- can together establish a MIRT-project and large-scale housing site with the right representation and accountability. The province is more focused on the larger regions, and can therefore play a role in specific parts of the decision-making processes.This can add to disagreements within consultations, but also adds expertise in directing a (larger) area.

Furthermore, it is unclear if establishing a specific *number of housing at locations at the start of the decision-making process* can help create stronger coordination within the decision-making processes. On one hand, a more specific range in housing numbers can help the MIRT-process in establishing more specific measures or components of the infrastructure, such as its capacity or frequency (regarding a tramline). On the other hand, the MIRT-process works with the range that is imposed by the governmental client. Currently, relatively large ranges are worked with. This can differ with 10.000 dwellings. Therefore, at this moment no barrier is found, but strengthening opportunities can be roused.

The green and white boxes at the bottom of Figure 7.1 show the guidance for decision-makers in implementing policy integration through coordination. To utilize the strengthening options of the model, and mitigate the barriers currently occurring, the requirements of this model are partly based on avoiding or mitigating asynchronous processes. Especially in the case of the incremental processes of a MIRT-investigation and -exploration, such asynchrony is hindering integration, as a phase is to be officially fulfilled after starting the next one. This barrier is mentioned relatively much in the semi-structured interviews, and hinders Utrecht-Rijnenburg its integration on a daily basis. Also, strong opinions are expressed on the redundancy of a separate BO NOVEX consultation. Therefore, careful consideration is required when initiation of this consultation starts.

Furthermore, a decision-makers guidance towards coordination is focussed on maintaining the current structure of BO / DO (Administrators and Directors meetings) and management group consultations. Part of these stakeholders- both ministries of I&W and VRO, a metropolitan region and a municipality - can participate in a consultation table, which discusses the external developments, impacting either or both the MIRT-process or large-scale housing site construction. Also, Utrecht-Rijenburg showed that working with an overarching programme, such as Uned, can help share progress, information and projects outcomes between transport- and spatial planning.

Integrating budget streams at the national governments can be managed by a ministry only, giving guidance towards a region. It is important that either or both the BO-MIRT and BOL consultations gain or receive attention from the housing sector developments. From a NOVEX view, integration within these consultations is important to adequately coordinate both developments.

Applying adaptive programming means that short-term agreements and decisions are latched, whereas on the longer term, the plans should be prone to adaptations, so that integration in coordination can be reached. Lastly, visualizing the integrated area through digital measures, such as a 3D model or digital twin can help in envisioning a new neighbourhood with various possibilities in accessibility. This can especially help when decision-makers do not see the value of integrating both policy domains.

7.2. Coherence model

Figure 7.2 shows the factors influencing coherence between a MIRT-project and large-scale housing sites, as well as guidance and requirements towards establishing coherence within the decision-making processes.

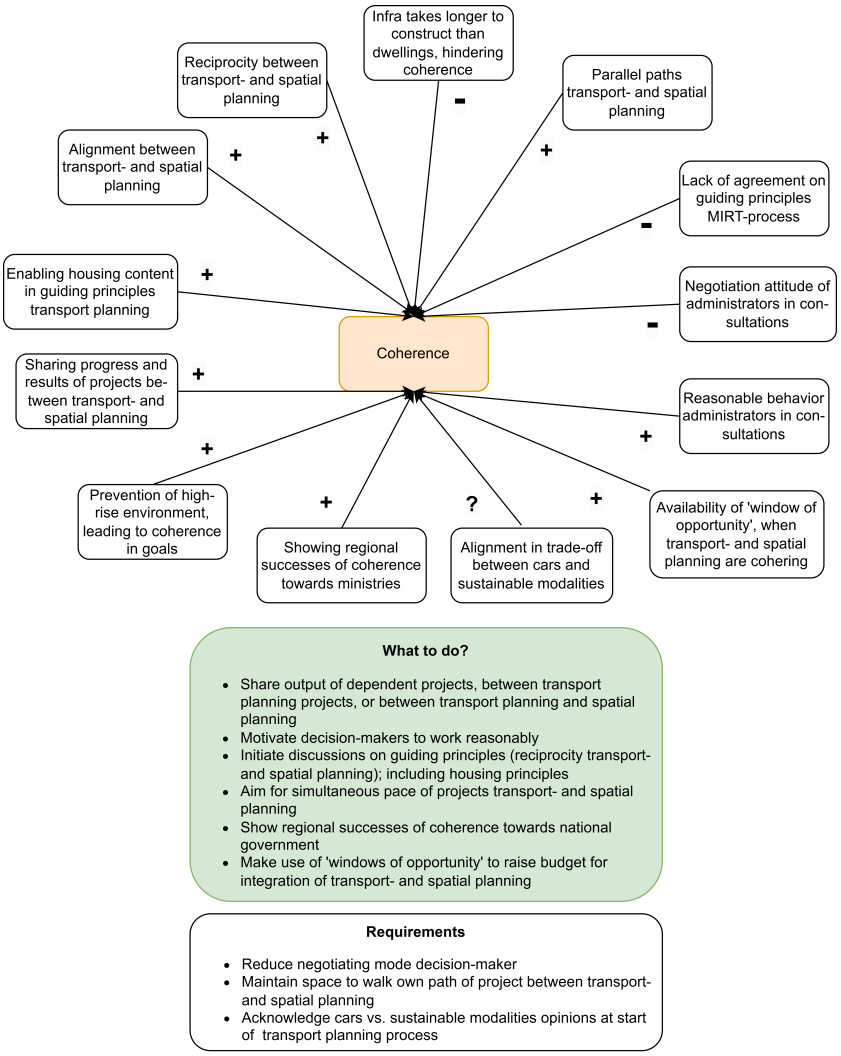

Figure 7.2: Coherence model, including decision-makers guidance (Own work)

Ideally, when the MIRT-process and a large-scale housing site decision-making process roughly follow a similar *parallel path*, these paths can be finished at a similar time. However, in reality, the pace and procedure times turn out to be longer or shorter in both processes. For the *trade-off between cars and sustainable modalities*, it is unknown whether a specific ratio between cars and sustainable means of transport is effective to work towards coherence in creating accessibility concerning a related large-scale housing site. Also, the preference of modalities differs per political direction and governance layer. Therefore, it is harder to reach agreement on choices for modalities using the large-scale infrastructure.

The decision-makers guidance in the green and white boxes at the bottom of Figure 7.2 requires a reduction in 'negotiating mode' of decision-makers or administrators. This change can be hard to implement, as it can be ingrained in behaviour of administrators. However, this barrier can be handled from the other side by motivating reasonable thinking through workshops or training. Also, enhancing coherence requires maintaining space to walk one's own path of executing projects within transport- or spatial planning. Faster processes can then be implemented, and regular set meetings with other policy domains can facilitate more focused work within one's own domain. Also, acknowledging opinions on the implementation of cars or sustainable modes within an area at the start of the MIRT-process can aid in defining a specific preference alternative in the MIRT-exploration phase.

Sharing the output of dependent projects, either between transport planning projects (such as a MIRT-investigation and MIRT-exploration in Utrecht-Rijnenburg) or between transport planning and spatial planning (such as between the MIRT-project and the Oostflank visions in Oeververbindingen Rotterdam) can enhance coherence between the policy domains. Also, initiating discussions on guiding principles, supported by the concept of reciprocity in policy documentation and including housing principles offers a stable basis towards coherence.

A simultaneous pace of the transport- and spatial planning process is ideally aimed at, but showing regional successes of coherence towards the national government can make a larger impact on integration. This can open up funding towards new integrated projects between MIRT-projects and large-scale housing sites. Lastly, making use of the availability of a 'window of opportunity', as elaborated on in Chapter 6, can raise the allocation of budget by the national government as well.

7.3. Cooperation model

Figure 7.3 shows the factors influencing cooperation between a MIRT-project and large-scale housing sites, as well as guidance and requirements towards establishing cooperation within the decision-making processes.

Figure 7.3: Cooperation model, including decision-makers guidance (Own work)

According to the results in Chapter 6, the exact influence of political pressure on cooperation in this context is dual. This namely depends on its position in the decision-making process. At the start of the process, political pressure can give rise to the urgency of integration the MIRT-process with a large-scale housing site. However, during the decision-making processes, the pressure leads to nervosity of team members and therefore hasty decision-making.

The hasty and ill-considered decision-making, as a consequence of political pressure and urgence of housing can dilute transport planning. This barriers cooperation towards transport planning processes. The dual relationship between *the urgence of housing, possibly diluting transport planning* and cooperation is linked to political pressure, as both the urgence and pressure lead to an acceleration in decision-making. Therefore, a relationship can be found between the factors of *political pressure* and *urgence of housing*. This relationship is an important one, as it shapes the external influences on cooperation. However, such complex relationships are left out of scope for this research, as the policy integration models would get

too large. Therefore, these relationships are not shown in the integration models, but can be addressed in future research.

The *transparency evoked by administrators showing their boundaries* implies that adopting (small) changes from another policy domain within an administrator's own plans or vision requires a receptive attitude. As respondents noted that trust is preferred between management groups of a MIRT-project and large-scale housing site, it shows that more trust between the groups can enhance cooperation. This trust is reached when administrators are honest in presenting their plans and boundaries throughout their ideas. Trust and (figurative) space are also necessary in order to investigate infrastructure options in the MIRT-exploration. This enhances cooperation between a MIRT-project and governmental clients. This type of trust is directed toward the large-scale housing project group, which is influenced by the selection of the infrastructure project within the MIRT process.

Also, the maintenance of a transparent attitude by administrators is required in order to cooperate with other administrators or governance layers. Two elements are considered important to acknowledge during the decision-making process. First of all, acknowledgment of dependency on information of other projects is required. Second, the weight of political pressure and therefore possible lock-in through intention agreements is a barrier that is to be acknowledged by decision-makers.

Regarding guidance- as can be seen in the green and white boxes of Figure 7.3 towards cooperation, (in-) formal strategic meetings can boost cooperation, as little contact or sparring makes it harder to align the management groups. The question remains whether informal or formal meetings are to be established, how frequent, and which stakeholders, or members of the management group of the projects are to be involved. This process can flow naturally and depends on the time and effort stakeholders want to put in. This planning of strategic meetings (for example towards a BO-MIRT, BOL or a city council gathering) can be aligned at the start of the decision-making process. Also, team members are to empathize with the other policy domain when overcoming language barriers between technical analyses and abstract visions. Understanding the goals, perspectives and way of thinking helps in creating integrated decision-making. This can for example be supported by enabling housing in MIRT guiding principles, as elaborated on in Paragraph 7.2.

Political pressure can be partly regulated by it giving rise to the integration of the MIRT-process and large-scale housing sites, but focusing on pragmatic thinking during the course of the decision-making processes. Lastly, superimposing the plans of both processes helps cope with the dependency of information on the other policy domain.

7.4. Manageability model

As stated in Chapter 6, the integration concept of *manageability* is added to the policy integration concepts from literature, being coordination, coherence and cooperation. This important finding therefore leads to a similar established policy integration model. Figure 7.4 shows the factors influencing manageability between a MIRT-project and large-scale housing sites, as well as guidance and requirements towards establishing manageability within the decision-making processes.

First of all, the influence of *establishing long-term visions of transport- and spatial planning, including the other policy domain* is dual. On one hand, manageability is created by integrating the elements that are prioritized by decision-makers in a long-term vision. However, a long time frame makes management of the policy domains more challenging, especially in a shifting political context with potential changes in team members or stakeholders.

Considering economic developments as equally important as transport and spatial planning has a dual impact on manageability. Trying to integrate three major developments -namely transport, housing and economy- seems harder, as it costs more dedication, participating parties and budget. However, naturally seen, constructing housing requires transport and boosts the economic value of the region. Therefore, natural interaction between the three domains is present. Also, the influence of *acceleration of decision-making* on the manageability of integration is positive. The housing crisis demands the fast construction and therefore decision-making on large-scale housing sites. However, the quality of decision-information of a MIRT-process should not suffer from this acceleration.

This trade-off is part of the guidance, shown in the green and white boxes at the bottom of Figure 7.4 towards decision-makers enhancing manageability. In general, team members are to remain flexible in establishing plans for the short- and long term. Also, the possibility to drop part of the project when the scope or complexity is too large to reach integration is required. Then, the 'snowball' effect of wanting to integrate every part of the project is mitigated.

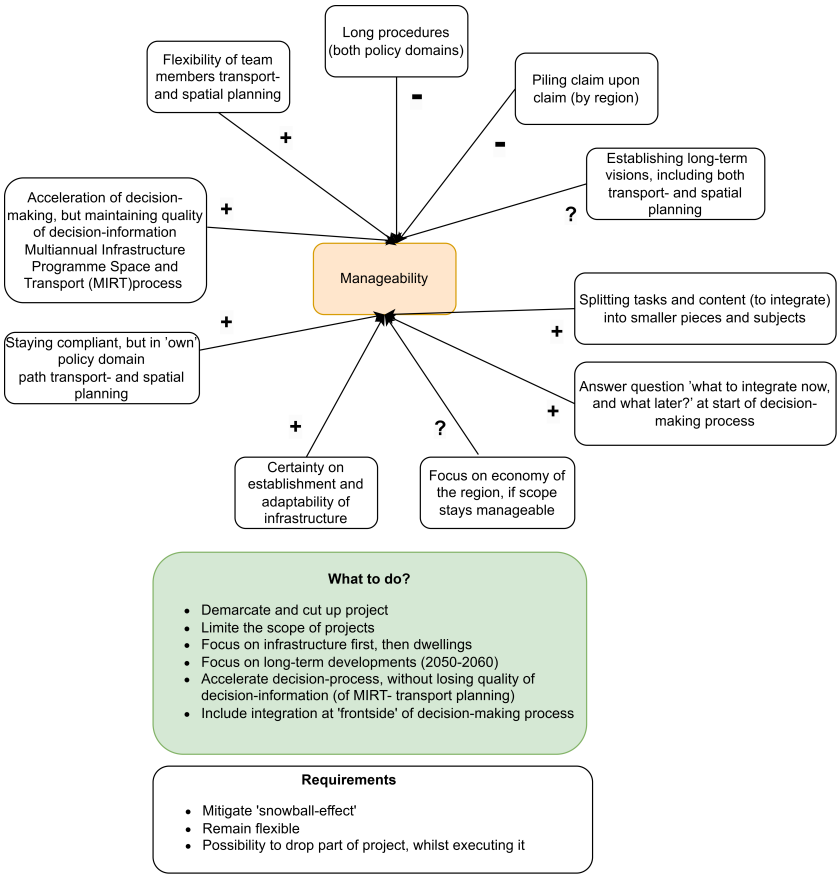

Figure 7.4: Manageability model, including decision-makers guidance (Own work)

Demarcating and cutting up projects in both policy domains to reach manageability can seem like general knowledge, but in this context, decision-makers can then prioritize the aspects they aim to integrate first. Such scoping can be based on the size of the area, as both types of planning are area-oriented, as elaborated on in Chapter 4. Then, the scope is limited and again a ’snowball’ effect is prevented.

