



# The Dutch Mobiliteitsfonds: evolution or revolution in infrastructure planning?

A study to determine the impact of the establishment of the Mobiliteitsfonds on adaptive planning and future-proof planning

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## Acknowledgements

Dear reader,

This thesis is the result of half a year of dedication and is the final piece of my Master Urban Governance at Erasmus University and thus my time as a student. During those five years, I have learned a lot, both personal and educational.

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Dear reader, enjoy reading my thesis!

Simon de Crom

## Summary

In infrastructure planning, uncertainties are emerging, and the environment is becoming increasingly complex. This requires an adaptive government that can deal with new challenges. For this reason, the Dutch government will replace the Infrastructuurfonds (Infrastructure fund) with the Mobiliteitsfonds (Mobility fund). A change in funds to be more flexible, collaborative, and innovative. The current Infrastructuurfonds focuses on expanding capacity and there is to a lesser extent room for adaptive planning. For this reason, this study analyses the impact of the Infrastructuurfonds with the Mobiliteitsfonds and determines to what extent adaptive planning can contribute to a more future-proof mobility planning. Adaptive planning is to be able to deal with changing circumstances during a process without limiting future options.

This thesis examines two roadway trajectories that both show to some extent characteristics of adaptive planning. With interviews and documents analysis is analysed to what extent it can be expected that the Mobiliteitsfonds will lead to more adaptive planning, contributing to a more future-proof mobility planning in the Netherlands. It is determined how the Mobiliteitsfonds can enhance adaptive capacity, what current challenges are in mobility planning and how adaptive planning is expected to alleviate those challenges and to what extent the Mobiliteitsfonds can meet the conditions for future-proof mobility planning.

The interviews stress the importance of clear goals and giving residents clarity as soon as possible. For this reason, it is argued, it is impossible to be entirely adaptive. Yet, it is argued, to some extent adaptivity is already possible. However, evaluation, a focus on learning and experimenting could improve to be more adaptive. The main contribution of the Mobiliteitsfonds to adaptive planning is that the Mobiliteitsfonds will promote an integral consideration of possible solutions and modalities. Possibly, the experienced bulkheads between modalities are removed and one will consider other solutions than infrastructure solely. In this way, the Mobiliteitsfonds will contribute to a more future-proof planning practice, but not just the Mobiliteitsfonds can facilitate the shift towards future-proof planning. Thus, the Mobiliteitsfonds is considered to be the confirmation of a movement that has already been deployed. It is an evolution instead of the revolution I expected.

Therefore, it is recommended that professionals show the possibilities of adaptive planning. Adaptive planning has a lot to offer, but one should know the possibilities. The possibilities are not always known amongst stakeholders. One of the manners to show the possibilities of adaptive planning is to conduct experiments. Regarding infrastructure and mobility planning, much is to be gained in conducting experiments.

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# 1. Introduction

Mobility technology is developing rapidly, and sustainability is becoming more and more critical. This has implications for the way we move, and we require updated infrastructure to deal with those changes (Heineke, Menard, Sodergren and Wrulich, 2019). In addition, uncertainties are emerging, and the complexity of society is increasing. It is necessary to move along the societal demand and create room for new infrastructure and mobility developments (Smart Mobility for example) and changing perspectives on mobility and infrastructure (Leerplatform MIRT, 2019). This requires a more adaptive capacity of the Dutch government. Mobility needs to be made future proof. For this reason, Buijs and Edelenbos (2012) argue that a more dynamic view of planning needs to be developed. This implies that a static government cannot solve the challenges we face. We need a dynamic, adaptive, and innovative government that can address the challenges and can implement innovative forms of transport. In a more dynamic view, complexity could be better addressed. They argue that a more 'adaptive development path' could contribute to achieving goals.

## 1.1 The Dutch case: towards the Mobiliteitsfonds

Corresponding with this view, the Dutch government will replace the Infrastructuurfonds (Infrastructure fund) with the Mobiliteitsfonds (Mobility fund). Both are parts of the national budget from which national roads, rail and water projects are paid. The rationale for this substitution is that the Mobiliteitsfonds should allow governments to be more flexible, collaborative, and innovative. It is an interesting shift from a focus on infrastructure to more grip to enhance mobility measures. Mobility is the functionality of transport, accessibility, and connectivity. Infrastructure is one of the means to provide in mobility (Leendertse, 2020). This requires an adaptive approach. According to the most recent review of the MIRT playing games, adaptive programming is considered difficult in practice (RoyalHaskoning, 2019). The intention is that the Mobiliteitsfonds will enhance adaptive capacity. The idea is that the legislation will come into force on January 1<sup>st</sup>, 2021. Interestingly, the intended year of implementation was 2030. This early implementation underlines the relevance of the change of fund (Letter of government, 13-05-2019).

Currently, infrastructure and mobility programs are funded by the Infrastructuurfonds and bundled in the MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport; multi-annual programme Infrastructure, Spatiality and Transport). The MIRT exists of projects and programs in which the national government works together with regional governments on infrastructure in the Netherlands. Besides regional governments, other stakeholders such as provinces, municipalities, transport regions, water authorities, civic organizations and companies are involved in the MIRT. According to the Ministry of Infrastructure and Water

Management (2016), these stakeholders work together to develop the competitiveness, accessibility and liveability in the Netherlands. Sustainable, ecological, societal and corporate responsible investments are the aim of the parties within MIRT, utilizing the strengths of the different parties. The MIRT embraces the whole process, from determining the statement to the realization, from organizing to financing. Till 2034, investments funded by the Infrastructuurfonds have already been appointed to projects through the MIRT.

The national government wants to utilize the existing infrastructure more efficiently and apply smart mobility (Letter of Government, 21-11-2016). Besides, more and more parties are involved in planning and interests are conflicting. This increased complexity requires flexibility and adaptive capacity and that is one of the reasons for the establishment of the Mobiliteitsfonds. Another reason is a more legal argument (Letter of Government, 21-11-2016). The legal scope of the Infrastructuurfonds compromises the resolving power of the MIRT. In the current situation the development of Infrastructure is the scope. Alternative solutions, such as the better use of infrastructure or mobility solutions are not possible directly from the Infrastructuurfonds. Finally, the Mobiliteitsfonds should allow policymakers to cope with essential challenges, such as the expected rise of mobility in urban areas and technological developments. Technologies emerge rapidly so mobility planning has to respond. Adaptive programming is one of the manners of how the Mobiliteitsfonds can allow us to cope with these essential challenges (Leerplatform MIRT, 2019).

The establishment of the Mobiliteitsfonds will have policy implications. According to the Minister of Infrastructure and Water Management (2018) governmental organisations will have to change its structure and the Mobiliteitsfonds will require more flexible governance and division of budgets. For this reason, two cases are selected that currently show, to some extent, characteristics of adaptive planning. Those cases show possibly that adaptive planning is already possible. Moreover, it can be assumed that the implementation of more flexible governance can cause changes for the usage of instruments such as the NMCA (National Market and Capacity Analysis) and the sieve method. These instruments are designed to plan long term. In contrast, adaptive planning requires moving along with developments instead of pretending that the future is already poured into concrete (Leerplatform MIRT, 2019). For this reason, the expected functioning of two instruments that may contradict adaptive ambitions is analysed.

The NMCA (National Market and Capacity Analysis) maps potential developments for the upcoming 20-25 years (Letter of Government, 01-05-2017). These include the development of self-driving cars, more people working at home, increasing popularity of the e-bike, etc. However, long-term projects often include uncertainties that cannot be influenced (KiM, 2017). Long-term projects can become obsolete over time and can have a restrictive effect on flexibility in decision-making (IBO, 2016). Adaptive planning is considered to be an



answer to those uncertainties (Kim, 2017). However, a question one could ask is how this will influence the instrumentation and how adaptive planning relates to this long-term measurement. In a letter of government (13-05-2019), the responsible ministers mention that they are exploring how the various instruments can be supplemented or changed. They aim to consider mobility measures more integrally, so this will change the instruments and measurement principles. At this moment, during the MIRT-exploration, several instruments are used.

The sieve method, also called the funnel approach, considers all possible solutions and funnels from a wide variety of solutions into just a few solutions. This is called the analysis phases and the aim is to funnel from all possible solutions to the promising alternatives to address the problems. This is an instrument to weigh up all the solutions from the analytical phase (sieve 0 and 1) to judgement phase (sieve 2). Eventually, the consideration of all the solutions leads to a preference decision (Ministry of Infrastructure and Climate, 2019). This approach can be conflicting with an adaptive approach, wherein possible solutions are kept open during the process and the decision-making process is more flexible. Will these methods have to change, reviewed or can these methods continue to play an important role in the planning process?

## **1.2 Problem statement**

With the current design, where infrastructure projects within the MIRT (mostly road widenings) are being funded by the Infrastructuurfonds are focused on the expansion of capacity and there is to a lesser extent room for flexibility and adaptiveness. The Infrastructuurfonds compromises the resolving power of the MIRT. The Mobiliteitsfonds aims to provide handles for adaptive capacity and flexibility to become future proof (Letter of Government, 13-05-2019). Consequently, mobility planning in the Netherlands will change and adaptive planning is one of the expected features that can enhance adaptive capacity. The question is what will change and how these changes will contribute to a more future-proof infrastructure and mobility planning. Hence, adaptive planning itself is not the aim of the replacement, the aim is to provide handles for future proof mobility planning and to be able to move along with changing societal circumstances. Therefore, this research will investigate to what extent professionals expect the Mobiliteitsfonds will enable adaptive planning and whether the Mobiliteitsfonds can contribute to future-proof mobility planning.

## **1.3 Research objective and question**

This research aims to analyse the impact of the substitution of the Infrastructuurfonds with the Mobiliteitsfonds and determine to what extent adaptive planning can contribute to a more future-proof mobility planning. This research will explore the differences between the

Infrastructuurfonds and the Mobiliteitsfonds, practical and theoretical. This research will evaluate the literature on adaptive planning and forecast to what extent to which the Mobiliteitsfonds can allow adoptive planning to be implemented. Moreover, this research will determine whether adaptive planning will lead to a more future-proof mobility planning since future-proof planning the aim of the Mobiliteitsfonds is. This objective has led to the following research question:

*To what extent can it be expected that the establishment of the Mobiliteitsfonds will lead to more adaptive planning, contributing to a more future-proof mobility planning in the Netherlands?*

The theoretical framework will explore the theoretical body on key principles of this research's critical principles, such as adaptive planning and future-proof mobility planning. The theoretical framework combined with the analysis (based on interviews and document analysis) will answer this research question. For the analysis, four sub questions have been formulated. The first question is a combination of theoretical and empirical insights. The remaining three questions are all empirical.

- To what extent can the Infrastructuurfonds and the Mobiliteitsfonds be connected to theoretical concepts regarding planning?
- How can the Mobiliteitsfonds enhance adaptive capacity, therefore affecting methods, instrumentation, and procedures?
- What are current challenges that occur in mobility planning and how is adaptive planning expected to alleviate those challenges?
- To what extent will the Mobiliteitsfonds meet the conditions for future-proof mobility planning?

#### **1.4 Societal relevance**

The societal relevance of this research is twofold. It can give insights in public investment and contribute to more sustainable transport. Firstly, investments in infrastructure and mobility are large amounts of public money. The MIRT and the adaptive capacity of the MIRT and what the consequences of this fund are. It is precise because of the large amount of public investment that it must be determined whether this money is being spent in a useful way. This research can provide insights into how public money should be spent.

In addition, one of the objectives of the Mobiliteitsfonds is to be able to use existing modalities more efficiently, in part to facilitate more sustainable (future-proof) forms of mobility (Letter of Government, 13-05-2019). If the Mobiliteitsfonds can contribute to the further implementation of, for example, Smart Mobility, it is possible that people can transport themselves more sustainably. In today's society there is increasing pressure on the living environment and sustainability is becoming increasingly important. A study into the implementation of a fund that could (also) make sustainable transport possible is therefore relevant.