A focus can be on infrastructure first, as this procedure takes longer than constructing dwellings. Within this focus, long-term developments (towards 2050 or 2060), including the other policy domain, can create a manageable overview of steps to be taken. Lastly, including integration measures can be performed at the start of decision-making processes, as then especially behavioral indications can be proposed.

7.5. Conclusion

To conclude, the established models highlight the importance of coordination, coherence, cooperation, and manageability in achieving (partial) integration of the Multiannual Infrastructure Programme Space and Transport (MIRT) process and the National Environment Vision EXecution force (NOVEX) program. Important to mention is that, based on the results of the semi-structured interviews, *manageability* is added to the established literature concepts of coordination, coherence and cooperation. Therefore, this integration concepts is crucial when implementing policy integration between transport- and spatial planning in the Netherlands. Within the established integration models, the interpretation of the results show that dual relationships are present. This duality implies that factors, such as *the role of the province* and *political pressure* have an ambiguous influence on policy integration concepts. Such uncertain relationships are to be taken into account when implementing integration of the two policy domains. Furthermore, insights from interviews reveal practical approaches which support the relationships between factors and integration concepts, being based on experiences from the Oeververbindingen Rotterdam and Utrecht-Rijnenburg cases, as well as on overarching expertise in the policy domains. These experiences show that coordination and cooperation are strongly present in the current interaction between transport- and spatial planning. However, there is space for coherence and manageability to improve this policy integration, with coordination and cooperation as a basis.

8

Conclusion, discussion and recommendations

8.1. Research objectives and methods

This research aimed to identify strengthening possibilities in the relationship between spatial planning in large scale housing sites and transport planning. The necessity lies in ensuring accessible newly developed large-scale housing sites within the Netherlands. Attention towards policy integration of transport- and spatial planning reduces congestion as well as limited access to new housing developments required. This is done by performing a literature study, desk research and semi-structured interviews within the cases of Oeververbindingen Rotterdam and Utrecht-Rijnenburg, located within the Netherlands. Next to providing an answer to the main research question, this chapter discusses the impact of the results, elaborates on the limitations of the research, and provides research recommendations.

8.2. Answer to main research question

The main research question posed in this research reads:

How can the relationship between transport planning and spatial planning in the Netherlands be strengthened?

The housing crisis in the Netherlands requires smart decision-making on how to create equitable access to newly constructed large-scale housing sites. This balance is to be found in the context of scarce space and financial constraints. Therefore, pressure is laid on the coherence between transport- and spatial planning decision-making processes.

By conducting a literature study, this research has shown that policy integration is required to tackle the public, complex and interconnected issue of combining transport- and spatial planning within the Netherlands, both acting in a scarce space. However, currently an implementation gap in applying policy integration between transport- and spatial planning is present in the Netherlands.

Policy coordination is partly present in the Netherlands, but challenges such as urban sprawl hinder policy integration. It is especially unclear what barriers and strengthening factors currently exist hindering the implementation gap towards policy integration within the two policy domains in the Netherlands. Therefore, based on a literature study, the integration concepts of coordination, coherence and cooperation are researched in two case-studies. Also, the possibility of an extra integration concepts is studied.

Based on the results of semi-structured interviews through two case-studies, a fourth integration concept which can strengthen policy integration is found, namely *manageability*. This important finding is a prerequisite in establishing desirable policy integration. Therefore, this research offers a scientific contribution by adding an empirically based integration concept to the existing policy integration literature. This scientific addition is elaborated on in Paragraph 8.3.1.

Semi-structured interviews on Utrecht-Rijnenburg, Oeververbindingen Rotterdam, and overall expertise in the policy domains reveal key factors supporting policy integration. These factors shape coordination, coherence, cooperation, and manageability, and therefore the integration of transport- and spatial planning. Therefore, the four integration models and their recommendations serve as a guiding tool for regional decision-makers navigating policy integration within limited space and financial constraints.

Case-studies show that regarding coordination, overarching programmes or consultation tables create space to share information and superimpose plans. For example, an overarching programme is present in Utrecht-Rijnenburg and a consultation table in Oeververbindingen Rotterdam. Meanwhile, the current hierarchical decision-making structure of transport planning decision-making processes can be maintained. Coherence can be strengthened by aligning process paths through agreement on guiding principles. These guiding principles can incorporate housing goals and focuses, such as *'enabling urbanisation'* in Oeververbindingen Rotterdam. Also, administrators can act in a reasonable manner. Furthermore, showing regional successes of coherence of both domains towards according ministries can also enhance coherence. This can differ per decision-making processes, when other policy sources (different ministries, different decision-makers) are present in these processes. Cooperation can be strengthened by (in-) formal strategic meetings between management groups of both domains, depoliticizing the decision-making process once started and behaving in an empathic manner to overcome language barriers between the domains. A politicized decision-making process is currently present in Utrecht-Rijnenburg, which consists of a politicized intention agreement on 63.000-75.000 dwellings in the Rijnenburg and surrounding areas.

Lastly, manageability is enhanced by focusing- at the start of the decision-making process-on which parts can be integrated at what time, as well as demarcating and cutting up projects. This can prevent a 'snowball' effect of decision-makers wanting to integrate every part of the plans of both domains. This vision is present in the decision-making process of Utrecht-Rijnenburg. Such an approach can provide a long-term plan, which can be scoped on an area base, considering the area- oriented characteristics of both policy domains. The projects of both domains can stay in separate paths, but are to be flexible in adapting their process developments towards the process developments of the other policy domain.

8.2.1. Case-studies performed

The Oeververbindingen Rotterdam case is an example of cooperation and alignment between policy domains, through consultation tables, informal strategic meetings, seizing political opportunities through working according to the 'zeitgeist', utilizing a political 'window of opportunity', and maintaining trust and transparency among team members. In contrast, Utrecht-Rijnenburg prioritizes the political urgency of large-scale housing, requiring pragmatic approaches and content-based planning to balance political influences. Effective management involves avoiding over-integration, mitigating asynchronous processes, and promoting knowledge sharing, while agreement on guiding principles and an overarching program remain strong within transport planning. Findings from both cases and broader expertise provide practical guidance for decision-makers. Ultimately, applying the four policy integration concepts— individually or combined— as guiding tools can enhance transport and spatial planning integration in the Netherlands, helping to bridge the implementation gap.

8.3. Discussion of results

The discussion of the results consists of the contributions to science and the contributions to society this research generates. This includes reflections on the results and therefore factors and relationships formed. The limitations of the research are included as well, scoping the research.

8.3.1. Scientific implications of research

Within this research, the literature study performed in Chapter 3 adds to the acknowledgment of an implementation gap present in policy integration between transport- and spatial planning within the Netherlands. This literature study acknowledges several policy integration concepts. These concepts can complement each other towards policy integration but are also relevant on a separate base (Cejudo & Michel, 2015; May et al., 2006; Meijers & Stead, 2004).

Figure 8.1 shows an adaptation of the policy integration triangle of (Meijers & Stead, 2004), as elaborated on in the literature study of Chapter 3. Here, the integration concept of coherence is included based on May et al. (2006). Important to notice is that, due to the semi-structured interviews conducted in the cases in this research, the green element of *manageability* should be added to this triangle, in order to reach policy integration. This is an important finding of this research and shows the scientific contribution of this research to existing literature on policy integration.

The similarities and differences found in Chapter 4 provide understanding on the unique and overlapping features of both processes, whilst these also create expectations on possible directions of the semi-structured interview results. The Venn-diagram shown in Figure 8.2 of unique and overlapping characteristics of both the MIRT-process and NOVEX programme is partly validated through semi-structured interviews. This figure is initially based on desk research, and a small share of literature. During the conduct of semi-structured interviews, the red-circled characteristics were explicitly mentioned. Therefore, a connection between theoretical content and practice is made.

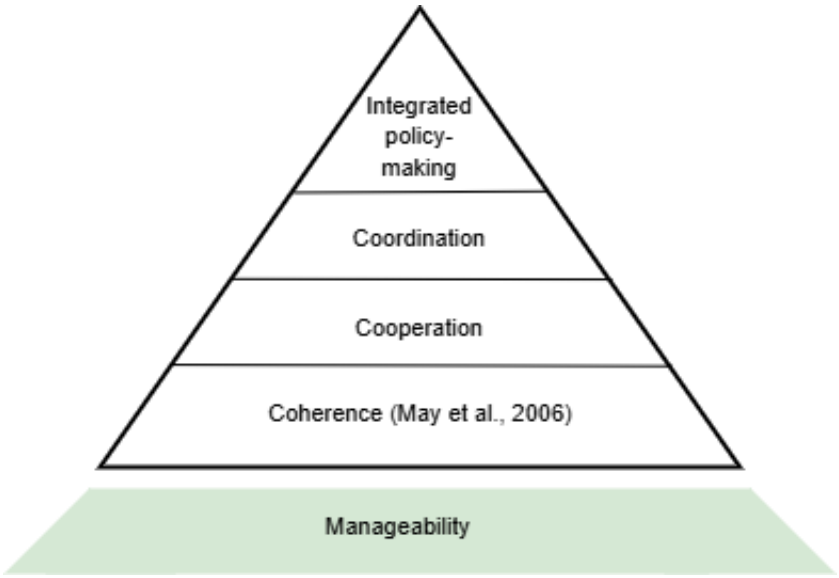

Figure 8.1: Integrated policy making, own work based on (May et al., 2006; Meijers & Stead, 2004)

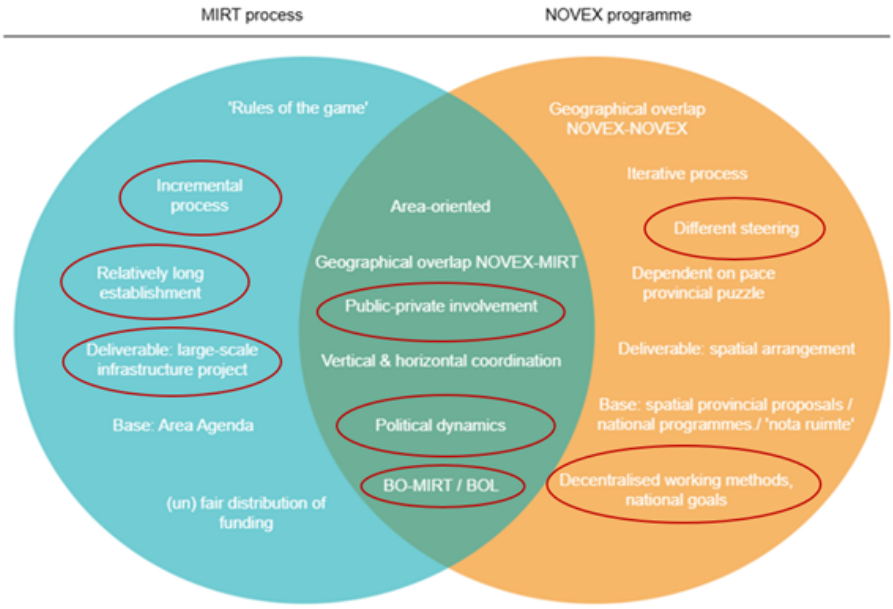

Figure 8.2: Mentioned factors in semi-structured interviews, based on desk-research factors (Own work).

The models provided in Chapter 7 also show the direction of relations between factors and integration concepts. Especially this chapter bridges the implementation gap towards policy integration of transport- and spatial planning within the Netherlands. From here, realistic steps for decision-makers are established, which contribute to the knowledge of understanding of practical implementations of policy integration concepts.

Overall, the research contributes scientifically by adding the integration concept of *manageability* to the literature integration concepts of coordination, coherence and cooperation. Also, the research connects real-life factors influencing theoretical policy integration concepts. Therefore, the research contributes valuable knowledge to the field of integration of transport- and spatial planning.

8.3.2. Implications for decision-makers

The research is aimed at regional decision-makers in transport planning investigations or explorations, facing the construction of large-scale housing sites and working at municipalities, provinces or institutions of metropolitan regions. This interaction can for example be overlapping goals or required cooperation of both policy domains. Also, it is aimed at regional decision-makers of large-scale housing sites, who want to provide access to new residents of these sites. A regional aim is focused on, as these decision-makers implement measures such as lobbying for integrated budget streams of ministries and join larger tables, such as administrative meetings (BO's) or consultation tables. These decision-makers can for example be part of the management groups of a transport- or spatial planning project. Then, the research results act as a guiding tool towards the implementation of policy integration between transport- and spatial planning in the Netherlands.

The necessary integration is to be initiated at the start of the decision-making process when comparing plans across both policy domains is still feasible or easier to adapt than at later stages. At the start, the regional decision-makers are to acknowledge the relevance of *manageability*, as this integration concept is newly added to the three established concepts of coordination, coherence and cooperation. As semi-structured interviews revealed that coordination and cooperation are relatively well-established in the transport- and spatial planning decision-making processes in the Netherlands, regional decision-makers can find space to focus on the other two integration concepts of coherence and manageability. Coherence can be emphasized by establishing similar guiding principles of both policy domains, making sure the attitude of administrators is reasonable and showing regional successes of coherence towards ministries. Manageability is more about establishing long-term visions, in which the project group decides on which parts to integrate first, and which ones at a later stage. This is easier when the guiding principles align and the attitude of administrators is reasonable. Therefore, these integration concepts are more effective when combined.

This research highlights that during decision-making processes, both behavioural and pragmatic factors can influence policy integration. Therefore, a mix of both can be applied in real-life cases where transport- and spatial planning are expected to integrate. Based on these experiences, decision-makers can build up knowledge on these concepts, and can eventually refine factors and implications towards their own preferences. Here, Oeververbindingen Rotterdam can serve as a well-established example of policy integration, whereas Utrecht-Rijnenburg can serve as an example in which despite politicizing of the area, a (partly) integrated decision-making process can nevertheless be established.

When implementing policy integration within the fields of transport- and spatial planning, it is important to consider the difference in unique and overlapping features of both policy domains. Here, regional decision-makers are to acknowledge that transport planning processes work more incrementally and work towards a large-scale infrastructure project, whereas a spatial planning process works more iterative, towards a 'spatial arrangement'. Also, the experienced decision-makers interviewed connect the specific factors with a specific literature concept. Therefore, aligning the relevant factors with the appropriate integration concept in decision-making processes is recommended.

Two types of discussions can be raised, based on this research. First of all, a political discussion can start off when the political direction or policies change towards a full-focus on either infrastructure or housing. This can lead to a lack of attention towards the integration of both policy domains. Then, the urgence of the housing crisis and the needed accessibility can be put forward, creating a supporting base for the necessity of policy integration of transport- and spatial planning. Secondly, a societal or behavioural discussion can be raised, as it can be difficult to change the behaviour of decision-makers in various governance layers. The question remains what happens if the intention and urgence of policy integration does not get through to regional decision-makers. Therefore, the urgence of policy integration is to be kept in mind towards and between decision-makers whilst implementing this in transport- and spatial planning.

8.3.3. Reflection on research results

During the semi-structured interviews, it became evident that full policy integration between transport- and spatial planning within the Netherlands is not directly wished for and cannot be achieved, due to the importance of maintenance of quality of separate policy domains. At first, it was expected that interviewees would be less realistic in aiming at this integration, fully embracing the concept. However, it is stated through (long term-) experience within the decision-making processes that full policy integration is not desirable. The main aspects that are realistically wished for are an overarching power or hierarchy leading to coordination, emphasizing the importance of the coherence between the policy domains, cooperation between management groups when it is really necessary and managing the scope of the integrated projects, leading to a realistic scope.

Within the Netherlands, constructing both a large-scale housing site and a large-scale transport infrastructure project to create access to this housing site at the exact same time is infeasible. This requires a thorough analysis of the paces and adaptability of the projects, as the large-scale infrastructure takes longer to construct than large-scale housing sites. Here, risk management and budget overruns are to be taken into account. Also, it requires stronger cooperation between the project groups, which can lead to a longer but more successful project duration.

Furthermore, behavioural and practical factors are combined within the models of integration concepts. It was however expected that actual behaviour of decision-makers would be less revealed due to little openness of respondents. Also, surprisingly, consciousness on the questioned integration concepts of coordination, coherence and cooperation was present within the interviews, which led to smoother conversations than expected beforehand.

A result awaited was the difference in results between the cases of Oeververbindingen Rotterdam and Utrecht-Rijnenburg. Cooperation and alignment were expected and found in Rotterdam, whereas Utrecht-Rijnenburg is less experienced with integration concepts, as expected. Furthermore, more interest conflicts between stakeholders were awaited in the results. However, especially political conflicts between stakeholders were less revealed. Such conflicts cannot be strongly adjusted through research and were therefore less focused on by the interviewees and therefore in this research.

Lastly, the established role distribution between governance layers and governmental clients leads to less possibility to adapt the decision-making processes than expected beforehand. This also depends on the power of the stakeholder. Such adaptability is in general more applicable in spatial planning applications, since the programme focused on in this research is less established within the Netherlands, compared to the transport planning decision-making process.

8.3.4. Reflection on usage of policy integration

Policy integration can be interpreted much broader than aimed at in this research. The focus could lay on policy packaging or policy patching of various policy measures. Also, the integration between different fields of policies create different definitions and guidelines on how to properly integrate these domains. Therefore, the added value of starting from this point of view -of policy integration- can be relatively general. However, the value of sourcing from this concept is found in the fact that four integration concepts are selected which can support policy integration. These policy integration concepts on their own or together can create sustainable integrated policies, as both the development of infrastructure and housing sites are long-term developments. Therefore, this transition towards long-term development can be covered by policy integration (Briassoulis, 2004).

In practice, large-scale housing sites are constructed before the construction of transport towards these sites. Accordingly, policy integration concepts are to be involved at the start of these decision-making processes, so that although paces might not align, at least broad consensus is reached on how to integrate the policy domains in the long term. This can lead to - as shown in the case of Oeververbindingen Rotterdam- early awareness on the importance of integrating within the decision-making processes. Eventually, policy integration is about creating effective, sustainable and responsible decision-making by providing handles towards reachable complexity of means, goals and instruments.

8.3.5. Limitations of research

The research performed includes several limitations, mainly due to constraints in methodology and time. First of all, the research is scoped towards transport- and spatial planning within the Netherlands.Therefore, a main focus is laid on Dutch decision-making processes. These processes and factors can be partly or completely different than surrounding countries, in which similar issues arise due to housing shortages. However, in order to keep the scope manageable, the scarce space of the Netherlands is selected in this research.

Second, potential bias may have influenced the semi-structured interviews. This stems from the framing of questions, as well as the political or governmental background of the interviewees. Bias may also have been introduced during the interpretation of interview results, as the coding process in the analysis programme of Atlas.ti involves both objective and subjective elements. Additionally, bias can be present in the selection of interviewees and case studies, as participants were identified through the network of the graduation company, which influenced the pool of respondents.

One strength of this research is the depth of insight gained through 10 semi-structured interviews, carefully chosen to reach a saturation point where responses became consistent. While a larger sample could have been considered, this approach ensured meaningful and detailed analysis. Additionally, while a comparative case study with two cases has limited external validity, it provides valuable in-depth perspectives that contribute to a refined understanding of the integration between transport- and spatial planning.

This research can be generalized due to the fact that the transport planning projects analyzed in this research are relatively large projects within the Netherlands, including various governance layers and amounts and types of stakeholders, them being based in different regions within the Netherlands. Also, decision-makers interviewed have tens of years experience within either or both the field of transport- and spatial planning. This strengthens the generalization of the research results.

While established policy integration models may not always directly apply to specific transport planning or large-scale housing developments, they provide a strong foundation for tailored approaches that account for the specific political and social contexts of each project. As both behavioral and pragmatic factors are revealed, these aspects add to the generalization of this research towards similar large-scale housing sites interacting with transport planning for accessibility of the housing, and vice versa. More broadly, regional decision-makers can leverage the guiding tools for effectively integrating transport planning with large-scale housing initiatives.

Lastly, in this research, the characteristics of transport- and spatial planning in the Netherlands are limited and simplified, in order to create a comprehensible Venn-diagram. The same applies to the coding process of the results of the interviews, in which subjective, simplified names are given to both subcodes and code groups. While this approach enhances readability, it inevitably reduces some of the complexity inherent in the research topic.

8.3.6. Future recommendations

Building on the limitations of this study, several recommendations can be made for future scientific research to deepen understanding on how to strengthen the relationship between transport and spatial planning.

First of all, a spatial planning region within the Netherlands withholds more elements than only housing, such as greenery or biodiversity. Therefore, future research can delve into the integration of one of the researches types of planning (transport- or spatial) in this study, integrating it with such elements. For example, studies could examine how housing development interacts with green spaces or how accessibility planning aligns with harbor activities.

Furthermore, from an empirical perspective, in order to prevent bias in a qualitative study such as this one, a broader range of interviewees can be selected. Greater focus on decision-makers from the Ministry of VRO (Housing and Spatial Planning), rather than primarily from the Ministry of I&W (Infrastructure and Watermanagement), could provide deeper insights into large-scale housing site implementation in the Netherlands. Also, experts in the field of mobility or accessibility can add to the knowledge gathered in the semi-structured interview. This can result in theoretical knowledge on behavioural measures to create accessibility towards large-scale housing sites in the Netherlands. The limitation of bias can also be tackled by asking interviewees to evaluate the research thoroughly, leading to a higher validation of the research.

In addition, a case can be established in which the implementation of the policy integration models from this research is tested. This can help identify potential errors and areas for improvement while providing valuable insights into how regional decision-makers perceive and apply such models in real-world scenarios. Ideally, this case is a different one than the two cases analyzed in this research, though it should be located within the Netherlands for consistency.

Further scientific research can also look into one of the integration concepts of coordination, coherence, cooperation or manageability, in order to gain more specific insights on effective achievement of possible policy integration between transport- and spatial planning. Such research can also focus on the extent to which these integration concepts are relevant, as well as whether a combination of one, two or more can offer more effective policy integration.

Furthermore, instead of researching decision-making processes in transport- and spatial planning within the Netherlands, the structure between governmental layers can be looked at. This can give a more realistic look into the everyday practices of regional decision-makers, which can lead to integration between transport- and spatial planning.

Lastly, dual relationships between factors and integration concepts are found in this research, through conducting semi-structured interviews. These relationships are indicated by a question mark in the models per integration concept, and imply that the direction of the relationship between a factor and policy integration concept is ambiguous. Future scientific research can reveal whether a possible positive or negative relationship fits these relationships, or whether the relationship turns out to be relatively more or less relevant than concluded in this research. Such research can be based on performing multiple case-studies in the Netherlands.

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A

Appendix A: Elaboration WoMo, Dutch governance and decision-making processes

A.1. Programme Housing construction and Mobility (WoMo)

The establishment of the Programme Housing Construction and Mobility is an attempt to integrate both the policy domains of housing construction and mobility. Namely, in 2023, it has been decided that the ministries of Infrastructure & Watermanagement (I&W) and Ministry of the Interior and Kingdom Relations (BZK) are to work together more tightly, in order to create cohesion within their policy fields. This has partly been tried through the programme Housing Construction and Mobility, in which these sectors can cohere with each other (Woningbouw & Mobiliteit, or: WoMo) (Rijksoverheid, 2024a). During the term of the cabinet-Rutte IV in 2021, it has been decided that, for a period of 10 years, €7,5 billion is made available to the accessibility of newly constructed housing in the 17 large-scale housing construction NOVEX locations, and outside these areas as well. This budget is managed by the programme of WoMo, and is part of the Mobility Fund of the ministry of I&W. Therefore, the WoMo expenses are to comply with the Mobility Fund (Rijksoverheid, 2024a).

In the start of 2024, the Temporary Arrangement Specific Allowance Mobility Packages (Tijdelijke regeling specifieke uitkering mobiliteitspakketten, or: SPUK mobiliteitspakketten) have entered into force. Here, €1,066 billion has been made available for such mobility packages, that contribute to the accessibility of NOVEX-locations. The mobility packages consist of accessibility measures, such as adaptations of roads, mobility hubs, cycling paths, and public transport accessibility (Rijksoverheid, 2024a). This funding is available until 2036 (Overheid.nl, n.d.). Every year, the House of Representatives of the Netherlands is informed on the development of the programme WoMo, together with the letter on the BO-MIRT consultations. Also, a separate development update is given from the programme Housing Construction (Woningbouw) towards the House of Representatives in spring (Rijksoverheid, 2023).

Figure A.1 shows the yearly cycle of information applied in the WoMo. First, the development reports of Housing Construction, then the MIRT overview are provided, and at the end of the year, the WoMo development reports are published.

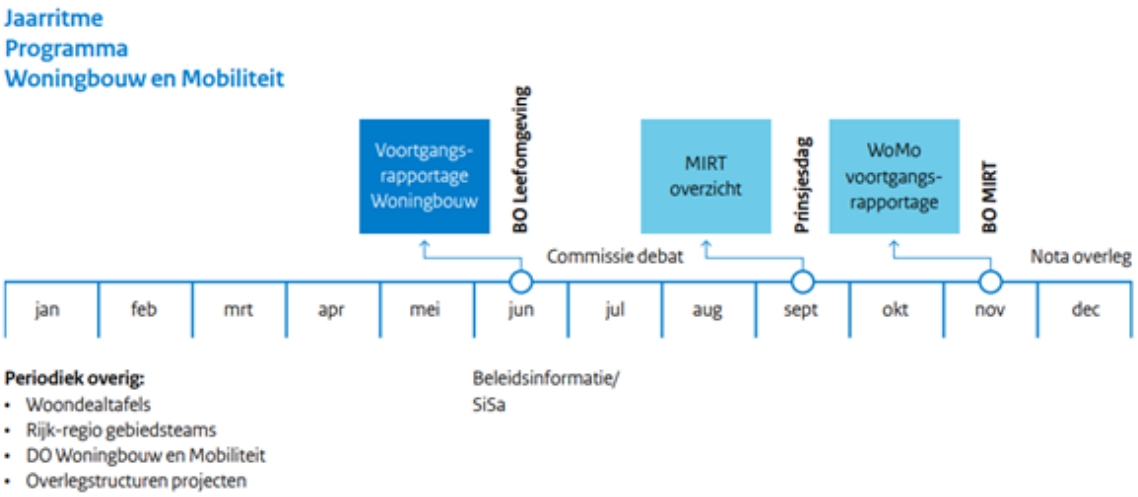

Figure A.1: Yearly cycle of information provision programme Housing Construction and Mobility (WoMo) (Rijksoverheid, 2023)

Whereas the coherence between the ministries of I&W and BZK is to be strengthened, when considering the released funds (or: vrijgevallen middelen), the ministries of I&W and VRO decide on these funds. These new arrangements are established in the BO-MIRT consultations (Rijksoverheid, 2023). Part of the programme Housing Construction and Mobility is the establishment of Interdepartmental Directors Consultations, in which the direction of the programme and risk management are elaborated on. Here, the commitment of both the Ministries of I&W and BZK are discussed, especially when changes in scope, time, and financial resources are needed. This is done in context of the various packages, based on the housing construction and mobility sectors, provided in the programme (Rijksoverheid, 2023).

Furthermore, a programme team Housing Construction and Mobility is established within the programme. Relevant information on the progress and management of risks in the projects are collected, as well as the preparation of decision-making is done. Also, advice can be given to the Directors Consultations, as explained above. Lastly, financial management at the internal part of the program organisation is ensured. The team is led by the programme managers of both BZK and I&W, in order to guarantee coherence between mobility measures and the construction of large-scale housing sites. The directors of the WoMo program lead the programme team. These programme teams are stated to closely work together with the region (Rijksoverheid, 2023).

This coherence on a national level will show its effectivity in the upcoming years. However, on a regional level, the principle of: *'decentral where possible, central where it has to'* is applied. This shows the aim of a decentralised implementation of the programme. At the start of the programme, a larger role towards municipalities is given, as experiences at municipalities led to the conclusion that municipalities needed expertise in specific areas, such as tendering infrastructure, in order to fulfill the demand of the WoMo (Rijksoverheid, 2023). On the other hand, in the development reports of the programme, the municipalities are given a role of

information provider towards the programme (Rijksoverheid, 2024a).

In general, if a municipality submits a request to amend a WoMo decision, an exploratory discussion with the municipality is used to find out the consequences for (the scope of) the project. The discussion with the municipality is conducted by (the leaders of) the area team (the MIRT regional coordinator and the area director). Such an area team (Dutch: Gebiedsteam) is composed of content experts from the ministries of BZK and I&W, leading to coordination between the national government and the regions, by agreeing on the implementation of funding. This team also works together with the programme Housing Construction of BZK. The aim of such an area team is to coordinate processes and act as a connection between project and programme (Rijksoverheid, 2023).

A.2. Three-tier system

The main governance system applied in the Netherlands is a three-tier system (Dutch: Drielaagssysteem). This consists of a national level, a provincial level and a municipal or local level. Such a top-down approach is critiqued on its application in a decentralised governance system. Here, the process is found to be too rigid and requiring a too long time in order to combine both local, regional and national plans. Furthermore, delegation of responsibilities from the top towards lower level authorities requires more coordination and control in planning and implementation. This is the case as more departments are established in order to fulfill this delegation (Alpkokin, 2012). Within both the MIRT process as the NOVEX programme, all three levels of governance are represented.

A.3. MIRT decision-making process

Next to the BO-MIRT meeting established, each spring, the Dutch Ministry of Internal Affairs leads the Administrative Consultations Living Environment (Bestuurlijke Overleggen Leefomgeving or BOL). The minister and secretary of state from the Ministry of Infrastructure and Water Management join all five MIRT regions. These include (Ministerie van Algemene Zaken, 2023).