### **1.5 Scientific relevance**

The scientific relevance of this research will focus on adaptive planning. It is argued that there is little experience with adaptive planning and programming and the application of adaptive programming in practice (Leerplatform MIRT, 2019), while uncertainty and complexity in planning is increasing (Rauws, 2017). Adaptive planning may be an answer to these uncertainties (Giezen, 2013; de Roo and Porter 2007). Adaptive management is an established and widespread managerial style in natural resource and ecosystem management, but to a lesser extent in, for example, infrastructure planning (Kato and Ahern (2007)). However, the increasing complexity makes infrastructure and mobility planning less controllable in a traditional way, requiring adaptive planning (Leendertse, 2020). As professor Leendertse questions in his inauguration speech: how to organise adaptive infrastructure planning?

This research can contribute to this gap with by analysing a concrete and topical attempt to make infrastructure planning more adaptive (the transformation towards the Mobiliteitsfonds). Yet, the conclusions of this research could exceed infrastructure planning. The call for adaptive management is gaining momentum (Mettau and Hulsboom, 2018). Also, in other theoretical bodies focusing on climate, technology and energy. Hence, this study can explore the potential of adaptive planning in an area in which it is little researched, contributing to the literature gap in infrastructure planning and exploring potential opportunities for research in fields such as climate, technology and energy.

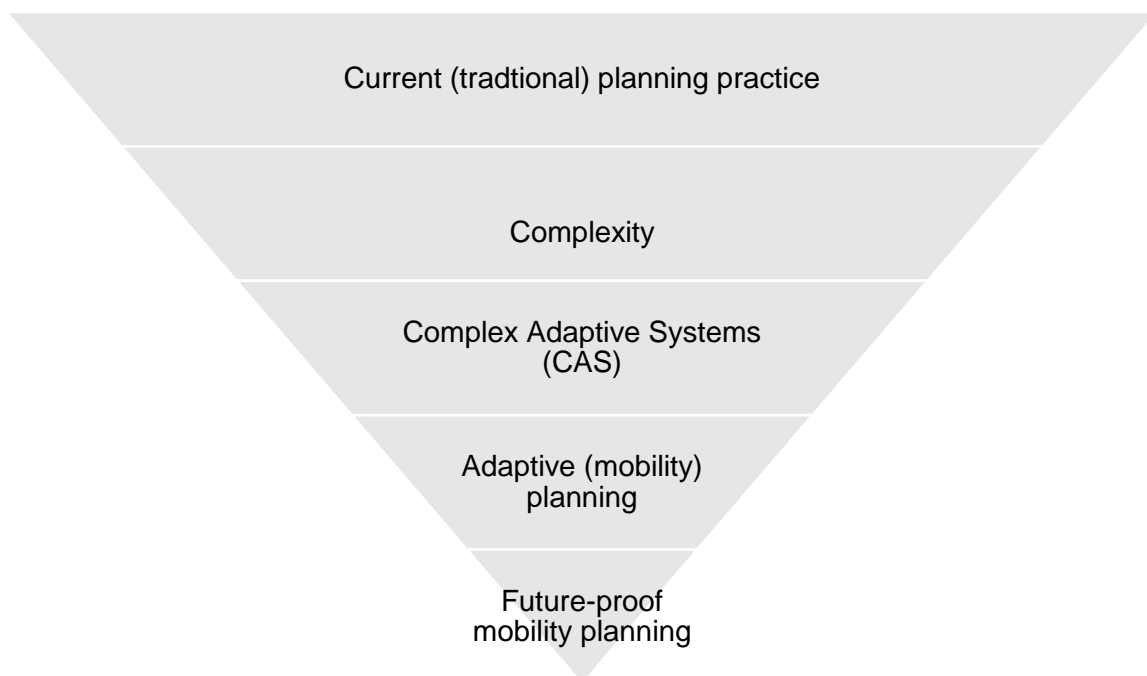
### **1.6 Structure of the thesis**

This thesis consists of a theoretical and an empirical part. The following chapter, the theoretical part of this thesis, will explore the theoretical debate about adaptive planning and investigate how future-proof mobility planning is being described. Chapter three discusses and reflects upon the methodology, elaborating on the chosen research design, data collection and data analysis. Chapter four describes the case and the context of the case. This is followed by the results from the empirical part, showing the findings out of the interviews and document analysis. The conclusion will summarize an answer to both the sub questions and

the research question. Finally, in chapter seven, there is room for reflection and discussion. This part will reflect upon the execution and implications of this research. In addition, recommendations will be given.

## 2. Theoretical Framework

This theoretical framework will elaborate on the key concepts for this research. The elaboration will start broadly, describing the current planning practice in the Netherlands and work towards a more detailed literature analysis of the relevant theoretical body. A short overview of complexity will be given, elaborating on Complex Adaptive Systems and complexity in infrastructure planning. The conditions and added value of adaptive planning will be discussed and concretised in mobility planning. The final remarks are on future-proof mobility planning. This theoretical framework can be seen as a “funnel”, starting broad working towards a more detailed level of description. Figure 1 shows the approach of the frameworks and how the concepts relate to each other. It is argued that when planning can meet complexity and when this happens, Complex Adaptive Systems (CAS) can evolve. When a system is complex and adaptive, adaptive (mobility) planning arises, setting the possible framework for future proof mobility planning.



*Figure 1: schematic overview of the relating concepts*

### 2.1 Planning practice in the Netherlands

De Roo and Porter (2007) provide an overview of the planning systems dominant in Western-Europe after World War II. They start with rational planning or technical-rational planning. Technical-rational planning is technical, procedural, instrumental, and functional. Especially after WWII, this approach was top-down and hierarchical. This approach assumes full knowledge of cause-effect and predictable results with blueprints as the cornerstone of

planning (Verhees, 2013). Accordingly, a clear roadmap is constructed, and the planning process had to be followed. Academic knowledge is the basis of technical-rational planning. “Surveying it, mapping it and capturing it and then on that basis you proceed” (Lennon, 2015, p. 964). However, criticism grew on the technical-rational planning. The technical-rational model assumes a strict separation of rationality and power, but it is argued (Verhees, 2013) that relationships between rationality and power exist. Technical-rational planning used to be the dominant planning practice in the Netherlands, but the decision-making process was too rigid, slow and viscous (Arts, 2007). For this reason, a committee “rapid decision-making infrastructure” (commissie Elverding) was appointed. This committee recommended emphasizing the exploration phase (“exploration new style”). In this new exploration, a wide variety of stakeholders is involved. This committee opted for less administrative bustle (red tape). According to Arts (2007), the Dutch planning practice should move away from technical-rational planning. Diversity is necessary, and the planning approach will have to be precisely defined each time in its context. Arts argues that the growing complexity in infrastructure planning requires tailor-made solutions. More flexibility and adaptive capacity can be manners to develop tailor-made solutions. Flexibility and addressing uncertainties are crucial elements of adaptive planning. De Roo and Porter (2007) speak of responding to growing complexity, moving towards ‘fuzzy’ models of governance. All the ‘fuzzy’ models of governance are somehow interconnected. They are a response to the notion that the national government does not have the resources to control the physical environment in a manner that satisfies all stakeholders (p. 109). They argue that the degree of complexity should be a criterium to choose the mode of planning.

The notion of complexity influences the planning practice. There is a need to respond to complexity.

The Dutch planning system is considered a legislated rather than a political system, emphasizing protection and legal security. Development plans guide future development and there is a deep-rooted belief for consensus-building. This belief leads to comprehensive designs that are embodied in a formal development plan. This formal part limits the potential to negotiate the scope and substance of developments once a plan has been formulated and spatial dynamism may be hampered (Janssen-Jansen and Woltjer, 2010). Also, according to Arts (2007), in the Dutch system, the decision-making process costs the most time and leads to time paths of 10-20 years. According to the theoretical body on Dutch infrastructure planning, it can be described as long-term, slow, formal and belief in the consensus. Leendertse (2020) mentions a focus to master and control, resulting in less capacity to adapt

to new circumstances. The approach is reactive and defensive. Osborne (2019) characterises this as a 'hedging' strategy. They describe the hedging approach as classic project management: hardly any room for adjustments in the project scope, planning or budget in response to, for example, changes in the environment or technology. Tight frameworks for both money and time (long term), a narrow scope and the classical legal instruments. This classic project management approach can be outdated (IBO, 2016) and requires adaptive planning (Leendertse, 2020) when complexity rises. This theoretical framework will work towards a comprehensive understanding of adaptive planning.

In the literature, the Dutch planning system is characterized as long-term, slow, and formal ("long term project management").

## 2.2 Complexity

As argued above, planning can meet complexity. According to Simon (1962) a complex system is a system made up of many parts that have many interactions (Simon, 1996). In accordance, Thomson (1967) described a complex organization as a set of interdependent parts, that make up a whole that is interdependent with some broader environment. One of the characteristics of complex systems is nonlinearity. Nonlinearity implies that small changes can have significant effects on the system (Anderson, 1999). The reason for this nonlinearity is feedback loops. Components of a complex system interact with each other via a complicated web of feedback loops.

These characteristics make complex systems hard to predict. The patterns that emerge in complex systems are hard to discover and describe (Verhees, 2013). Complex systems move between order and chaos or randomness and this what makes complex systems adaptive.

The OECD (2017) concludes that complexity is becoming more common in a growing number of policy issues. They emphasize the role of technological developments as a catalysator of complexity. It is stressed that the key to complexity is the insight that policies can't be controlled: "*systems are prone to surprising, large-scale, seeming uncontrollable, behaviour*" (p. 15-16). They mention "promoting adaptability" as one of the most important manners to deal with complexity. This vision is shared with amongst others Johnson (2009), who states that a certain level of flexibility is required to adapt to the unexpected (Johnson, 2009). This notion of flexibility is underlined by Klijn (2008), who states that a system is constant on the move, "*riding the fitness landscape.*" Moreover, he argues, complexity implies that systems cannot be managed. Instead, the manager should adapt. This brings us to Complex Adaptive Systems (CAS) and the first notion of adaptive capacity.

### 2.2.1 COMPLEX ADAPTIVE SYSTEMS

A part of the complexity literature focuses on Complex Adaptive Systems. Complex Adaptive Systems can be characterised by the notion that actors operating in these systems focus on the improvement of performance and outcomes (Verhees, 2013).

Complex Adaptive Systems focus on the improvement of performance and outcomes.

Anderson (1999) states that complex adaptive systems emphasize structuring systems that can implement adaptive solutions quickly. He points out that there is no widely accepted definition or paradigm of complex adaptive systems. Still, four key elements of CAS's can be abstracted from the literature: agents with schemata, self-organizing networks sustained by importing energy, coevolution on the edge of chaos and recombination and system evolution. The element agents with schemata emphasizes the crucial role of agents in a system. Complex adaptive system theory examines the behaviour of agents in a system and questions how variations in the decisions of agents or the interconnections among agents influence the outcomes (Anderson, 1999). In CAS models, agents follow a set of rules but are not necessarily prisoned in those rules. Schemata is the terminology of "images of the environment that attempt to capture its salient complexity" (Simon, 1996). When the circumstances become more uncertain, problem-solving requires responses based on those schemata. A system becomes a complex adaptive system when environmental regularities condense into schemata.

Second, self-organizing networks sustained by importing energy enhances the self-organization of actors. Self-organization means that patterns can emerge without a central controller influencing the process (Anderson, 1999). This is interesting since in a technical-rational planning approach, the government is the central planner. This would underline the notion that the technical-rational approach not appropriate is for complexity thinking. However, self-organization can only occur in open systems that import energy from the outside. For order to arise in a complex adaptive system, the agents or components within the system should be partial, not fully connected. For that matter, complex adaptive systems should not be completely hierarchical. In addition, it is argued (Rauws, de Roo and Zhang, 2016) that self-organisation has a key role in spatial development processes and can support planners to address a changing world.



Third, agents coevolve with each other due to changing behaviour among agents. They evolve to the edge of chaos, but still according to a power law. It is argued that a system must improve outcomes to accept significant changes.

Recombination and system evolution is the last characteristic of Complex Adaptive Systems. CAS's consist of other CAS's, which are also subject to the evolutionary process. Each component of a CAS can change, extinct, appear or evolve. Moreover, CAS's can evolve when new components, such as new agents, are introduced (Anderson 1999).

Complex Adaptive Systems consist of four key elements: agents with schemata, self-organizing networks sustained by importing energy, coevolution on the edge of chaos and recombination and system evolution.

Due to these four characteristics, complex systems can be Complex Adaptive Systems. Especially agents and interacting agents can make complex systems Complex Adaptive Systems. Following Anderson (1999), Axelrod and Cohen (2000) argue that agents in Complex Adaptive Systems use their strategies in patterned interaction. Moreover, the lack of central control is considered necessary in Complex Adaptive Systems (Johnson, 2009). The agents in complex adaptive systems should be able to adapt to new conditions and improve over time in relation to the environment in which the agent operates in (Oughton, Usher, Tyler, and Hall, 2018).

In this research, complexity and Complex Adaptive Systems are considered as phenomena triggering adaptive planning. Adaptive planning becomes relevant when complexity has emerged. A complex system can become a CAS when it fulfils those above-listed elements. Adaptive planning is seen an answer to growing complexity. This study assumes that, based on the theoretical body elaborated on below, that infrastructure and mobility planning complex is. For this reason, adaptive planning is operationalised and empirically researched, complexity solely theoretically explored.

#### 2.2.2. COMPLEXITY IN MOBILITY PLANNING

It is argued that (infrastructure) planning must cope with complexity. Already in 1972, Rittel stated that planning problems are wicked problems. Verhees (2013) adds to this notion that planning changes fundamentally when it is considered a part of complex adaptive systems (p. 13). Struiksma, Tillema and Arts (2008) state that the transport infrastructure planning is complex due to the fast growth of mobility in modern society. The dilemma is the misbalance between expanding infrastructure and a healthy, sustainable environment. Nooteboom (2006)

emphasizes the connection between large scale and small-scale. This is what he calls “the connection between individual versus the whole system (p. 237)”. Subsystems, which can be individuals, interact with each other. Interestingly, he mentions mobility systems as an example, where infrastructure managers, commuters and goods producers interact with the system, such as the government, civil society, science, and corporates. Leendertse, Aarts, Busscher and Verhees (2016) argue that the domain of planning (infrastructure and spatiality) a complex system is and Oughton, Usher, Tyler, and Hall (2018) argue that planning is a Complex Adaptive System. The planner is seen as an actor in a complex system with many uncertainties. Oughton et al., (2018) apply key characteristics of a complex adaptive system on the working of infrastructure systems and conclude that this infrastructure system is a complex system.

Interestingly, Boelens (2015) crystallises planning complexity into mobility and describes why mobility is a complex adaptive system. He argues that mobility can be regarded as a complex adaptive system within the greater system of society. The way mobility is executed depends on possible means, finance, personal convictions, etc. Thus, mobility adapts itself to external possibilities and internal considerations (p. 194). Additionally, mobility meets complexity due to various volatile and changing features that influence each other in growing diversity. Examining mobility requires understanding the reciprocal interactions among complex features such as technological innovation, health, pollution, lifestyle, socio-cultural trends, etc. These increasing complexities require adaptive planning (p. 199). Macmillan (2013) concludes correspondingly: *actions of actors in mobility systems are prone to change since the change itself, leading to pronounced degrees of systematic emergence and unpredictability* (p. 203). According to him, current ways of viewing mobility fail to make improvements in mobility systems. He pleads for a more comprehensive view on mobility, sensitive to the dynamic interplay of various actors. Adaptive planning may be a solution.

Mobility planning meets complexity and can be characterized as a complex adaptive system.

The notion of mobility planning as a CAS reflects the potential for adaptive planning. The following paragraph will elaborate on adaptive planning.

### **2.3 Adaptive planning**

This paragraph will describe what adaptive planning is, after which the role of adaptive planning in the mobility sector can be described. Planning can be defined as “allocation and regulation of land use in a certain area to maximize functional performance and minimize

negative effects serving a collective ambition of quality set by the community” (Leendertse, 2020, p. 37).

At first, adaptive planning focused on complicated ecological or biological modelling techniques. Early proponents of adaptive planning ‘borrowed’ their insights from more exact science (Holling 1978; Gunderson et al., 1995), arguing that humans do not have enough knowledge to manage ecosystems. The insight that the ability to predict future key drivers influencing an ecosystem inherently limited is, is vital for the notion of adaptive management (Pahl- Wostl, 2007). The first definitions of adaptive management included implementation of policies as experiments (Lee, 1999), to probe the responses of systems when human behaviour changes. This reasoning is still dominant in the literature on adaptive planning, only now has learning become more dominant, instead of doing experiments. Learning is a consequence of doing experiments, but not all learning capacity arrives from doing experiments solely. In addition, Lee (1999) argues that one could never know enough. Therefore, the most critical policies must be tested rigorously and early. Nowadays, it is not the experimenting (Pahl-Wostl, 2007) that has a central role in adaptive management; it is learning. Learning capacity is a crucial characteristic of adaptive management.

The capacity to learn is key to adaptive planning. Doing experiments is a method to learn.
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According to Pahl- Wostl (2007), adaptive management refers to

*“a systematic process for continually improving management policies and practices by learning from the outcomes of implemented management strategies” (p. 52).*

Hence, the main target of adaptive management is to increase the adaptive capacity of the system. However, this definition still does not state what adaptive capacity is. According to Folke et al., (2002), adaptive capacity is the ability of a system to cope with innovation without limiting future options. It aims to cope with changes and adaptive management requires continuous monitoring, evaluation, policy adjustment. In addition, for adaptive management to flourish, one should acknowledge that failure occurs- and offers new learning opportunities. Nooteboom (2006) pleads that especially trust necessary is to create adaptivity. In addition, one his book’s conclusions is that collaboration between policymakers has led to an adaptive network, which reached a breakthrough in thinking about sustainable mobility: *“not a single person or organisation can manage sustainable changes on its own”*. This requires a joint effort (p. 233). Moreover, he argues, joint vision is of key importance in adaptive networks. Folke et al., (2005) add that adaptive management requires networks, polycentric governance, and collaboration. Besides these features, Kato and Ahern (2007) move towards adaptive planning and add that under an adaptive planning approach, various uncertainties can inform

adaptive hypotheses, guiding planning and monitoring actions. Moreover, to deal with complexities in adaptive planning, planners should develop an interdisciplinary approach, helping them create the necessary cooperation and sharing of ideas amongst stakeholders. Finally, Kato and Ahern conclude, one should learn by doing, and conducting several plans or experiments at once can boost fast learning.

However, these characteristics are not the only essential aspects of adaptive planning. In his dissertation, Verhees (2013, p. 71) elaborates on the importance of feedback loops in adaptive planning. He argues that feedback plays a role when there is a need to learn from the past or others. This necessity only arises when there is competition for a limited amount of resources (which is the case regarding traffic, mobility, and infrastructure in the Netherlands; space is scarce). Due to this scarce, selection of actors or strategies grows. The actors who perform, learn, and adapt, survive. Axelrod and Cohen (as defined by Leendertse, 2020, p. 40) consider adaptability as a process of creating variation initiated by a change in the context of the system, selecting a variant that matches the change (fit) and the implementation of the variant in the processes of the system (retention). The creation of variation and the capability to create variation are vital characteristics of adaptability. According to Leendertse (2020), variation is necessary to be able to react to changing circumstances. Axelrod and Cohen (2000) mention the importance of a balanced number of variants and emphasize variation. They argue that a system should not implement variant after variant, but a system should not converge too quickly to a choice cast in concrete. Additionally, emphasize Axelrod and Cohen (2000) the importance of selection and how selection may lead to adaptive planning. According to them, only after a long term does it become clear which alternative is most suitable, the 'fittest'. They plead for more short-term criteria and application of solutions or alternatives, so that the chosen alternative a correct reflection is of the long-term goals, keeping the long-term performance in mind. Hence, effective methods for the selection of the right actions and alternatives are fundamental. Verhees (2013) stresses the importance of competition. According to him, competition is the catalysator for the selection of actors or strategies. Those actors that perform best, learn best and adapt "survive".

Moreover, Kato and Ahern (2007) mention collaboration as a key characteristic of adaptive planning. Folke et al., (2005) confirm this statement: "collaboration is at the heart of adaptive governance" (p. 636). Collaboration may lead to engagement and interaction, leading to a possible new value and mutual learning.

Adaptive planning is not only a matter of doing experiments to learn, conducting plans, or experiments for fast learning, monitoring, and learning by doing, but internal process management is an added key feature. Collaboration and a joint vision are of key importance for adaptive planning. Moreover, the creation of variation, the capability to create variation and selection are vital aspects of adaptive planning.

These conditions can contribute to reaching the added value of adaptive planning. The added value of adaptive planning is fourfold (Stratelligence decision support, 2017):

1. Less risk of overinvestment by taking uncertainties into account, possibilities to optimize over time and to build more flexibility.
2. More opportunities to improve functionality and find innovative by the broader scope and the search for linkage opportunities.
3. Better substantiation of decision-making through more and better decision information.
4. More effective cooperation between parties due to the shared ambition and the ambition to find a preferred strategy together.

Now we have set the conditions for adaptive planning and the proposed added value, we can go more in debt on adaptive mobility planning.

## **2.4 Adaptive mobility planning**

As mentioned in the introduction, mobility is the functionality of transport, accessibility, and connectivity. Infrastructure is one of the means to provide in mobility (Leendertse, 2020).

It is argued adaptive planning can contribute in the fight against climate change. Since infrastructure planning and mobility can greatly influence climate change, it is important to take this stance into consideration. Pahl-Wostl (2006) argues for example that management should be made more flexible and adaptive to make it operational under fast changing climate change. Addressing climate change is one reason for the emergence of smart mobility. Being able to implement smart mobility is one of the reasons for the establishment of the Mobiliteitsfonds (Letter of Government, 21-11-2016).

Struiksma, Tillema and Arts (2008) state in their publication on room for mobility that more infrastructure does not help congestion problems and argue that new approaches are desirable. Involved actors need to be involved more in the planning process and adaptive planning should be applied to plan mobility future-proof. According to research institute Blueconomy (2014), adaptive mobility planning can contribute to utilizing opportunities in the field of technological developments. They give the self-driving car as an example of opportunities that can be utilised when using adaptive planning. Besides the technical aspect,

new business models and actors emerge, and new mobility cultures are developing. This requires adaptive planning (Boelens, Lauwers and Witlox, 2015).

In his recent (2020) inaugural speech (personal communication, not published yet), Leendertse elaborates on the differences between infrastructure and mobility. In the Netherlands, infrastructure planning occurs according to a sectoral and project-based approach (Heeres, 2017). Future demand for mobility is predicted, bottlenecks in the existing networks are determined and after that, projects that should resolve those bottlenecks are defined. This means that projects after definition are considered not to be in direct connection with their environment. Due to this approach, the chance of added value for the bigger network and the environment can be lost. According to Leendertse (2020), projects cannot be viewed separately from their environment. However, he argues, due to societal developments, projects affect its environment more and more (for example the nitrogen crisis in the Netherlands). Moreover, the environment affects mobility networks increasingly. These developments ensure that projects cannot be considered on it and cannot be managed as an individual case. For this reason, infrastructure development should be managed in accordance with its environment. This is where adaptive planning comes in. Possible effects of the changing environments and developments such as smart mobility can then be curbed instead of controlled in advance.

Adaptive planning is necessary to make mobility-planning future proof.
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This statement is underlined by Zuidema and Woltjer (2011) who argue that the contextual factors surrounding planning (societal developments, sustainability, technological innovation) become increasingly important. These factors cannot be taken into consideration when factors are captured early in the planning process. Accordingly (Osborne, 2019), planning requires more flexibility and adaptivity to be future proof.

## **2.5 Future-proof mobility planning**

Eventually, adaptive management is not the solution but a way to reach the solution. This is shown in the conceptual framework in paragraph 2.6. The Mobiliteitsfonds aims to improve the efficiency of costs so that mobility becomes central, instead of infrastructure (Letter of Government, 13-05-2019). This paragraph will explore the conditions for future-proof mobility planning.

Reardon and Mardsen (2018, p. 164) conclude in their book on (smart) mobility transitions that governments should meet three requirements to design their environment for future-proof

mobility. First, governments should clearly set out the policy objectives that they are seeking to achieve (road safety, congestion, etc.). The usage of innovation, such as Smart Mobility, should be about whether these innovations can contribute to delivering those outcomes.