- Northwestern Netherlands
- Southwestern Netherlands
- Southern Netherlands
- Eastern Netherlands
- Northern Netherlands

During these meetings, process agreements of the MIRT process are agreed upon. After a debate on the process agreement towards summer, on Prince's Day (Prinsjesdag), a proposal of the budget of the Ministry of I&W is presented to the States General (Staten-Generaal)(Ministerie van Algemene Zaken, 2023).

In 2024, these two BO and BOL meetings were combined, due to the establishment of the new cabinet. The focus here was on the introduction of the new ministers towards and with each of the MIRT regions (Blomaard, 2024).

For each of the decision moments (at the end of a phase), the essence of the decision moment is indicated. Also the steps to take and the requirements to meet the decision information are defined. This is called the information profile (Ministerie van Infrastructuur en Waterstaat, n.d.-b). These information profiles are handed over to the Dutch House of Representatives (Tweede Kamer), alongside earlier provided analyses done (such as a Marginal Cost Benefit Analysis) (Ministerie van Infrastructuur en Milieu, n.d.).

A.3.1. Investigation phase

The investigation phase of the MIRT process consists of an analysis phase and a solutions phase, taking up three to six months. In the analysis phase, a sketch of the problem is made, after which a broad scope of solutions is proposed, for example including different modes and locations. The deliverable of the MIRT Investigation phase is an action plan, which -if found interesting-, is carried on towards the exploration phase (Goudappel, n.d.).

The Start Decision (Startbeslissing), starting off the exploration phase, consists of the central challenges addressed and the scope of solution directions. Furthermore, the participating parties and their roles, duties and powers are elaborated. A condition for this Start decision is insight into 75% of the funding of costs for the infrastructure project (Ministerie van Infrastructuur en Milieu, 2016).

A.3.2. Exploration phase

The MIRT exploration following consists of four phases, namely a starting phase, an analysis phase, an assessment phase and a decision-making phase. The starting phase contains an action plan of the Start Decision, whilst the analysis phase elaborates on the various alternatives present. According to the rules, at least one non-infrastructural solution is to be considered as an alternative (van Geet et al., 2019). The order of phases and its deliverables within the exploration phase are shown in figure A.2.

Figure A.2: The MIRT process phases and its deliverables (Ministerie van Infrastructuur en Waterstaat, 2022b)

These alternatives receive an assessment on outlines, after which the most promising scenarios are left. Then, in the assessment phase, the effects of the different scenarios are elaborated, after which the decision-making phase starts in which all knowledge on the MIRT exploration leads to a Preference Decision (Voorkeursbeslissing). This sequence of the MIRT

exploration phase is followed for every MIRT project (Goudappel, n.d.). In addition, the exploration phase lasts three months to two years (Laane & Barten, 2019). Therefore, this part of the MIRT process, together with the MIRT investigation, can be viewed as a long decision-making process (Van Mastrigt, 2019).

A.3.3. Plan elaboration phase

Since a Preference Alternative is chosen at the end of the MIRT exploration phase, only one alternative is present in the Plan Elaboration phase (Laane & Barten, 2019). This alternative can be funded by the national government and can be elaborated on, as a whole or in parts. This elaboration is done both in the fields of finance and legality of the plan. In the case of infrastructure, a Route Decision (Tracébesluit) is established. Furthermore, a focus is laid on the objectives, scope and approach of the process. Here, sustainability and co-opting opportunities (making the project faster or cheaper) are investigated as well. In addition, the realisation period, funding, distribution between the participating parties and the market approach are included.

Within the Plan Elaboration phase, two implementation strategies are present, one being focussed on projects, and the other type on programmes. Worth to mention here is the fact that MIRT projects or -programmes, situated in the same area or region, are mutually coordinated. Since various governments can be responsible for subprojects, a governance agreement is a method to gain mutual support for the implementation strategy. This coherence is explicitly mentioned in the administrative consultation (Bestuurlijk Overleg) with the client. The result of this phase is a process design in which the participating actors at specific points are defined, as well as their (legal) information provided and needed. These elements are included in the final Project Decision (Projectbeslissing), taking up two years until this point (Ministerie van Infrastructuur en Milieu, 2016).

A.3.4. Realisation phase

After approval of the Project Decision, the realisation phase can start off. In line with the action plan, the implementation strategy and process design, the Completion Decision (Opleveringsbeslissing) will be made. This is done on a base of an end report, including financial justification of the project costs, as well as on the construction process. Furthermore, the realised scope and the time course of the project are included. Lastly, expected maintenance costs are included (Ministerie van Infrastructuur en Waterstaat, 2022b).

In 2022, the most recent changes have been made on the MIRT ‘rules of the game’. This includes an emphasis on mobility solutions, instead of infrastructure solutions, working according to the law on Mobility. Furthermore, more attention is drawn to the phase prior to the start of the MIRT exploration, ensuring control over costs and risks. In addition, attention is drawn to sustainability, programmatic thinking and adaptivity. Also, the rules have been made more future-proof by not including policy objectives. This is also done by updating the information profiles, included in a decision after a specific phase. Lastly, the ‘rules of the game’ are made more concise and simple, so that a single set of method descriptions and associated information profiles has been created (Leerplatform MIRT, 2022).

A.4. Definition of spatial planning within the Netherlands

Part of this NoVi is the NOVEX program (Nationale Omgevingsvisie EXecutiekracht). This programme is established in 2022, and displays a sustainable vision for the layout of the Netherlands, set up to 'sharpen' the NoVi. This sharpening is done together with the programme 'Mooi Nederland', in which the renovation of the Netherlands is implemented in an aesthetic and qualitative way. Therefore, focus can be laid on for example experiential value (beautiful), utility value (functional) and future value (robust and sustainable) (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-a).

A.4.1. Decision-making process NOVEX programme

In order for this decision-making cycle to start off, it should be decided on what the demanders of space are in a certain regions, or elsewise: *'what needs to be fitted in, spatially seen'*, both on a national and regional level. Then, the national and regional objectives and interests can be brought together in 12 'starting packages', which lay the foundation for the 'provincial puzzles', as can be seen in 4.5. Here, the balancing principles of the NoVi are applied, which include combinations of functions taking precedence over single functions, centralising characteristics and identity of an area, and avoiding passing on of problems.

Furthermore, *"Water and soil as guiding principles"*, focussing on sufficient and clean water and soil, are important for spatial planning in the puzzle (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a). In addition, national government-region governance (Rijk-regio governance) is present in the form of one administrator (Dutch: bewindspersoon), who is the first point of contact from the Cabinet. This administrator is appointed per region, and is a minister, originating from various ministries, fitting with the largest specific challenges in the region (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a).

This cyclical process consists of space for new development, originating from the national programmes, additional developments from national programmes, additional spatial decision-making, as well as new spatial chances. An important aspect of this cyclical process is the monitoring of the development in order to adapt to the pace and result of the implementation. Therefore, when necessary, agreements can be adapted to changing circumstances (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a). Another main part of the decision-making process of the NOVEX program are the various types of 'tables':

Province tables: During 'province tables', the national government and the specific province discuss issues between provinces and NOVEX-regions. Also, lines of thought, solution directions and questions are shared with each other, in order to show the progress made in the decision-making.

National government tables (Rijkstafels): This table serves the goals of finding alignment and coordination at a national governmental level. The 'start package' is established through this interdepartmental table.

Managerial coordination (Bestuurlijke Afstemming): Within the 'puzzle phase', consultations take place between the minister of Housing and Spatial planning (Volkshuisvesting en Ruimtelijke Ordening) and each province separately. Here, the Administrative Consultation on the Living Environment (Bestuurlijk Overleg over Leefomgeving) and Administrative Consultation MIRT (BO-MIRT) are used as input. In these countrywide consultations, cross-provincial themes and the connection with the NOVEX areas, investment agreements and the outcomes of spatial puzzles can be discussed. Finally, at each vertical dotted line in 4.5, additional managerial coordination is taken into account, as these are decision-making moment in the process (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a).

A.4.2. Goals and progress NOVEX program

Questions which arise in the progress of the NOVEX programme are on how to agree with partners on a joint development prospective in a short time. Also, the question arises on how to combine the goals of housing, sustainability, climate adaptation, employment and accessibility in a scarce space (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a). A focus is laid on 'integral' acting and deciding, in which a culture change is needed in order to include civilians in the development of a region (NOVEX Zuidelijke Randstad, n.d.-b).

Furthermore, an important consideration is the similar pace between the parallel steps in the decision-making process when reaching deadlines in order to reach a 'spatial arrangement'. When visions are not delivered on time, delay can cause a longer decision-making process, as both the provincial path and the NOVEX-region paths rely on each other.

B

Appendix B: Search strategy literature study and case-study selection

B.1. Search queries

Table B.1 shows the areas of literature researched, along with its search queries, applied in both the search engines of Scopus and Google Scholar. Some areas required more general or specific search queries, and therefore contain multiple search queries.

Table B.1: Areas and search queries applied in literature search strategy

Area	**Search queries**
Theory policy fragmentation	New AND public AND management AND policy AND fragmentation
Fragmented policy making towards integration (in transport)	Fragmented AND policy making AND integration
	Fragmented AND policy making AND integration AND transport
Integrating policy making in housing construction	Policy AND coherence AND housing construction
Theory policy integration	Policy AND packaging AND transport
	Policy AND packaging AND (transport OR spatial planning)
	Cooperation AND theories AND land use AND planning AND transport
Overlap transport planning and spatial planning	Integration AND transport planning AND spatial planning

B.2. PRISMA approach

Figure B.1 shows the PRISMA approach conducted within the literature research. The different search queries led to a total of 397 articles.Then, their title were screened, which led to a total amount of 197 articles. After duplication removal, 186 articles were left. Then, a larger screening on title, abstract and keywords was conducted. Here, several exclusion criteria led to the removal of articles. This included: no reference to theory or policy domain aimed at, no English or Dutch article, irrelevant goals or methods used and inaccessibility of the source (e.g. through a paywall). Furthermore, the search was limited to the fields of social sciences, engineering, decision sciences, business, management & accountancy, and environmental sciences, as these fields come closest to the theory aimed at, as well as the policy domains researched.

Afterwards, 66 articles were considered relevant. Then, the method of *snowballing* was applied, as stated in the main report, which led to an extra amount of 12 articles. Afterwards, the introduction, results and conclusions were screened in order to be found eligible. Here, articles with redundant conclusions, irrelevant content, methodology and findings were removed. This led to a total amount of 50 articles.

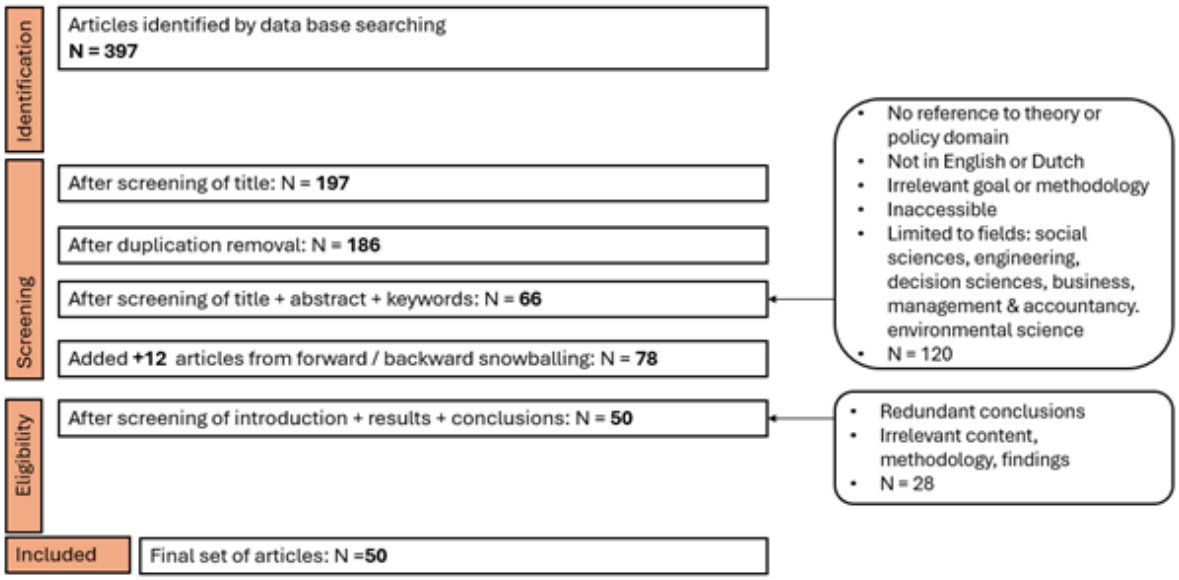

Figure B.1: PRISMA diagram process towards selected literature (Own work).

B.2.1. Case-study selection

The comparative case-study (with 2 cases) conducted in this thesis are selected by first defining the aim of the case-studies. This aim consists of acquiring perspectives from decision-makers and experts on the relationship between transport planning and spatial planning within the Netherlands. This can lead to recommendations on the strengthening of the relationship. Therefore, the comparative case study consists of semi-structured interviews with decision-makers and experts in this field in the region of the Netherlands.

A shortlist of cases is created based on the selection criteria which can be found in Figure B.2. These include a MIRT exploration and/or -investigation process phase present in a project, located in a NOVEX region in the Netherlands. This last criterium leads to the nearby location to a large scale new housing site. The next criteria are access to people involved in the decision-making process, as well as to policy documents and desk research documents are two criteria found important. However, the main selection criterium consists of the fact that strengthening opportunities in the relationship and therefore integration of the MIRT-process and the NOVEX-programme or -region are present. This criterium reflects the main research question of the research.

These criteria are shown in Figure B.2. This triangle shows the funneling of case-studies towards the last two cases.

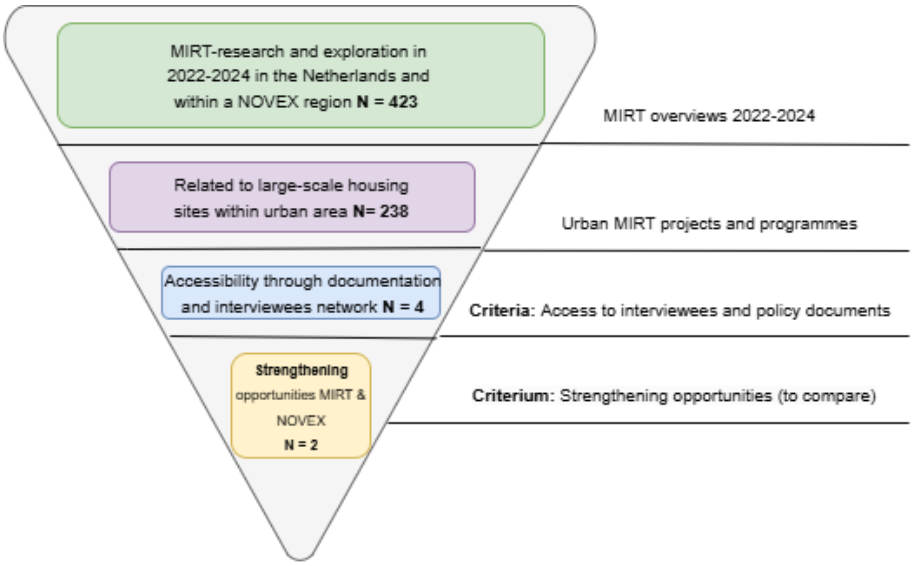

Figure B.2: Case-study funneling (Own work).