Second, stakeholders should always reflect on what society would want, rather than what a small administrative elite wishes to. This statement is emphasized by Lindenau and Bohler-Baedeker (2014), who argue involving stakeholders and the public one of the fundamental requirements is for sustainable (future-proof) mobility planning. They mention the shift from top-down planning towards collaborative planning. May (2015) pleads for an approach wherein stakeholders are involved in the early phases of the process. This can lead to broad political support and strengthen the first requirement for future-proof mobility, namely clear goals, and a joint image of the policy objectives.

Third, the role of local, regional, and national governments in the infrastructure area should be re-imagined. This can be a significant change of events, but a new mix of systems may require a more radical re-think of how governments structure their approaches. This change would require decent network management. However, policy evaluations show that this can be a hard task for public organisations (May 2015). The role of the government as a central actor is likely to change. Banister (2008) mentions that an open and active involvement of all parties could be far more effective. Broad coalitions should be created to include all kinds of specialists and citizens and there must be some degree of willingness to change. These requirements could all fall in the scope of adaptive planning, but the empirical part of this research will elaborate on this notion.

## 2.6 Conceptual model

The conceptual model shows an overview of expectations that could be drawn after an analysis of the theory. The arrows indicate a relationship that could be examined. This research will determine to what extent the Infrastructuurfonds an example of is technical-rational planning and to what extend the Mobiliteitsfonds can be considered adaptive planning. Moreover, some conditions for adaptive planning arose from the theoretical study. It is argued that adaptive planning can emerge when one is doing experiments, learning, evaluating, collaborating, and developing a joint vision. This research will examine if those conditions are met in practice. Eventually, the expectation is that the Mobiliteitsfonds, consisting of adaptive planning, will lead to future proof mobility planning.

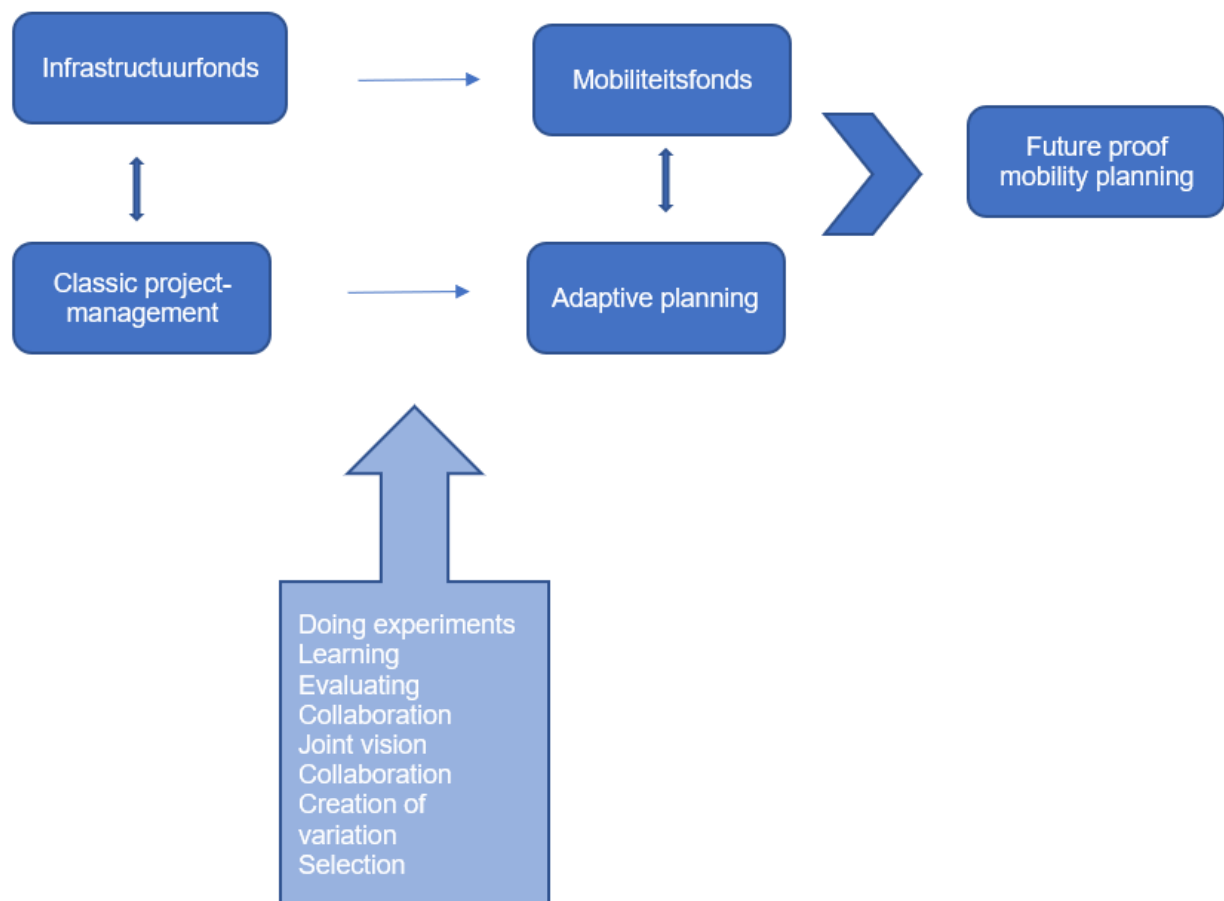


Figure 2: Conceptual framework



### 3. Methods

This methodological chapter elaborates on the made choices about the approach of this research.

#### 3.1 Research design

This research is qualitative. Due to this qualitative nature, meanings and visions play a critical role, so that perspectives, motifs, ideas, and feelings (Bryman, 2016, p. 401) on the expected consequences of the replacement of the Infrastructuurfonds with the Mobiliteitsfonds can be tracked down. These forms of social knowledge are the best to find out with respondent's insights (Bryman, 2016, p. 393). Moreover, the change of funding has not been implemented yet. Thus, it is vital to have the opportunity to ask about the feelings of respondents and expectations. Qualitative research allows the researcher to understand the context. Since the replacement has yet to be implemented, the context is of key importance to draw conclusions. In addition, adaptive management is about a process. According to Bryman (2016, p. 401), *“qualitative research is often depicted as attuned to the unfolding events over time and tot the interconnections between the actions of participants of social settings”*. Qualitative methods are an appropriate way to grasp subjective meanings of actions and processes. More importantly, qualitative research allows the exploration of new and unknowns issues. In this way, qualitative research will help to understand the process, even though the fund still must be implemented yet.

#### 3.2 Case selection

This research is a case study. A case study involves a detailed and intensive analysis of a specific case (Bryman, 2016, p. 60). A limited number of situations are explained in detail. More specifically, a cross-case analysis. A cross-case analysis examines themes, similarities, and differences across cases. Ultimately, a cross-case analysis provides opportunities to learn from different cases and gather critical evidence to modify policy (Khan and VanWynsberghe, 2008). This research focuses on the second stage of the MIRT-process, namely the MIRT-exploration (verkenning). Chapter four will elaborate more in debt on the functioning of MIRT-explorations.

During the exploration, stakeholders search for possible actions and measures to realise the task. A wide variety of stakeholders is involved, companies, civic organisation, citizens, and governments. Core of the exploration is the funnel process: from broad analysing, via an inventory of solution directions, to one governmental preference decision (Ministry of

Infrastructure and climate, 2016). In this funnel approach, critical decisions are made that influence the results of the process. Especially in this phase of the MIRT-process, the possible application of mobility solutions is considered, and decisions are made. For that reason, I have decided to research this stage of the MIRT-process. If, for example, adaptive planning will be applied, it is decided in the MIRT-exploration (Ministry of Infrastructure and climate, 2016). The establishment of the Mobiliteitsfonds can provide more handles in this phase to implement adaptive planning. This argument is confirmed by stakeholders, who mentioned that, especially in the exploration, more flexibility could be introduced (AT Osborne, 2019).

However, there are many examples of MIRT-explorations in the Netherlands and they would all entail to some extent different features of adaptive planning. The Mobiliteitsfonds aims to enhance adaptive planning and due to this, two cases have been selected that operate already according to adaptive standards. In this way, it can be determined to what extent adaptive planning can already emerge within the boundaries of the Infrastructuurfonds and where professionals expect that the Mobiliteitsfonds can provide more handles for adaptive planning. The two cases are two railroad projects: A2 Deil-Vught and A67 Leenderheide- Zaarderheiken. Those cases will be compared with each other, searching for similarities and differences.

### **3.3 Respondent selection**

The respondents are selected based on select sample, in this case the so-called *criterium sampling* (Bryman, 2016, p. 409). Criterium sampling means that the interviewer conducts interviews with respondents who meet specific criteria. The criteria were to be directly involved in one of the two cases or directly involved in the establishment of the Mobiliteitsfonds, mostly from national governments, enabling me to ask general about their expectations of the Mobiliteitsfonds. Generally, I spoke to case-specific respondents first, so that I was able to present those case specific insights to the more general respondents. I can present the adaptive characteristics from the cases to the general respondents, asking them to what extent they expect that those characteristics are case-specific or shown generally. Below, an overview of the respondents is listed. To guarantee anonymity, the organisations are not listed together with the function. The organisations that respondents worked for were the Ministry of Infrastructure and Water Management, Witteveen and Bos, a municipality, province Noord-Brabant and Limburg, AT Osborne, and the Directorate-General for Public Works and Water Management (Rijkswaterstaat).

Respondent	Case/ general	Function
R1	A2	Process manager
R2	A2	Project manager
R3	A2	Mobility manager
R4	A2	Environmental manager
R5	General	Policy advisor scenario analysis
R6	A2	Mobility strategist
R7	General	Policy advisor impact analysis
R8	General	Policy advisor environmental analysis
R9	A67	Environment manager
R10	A67	Project manager
R11	General	Former policy advisor/ professor
R12	A2	Impact analysis
R13	A67	Project manager
R14	A67	Environment manager
R15	General	Policy advisor mobility

*Table 1: respondents*

### 3.4 Gathering of data

A significant part of the data will be gathered by conducting interviews. In qualitative research design, interviews offer an appropriate to track down the interpretations, motifs, attitudes, and such from respondents (Bryman, 2016). These interviews were semi-structured. A semi-structured interview means that an interview guide is used, allowing me to structure the interviews. The topic guide derived from the theoretical study and operationalization. This interview guide is attached as appendix 1. Semi-structured interviews offer the possibility to deviate from a specific, pre-arranged order of questions. In this way, there is room to delve deeper into certain matters before moving on to one another topic. The possibility to continue asking questions based on answers from a respondent can enable the researcher to have a deeper understanding of the answers of a respondent (Bryman, 2016). Due to Covid-19, the interviews were held online via video calling. Using video calling instead of regular calling allowed me to capture non-verbal communication. According to Bryman (2016) the implications of non-face-to-face interviews are not significant and during this research, video calling has had no apparent negative effect.

Besides the interviews, a significant amount of data is gathered by document analysis (qualitative content analysis). Documents can provide insights into what methods are used during the exploration and what choices are made. In MIRT-explorations, these documents are an important instrument to keep stakeholders posted on the process. Hence, all the documents are public. The usage of documents means triangulation for this research; triangulation is the use of more than one method or source of data, so that findings may be

cross-checked (Bryman, 2016, p. 697). Moreover, triangulation can increase the reliability of the research. An overview of analysed documents is listed below.

<b>A2- Deil-Vught</b>	<b>A67 Leenderheiken - Zaarderheiken</b>	<b>General</b>
Startbeslissing MIRT-verkenning (DA2.1)	Governance Bereikbaarheid Zuid-Nederland (DA67.1)	Memorie van Toelichting wet Mobiliteitsfonds (DG1)
Notitie Reikwijdte en detailniveau (DA2.2)	Startbeslissing MIRT-verkenning (DA67.2)	IBO Flexibiliteit in de infrastructurele planning (DG2)
Verdiepende Longlist (DA2.3)	MIRT-verkenning Eindrapportage Uitwerking en Beoordeling Mogelijke Oplossingsrichtingen (DA67.3)	Studio Bereikbaar: Proeftuinen Mobiliteitsfonds (DG3)
Gebiedsbeschrijving en probleemanalyse (DA2.4)	Passende beoordeling voorkeursalternatief (DA67.4)	Kamerbrief Voortgang Vorming Mobiliteitsfonds (DG4)
Breed Mobiliteitspakket (DA2.5)	Structuurvisie (voorkeursalternatief) (DA67.5)	Kamerbrief vaststelling IF begroting 2020 (DG5)
	Notitie Reikwijdte en detailniveau (DA67.6)	
	Achtergrondinformatie (DA67.7)	

*Table 2: documents*

### 3.5 Data analysis

The dataset is processed in Atlas.ti to code the data. This means that the interviews are transcribed, which allowed me to analyse the data. In addition, with the transcribing and coding of interviews, the data were processed several more times, creating a better picture of the gathered data. Besides, transcripts increase the reliability of research (Bryman, 2016, p. 479). Coding can reduce the amount of data, selecting the relevant information. To code the data, the operationalisation was kept as the basis for the coding scheme, with some unexpected results added as a code. The coding scheme is attached as appendix 2. Additionally, the operationalisation is used as a table to fill in certain parts of interviews to see patterns- or differences- amongst the data and to be able to compare this with the operationalisation. In this way, the data is coded double, in Atlas.ti and 'on paper', using the operationalisation.

### 3.6 Validity and reliability

Validity consists of internal and external validity (van Thiel, 2007). Internal validity is about the question of whether the phenomenon you try to measure will reflect the conclusions. To ensure

this, I worked process-based, conducted all the interviews myself and operationalised the key concepts. Operationalisation can allow the researcher to measure theoretical concepts. External validity is about the extent to which results generalisable are. Especially in a case study, like this research, it can be a problem to guarantee generalisable results (Bryman 2014). In a quickly developing playing field, like mobility, the results would probably be different under other circumstances. In addition, political choices are important, and the responsible minister is likely to change after elections. One of the best ways to tackle the issues related to external validity is triangulation (van Thiel, 2007). Therefore, triangulation is applied for this research; policy documents are considered an important source of information. Moreover, to achieve external validity, a detailed description of the social setting is given. This allows others to judge whether the findings applicable are in different settings (van Thiel, 2007).

To ensure reliable research, this research analysed as many original documents as possible. Letters of government, official websites or other sources that derive from a ministry will be used. Moreover, the respondents are involved directly in the case, which can safeguard reliability. Another source of reliability in this research that a detailed description of the undertaken steps available is. The topic list and coding schema are attached, and this thesis is constructed in a way that all phases of the research process can be traced (Bryman, 2016). Finally, to all respondents is the aim and context of this research explained. Before starting the interview, all respondents were given the opportunity to ask questions, to clarify what the respondent is participating in. Moreover, the respondents were asked to agree on recording the conversation, process their data (anonymously) and make the findings public. All respondents agreed to these conditions by filling in the consent form in advance of the interview.

### 3.7 Operationalization

The operationalisation is the bridge between theory and practice. The concepts mentioned in the theoretical study are made measurable. The operationalisation will form the basis for the interview guide and allows the researcher to question the concepts. The operationalisation consists of the concepts, the given definitions and the indicators deriving from the definition or theoretical study. The variables enhance the societal elaboration and give possible anticipation on interview questions. In general, the operationalisation follows the structure of the important theoretical concepts derived from the (sub-)questions. The operationalisation forms the interview guide. The answers given to the interviews form (in combination with document analysis) the findings.

Concept	Definition	Variable	Indicator
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<b>Current infrastructure planning in the Netherlands</b>	The current state of infrastructure planning in the Netherlands, according to the functionality of the Infrastructuurfonds.	Term	Short/ long
		Speed	Slow/ fast
		Process	Formal/ informal
		Belief for consensus	Deep routed/ occasional
<b>Adaptive planning</b>	A systematic process for continually improving management policies and practices by learning from the outcomes of implemented management strategies	Policy implementation	As planned/ experimental
		Learning	By doing/ by experimenting
		Evaluation	Little/ often
		Vision on new policies	Joint/ individual
		Collaboration	Uniformity/ variation
		Variation	Balanced number of variants
		Selection	Mismatch/ match between chosen alternative and (chosen) goals
<b>Adaptive mobility planning</b>	Mobility projects cannot be viewed separately from its environment and cannot be considered as an individual case.	View on projects	Direct connection with environment/ considered an individual case
		Technological developments	Neglecting/ utilizing
<b>Future-proof mobility planning</b>	Governments should meet three requirements to design their environment for future-proof mobility.	Governments should have goals.	Vague/ clear
		Governments should reflect needs.	Individual needs/ societal needs
		The role of local, regional and national government in the transport arena.	Re-think/ as used

Table 3: operationalisation

## 4. Case description and context

The two cases and subjects of the case study will be elaborated on in this chapter. The subjects of this study are two MIRT-explorations, namely the A2 Deil- Vught and A67 Leenderheiken -Zaarderheiken. Hence, this chapter briefly elaborates on MIRT-explorations in general, where after a more detailed description of the two cases is given.

### 4.1 MIRT-explorations

The MIRT-exploration aims to develop a smart, sustainable and climate proof solution by researching the task broadly, concretising the objective and problem analysis and making a spatial consideration. Funding through the Infrastructuurfonds can be applied when the objectives meet the legal scope of the fund. Each year, the MIRT-explorations are weighted against each other and prioritised according to the available budgets of the involved automatically. During the exploration, a variety of possible solutions is weighed, and the problem-solving capacity of the alternatives is judged and eventually, with the preference decision, the minister will select (the combination of) the best alternative(s). The alternatives are judged in various themes, such as consequences for traffic, safety, environment, liveability, nature, landscape and culture history, soil, water, and climate adaptation.

The explorations that become plan elaborations end with a politically supported preference decision. The whole MIRT-process is displayed below:

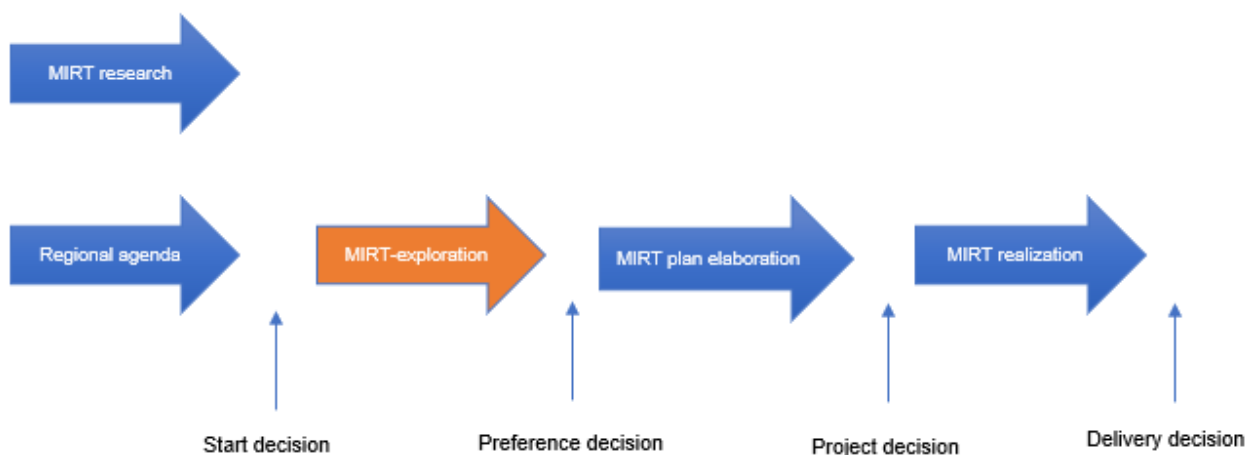


Figure 3:: MIRT-process. The exploration, subject of this research, coloured orange.

### 4.2 A2 Deil- Vught

The MIRT-exploration A2 Deil-Vught is still in process. In June 2018, minister van Nieuwenhuizen gave the start decision. That moment, the next MIRT-phase came into force: the MIRT-exploration. The NMCA labelled the A2 Deil-Vught as one of the biggest traffic

bottlenecks in the Netherlands. This has both economic consequences as road safety consequences and therefore, the trajectory had to be improved and the MIRT-exploration started. The five clients are the Ministry of Infrastructure and Water Management, Department of Waterways and Public Works (Rijkswaterstaat), the provinces Gelderland and Noord-Brabant, regio Rivierenland and municipality den Bosch. The route A2 Deil-Vught has a length of 33 kilometres and crosses 6 municipalities, 2 provinces and 3 water authorities. The A2 starts in Amsterdam and ends at the Belgium border. It is a vital traffic artery in the Netherlands (DA2.2).



Figure 4: Location of the A2 in the Netherlands, with the Deil-Vught trajectory marked. Source: WegenWiki.nl

A significant part of the MIRT-exploration is the analytical phase. The analysis phase aims to funnel from all possible solutions to the promising ones to tackle the problems on the A2 Deil-Vught. The process during the MIRT-exploration, in terms of alternatives, is shown below:



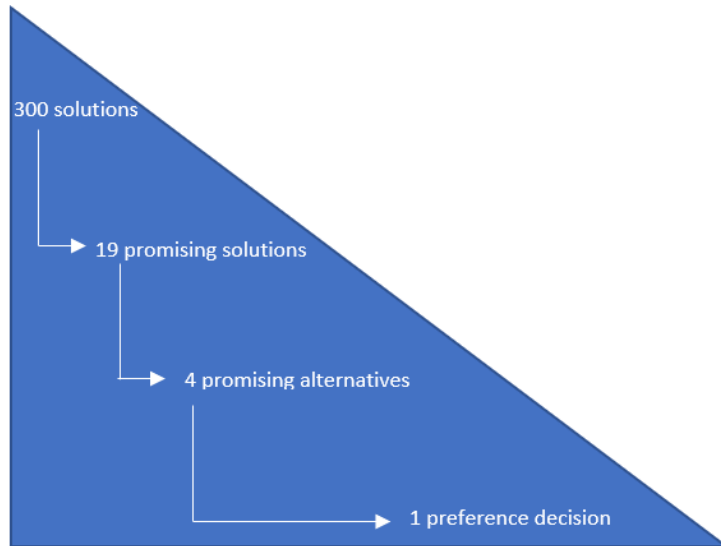


Figure 5: Sieve of solutions in A2 Deil-Vught exploration. Each arrow reflects one sieve. At the time of this research, the exploration was in the final arrow/ sieve. Figure adapted and translated from presentation Waardenburg 18-06-2020.

Ultimately, four promising alternatives have been selected:

- Alternative 0+: minimal extra asphalt. This alternative has a focus on better usage of existing modalities with a minimal construction of extra asphalt. This alternative is the most sustainable and circular. 0+ is the cheapest alternative.
- Alternative A: basis road widening. This alternative is a step more extensive than alternative 0+; it does add asphalt through by broadening the road between nodes Deil and Ampel.
- Alternative B: road widening +. This alternative is one step more extensive than alternative A. This alternative contains an extra measure on the ring road near den Bosch.
- Alternative C: maximum capacity. This is the alternative that adds maximal capacity to the A2. This alternative is the most expensive and can cause the most environmental damage.

Regardless of what alternative will be selected, each promising alternative will contain a package of additional measures, consisting of optimising node Deil, optimising of the various connections, better usage and demand control and Smart Mobility. The latter three additional measures are considered as one package of ‘smart and sustainable mobility’. Those smart and sustainable mobility measures are considered important since the problems on the A2 so extensive are that only infrastructure measures will not solve all the problems. Some of those measures depend on autonomous developments and are being realized outside the scope of the project. To be able to implement autonomous developments, an adaptive process is started. This means that those measures are not captured in an early phase of the exploration.

According to the planning, the minister will decide end 2020. This alternative will be finalised after this decision, resulting in a preference decision. When the preference decision is formulated, the plan elaboration phase will start.

#### **4.3 A67 Leenderheide- Zaarderheiken**

The A67 Leenderheide- Zaarderheiken trajectory is a bit further in the process. The structural vision of the minister of Infrastructure and Water Management has been published on May 13, 2020 (DA57.5), which means that the exploration phase has ended. The reason to start the exploration on this trajectory was that the flow and traffic safety insufficient was. Moreover, there were difficulties with the high amount of freight traffic on this trajectory. The trajectory is a vital route for (freight) traffic between Germany, Antwerp, the Belgium coast and the Randstad.