The four cases found in the blue part of Figure B.2, are elaborated on in their last criterium in Table B.2. This refers to their strengthening opportunities.

Table B.2: Shortlist case-studies

Project name	Expected strengthening opportunities
Oeververbindingen Rotterdam	Well-integrated implementation of both the NOVEX-programme and the MIRT-process.
CID-Binckhorst	Building tempo and its dependance on the housing market and technological advancements in mobility (Verhegge, 2019).
Oude Lijn	Main focus is on infrastructure improvement; increasing the importance of the NOVEX-programme can be an opportunity.
Utrecht-Rijnenburg	Funding troubles and dependance of dwellings construction on Merwede line (tramline), see Chapter 5.

Based on Table B.2, the *Information-oriented selection* strategy of Flyvbjerg (2006) is applied. Here, *maximum variation* cases are selected, which differ in one or more dimensions (Flyvbjerg, 2006). This strategy is combined with the *strengthening opportunities* found in Table B.2.

Therefore, from this list in Table B.2, the two case-studies of *Oeververbindingen Rotterdam* and *Utrecht-Rijnenburg* (related to the MIRT-exploration OV and Wonen, but scoped towards Rijnenburg) are chosen, as a comparison can be made between an expected well-integrated NOVEX-programme and MIRT-process, with an ongoing MIRT-process, in which strengthening opportunities are present in the form of dependence on infrastructure.Therefore, within this scope of research, the most *variation* of case-studies is selected.

C

Appendix C: Interview guide

This appendix shows an overview of the interviewees, as well their possible involvement in the case-studies performed. Furthermore, the interview scripts applied in the semi-structured interviews are provided. The interviewees, their roles and involvement in neither, one or two of the cases are shown in Table C.1. The table is ranked in chronological order of conduct of the interviews.

Next to the predetermined questions defined for the semi-structured interviews, extra questions were kept in mind to add as follow-up questions. The following predetermined questions were asked in Dutch, since all interviewees are from Dutch origin. However, in this thesis, the questions are included in English, to reach reading convenience of the thesis.

Table C.1: Interviewees and their institutions, roles and cases involved

Interviewee	Institution	Role	Case involved
R1.	Consultancy firm	Senior advisor	Oeververbindingen Rotterdam & MIRT exploration OV en Wonen (Utrecht-Rijnenburg)
R2.	Consultancy firm	Partner	Oeververbindingen Rotterdam
R3.	Ministry of I&W	Policy advisor	Oeververbindingen Rotterdam
R4.	Ministry of I&W	Policy advisor	Oeverbindingen Rotterdam & MIRT investigation A12-Rijnenburg
R5.	Engineering- and architectural firm	Policy advisor housing	Oeververbindingen Rotterdam
R6.	Ministry of I&W	Policy advisor	None
R7.	Municipality of Utrecht	Policy advisor	MIRT exploration OV en Wonen (Utrecht-Rijnenburg)
R8.	Municipality of Rotterdam	Policy Advisor	Oeververbindingen Rotterdam
R9.	Not applicable	Policy advisor	Oeververbindingen Rotterdam
R10.	Province of Overijssel	Policy advisor	None

C.1. Interview script

The following interview questions, including various extra questions (in italics) when wanting to elaborate on a specific topic, form the base for the semi-structured interviews held. The questions are split up with a focus on either the MIRT-research and -exploration phase of a case, or with a focus on the NOVEX-programme. The choice for one of the two focuses is based on the background and expertise of the interviewee. Furthermore, within the MIRT-based interview, one of the case studies was asked for. This depends on the expertise of the interviewee, and is referred to in this script by the words *case X*.

C.1.1. Interview script MIRT-based interview

Introduction:

Thank you for participating in this interview. We will discuss the relationship between large-scale housing development initiatives in NOVEX areas and the MIRT research and exploration phase. This concerns the MIRT exploration of Oeververbindingen Rotterdam / OV en Wonen, within the NOVEX region of the Southern Randstad / Utrecht-Amersfoort. The consent form has been signed in advance. Additionally, the interview will be recorded via audio, and the data will be anonymized before being processed in the graduation thesis. The thesis will include an anonymized summary of the interview.

General questions about NOVEX and the MIRT proces:

1). What is your role within the MIRT research / MIRT exploration in case X? And what does this imply?

2). Are you familiar with the concept of the NOVEX region / NOVEX program?

If yes, could you explain to what extent this program plays a role in case X? [Definition: *NOVEX stands for National Environmental Vision EXecution Force. The programme NOVEX was created to improve the implementation of all national policies with an impact on the spatial planning of the Netherlands* (Provincie Zeeland, n.d.)]

3). In which phase of the MIRT process is case X currently, and does it involve the access to housing areas?

Questions about integration and cooperation:

4). What does the reciprocity between housing development and its accessibility look like? *(In Oeververbindingen: project director monitors this*

How is / was this the case in the MIRT exploration phase?

5). To what extent do you notice integration between transport planning and spatial planning in case X?

To what extent is there coherence, collaboration, or coordination between the MIRT research and exploration and the implementation of the NOVEX program's vision in this region? (For example, integration of personnel or policy documents)

6). How is cooperation between the different policy domains managed in this process? And do different interests play a role here?

How is everyone kept informed of the progress within the NOVEX program? This includes cooperation between ministries, as well as between ministries, provinces, and municipalities.

7). Are there dependencies between the policy domains that affect the progress of the MIRT process? – decision-making speed (due to urgency), waiting for documentation?

Can you provide examples of such dependencies?

8). What is your opinion on integrating the MIRT exploration with the NOVEX program? Is this important / relevant, and is it necessary in the decision-making process for transport planning and spatial planning in the Netherlands?

Question about integrating NOVEX into the decision-making process:

9). How could the NOVEX program ideally be incorporated into the decision-making process of MIRT research or exploration?

(Currently: taking into account the number of homes to be built + BO-MIRT involved in NOVEX decision-making)

Which elements do you consider essential in this process? (For example, timing, budget, communication)

Questions about policy integration and the feasibility of housing locations:

10). In which phase within the MIRT research or MIRT exploration do you think policy integration with housing locations and NOVEX regions is feasible?

Can you explain this with an example from case X?

11). How is the range / bandwidth of housing numbers taken into account in the MIRT process? Is this preferred? *scenario thinking*

12). In MIRT-investigations the urgency of housing construction is prominent, but this is less evident in MIRT explorations, what do you think of this? Does this depend on the final outcome of the phase? Is this a bad thing?

13). At what stage within the MIRT-investigation or MIRT-exploration do you think policy integration with housing sites and NOVEX regions is feasible? Can you explain this using an example from case study X?

Questions about barriers and solutions:

14). What barriers or challenges might arise when integrating the NOVEX program into the first two phases of the MIRT (i.e., the MIRT research and exploration)?

15). What possible solutions do you see for overcoming these barriers, specifically regarding the integration of transport planning (via MIRT research and exploration) and spatial planning (the NOVEX program)?

(For example, changing or adjusting MIRT rules)

16). What would be a feasible first step to better integrate MIRT projects into spatial planning (NOVEX regions)?

Questions about decision-making moments and housing:

17). What is your opinion on the decision-making moments (e.g., BO-MIRT, BOL, NOVEX, WoMo) within the annual decision-making cycle? (Currently: separate meetings, Southern Randstad wants 2-4 BO NOVEX meetings per year with the Ministry, provinces, water boards, municipalities)

Could these moments be organized differently in this case or in general?

What do you think of the establishment of a consultation table, as has been established in Rotterdam? What role should such a table play? And what expectations do you have of such a table?

18). Would it be better to discuss housing earlier than other discussions (about MIRT)? And should these be kept separate or not? Why?

Questions about programme Housing and Mobility and involved parties:

19). Do you have experience with the Housing Mobility program?

Is this applied in case X? What do you think of it?

20). Which parties and interests, in your opinion, come out as the strongest in the implementation of the NOVEX program?

On the other hand, which interests do you think should be better considered? Is there sufficient trust between the involved parties?

Closing questions:

21). Is there anything you would like to add that has not been covered yet?

[Would you like me to share my conclusions with you once the research is completed?]

[Thank you very much for answering my questions and have a great day!]

C.1.2. Interview script NOVEX-based interview

Introduction:

Welcome.Thank you for participating in this interview. We will discuss the relationship between large-scale housing locations in NOVEX areas and the MIRT research and exploration phase. This concerns the MIRT exploration of Oeververbindingen Rotterdam / OV en Wonen, within the NOVEX region of the Southern Randstad / Utrecht-Amersfoort. This interview will focus on the decision-making process within the NOVEX program. The consent form has been signed in advance. Additionally, the interview will be recorded via audio, and the data will be anonymized before being processed in the graduation thesis. The thesis will include an anonymized summary of the interview.

General questions about NOVEX and the MIRT process:

1). What is your role within / to what extent are you involved in the NOVEX program, a NOVEX region, or a large-scale housing location? And what does this imply?

2). The NOVEX program is being set up on a national scale. How do you think this program can be anchored at the local or provincial level?

3). To what extent do you notice integration between transport planning and spatial planning at the policy level within the NOVEX regions?

To what extent is there coherence, collaboration, or coordination between the MIRT research and exploration, and the implementation of the NOVEX program's vision in the region?

4). What does the reciprocity between housing development and its accessibility look like? *(In Oeververbindingen: project director monitors this*

5). How is the cooperation between the various policy domain parties managed in this process?

How are stakeholders kept informed of the progress within the MIRT phases? This refers to cooperation between ministries, as well as between ministries, provinces, and municipalities.

6). Are there dependencies that could affect the progress of the process? (speed of policy development due to crises / giving urgency to it)?

Can you provide some examples of such dependencies?

7). What is your opinion on integrating the MIRT exploration with the NOVEX program? Is this important, and is it even necessary in the decision-making process about transport planning and spatial planning in the Netherlands?

Questions about integration and barriers:

8). What barriers or challenges do you see in integrating the NOVEX program into (the first two phases of) the MIRT process (MIRT research and MIRT exploration)?

9). What possible solutions do you see for overcoming the barriers in integrating transport planning (via MIRT research and exploration) and spatial planning (the NOVEX program)?

10). What do you think would be a feasible first step to better integrate MIRT projects into the spatial planning of NOVEX regions?

Questions about decision-making and housing:

11). What do you think about the decision-making moments in the annual cycle, such as BO-MIRT, BOL, NOVEX, and WoMo?

Are these moments effective, and should they be organized differently (in this case or) in general?

What do you think of the establishment of a consultation table, as has been established in Rotterdam? What role should such a table play? And what expectations do you have of such a table?

12). Could housing discussions be held separately, or is integration with other discussions desirable? And why?

Questions about programme Housing and Mobility, and the interests of stakeholders:

13). Do you have experience with the Housing Mobility program?

Is this program applied in the decision-making of the NOVEX program?

If yes, what do you think about the application of the Housing Mobility program in this process?

14). Which parties and interests, in your opinion, emerge as the strongest in the implementation of the NOVEX program?

Is there trust between the involved parties? Are all relevant interests being taken into account in a fair and just manner?

15). [At the national / provincial level]: Do you think the province is capable of playing a major role as a ‘director’ in the NOVEX regions?

Is this feasible, in your opinion, and what are the possibilities or limitations?

Financing and municipal involvement:

16). The financing of new housing is said to be applied with 50% of the costs potentially being borne by municipalities (according to WoonTop, December 11, 2024).

Do you think this is feasible for municipalities? Why or why not? How could this be applied differently?

Closing questions:

17). Is there anything you would like to add that hasn't been addressed yet?

[Can I share my conclusions with you after finishing this research?]

[Thank you for your participation in the research!]

D

Appendix D: Main documents consulted case-studies

The introduction to the topics of the MIRT-process and the NOVEX-programme, as well as on the cases, are based on various reports and policy documents. Table D.1 shows the main documents consulted for these analyses. The documents are ordered per case, not on importance of the content.

Table D.1: Main documents consulted in case-studies and overarching national documents

Document	**Case-study focus**	**Date of publication**
Integraal Verkenningenrapport en milieueffectenrapport	Oeververbindingen Rotterdam	Nov. 2022
Presentatierapport beslisinformatie	Oeververbindingen Rotterdam	Sept. 2022
Integraal Participatierapport	Oeververbindingen Rotterdam	Nov. 2022
Verkenningenrapport en planMER	Utrecht-Rijnenburg	Nov. 2024
MIRT-verkenning OV en Wonen regio Utrecht	Utrecht-Rijnenburg	March 2022
Programmatische verkenning Rijnenburg	Utrecht-Rijnenburg	Sept. 2024
Utrecht Nabij Ontwikkelperspectief	Utrecht-Rijnenburg	25-11-2020
Novex-programma	Overarching	01-07-2022
Mirt spelregels	Overarching	20-09-2022
Mirt overzicht 2024	Overarching	2024

E

Appendix E: Coding process interviews

With the use of Atlas.ti software tool, the qualitative data from the conducted semi-structured interviews can be reviewed. First, a rough scan is made from the data obtained from the interviews. This creates a general idea of the content and themes touched upon per interview. Afterwards, inductive coding starts off with establishing the data, and then establishing segments, categories and relevant codes (Bihu, 2024). This is not done by using preconceived notions on the data, but by simply reading the data. Then, the interviews are summarised, in order to put them in the report in an anonymised and shorter version. The codes created by inductive coding are used to summarize and formulate groups of codes. This identifies themes within the interviews. The relevant quotes derived from the interviews are merged into a relevant code as well, and used to describe the relating codes or factors. The codes, as shown in Tables E.1 and E.2 are presented in Dutch, since the interviews are conducted in this language. This creates a direct interpretation of the interview results, adding to their reliability.