*Figure 6: Location of the A67 in the Netherlands, with the Leenderheide-Zaarderheiken trajectory marked. Source: WegenWiki.nl*

An important aspect of the exploration is that the MIRT-exploration A67 was accommodated as one of the different tasks for SmartwayZ. SmartwayZ is an innovative mobility programme which that been established to tackle accessibility problems in the south of the Netherlands. In this programme, the central government, provinces, municipalities, knowledge institutes and the business community work together to create the safest, smartest, and most robust mobility network in the Netherlands. Cornerstone of SmartwayZ is the development of Smart Mobility. The intention is smart where possible, capacity expansion where necessary. A program council manages SmartwayZ with directors of various governments, knowledge

institutions and specialists from market parties. SmartwayZ is managed adaptive and grows with opportunities that develop over time. The approach of the sieve method differs from the chosen approach in the A2 Deil-Vught. During the A67 exploration, instead of promising alternatives, promising “clusters” of measures had been chosen. Hence, the consideration of possible solutions and clusters is shown below. The difference between the longlist and the shortlist is that the shortlist contains more realistic measures, both environmental and budgetary (DA67.6).

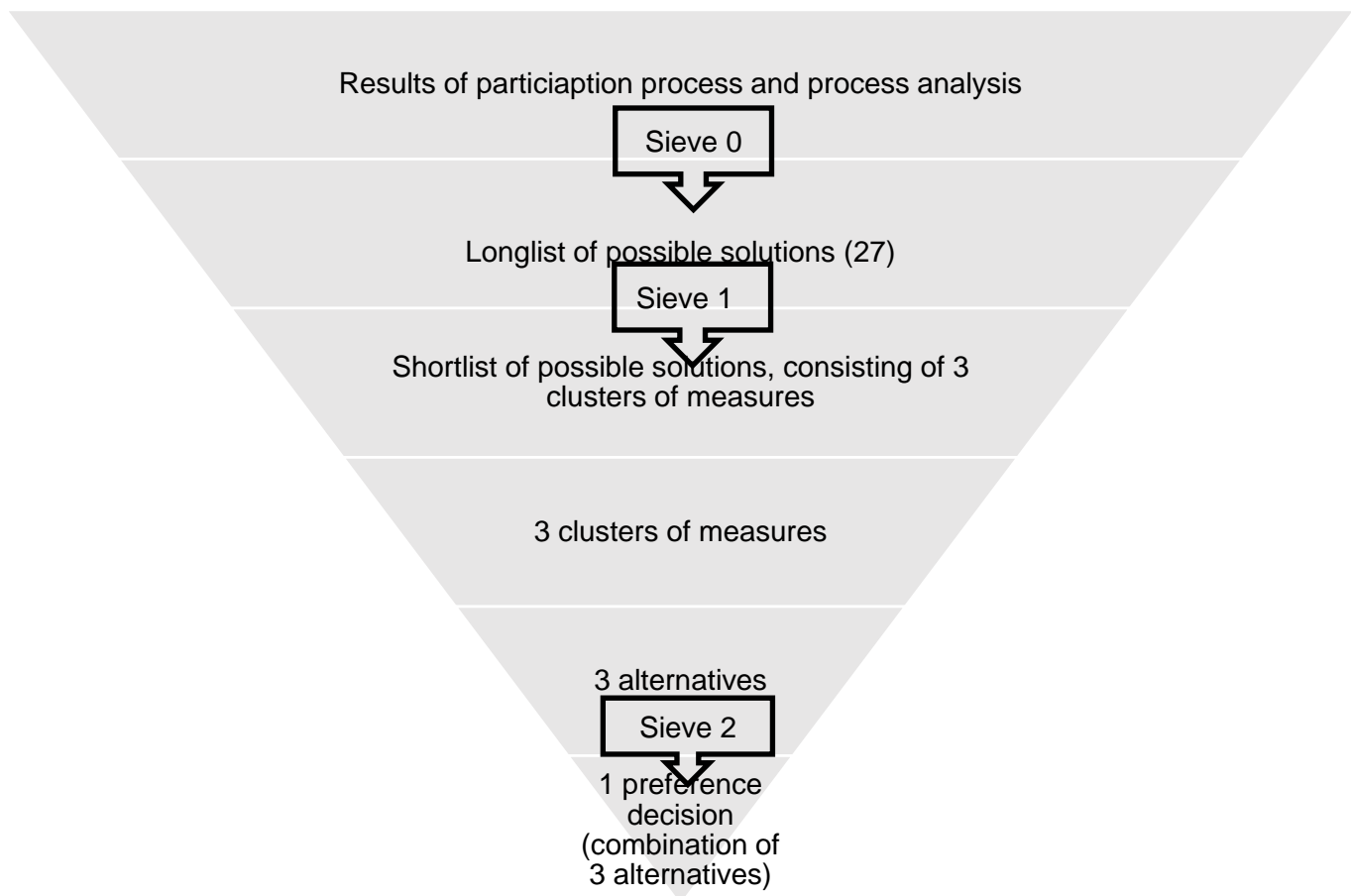


Figure7: sieve of solutions and process steps taken in the A67- exploration. Own adaptation.

The 3 promising clusters that have been selected and further elaborated are as follows:

- Alternative 1: Smart Mobility to limit the rush hour peak by a targeted approach to passenger traffic, such as improving bicycle possibilities and public transport options.
- Alternative 2: road widening by adding a long weaving section (both directions) between Leenderheide and Geldrop, with additional Smart Mobility measures.
- Alternative 3: road widening by adding lanes between Leenderheide and Asten, with additional Smart Mobility measures. This alternative had the highest impact on the environment.

The consideration of the alternatives showed that Smart Mobility measures only would not solve the issues. Alternative 1, therefore, proved to be insufficient. The preference decision became a combination of alternatives 2 and 3: a partial road widening by adding lanes and a weaving section. Moreover, node Geldrop's design has yet to be decided, just as an eventual road widening till Someren and Asten. For those parts is the plan elaboration phase started. Smart Mobility measures can be implemented right away and focus on traffic safety and traffic flow (Structuurvisie A67, 2020).

## 5. Findings

This chapter will give an overview of the findings. The findings derive from both documents and interviews and answer the sub questions- which will eventually answer the research question. The findings are structured according to the (empirical) sub questions:

- To what extent can the Infrastructuurfonds and the Mobiliteitsfonds be connected to theoretical concepts regarding planning?
- How can the Mobiliteitsfonds enhance adaptive capacity, therefore affecting methods, instrumentation and procedures?
- What are current challenges that occur in mobility planning and how is adaptive planning expected to alleviate those challenges?
- To what extent will the Mobiliteitsfonds meet the conditions for future-proof mobility planning?

### 5.1 Description of current infrastructure planning

To answer the first sub question, a description of the current infrastructure planning should be given. This description starts broadly, describing how respondents would describe the Infrastructuurfonds (5.1.1) Subsequently, the current adaptiveness in the two cases is described according to operationalised features (5.1.2).

#### 5.1.1 CHARACTERIZING THE INFRASTRUCTUURFONDS

The Infrastructuurfonds has a long-term orientation. Most respondents would describe the Dutch infrastructure as long-term and some argue that the average lead time of projects indeed long is (R3, R7, R12). Accordingly, budgets tend to be '*anchored*' for a long time (R4, R6, R7). Respondents confirm the functioning of budget-funds and acknowledge the importance of capturing budgets and understand that infrastructure exceeds regular budgets. Therefore, it is argued, the long -term focus makes sense due to the massive investments that must be made and the national importance of highly developed infrastructure.

Moreover, respondents emphasize the tendency of projects to be delayed. The system is argued to be a diffuse whole and a small change can have significant consequences. As one respondent (R7) aptly describes: "*the best-known cause of delay is delay*". Due to the Infrastructuurfonds, we have a mechanism that can deal budgetarily with those regular delays (R15).

However, the finding that planning in the Netherlands is long term does not necessarily imply anything about the process. Respondents were asked how they would describe the current functioning of the planning practice in the Netherlands. Besides long-term, respondents (R3, R7, R8, R12, R14) characterize the current practice as focussing on the enlargement of road capacity and working on current bottlenecks. When working on those bottlenecks, there is a certain focus on infrastructure measures and resolving traffic jam (R3, R5, R7, R8 R12, R15). R8, R9 and R10 describe this practice as traditional planning. Moreover, most of the respondents characterize infrastructure processes according to the Infrastructuurfonds as a formal process that tends to be standardized and procedural. Respondents understand the rationale behind the procedural and standardized approach. The procedures are a way to deal with the complex environment (e.g. variety of stakeholders), to justify public spending, and to divide the long lead time. R13 describes the planning practice as rigid and tightly framed to what modality the money goes. According to this respondent, there is a certain lack of flexibility.

Interestingly, these insights correspondent with the description given in the theoretical framework, where the current Dutch infrastructure planning was described as long-term, slow, and formal ("long term project management").

#### 5.1.2 CURRENT ADAPTIVENESS IN THE TWO CASES

The long-term, procedural approach can affect adaptive planning in the current situation. As mentioned, respondents emphasize the traditional approach and theoretically, a traditional planning approach can limit adaptive possibilities. For this reason, the current adaptive possibilities are mapped. According to the public documents of the two cases, there is a certain focus on adaptive planning. This section will elaborate on both the documents and the interview data, emphasizing possible differences between documents and professional experiences. This section is divided according to the important features of adaptive planning, formulated in the theoretical concept and operationalizing: policy implementation (as planned/ experimental), learning, evaluation, vision, variation, and selection.

##### *Doing experiments and focus on learning*

According to the documents belonging to the A67 trajectory, stakeholders work together in a renewed way and innovation is key. To give room for innovation, stakeholders let go 'fixed programming' and give space to innovations. The programme is continuously monitoring, evaluating, further developing, and adapting those innovations (DA67.1). The preference decision reflects the adaptive approach with short-term measures (DA67.4). An example of those short-term measures is the implementation of Smart Mobility measures.

For the trajectory A2 Deil-Vught is the most important adaptive aspect the package quick wins and demand-driven measures (DA2.2). The adaptive part of these measures entails that the measures are not anchored too early so that you can respond to developments on the road, politics, and the market. These measures are additional and will be added to one of the four alternatives, which has yet to be chosen. The importance of an adaptive package was stressed in the start decision (DA2.1) and this is reflected in the MIRT- exploration. In practice, have these quick wins been reviewed already. Parts have been adjusted and the expectation is that part will be adjusted in the future (DA2.5). Moreover, the quick wins need to remain so that the road can eventually be widened. In addition, due to the monitoring efforts, it is shown that the effects of quick wins lower than expected are. The traffic flow is possibly compromised and therefore, the steering committee has decided to search for more quick wins that may lead to improved traffic flow. One of the opportunities to do so is by starting a broad coalition with other parties including businesses (DA2.5). This shows a specific focus on learning. The quick wins have a focus on learning by doing, evaluation during the process and possible implementation when successful.

Concluding, the document analysis shows a certain degree of doing experiments and a focus on learning in both the exploration, but the documents did not elaborate extensively on those topics. It would be interesting to see how respondents perceive those features.

R2 argued that the A2 Deil- Vught exploration certainly had room for the implementation of experiments, but the implementation of experiments will always be associated with more discussion, leading to a longer time investment and more expenditure. Therefore, R2 was averse to doing experiments. It partly depends on the project team to what extent one is willing to do experiments. R7 complements this statement, arguing with doing experiments, there is a high need for making significant investments, while the turnout is low. According to this respondent, this is a barrier to conduct experiments in the current system.

However, respondent 11 contradicts this statement, arguing that there are no apparent barriers not to do experiments. According to this respondent, the only barrier not to conduct experiments is laziness. Being experimental and innovative requires a little cleverness, common sense, and the clever usage of procedures. So, employees should be able to learn and conduct experiments, but organisations do not function in a way that learning is promoted: *“people don’t like it when one starts to learn”*. According to this respondent, the functioning of the involved organisation should change for them to be adaptive. The reason why these organisations fail in learning is because of the focus on tax money. Organisations are shy about conducting experiments with tax money. In this way, this perspective corresponds with

the perspective on learning and experiments given by respondent 2. Personal motivation and personal characteristics partly decide whether a team has a focus on the doing of experiments. Also, R12 is critical on learning in infrastructure planning. According to this respondent, there is room for experimentation or pilots, but in the margin. Also, in the A2 trajectory, there is room for experimentation, as long as it is beside the road widening. Accordingly, this respondent does not perceive any room to learn from the main choices. Eventually, it is argued that innovation or experimental goals can perish due to a lack of budget.