Table E.1: Coding scheme interviews

Category	Code	Subcodes	Grounded
Context/ aanleiding tot integratie	Woningen	Aantal woningen scenario's	3
		High-rise vergelijking	4
		Toenemende urgentie woningen (woningnood)	10
	Aanleiding MIRT	Uitgangspunten	6
		Politisering	2
		Doelstelling woningen in MIRT-proces	2
Persoonlijke ervaringen	Ervaringen Oev-erverbindingen Rotterdam	Informeel strategisch overleg	2
		Meer aandacht woningen gedurende MIRT proces	2
		Noodzaak en druk	2
		Tijdsgeest	2
		Unieke verkenning	1
		Vertrouwen	2
	Ervaringen Utrecht-Rijnenburg	Aansluiting processen	4
		Intentie	2
		Tijd nodig voor integratie	1
		Vaststellen infrastructuur	2
Relaties / integratie concepten	Relatie transport- and spatial planning	Samenhang TP / SP	16
		Informatie delen	4
	Concepten integratie	Afstemming	5
		Wederkerigheid	3
		Doelbereik	4
		Flexibiliteit	3
		Beheersbaarheid	10
		Coordinatie	1
		Redelijkheid	4
Relatie factoren	Barrière factoren	Afhankelijkheid	4
		Andere taal spreken	4
		Eis op eis stapelen NL	4
		Lange procedures	3
		Politieke druk	4
		Asynchrone processen	5
		Sneeuwbaleffect	4
		Weinig overeenstemming uitgangspunten	5
		Verschillende geldstromen	9

Table E.2: Coding scheme interviews

Category	Code	Subcodes	Grounded
	Versterkingsfactoren	Adaptief programmeren	3
		Depolitiseren	3
		Visualiseren integratie	2
		Overeenstemming doelstellingen /uitgangspunten	6
		Eigen weg inslaan	5
		Niet alles integreren	2
		Op elkaar leggen / aansluiten van plannen	8
		Opdelen project	2
		Opzetten overlegtafel	8
		Parallele paden TP/SP	3
		Redelijkheid	4
		Successen laten zien	2
		Toekomstvisie (lange termijn)	2
		Verplaatsen in ander en transparant zijn	5
Inhoud	Inhoudelijk beleid	Pragmatisme	5
		Zelfde modelgebruik	2
		Toepassing parkeren / OV	12
Process	Procesmatig / organisatorisch	Concrete doorvertaling (met stappen) TP/SP	2
		Infra (zou) eerder dan woningen	5
		Infra duurt langer dan woningen	4
		Programmatisch werken (e.g. UNed)	5
		Regionale samenwerking (gebiedsalliantie)	2
		Gebiedsbudgetten	1
	Bestuurlijke afspraken	BO MIRT / BOL mening	5
		BO NOVEX mening	7
		Houding bestuurders	2
		Infra, woningbouw en economie	4
		Rol provincie	8
		Samenwerking ministeries	3
		Voorkant besluitvorming	2

F

Appendix F: Elaboration characteristics MIRT and NOVEX

F.1. Elaboration on interconnectedness MIRT process and NOVEX programme

A draft roadmap for spatial arrangements within the NOVEX program was introduced in December 2024, covering both the improved *Nota Ruimte* and a parallel decision-making process (Ministerie van Volkshuisvesting en Ruimtelijke Ordening, 2024b). While BO-MIRT meetings are included in the timeline, other mobility measures are absent, as spatial arrangements encompass broader concerns like green spaces and harbor activities. Nonetheless, the Mobility Fund could play a more prominent role, given its significant allocation toward housing accessibility. The integration of *Nota Ruimte* policy with a parallel practical process offers a model for similar initiatives. By aligning design, coordination, and decision-making phases, this approach supports the integration of abstract programs (e.g. NOVEX) with the phases of a more practical MIRT processes.

F.2. Elaboration on overlapping characteristics MIRT process and NOVEX programme

Geographic overlap exists between the two programs, requiring mutual consideration. Currently, progress of both projects in decision-making or investigations is reported in both. MIRT programs and NOVEX regions are area-oriented, fostering innovative links between (road) infrastructure and spatial policy sectors like housing (Priemus, 2007). Also, rather than a linear, infrastructure-focused MIRT approach, an integrated strategy is pursued, depending on actor willingness to incorporate area-oriented elements in transport planning (De Boer, 2017).

Spatial planning and the physical environment, including transport planning in the Netherlands, feature strong horizontal and vertical coordination (Elisabete A. Silvai & Ransford A. Acheampongi, 2015). Horizontal coordination involves authorities at the same level working in related policy areas, while vertical coordination spans national, regional, and local government layers (Alpkokin, 2012).

F.3. Elaboration characteristics NOVEX programme

NOVEX regions stem from eight NOVI areas, seven urbanization strategies, two new NOVEX areas, and some mergers, leading to geographic overlap, especially in the densely populated Randstad (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b). Many regions span multiple provinces, requiring collaboration between provinces and the national government to translate national spatial policies into regional implementation, integrating NOVEX into the 'provincial puzzle' (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b).

Timely coordination between the 'Provincial Puzzle' and NOVEX Development Prospects is crucial but challenging. Administrative meetings for MIRT and NOVEX can be slow, delaying spatial decision-making, particularly in provinces with complex spatial challenges. This, in turn, can postpone the establishment of 'spatial arrangements.' At the end of the alignment cycle, the NOVEX program delivers 'spatial arrangements'—agreements on visions, solutions, and implementation tools for the physical environment, addressing housing, climate resilience, biodiversity, and nature restoration (Berenschot, n.d.; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b). These arrangements align with provincial rural programs and spatial plans and have gained attention from policymakers at all levels since NOVEX regions were introduced in 2022 (Metropoolregio Amsterdam, 2024; Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, n.d.-b; Provincie Zuid-Holland, 2024).

Together with 'Mooi Nederland,' NOVEX refines the NOVI vision, ensuring that physical environment development is addressed in both policy and implementation, fostering an iterative decision-making process (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022a). The program is based on provincial proposals, national programs, and the 'Nota Ruimte,' which provides a long-term vision for managing scarce space in response to major challenges, covering 2030, 2050, and 2100 (Ministerie van Infrastructuur en Waterstaat, n.d.-a).

F.4. Elaboration characteristics MIRT process

Although the NOVEX program consists of 16 regions, multiple MIRT investigations and explorations can occur simultaneously within them. For example, in the Utrecht-Amersfoort NOVEX region, the MIRT investigations 'OV en Wonen in Regio Utrecht' and 'A12-Rijnenburg' address MIRT elements (Uned, n.d.-a). However, not all NOVEX Development Prospectives explicitly mention MIRT processes, often referencing only BO-MIRT meeting outcomes. The MIRT process follows established 'rules of the game,' defining procedures, roles, and responsibilities (Ministerie van Algemene Zaken, 2023), whereas NOVEX lacks such formal guidelines. Instead, it outlines an ideal decision-making process, as discussed in Chapter **??**. MIRT is also guided by the Area Agenda (Gebiedsagenda), in which national and regional partners define major regional challenges, set joint ambitions, and identify related tasks (Ministerie van Infrastructuur en Waterstaat, 2022b).

Lastly, MIRT funding distribution has been criticized, as the Randstad received more funding in absolute terms until 2019. However, on a per capita basis, the allocation appears more balanced (Vereniging Deltametropool, n.d.). For NOVEX-programme implementation, funding estimates remain unclear due to unknown implementation costs.

G

Appendix G: Elaboration stakeholder analysis case-studies

G.1. Elaboration stakeholders Oeververbindingen Rotterdam

The following stakeholders did not initiate the MIRT-exploration, but do experience impact of the process, and therefore want to show interest in the exploration. Local entrepreneurs want to sustain their business by generating benefit from created or maintained accessibility in Rotterdam. Also, advocacy groups (belangengroepen) plead for a MIRT-exploration leading to a preference alternative to their liking (e.g. from an environmental perspective).

Then, external advisors are a stakeholder. All three governance layers (national, provincial and municipal) can hire experts. Their interest is fulfilling the MIRT-research or exploration and its role, dedicated by the (governmental) client. This can mean creating an overview of the project as a project manager, or including the surroundings as an 'environmental' manager. Both could be part of such functions of such external experts. Finally, resident (groups) want to withhold a liveable environment in their neighbourhood / zones of interest in Rotterdam.

G.2. Elaboration stakeholders Utrecht-Rijnenburg

Next to the included parties in the Uned programme, project developers owning the lands of Rijnenburg, are a stakeholder. Regarding their vision, dwellings should be constructed before the envisioned start of 2035 (Baggerman, 2022).

Furthermore, external advisors are required to perform both the MIRT-research and MIRT-exploration. Lastly, residents around the polder of Rijnenburg have an interest of maintaining a sustainable and liveable environment. A decision on Rijnenburg can affect their surroundings. For example, construction of housing in Rijnenburg can create positive effects, such as more accessibility. However, less greenery in the polder can act as a negative effect, or emissions from a large infrastructure can act as a negative external effect.

H

Appendix H: Interview results

This appendix shows the interview results through a summary of the conducted interviews, a short background of the interviewee, including the cases the interviewees were / are involved in. Both elements are checked with the interviewee.The interviewees are referred to as R [number], in which R means 'respondent'.

H.1. Background and summary R1

H.1.1. Background R1

R1 is a senior advisor at a consultancy firm.R1 was involved in the case of Oeververbindingen Rotterdam, and is currently involved in the MIRT-exploration of OV and Wonen, regarding Utrecht-Rijnenburg.

H.1.2. Summary R1

R1 tells that a more in-depth phase is started in the MIRT-exploration phase in Utrecht OV en Wonen, since no preference alternative is currently found. One of the principles of this MIRT-exploration is enabling the urbanisation of Utrecht and Nieuwegein, in which a focus is laid on a sufficient target range. This principle can be considered as satisfactory, towards the integration of housing construction aims in a MIRT project. When this principle is not followed, the national government will not allocate budget to the MIRT project, which urges the project to follow these.

The MIRT-exploration focusses on infrastructure plan of the Merwedelijn (tram). Here, the ranges of newly constructed housing quantities are considered, in order to decide on for example the frequency of the line. Also, the project managers of both the MIRT-exploration and MIRT-investigation align their thoughts and ideas regularly. The alliance of UNed adds to the collaboration between the national government and the region in this case. The meeting of directors in the projects are carefully prepared, so that all information is present in the meeting. A BO-MIRT is used for formal decision-making, after which next steps or phases can be taken.

Furthermore, the MIRT projects in Utrecht are not in the same phase. A12-Rijnenburg is namely in the investigation phase, whereas 'OV and Wonen' is in the exploration phase. This can hinder the decision-making process of the BO-MIRT. Therefore, it is difficult for a project to work towards one moment in time (BO-MIRT). Nevertheless, smaller questions of a MIRT-project can be skipped / obfuscated towards a BO-MIRT meeting, after which a research on this topic is done afterwards.

R1 mentions that concreteness from e.g. a NOVEX programme can be asked when communicating or informing a MIRT project, since abstract terms are used in the housing construction visions and -programmes. This is also the case since the NOVEX programme is a broader programme with visions, whereas a MIRT is a project with a specific infrastructure as a deliverable.

Both Oeververbindingen Rotterdam and Utrecht-Rijnenburg have a strong connection with housing construction (goals). The MIRT-exploration of 'OV and Wonen' takes the scenario's of housing into account, which can vary widely. Furthermore, the national government is to choose between the maintenance or renovation of infrastructure on one hand, or the construction of new infrastructure on the other hand. However, no budget can be fully allocated to both pathways. In this choice, safety is high on the (political) agenda. This impacts the safety measures of the Merwede line (tram) in the MIRT-exploration.

A question which arises is the applicability of the Merwedelijn (tramline), since this can attract specific residents of the residential area. Therefore, a behavioural change from the car towards using public transport / a tramline is to be stimulated for residents.

Furthermore, the financial position of municipalities is not well enough to create tens of thousands of housing, which leads them to ask the national government for funding. A dilemma in the amount of parties joining a table during the exploration is: the larger the number of actors, the more complex, but the less clout (Dutch: slagkracht) such a table contains.

H.2. Background and summary R2

H.2.1. Background R2

R2 is a partner at a consultancy firm, and was involved in the MIRT-exploration of Oeververbindingen Rotterdam.

H.2.2. Summary R2

R2 had the whole process in mind as a project manager in Oeververbindingen Rotterdam, between 2018-2022. One of the principles of the Oeververbindingen was the facilitation of housing construction in the region of Rotterdam.The sequence of the access to housing and the housing construction development can never be completely figured out one-to-one, but in the case of Oeververbindingen, the time paths of this project and the Oostflank were juxtaposed. This led to a fulfilling alignment of the Oeververbindingen and the Oostflank.

The alignment between the MIRT exploration of Oeververbindingen and the housing challenges was explicitly examined. The MIRT project team worked together quite intensively with the members of the 'Omgevingsvisie' (Environmental vision) of the Oostflank. Here, discussions were raised on how both developments could fit together, mostly on a content level.

Then, members of one group temporary worked along with the other project. Therefore, a discussion on the type of Oeververbinding which could complement the housing construction was to be found.

The BO-MIRT meeting is a 'hammer piece' so to say, as all preparations and discussions are held beforehand. The fact that the 'R' of MIRT has been added to the abbreviation and content, is a big win. Steps towards the interweaving of the 'R' in the MIRT are being taken. The MIRT is one project, whereas an abstracter (helicopter view of projects) and less concrete role is dedicated towards the housing construction visions. Therefore, R2 looked at how the project could fit in the bigger development at the Oostflank in Rotterdam. However, at the start of the project Oeververbindingen, it was not clear how many dwellings would arise in the Oostflank. This number arose during the project development.

In general, when the national government invests in infrastructure, it 'demands' from municipalities and regional partners that a certain amount of dwellings is realised. MIRT projects take a long time, which led to a growing urgence of housing construction while the project was evolving. Also, the allocated budget of 7,5 billion from the national governments led to an impulse in urgency. Process wise, the developments in both the Oostflank and the Oeververbindingen were knowingly presented as a whole in the council, and not in separate 'puzzle pieces'. This led to an integrated presentation of both developments.

Strengthening opportunities for integration can lie in the fact that the MIRT 'rules of the game' can include 'best practices' of integration. Also, separate 'tables' can be introduced which discuss various (overlapping) subjects. This can be done at a lower 'work level' level. When implementing a preference alternative, the focus can be on the type of agreements made to reach this integrally. Likewise, flanking measures are a large part of the two policy domains, and these can be adjusted in an easier way. The shell of tangent can reach overlap in the domains, in which two programmes can be integrated. Therefore, these shells should align with each other, but should not severely influence the key principles of both domains too much (in a negative sense).

H.3. Background and summary R3

H.3.1. Background R3

R3 is a policy advisor within the Ministry of I&W (Infrastructure and Watermanagement). R2 participated in the MIRT-exploration of Oeververbindingen Rotterdam, where the ministry acted as a commissioning authority for Rijkswaterstaat.

H.3.2. Summary R3

R3 states that new densification within cities is a result of the MIRT-investigation performed in the region of Rotterdam-The Hague, where several large bottlenecks in infrastructure and public transport are found, as well as highway bottlenecks. These bottlenecks grab the attention of a minister, who wants to address these bottlenecks. The investigation concluded in the fact that constructing housing is to be performed close to public transport lines and the RandstadRail(metro-/tram network Rotterdam Den Haag), creating a profitable public transport system and releaving the highway bottlenecks. This brought along an urbanisation agreement (Verstedelijkingsakkoord), in which housing was dedicated towards cities. Also, this re-

sulted in 2 MIRT-explorations: Oeververbindingen Rotterdam, OV-line Binckhorst Den Haag and the 'Oude Lijn'.

This agreement is later specified towards various destination plans (bestemmingsplannen) within Rotterdam and the Hague. When constructing housing, the infrastructure bottlenecks enlarge. Therefore, both should be addressed appropriately, showing the reciprocity of these policy domains, in which linked agreements are made. This reciprocity is acted out as a injunctive relief by (national) governments, in return for budget.