R14 agrees with the abovementioned line of reasoning and gives the A67 case as an example of how difficult it is to spend money on experiments. According to this respondent, there were ideas to innovate and money was budgeted for experiments, but when the execution of plans comes closer, the governing party tends to execute “the old way” and are not willing to choose for the uncertainties and doubts of new solutions that come with the doing of experiments. To deal with those doubts and uncertainties, adaptivity is required and this adaptivity is currently not present. Finally, R15 confirms these claims that experiments are hard to conduct within infrastructure planning due to the spending of tax money. However, the respondent argues, you will need some experimental space to learn.

Summarizing, there is a misfit between the intended experimental focus and the focus on learning between the documents and respondents’ experiences. If there is any room for those features, it is in the margin.

#### *Current adaptiveness: monitoring and evaluation*

Monitoring and evaluation are formulated to be key factors for adaptive planning. However, respondents have different views on monitoring and evaluating in the current planning practice and the two cases.

R4 argued that the A2 trajectory evaluation moments had- and -considered these moments as very useful. The same goes for R14, who states that evaluation of short-term policies during the A67 exploration beneficial was and of key importance for the development or continuing of policies. R13 emphasizes the role monitoring played during the A67 exploration. Experiences of road-users were monitored and evaluated, and, in this way, the respondent argued, they were able to give importance to the experience of road users. R14, also involved in the A67 case, argues that especially monitoring becomes increasingly important to be adaptive in an increasingly digitalizing world. The data they monitor is used to be adaptive and decide whether it is useful to do an extra road widening at a specific part of the trajectory.

R2 mentions a lack of evaluation and R3 (both A2) misses evaluation moments during the process to revise the current course of events. R9 was a bit more critical on evaluations,



stating that a new project can follow soon and there is not always time or money to evaluate the course of affairs. Conversely, according to R11, evaluation is not part of the learning process or not in the way how evaluation is currently organised. According to this respondent, more informal settings are necessary to learn. In addition, no one pushes or fosters the evaluation.

The respondents show different perspectives on the role of evaluation. The respondents involved in the A67 case perceived monitoring and evaluating the best. This is in correspondence with the analysed documents. DA67.1 mentions the “prominent role” for evaluation and monitoring multiple times and elaborates on how monitoring and evaluation can help make substantive choices about which measure can best be used. Also, this document confirms the importance of monitoring and evaluating measures *ex durante* to make the programme more adaptive and innovative. Hence, monitoring and evaluation is part of the preference decision (DA67.5).

The A2 Deil-Vught MIRT-exploration does elaborate on the role of monitoring and evaluation (DA2.4) and mentions that monitoring and evaluation play an important role in the short-term measures and can be a useful addition for the long-term measures. However, not all respondents involved in this case speak positively or emphasize the role of evaluation and monitoring during this exploration. This could indicate some untapped potential during this exploration.

#### *Current adaptiveness: collaboration and shared vision*

In the theoretical framework, the importance of collaboration and a shared vision to be adaptive was stressed. Both the A67 case and the A2 case show to some extent features of new collaborations to accomplish this shared vision. DA67.1 elaborates on the triple helix collaboration with knowledge institutes, governments, businesses, and the environment that are intimately involved. R14 names this collaboration “*quite unique in mobility land*”. Even though the A2 exploration is not characterised as a unique collaboration, the collaboration is still mentioned as ‘indispensable’ (DA2.1). However, the A2 Deil-Vught construction wherein five parties are client makes them unique and innovative (Da2.2, R1, R2, R3, R4). In this exploration, it was a conscious choice to involve a wide variety of stakeholders, to be adaptive (R3). R1 calls this broad coalition and collaboration a great development wherein this respondent perceives a clear transition from a more agent-principal relationship towards a more systematic view: “*the vertical hierarchical line becomes more and more a horizontal line.*” R4, R6, R9, R10 and R11 emphasize the transition towards a more systematic view. A given reason for this more systematic view is that projects are explored more integral and broader and the national governments need, for example, local governments if a bicycle lane one of the solutions is. According to R6, these renewed collaborations are an excellent challenge for

the national government. The challenge for the national government is two-folded. On the one hand, it can be hard to work together efficiently with parties who have a desire to make profit (R14). On the other hand, the constant involvement of a wide variety of stakeholders is a challenge for the national government (R12 and R15). After the broad exploration, key is to keep the collaboration broad. How can you guarantee this broad collaboration in the plan-elaboration phase?

In addition, this broad collaboration can give an interesting political dynamic, with representatives from various parties with different political preferences or electorates. This findings section will elaborate further on the role of politics in adaptive planning.

Summarizing, in the current planning practice, broad collaboration is possible and executed in practice; in the two cases of this study but also in other trajectories. R13 sums it up: *“the Infrastructuurfonds does not prevent projects to do it this way.”*

Another formulated feature of adaptive planning, having a shared vision amongst the stakeholders, is less noticed by stakeholders. Also, the analysed documents do not stress the importance of a shared vision amongst all stakeholders, although one could state that published documents could result from a shared vision amongst stakeholders. However, the respondents are less pronounced. R12 for example even mentions a lack of a widely accepted vision, especially in the field of more complex collaboration with an eye for technological development. Nevertheless, a widely accepted vision on what to do with smart mobility, sustainability, data, etc. is missing. An integral vision of where to go is lacking and this can be a barrier. R14 and R4 agree with this perspective and add that it is important to know what you are working on together.

#### *Current adaptiveness: variation and selection*

Respondents were less pronounced about the presence of variation and selection in the cases. Theoretically, variation is about a balanced number of variants and how choices are made: implementing variants after variant or casting the options into the concrete. Selection entails the search for the fittest solution, and it is argued that only after a long time, it becomes clear what alternative reflects the goals the best.

Respondents tend to argue that explorations have an immediate focus on road widening and asphalt. It is argued that planning is traditional and long-term and has a certain focus on the improvement of bottlenecks (R3, R5, R7, R8, R12, R15, R8, R9 and R10). This point of view can possibly hinder the integral consideration, or, as it is argued, the current system lacks an integral consideration (R6, R8, R11, R15) and for this reason, one state say that the opportunities of variation are not optimally utilized.

The quick wins in the A2 trajectory show to some extent characteristics of selection during this exploration. R4 describes the formulated quick wins as an asset to the adaptive capacity. R3 elaborates on this statement and argues that the quick wins contributed to an integral consideration, analysing various modalities. Examples of quick wins are employee approach, strengthening public transportation and incentives to avoid rush hour. R2 describes the case's adaptive capacity as the possibility to change the possible solutions during the process. The solutions that were the easiest to adjust were the quick wins. Especially those quick wins aim to search the fit and to find a measure that can meet the long-term goals. In this way, the presence of quick wins in this exploration is a manner to enhance selection, therefore contributing to the trajectory's adaptive capacity. Moreover, according to DA2.5, the quick wins package is adaptive and adjustable to reach long-term goals. Because the quick wins did not live up to expectations, they were adjusted. For this reason, in combination with the respondent's opinions, one could argue that the quick wins package contributes to adaptive capacity in terms selection.

## **5.2 The Mobiliteitsfonds enhancing adaptive capacity**

Beneath, insights and expectations on how the Mobiliteitsfonds can enhance adaptive capacity will be given, both based on policy documents (5.2.1.) and perceptions (5.2.2.). Moreover, to answer the second sub question, insights on how this will affect methods, instrumentation and procedures are formulated.

### **5.2.1 POLICY POINT OF VIEW**

Based on the analysed policy documents, two features of the Mobiliteitsfonds enhancing adaptive capacity emerge.

#### *Mobiliteitsfonds as an answer to (technological) developments*

The recent (31-03-2020) published explanatory memorandum (DG1) on the Mobiliteitsfonds elaborates on the transformation's expected changes. It is mentioned, for example, that the emergence of technology, such as Smart Mobility, requires multi-annual investments. The modes of mobility change and this sets requirements for infrastructure. According to the explanatory memorandum, measures that aim to increase efficient use of infrastructure, such as nudge measures (stimulating of avoiding rush hour, the use of alternative modes of transportation, increase occupancy), Smart Mobility and MaaS can all be financed by the new fund. Moreover, in the proposed Mobiliteitsfonds, studies such an MIRT-exploration are explicitly integrated in the fund, to avoid any doubt about the finance of these studies. The division of tasks with decentral or other governments will remain the same. The establishment

of the Mobiliteitsfonds will not lead to a transfer of obligation towards other governments (Regeerakkoord 2017).

### *Pilots and experiments*

Interestingly, pilot projects and experiments can be funded by the Mobiliteitsfonds. It is argued that pilot projects and experiments can contribute to a future-proof mobility system. Moreover, the Mobiliteitsfonds will allow the payment of research as preparation for infrastructural measures. In this way, experiments, research, and pilots can be funded (DG3). Besides research, competition between potential investments should also be made possible (DG4), which is one of the features of adaptive planning. According to the explanatory memorandum, which elaborates on the proposition to fund pilots and experiments out of the Mobiliteitsfonds, pilots can contribute to the stimulation of measures that increase the effective usage of infrastructure. It is argued that pilots and experiments results tend to be uncertain and according to the Infrastructuurfonds, this can be a barrier to invest in pilots and experiments. To investigate the efficiency of these kinds of measures, funding for pilots and experiments is made possible. Interestingly, respondents were divided on the possibilities to experiment and to invest in pilots. In this way, the Mobiliteitsfonds can take away the last barriers to invest in pilots and experiments.

### 5.2.2 RESPONDENTS PERSPECTIVE

When asked about expectations on how the Mobiliteitsfonds could enhance adaptive capacity, two exciting findings derived from the interviews: the Mobiliteitsfonds as a label for an ongoing transition and the Mobiliteitsfonds as the removal of bulkheads.

### *Mobiliteitsfonds as a label for an ongoing transition*

Consequently, the Mobiliteitsfonds is characterised as a confirmation of a movement (R8, R7, R6, R15, R11, R9, R10, R14). On paper, mobility will be central instead of infrastructure and possibly, this will lead to the required change of mind. This transition, or movement, is described by respondents as the increased demand for mobility solutions and it is a good thing that the national government acknowledges this transition and changes the label. R8: *“The fact that we will discuss mobility instead of infrastructure, transport instead of asphalt, will definitely contribute to this ongoing transition”*.

However, not all respondents consider this label as a change that will have significant implications. Hence, few respondents mentioned the establishment of the Mobiliteitsfonds as ‘symbol politics’ (R5, R7) that show the direction planning is going to but will not have an extensive impact. R11 expects that the Mobiliteitsfonds will not add adaptive capacity. R14 agrees with this view and states that Infrastructuurfonds already has adaptive possibilities and

these can be utilized, *“but it is good to change the name (...) people often stick to what is known and very often it is much better to emphasize that is new”*. Respondent 10, also (as R14) involved in the A67 case, agrees and states that those adaptive possibilities already utilised are. R3, involved in the A2 case, confirms this statement but does not necessarily see how adaptive planning can change when the Mobiliteitsfonds comes into force.

R15 tackles this view and argues that one should not consider the transition to the Mobiliteitsfonds as a huge change, but as a development that is being responded to. In this respondent's view, expectations of the Mobiliteitsfonds are too high and one should consider it is a logical step. *“Evolution instead of revolution”*.

#### *Mobiliteitsfonds as the removal of bulkheads*

Respondents disagree on the extent to which they expect that the Mobiliteitsfonds will remove the bulkheads between the different modalities. Especially the bulkheads between highways and public transportation are pointed out as bulkheads that should be removed.