Within Oeververbindingen, an exploration is done with all governance layers, over all modalities, in one area with a goal. This is unique, according to R3. In all 'oeververbindingen' measures were necessary, as traffic bottlenecks were found at these locations. Therefore, also no discussion on usefulness and necessity were required. Urbanisation led to even more necessity of measures.

A dilemma in Rotterdam was the fact that the Oeververbindingen could be found useful if the Oostflank was constructed. That is a linchpin, according to R3. However, the Oeververbindingen was to be constructed anyways, so this dilemma was less relevant here.

Several MIRT consultations and infrastructure projects face the same challenges. The first one is the long procedures with appeal possibilities, in both the housing construction and infrastructure projects. Secondly, in the Netherlands, claim upon claim are put on the table, even for simpler projects. For example, circularity, climate adaptivity and participation can be seen as such claims. However, according to R3, one has to admit that not every project can go 100% well on all points elaborated. Such claims arise from the region, where budget deficits, responsibility and other 'wishes' are put forward to the national government, without adding budget. This can be seen as a 'free-riders' mentality, according to R3. Therefore, with all these wishes, the scope of a project is kept small by a minister (e.g. towards infrastructure only), in order to reach stability in the development of the project.

Also, land positions of municipalities lead to pressure to do something with the land, like constructing housing. This leads to poorer alignment with other parties, as well as performing reasonable decision-making. Also, shoving off responsibilities -such as access to the housing- can be part of this pressure. Since the cabinet is focussing on intention-agreements (e.g. during a housing construction top meeting), infrastructure gets 'snowed under'. It should therefore be prevented that housing construction will dominate everything, as this leads to misery in accessibility of this housing construction.

These issues lead to delays in national and regional projects (roads, railways, housing) due to numerous objections and appeals, overloading the Council of State. Also, high study burdens and costs from extensive requirements are required. Furthermore, missed opportunities for policy integration are created, as the Minister limits measures to legal obligations to avoid precedents and financial strain. Also, municipalities shift infrastructure responsibilities, prioritize rapid housing development, sometimes triggering objections and appeals, even from Rijkswaterstaat.

In order to reach maximum alignment, the guiding principles of the MIRT project are to be realistic, affordable and procedurally feasible. Also, directors are to act reasonably, by deciding on which parts of the projects are feasible, whilst their own plans may interrupt each other's.

This is possible with several studies, done apart from each other, but aligning their similar guiding principles meanwhile. Alignment is specifically needed on the specific location of housing and infrastructure, as well as on the question of what is needed when it comes to accessibility.

Also, R3 stresses that as a national and regional government, agreement on the housing numbers to be used for 2040 and 2050 and where these additional homes will be built—a shared long-term reference are necessary. Basing all studies on this reference to enable separate but simultaneous studies with a manageable scope, following the appropriate legal procedures with a controlled team, is also relevant. This avoids bundling everything into a single mega-study requiring multiple procedures, which would make the process unmanageable.

The processes and types of persons working on either a MIRT project or on housing construction visions are totally different. This is a matter of alignment, but also keeping a balance towards giving space to both pathways. This space is about the (technical) content of the domains, in which no interference is required.

According to R3, the best coordination is established with an administrative consultation, a directors' consultation, a management group (Regiegroep) consultation, with two persons - one representing housing and one representing transport- on all these levels. The most far-reaching way of integration possible, in the view of R3, is that a 'bandwidth' is in the number of housing serves as a basis for the guiding principles established together (by transport planning and spatial planning). Such a guiding principle with a bandwidth can make sure that both policy domains harmonise well. Furthermore, demarcation and breaking down of overall goals is needed in order to keep the manageability. Then, a plan for housing development and a plan for infrastructure will exist parallel. Both plans are to 'run with each other', and in decision-making, both should be decided on. Thus, unpleasant surprises in the director's meetings can be prevented. Here, one party should not cram every aspect in one plan, but rather own procedures and scopes can be performed, with alignment between these progresses. Furthermore, sticking to the plan until the end is not necessary, there should be space to let go of parts.

In addition, the consequence of wanting things from an ideology, which are not compatible, is that a totally integrated plan can be reached in the far future. However, an incremental plan in time can help reaching such a goal of large-scale housing and infrastructure. R3 does agree with working in smaller and less amount of parts of a project. In that sense, less time and money are spent on megalomaniac plans. More specific measures for this integration consist of 'meeting tables'. In Rotterdam, the Oostflanktafel established leads to alignment and knowledge transfer, leading to an advise. This alignment is increasingly necessary during the progress of the project. Also, the outside world can be kept informed through this table. Furthermore, trials of municipalities to prevent a large amount of cars in their cities, asks for spatial choices in public transport and parking. This can be achieved by coercion, such as removing or reducing parking places at the station.

In the programme MoVe (Mobiliteit en Verstedelijking) in Rotterdam, a well-established governance structure is present, and therefore, according to R3, this structure is to be kept. Therefore, a new NOVEX structure is less needed, when this programme is present. Apparently, there is a lack of feeling that the BO-MIRT meeting is from 'all of us', although the 'R' repre-

sents spatial planning. In the NOVEX programme, the province should act as an area director (gebieds regisseur), but is not taking this role. Towards a minister, alignment is shown by municipalities and provinces, but otherwise, conflicting interests are found.

H.4. Background and summary R4

H.4.1. Background R4

R4 is a policy advisor for MIRT projects for the ministry of I&W (Infrastructure and Watermanagement). R4 is involved in both the MIRT-investigation of A12-Rijnenburg, as well as the MIRT-exploration OV and Wonen, both located in Utrecht.

H.4.2. Summary R4

It is very complex to add high density risings to existing areas, according to R4. Therefore, in the MIRT-investigation of A12-Rijnenburg, knowledge on the existence of NOVEX-regions is present. However, the influence of the NOVEX-programme is implicit, as working methods are aligned to this programme. Since the NOVEX plans are put on paper, the integration of elements has been touched upon the MIRT investigation A12-Rijnenburg.

In a MIRT investigation, traffic models estimate the differences between various amounts of the construction of housing in the area. Both fields should interact with each other, raising questions on what will happen if one of the fields changes. In addition, the national governments joining in MIRT projects are not one voice per say, it is divided into ministries with their own expertise and clashing opinions. Within governance layers, institutions are opinionized on the parts that are not (so to say) their expertise, which leads to a field of tension.

Still, the formal decision-making process works fluent. However, informal alignment is important for preparing these formal decision-making points. A reason for longer processes can be found as the first steps of investigations or explorations are being repeated, for example by engineering offices.

Within the MIRT-investigation and -exploration in Utrecht, the UNed programme structure includes the reciprocity, as a form of alignment between partners. The interaction of the MIRT-investigation with the MIRT-exploration was laborious, as the processes are performed in an asynchronous sequence. This makes staff of both projects very nervous. Also, in the MIRT-exploration of OV en Wonen, a high pressure was put on decision-making, which makes the exploration group focus on their own project, as no distraction is preferred. However, the project team is conscious of the fact that a large amount of alignment is required to adequately perform both processes. This alignment is only possible when a specific level of information is shared. It can lead to stability in a dynamic environment of both projects. However, one can de-tangle this alignment if one wants to.

Also, there is an increasingly integrated view of issues, and more content is put in those issues. Then, such issues are taken along for years, in which integrated decision-making is tried to be reached. This wish for integration leads to a so-called ‘snowball’. However, issues within the larger issue could have been solved meanwhile. This means that smaller parts of the issue can be extracted, as it is clear how these can be addressed. Such extractions can result in value ‘on the street’, showing the visibility of the project’s operation. These extractions are not thrown away, but might (not) be decided on later, after which no attention is given to them

anymore.

An example of alignment in Utrecht is the area alliance started by the municipality of Utrecht, Nieuwegein and the Province of Utrecht, in order to develop Groot-Merwede and Rijnenburg. This is an example of how to evolve after the MIRT-investigation of A12-Rijnenburg. This can be a MIRT-exploration. If such an exploration is chosen, the question arises which parties are to join this exploration. It can be the alliance with a ministry, or separate parties. In an area alliance or according consultation table, it is of importance that one should look at developments in the short term, as well as in the long term. Then, it can be decided on what should be arranged to meet these developments.

In order to create access to an area, the easiest way is to construct a train station. When this is not possible, other options such as the tram are considered. If access to Rijnenburg is to be created with public transport, the construction of the Merwedelijn should be started earlier than housing construction. Then, the two projects can be constructed in parallel. Also, if the exploitation of the tram line is started, 'only' a smaller part towards Rijnenburg is to be constructed, otherwise a long time is needed. Within the MIRT-explorations, the focus is on which trace of the Merwedelijn makes housing (im-) possible. One possibility can be adapting the location of a tram stop, in order to reach housing better. However, in an ideal world, a digital twin of a design is made, in which information can be added by all relevant parties, and in which design responsibilities are captured. Then, a municipality or Rijkswaterstaat can track its acreage.

H.5. Background and summary R5

H.5.1. Background R5

R5 is a manager at an Engineering- and architectural firm and was involved in the area of South-west Netherlands, including the Oeververbindingen Rotterdam, representing the ministry of BZK.

H.5.2. Summary R5

As an 'area director', R5 had the network to search for people from housing and the MIRT project directly. This is the role of an 'area director', to which no fixed structure of contact is assigned.

Also, R5 tells that for the 17 large-scale construction, more funding is available, which gives an incentive to cooperate and translate visions towards actual actions and results on a regional level. Also, no extra 'tables' are dedicated to these 17 regions, as the 'Housing Deal' (Woondeal), NOVEX tables and the BO-MIRT and BOL can be used as instruments in this case. This is an example of a pragmatic way of thinking. The BO-MIRT and BOL meetings gives grip to the management groups of the projects in the two policy domains. Furthermore, the scale level of a BO-NOVEX meeting is simply too high to lead to concrete area developments. On this scale, the programme Housing and Mobility (WoMo) is one of the programmes in which the most intensive collaboration between VRO and I&W is established.

An important aspect of integrating is making concrete translations of ambitions towards regional agreements. Here, adaptive programming can be applied if decision-makers hold on too much to a dream image, within both policy domains. Therefore, a balance is to be found

between latching on to a plan, and creating varying perspectives.

When looking at the Oeververbindingen Rotterdam, normally, there was no active participation from (public) housing. However, in the case of Rotterdam, these people participated in the MIRT-exploration phase. Here, not only agreements on infrastructure, but also reciprocal on the housing numbers and the planning of the outline of the Oostflank development. Meanwhile, the coherence of the housing construction with MIRT-project gave a so-called 'hook' to the developers to agree with the municipality of Rotterdam on the development of the Oostflank. Therefore, Rotterdam was a good example of analogous agreement of the MIRT-exploration and choosing a preference alternative, with a directors agreement, as well as a parallel actualisation of an 'Omgevingsvisie', in which area development of the Oostflank was ensured. In other regions, R4 does not see these visions and projects parallel and reciprocally connected.

The 'Oostflanktafel' , proposed by R5 in Rotterdam, is there to maintain and preserve the agreements made between infrastructure and housing. This is because, from a housing perspective, there is not much else to look for in a technical MIRT project.

Ideally, parallel agreements are made on the development of the accessibility and infrastructure on one side, and the growth of housing numbers, residents and working facilities on the other hand. However, when linking these two too dependently, one can wait too long for the other one to develop. This is especially urgent due to the housing shortage in the Netherlands. Nevertheless, constructing too quick can lead to less market for these houses.

In addition, it is of importance that, as the national government, the relationship with the regions is not lost throughout the process of cooperation. In this relationship, the region should either show its successful steps or projects, or actually start a project. This happened in Rotterdam, where the mentality of the municipality led to sub-areas that are far or already started construction.

Furthermore, when one stays in its 'own cube', then breakthroughs, such as in Rotterdam, are not realised. If one imagines standing in the shoes of the other side, and is transparent about the boundaries of its responsibility and mandate, integration can work out. This transparency and openness leads to trust within the project team. On the other hand, when administrators are constantly in a 'negotiation position', then a solution / preference alternative for the infrastructure will not be found. Therefore, depoliticizing is necessary. Nevertheless, the urgence of the integration can be politicized, in order to put the issues on the political agenda. Between these moments, politics is ideally less involved. Lastly, provinces can have participate in different stages. In Rotterdam, the province was part of the management group until the MIRT-exploration started.

H.6. Background and summary R6

H.6.1. Background R6

R6 -policy advisor at the the Ministry of I&W- was involved in the Oeververbindingen Rotterdam, from 2014 until 2020. This withheld coordination and collaboration with other governments, especially focussing on the modalities investigated in relation with the housing construction. This also entailed preparing 'administrative consultations' (BO's).

H.6.2. Summary R6

R6 tells that in Rotterdam, before 2014, consultations were already held on the agglomeration power of the Zuidelijke Randstad, and how this should be funded. During the execution of Oeververbindingen Rotterdam (between 2014 and 2020), the ministry of Economic Affairs, next to I&W and VRO, played a large role in government coordination within the Oeververbindingen Rotterdam. When referring to ministries, the BOL meeting can be seen as the focus of the ministry of VRO (Housing and Spatial planning), whereas the BO-MIRT meeting is the focus of the Ministry of I&W (Infrastructure and Watermanagement). During the BO-MIRT meetings of Zuidelijke Randstad, dynamics between municipalities played a role, as larger and smaller municipalities joined and received a certain amount of budget for their infrastructure projects.

7,5 billion euros for (the accessibility of) housing construction was in the coalition agreement with a clear framework. This is because as much housing construction was to be realised. However, the Ministry of I&W could not construct this themselves, as this can only be done by municipalities. Therefore, the focus was on housing construction, whereas it could also have laid on economic development and accessibility through double commuting (housing-work). In general, when integrating topics (such as mobility, economy, nitrogen), 'agenda setting' is crucial to keep people engaged. Currently, housing construction locations are identified, where R6 doubts if the economy in these locations will actually boost. Next to economic development, one should focus on the quality of the existing population, and its effect on the economy.

A barrier in integration between transport planning and spatial planning is the personal collaboration skills of key people involved in the process, such as directors. This makes sure that these key people grant each other and keep each other informed. Also, there is bias in budget and control within the Ministry of I&W, which leads to a lacking discussion on the end result of decisions 'on the street'. Furthermore, different municipalities have a different interest in the open spaces in their region, which barriers the relationship with the province of the region. The regional demands that are asked for can be a barrier, but are necessary in order to satisfy the population in the region. In addition, area-oriented cooperation is to be given more attention, so that background knowledge is available in this topic for administrators and decision-makers.

From an effective perspective, a gathered BO – Novex meeting is less relevant, as then every region is to imply these meetings. Also, such meetings are then to held on e.g. nitrogen and energy issues as well, which leads to a non-ending list of meetings to be held. Also, having more administrators at the table leads to discussions in which some administrators do not have to contribute, as the topic does not comply with their expertise. So, recurrent informing is necessary, but can lead to less efficient consultations. Therefore, the urgence of consultations is of importance in to keep people from getting uninterested.

It is inconvenient when housing is constructed, but no access is created yet. Therefore, the three aspects of housing, infrastructure and economics must go hand in hand. Pragmatic thinking can help in creating interim solutions on the different paces of the three aspects. Here, one should think of the fact that infrastructure will take longer than housing, so should be constructed earlier on in the process. Furthermore, short-term thinking is not applied enough yet within housing construction plans. Therefore, one could focus on splitting houses or moving older generations towards smaller housing in the same area.

Integration between transport- and spatial planning is possible when a difference is made in time scale and in actual scale. This will lead to a smaller scale with a smaller time horizon. The actual scale of the project refers to the governmental scale in which an infrastructure / housing project is fulfilled, such as on a national / provincial/ regional scale. Ideally, common goals and ideal images are to be shared and discussed between the national government and the region. The -newly established- Nota Ruimte can help in defining these goals and images, leading towards similar intentions. Monitoring through a consultation table can be a method to see if the 'right' steps are taken in the process. On the other hand, the administrative burden of such a consultation table is to be kept at a low level.

In Rijnenburg specifically, R6 is worried about the political influences on this polder. The declaration of intent agreed on leads to a lock-in for administrators. There is namely no 'way back', even though other locations could be chosen to develop. It is the influence of the lobby of the landowners which led to this politicisation of Rijnenburg.

H.7. Background and summary R7

H.7.1. Background R7

R7 is a policy advisor within the municipality of Utrecht, and participates in the MIRT-exploration OV en Wonen, with regard to the Merwedeline (tramline), which creates access to the large-scale housing construction site Utrecht-Rijnenburg.

H.8. Summary R7

R7 tells that before the MIRT-exploration OV and Wonen, area development plans were established, in order to maintain the urgence of accessibility and mobility in the region. In the area development plan in Utrecht, public transport was noted as a prerequisite for area development, including housing. Also, it was stated that ongoing projects (e.g. housing plans and mobility) were to work together more strongly. When the MIRT-exploration OV and Wonen started, the area of Utrecht-Rijnenburg was not appointed as a housing construction site. However, the infrastructure project of the Merwedeline (tramline) does act, since the start, as a prerequisite to enable housing development. The broad development of housing is taken into consideration in the MIRT-investigation A12-Rijnenburg. The tramline takes at least 10 years to construct, which is longer than the housing construction possible in the area.

According to R7, integrality is a well-found concept, which is to start early in the decision-making process. Critical feedback on the manufacturability of plans from either the MIRT-investigation or -exploration are necessary to adapt to each other's plans.

The MIRT 'rules of the game' define the importance of the objectives of the MIRT-exploration, which are therefore kept in mind regularly (one of which is providing urbanisation developments with access). Nevertheless, of the three objectives, the one regarding the relationship to housing construction, gathers more attention of administrators. In the working process, a struggle is found in the superimposing plans of the MIRT-investigation and the MIRT-exploration. The two processes dependent on each other's results, which leads to delays in both processes. Therefore, flexibility is needed to align the two. Also, crucial information is to be shared, as neither of the processes wants to lag behind.

The programming of both the MIRT-exploration as the MIRT-investigation in Utrecht, based on the consortium UNed works well, in aligning plannings and agreements of both MIRT-processes. Efficiency is found in composite meetings (including the MIRT-exploration and -investigation) as various decisions can be coupled and made. In UNed, 5 'clients' are present, which is relatively more than 'normal' (around 2 or 3). This is because of the integrality of the issues involved in Utrecht. Decisiveness is therefore harder to be found.

Also, within a municipality and a province, spatial planning and mobility are gathered in one 'college'. However, within the national government, separate ministries are established for these issues, namely I&W and VRO. Therefore, separate steering and various funding streams lead to steering from other perspectives. Although collaboration between the ministries is present, still this steering can hinder the integration of transport- and spatial planning, especially at a local level. When integrating both policy domains, only the crucial links are to be integrated. This can for example be the location of stops of the tramline.

In addition, the national developments in housing construction influence the decision-making of the MIRT-exploration, which needs adaptability from both processes. However, it can create acceleration in decision-making. This acceleration is decision-making is not always preferable, because the quality of decision-making can suffer from it.

Ideally, the infrastructure is constructed, after which housing is constructed. However, large infrastructure has a large preparation and construction time. Therefore, the question is raised in the MIRT-exploration: 'when is the infrastructure plan 'good enough', in order to be constructed (quickly)?'. Furthermore, a difference in the type of study between spatial planning and transport planning is that MIRT-projects use quantitative traffic models, whereas housing visions use qualitative methods. Especially this last type of method is difficult to make 'tangible', in order to compare it to the quantitative models. Lastly, management consultations (BO's) for infrastructure and housing are preferably kept separate, as extra preparation of decision-making is needed in order to execute extra BO's. Also, different Novex regions can develop itself at different moments in time, which leads to asynchronous needs for administrative meetings.

H.9. Background and summary R8

H.9.1. Background R8

R8 works as a policy advisor at the Municipality of Rotterdam, with a focus on the Oostflank in Rotterdam.

H.9.2. Summary R8

R8 tells that when, for example an infrastructure project, is a prerequisite for the establishment of housing construction, this can be a decisive factor in establishing decision-making and the sequence of the projects.

Within Rotterdam, the progress on the MIRT project and Oostflank are passed on to ministries. In the region, the MRDH region functions as a level in between, instead of the province (more rural area focus). However, a dilemma raised through the national government processes, is the different cash flows that flow from the ministries. Both the ministry of VRO and I&W have created their own budget and cash flows, which makes it harder to provide the streams at a similar pace and time. During the finalisation of the MIRT-exploration Oeververbindingen Rot-

terdam, the guidance groups of the exploration and the Oostflank organised informal meetings once a week or every second week.

In 2022, just before the national elections, R8 and a colleague asked the director of the Oostflank to create space to sign a deal with the national government. Since part of the 7,5 billion euros could be allocated to the accessibility of the Oostflank, such collaboration was to be proven towards the national government. In this sense, opinions were formed, claiming that 'only' information of the MIRT-exploration would not attract the budget desired. From this perspective, a business case was developed by the national government to prepare for the cabinet formation in 2022. This is done to provide a solid financial demand, combining all large-scale housing sites in the Netherlands together. These business cases led to the budget allocation of 7.5 billion euros towards the accessibility of newly constructed housing. Then during 2022, the municipality started lobbying to get a good portion of this to the Oostflank and Stadsbrug projects.

This business case was established by different bureaus. Eventually, in 2023, a partial revision of the environmental vision (Omgevingsvisie) had been delivered.

During the years R8 worked on the Oostflank, 3 parallel tracks have been formed, namely:

- The MIRT-exploration Oeververbindingen Rotterdam
- A vision on the urbanisation options within Rotterdam (working, facilities, greenery). This was supported by a MER (Environmental Impact Assessment) investigation.
- The national government was dedicated to create criteria for the large-scale housing construction locations, which formed the base for allocating budget to these locations.

Formerly, the project organisation acted further away from the directors and administrators meeting. However, during the Oostflank development, these meetings have been intertwined more. This was necessary due to the allocation of budget for aligning a MIRT-project and large scale housing site.

For R8, it is of importance that the elaboration of the MIRT-project and Oostflank affect the residents 'on the street' in a right manner. Then, both projects actually work on the same developments, with the same guiding principles. Thus, it is important to know which position the members are working from, and which interest is served. Also, R8 asks the project members to consider the 'boundaries' of their subarea scope. In between these scopes, integration can be fulfilled. This can be done by interest in each other's scopes and creating an opinion on these aspects. This leads to a joint responsibility for the integral projects.

Rotterdam has implemented 'personal unions' (personele unies). This means that the same person works on e.g. the Stadsbrug (MIRT-project) as the Oostflank (housing) at the same time, and can therefore protect the alignment of these projects.

The established Oostflanktafel can lead to discussion on external developments, with an impact on the projects, and of which analyses can be made. Therefore, consciousness on the existence of an extra ambition lives in both the housing construction and MIRT-project. Lastly, VR images of an area in the region with housing construction developments and the establishment of a MIRT-project can act as an instrument creating enthusiasm and realism on the ideas of both policy domains.

H.10. Background and summary R9

H.10.1. Background R9

R9 is a policy advisor.

H.10.2. Summary R9

R9 tells that the MRDH region, next to providing accessibility and housing, aims at supporting the economic power of the region. This is called the 'regional agglomeration power', and is to be considered strongly whilst integrating transport- and spatial planning. Therefore, existing lines (e.g. public transport) are to be used, next to which densification can take place.

The urgence given to housing construction in the MIRT-investigation is right, since it has given rise to the MIRT-exploration itself. Next to that, it prompted the business climate (vestigingsklimaat) of the region, attracting residents to work and live in the region. However, the ministry of I&W is less open-minded towards accessibility with more sustainable forms of transportation. Also, thoughts are set on 'just' constructing houses at a location, whilst considering the surroundings less.

In the MIRT-exploration of Oeververbindingen Rotterdam, both quantitative (model-wise) and qualitative (environmental aspects) were taken into account. This was especially relevant in the area of Feyenoord City and the stadium of Feyenoord, where it was unclear which direction was taken (e.g. new stadium or not). It is however relevant to the quantitative MIRT-exploration that one looks far into the future, since large investments are being made. This refers to the years of 2050 or 2060, instead of the commonly used year of 2040. Qualitatively seen, expert judgements and previous experiences, can help define the development of the city, based on a specific Oeververbinding.

During the MIRT-exploration, the projectmanager made sure that the programme goals of the MIRT-exploration were aligned with the ones of the housing construction site of the Oostflank. Also, R9 found it important to share the same goals in the Oeververbindingen Rotterdam. These goals can be lost or neglected when different project groups are working on their own details. However, once in a while these goals should be given attention, after which a clear plan is made.

Manageability is a barrier when trying to construct an infrastructure at first, after which housing is constructed. On the other hand, flexibility is an important pillar in the MIRT-project and the Oostflank, as both project groups are to have this characteristic in order to shape, especially the borders, of their projects. During the MIRT-projects, talks broke down due to inflexibility of adjusting one of the plans.

Lastly, the Oostflanktafel was meant to unify both the accessibility and the housing construction of the Oostflank, in which both project could support each other. This is relevant, as every step taken in the MIRT project, the more detail and funnelling towards a preference alternative is established. This leads to a higher urgence of monitoring the housing construction and other external developments, during the development of the MIRT project. Nevertheless, not every topic is to be discussed in such a table, as this would take a longer time. Ideally, both projects are to work at a parallel pace, so that total alignment can is possible.

H.11. Background and summary R10

H.11.1. Background R10

R10 is a policy advisor at the Province of Overijssel, and works on an urbanisation strategy for the ‘Stedendriehoek’. Also, R10 is involved in the NOVEX programme for the region Zwolle.

H.11.2. Summary R10

R10 states that first, spatial arrangement can be established, which can be supported by the MIRT-systematics. When a budget is available from the national government, in the BO-MIRT meetings, such budget can be allocated to a specific regions, which lobbies through a urbanisation strategy. In Zwolle, the strategy for mobility was taken into account in urbanisation principles. This regards e.g. proximity, living-working balance or where workplaces are located. Also, budget from the national government are labelled to mobility, whereas these are actually budgets which accelerate the housing construction. In practice, housing has its own exploitation, which should be counted around. Political pressures plays a role here. Therefore, pragmatism would be useful here. This is to be combined with the concept of mobility in the back of one’s mind.

In cooperation, a programmatic approach is followed. There is one programme for mobility, and one for housing. Furthermore, the national government is focussed more on traffic flow, whereas a municipality focusses on parking spots in the city. Barriers evolving in the integration are the fact that housing construction depends on financial elements, regulation, nitrogen issues and so on.

The integration of transport and spatial planning are relevant, as transport planning can lead towards closing of unprofitable tops of housing. Both should lead towards the goal of creating accessibility towards housing. Also, the role of the province in Zwolle is larger. In the Randstad, this is less, as a metropole region or large city has shorter lines towards ministries. When the integration asks for more people or budget, this should be done under the ‘flag’ of the NOVEX programme, and not in a separate BO consultation.

Lastly, one can reconsider the finance of housing. At the moment, the national government allocates no budget towards a spatial arrangement, but does in the MIRT-systematics. With area budgets, a sum of mobility, nitrogen funding and a delta programme, all matters which relate to housing, can help in allocating budget to facilitate urbanisation. If one funding jar is used less, it can be used towards another goal. This is how a common goal is achieved. However, this is hard due to personal scoring with budgets and programmes by administrators. Also, there is fear that preconditions of the budgets are not met.

I

Appendix I: Elaboration on frequencies of grounding codes interviews

This appendix elaborates on the factors which are inserted in the integration models, but have a relatively low grounding in the interviews. The fact that factors are mentioned less than others does not mean that these factors can be considered less relevant, as fewer interviewees might be involved in specific parts of decision-making processes, or familiar with the digital integration options as mentioned in this paragraph.

I.0.1. Frequency of grounding coordination

Within coordination, the code *Lack of 'R' belonging to spatial planning (in MIRT)* is mentioned twice in the interviews. However, it is added, since this surprised the researcher, who had learned and therefore expected that the 'R' of space could be dedicated to spatial planning. Also, digital integration through digital twins is mentioned twice, but these technologies have convinced decision-makers to move on with an integrated transport- and spatial planning project, proving its success.

I.0.2. Frequency of grounding coherence

Within the codes of coherence, various codes are mentioned 'only' twice in the semi-structured interviews. The *negotiation attitude of administrators* is drawn from various experiences of interviewees, which proved the importance of this code. Also, the availability of a 'window of opportunity' was present in Rotterdam, which showed the success it had on the integration of both policy domains. Lastly, *showing regional successes of coherence towards the national government* seemed a realistic measure to the researcher, as this measure can be applied outside of transport- and spatial planning as well. Therefore, this code is included as well.

I.0.3. Frequency of grounding cooperation

Within cooperation, several codes are mentioned twice in the semi-structured interviews, but still taken into account. The *arrangement of (in-) formal strategic meetings* is a strengthening factor in the relationship between transport- and spatial planning in the Oeververbindingen Rotterdam. This proves the importance of this factor. Also, *generating and applying similar technical models* were mentioned as a strengthening factor in both cases, which led to inclusion of this factor. Lastly, a *base of trust in management groups* is a more general strengthening factor, but can complement transparency and showing boundaries of administrators. Due to its added value within integration, this factor was taken into account.

I.0.4. Frequency of grounding manageability

Within manageability, the code of *acceleration in decision-making* was mentioned once in an interview. However, due to the trade-off made between this code and *maintaining quality of decision-information in the MIRT-process*, the code is considered as relevant. Also, *establishing long-term visions, including the other policy domain than initially focused on*, is explicitly mentioned twice. However, in various other interviews, this code emerged implicitly. Therefore, its relevance is broader than direct grounding in the interviews. Lastly, *certainty on the establishment and adaptability of infrastructure* was mentioned twice, but partly relates to *adaptive programming* within coordination. Therefore, this code adds value to other integration codes in the research.