Respondents argue that this is of the most added value, especially in terms of adaptive capacity. However, some respondents do not perceive those specific bulkheads since they were already able to plan adaptive or spend money on another modality than car infrastructure. Respondent 4 argues to be satisfied with the way how money can be spent and divided from several different budgets. There were no remarkable difficulties (bulkheads) in the division of money. R2 adds to this statement that the distinction between public transportation, road, bicycles (the different modalities) visible is and sometimes noticeable in the process. However, it was possible to bypass those borders between modalities and explore all the modalities: *“a lot of things can already be done now, but they don't always happen. It was for me always possible to be flexible and to approach the borders of the possible solutions”*. R3 confirms this statement by arguing that this case has a broad focus which is more than road widening. During the exploration, the quick wins already played an important role and public transportation solutions are all possible solutions. R6 claims that the case an adaptive character has and does not feel limited by any budgetary restrictions. These experiences indicate that those bulkheads between modalities do not adversely affect professionals in their work. However, these respondents are all involved in the A2 case. Paragraph 5.3 will elaborate on professionals who do experience those bulkheads as challenging.

Conversely, contradicting some of the above-mentioned experiences, R2 (who did experience the bulkheads but was able to bypass them), R12, R13 and R15 argue that they can imagine and expect that those bulkheads will be removed with the Mobiliteitsfonds. R15: *“I think that the Mobiliteitsfonds will take away the last barriers to work integral and broad.”*

R9 and 10 are in the intermediate category and do not know to what extent the Mobiliteitsfonds will take away the bulkheads between the various modalities. They both hope that it will take those bulkheads away but are not sure. R6 can also be categorised in the intermediate group and argues that the Mobiliteitsfonds could take away those bulkheads between roads and public transportation, but this respondent thinks that this removal will only make a difference for the ministry. As this respondent argues: *“we are not concerned with where the ministry gets the money.”*

R11 is positioned on the other side of the spectrum and is the most sceptical on the expected removal of the bulkheads: *“I don’t think that the Mobiliteitsfonds will take away the bulkheads between modalities. The political layer is too vast to be taken away.”*

### 5.2.3 PRACTICAL IMPLICATIONS REGARDING INSTRUMENTATION

To meet the mobility ambitions, the ministry is working on a renewal of methods and instrumentation. The sieve methods and the NMCA are two instruments that can expect a renewed method or are instruments that are considered to be conflicting with adaptive planning. Respondents expect the instruments to change to varying degrees.

#### *Sieve method*

The sieve method, wherein many solutions are sieved into a smaller number of more promising alternatives, is not expected to change radically. The primary rationale for this has been given previously: people want clarity. Respondents acknowledge that adaptivity can be compromised when particular possibilities are ‘sieved out’ early in the process and respondents agree that this may be inconsistent with the ambition to be adaptive. However, giving as much clarity as possible to stakeholders is considered more important (R4, R3, R2, R10, R12, R13, R14). This appears to be of key importance for infrastructure planning. It was mentioned when respondents were asked to characterize the current planning and mentioned when discussing the sieve method.

Respondents tend to be satisfied with this instrument but foresee a change in the way how alternatives are sieved. The extensive list with a wide variety of alternatives (sieve 0) can evolve when mobility becomes the focal point instead of infrastructure (R7): *“we can sieve towards mobility”*. R3: *“the sieve is focused on infrastructure”*. Also, R5, R7 and R12 stress the current focus on infrastructure in the sieve method. In this way, the sieve method symbolizes how infrastructure is planned and organised in the Netherlands. An interesting addition is given by R3, who argues that how solutions are sieved, depends on the assignment. When the assignment is broader, a wider variety of possible solutions is sieved. This is the responsibility of the Ministry. The A2, for example, had this broad assignment and this is reflected in the sieve process (R4, R6). As R12 illustrates: *“when the aim is to solve*

*bottlenecks, the sieve method fits perfectly (...) when the assignment is to increase mobility, the sieve method can be adjusted to investigate mobility solutions”.*

In conclusion, respondents are satisfied with the method itself, wherein solutions are being funnelled into promising alternatives, but the focus on infrastructure solutions reflects in this method and respondents argue that this focus on infrastructure should revolve.

## NMCA

The NMCA (National Market and Capacity Analysis) maps potential developments for the upcoming 20-25 years (Letter of Government, 01-05-2017). A tension can be formulated in advance between a long-term estimate (such as the NMCA) and the pursuit to be adaptive. R8 describes this as *“incredibly difficult”*.

Nevertheless, the role of the NMCA as predictor of bottlenecks is not expected to change drastically. The general tendency among respondents is that because of the large investments that often accompany infrastructure, there must be a report that can justify these investments. This is against the political randomness that ministers can decide what road will be widened. Respondents argue that the instrument itself should remain. As R3 states: *“you will always need some kind of models or data to substantiate your choices”*. This underlines the description of the current infrastructure planning in the planning that has been given earlier. The planning is formal and there is hardly any room for innovation since choices are chaired on hard data and experiences. In this way, R4 confirms this statement, describing the NMCA as *“becoming static”*. This respondent tends to characterize this as outdated: *“the NMCA points out the biggest bottlenecks and those bottlenecks are included immediately in the coalition agreement and those trajectories are widened.”* This respondent stresses the importance of broadening the NMCA: *“we should use the NMCA as an indicator of accessibility problems and we should use the NMCA in a broader context.”* This broader context of the NMCA is stressed by several respondents (R3, R5, R11 R12, R15). The current NMCA can select just the bottlenecks while an integral environment becomes increasingly relevant. More developments need to be included in the NMCA. The world is becoming increasingly complex and that makes it more challenging to predict infrastructure and mobility. Hence the broader and more integral NMCA, to capture as many developments as possible. Thus, it is argued (R5, R7 R10, R13 and R15) that it may become more difficult to measure quantitatively since not all developments could be measured easily (e.g., nudging approaches). For this reason, those respondents foresee a more prominent role for expert judgements in the NMCA. In this way, it could still be possible to plan adaptive and use the NMCA (R5-R6).

### 5.3 Adaptive planning as the alleviation of challenges

According to the Ministry of Infrastructure and Water Management, the Mobiliteitsfonds is expected to answer problems that professionals face or expect to be facing soon (Letter of Government, 21-11-2016). This paragraph tends to investigate whether professionals perceive certain challenges and to what extent they expect that adaptive planning can alleviate those challenges. Hence, it is determined what challenges are currently perceived and it is formulated to what extent professionals expect that adaptive planning can alleviate those challenges.

#### *Budget for non-infrastructure measures*

The first challenge is the challenge that is meant to be solved with the Mobiliteitsfonds: the division of money for a variety of measures. Money that has been reserved for infrastructure measures has, according to the Infrastructuurfonds, to go infrastructure. Public transportation measures cannot be paid directly from the Infrastructuurfonds. Respondents describe this phenomenon as bulkheads between modalities. However, not every respondent perceives those bulkheads in the same degree.

Respondent 7 mentions those bulkheads as significant. R8 states that those bulkheads are anchored in the way planning is organised in the Netherlands. At this moment, *“we are only talking about infrastructure”*. R15 mentions that, due to the Infrastructuurfonds, an integral view on the problem is obstructed. The existence of those bulkheads leads to a broader problem. Since only infrastructure measures can be paid out of the Infrastructuurfonds, there is a certain focus on infrastructure and the improvement of bottlenecks (R3, R5, R7, R8 R12, R15, R8, R9 and R10). This focus can be a barrier to focus on the bigger picture of the environment. Evidently, respondents acknowledge the existence of bulkheads between different modalities and describe this as a challenge or inefficiency in the current practice. Consequently, it is argued that the removal of those bulkheads would improve the integral consideration of modalities.

Since the two case studies are known for their adaptive character with an integral consideration, it is questioned if respondents perceived this challenge in practice. The challenge was acknowledged, but the consequences of those bulkheads, less integral consideration, and non-infrastructure measures as a part of the solution, were experienced to a lesser extent. For example, R4, who argues that he or she did not have the feeling that it was very complicated for the employees at the Ministry to arrange money for non-infrastructure measures: *“I don’t even know from what jar the money was coming from, or whether it all comes from the Infrastructuurfonds, the flexibility was available.”* R10 adds to this notion that the tension does not necessarily derive from the fund, but from the scope of the assignment. This respondent does not expect that another label (Mobiliteitsfonds) will



influence the integral consideration. R13 agrees and argues that it is mainly procedural. This respondent argues that it is indeed difficult to spend money from the national government (Infrastructuurfonds) on non-infrastructure measures, but that does not mean that it is impossible to spend money on those measures. In the case of the A67, the province invested in those kinds of measures and that worked out fine, only sometimes “*illogical*”. Respondent 6 feels the same way about the financial constructions and argues that they (the province) do not see in what way the ministry arranges the financial construction. There is always a way to make it work and according to this respondent, an integral consideration is possible when reserving money according to the Infrastructuurfonds. R9 and 10 share this point of view. In conclusion, it is to some extent possible to make a budget for non-infrastructure measures and the degree to which this is possible varies across cases. However, respondents do not expect adaptive planning to lead to the removal of those bulkheads, but the Mobiliteitsfonds may contribute to the removal of those bulkheads (R2, R6, R13 R15, R6).

#### *Tensions between central and decentral government*

Another formulated challenge in the interviews is the ‘tensions’ between the local and national governments. In cases like the A2 Deil-Vught and the A67 Leenderheide- Zaarderheken work several governments together and this can result in tensions or challenges. This tension is stressed by R4, R6, R7, R9, R10 and R15. The core of this finding is that projects become increasingly complex and require an increasingly wider variety of possible solutions. These solutions may require for example steering measures (e.g. employer’s approach, bicycle lanes and smart mobility. When measures are of national importance (e.g. national highways), it can be funded by the Infrastructuurfonds. However, local bicycle accessibility, is municipal interest but a national highway can compromise the local accessibility. This example symbolises that it becomes increasingly complex to determine what local/ regional interest is and what national interest is. R15 explains that the Mobiliteitsfonds plans to be a framework wherein national money can easily be fluid to decentral governments. In addition, considering adaptive planning as the possibility to adapt to changing circumstances, therefore considering a wider variety of options, it may be possible that adaptive planning will lead to a decrease in the tension between central and decentral government.

#### *Role of politics*

Another challenge that had been formulated is the role of politics in the current planning practice. Although the MIRT-system was established to make investments in infrastructure resistant to political waves and developments (R9, R10, R15), respondents mention the role of politics as one of the challenges in planning. The current focus on infrastructure can on the one hand be explained by the scope of the Infrastructuurfonds, but also by the role of politics

in the planning. It is argued (R5, R6) that some political parties, such as the VVD (conservative liberals) and CDA (christen democrats) still have a certain focus on infrastructure measures and those parties tend to prioritise investments in asphalt. Apart from political party, it is nuanced (R5, R1, R7, R12) that politicians will always prefer solving traffic jams directly. The traffic jam is what the electorate experiences and traffic jam is what the electorate wants to be solved. Long-term sustainable solutions are less attractive to politicians. Moreover, R4 and R1 clarify that the responsible aldermen in the municipality can make a significant difference in the focus paid to for example sustainable mobility instead of asphalt. Also, respondent 15 acknowledges the relevance of political choices and argues that the national political focus was to solve capacity bottlenecks, but this perspective could be evolving soon. The Mobiliteitsfonds should allow the minister to make other choices than investing in asphalt.

### *Being able to give clarity*

Besides these features, respondents mention a main challenge in the desire to give clarity from the beginning to the residents. This tension particularly is interesting, since adaptive planning may *cause* this tension instead of solving. In general, adaptive planning is seen as a tool to make planning more flexible, but infrastructure and mobility planning remains a process that should focus on the long term, which contradicts flexibility (R2, R3). All respondents acknowledge the importance of being able to anticipate to certain developments, but at a given moment, a decision should be made. Especially when a road widening likely is, adaptivity may not always be the most satisfying solution for especially residents of the surrounding environment. Therefore, it is argued that participation of key importance is, but explorations can have long lead times. For this reason, it is essential to give citizens clarity as soon as possible on whether a road widening will occur or not (R1, R2, R8, R9, R10, R11, R13). R2 summarizes:

*"It is all nice, more flexibility and adaptivity, but a) problems need to be solved and b) you have to deal with residents' ambiguity. You can't let that last forever."* R11: *"a new highway, whether or not in your garden, we will have a look at that."*

In conclusion, the challenges are argued to be more deep-rooted and adaptive planning solely will not bring the required change. The main challenge is a deep-rooted belief in capacity expansion and this challenge is reflected in the (lack of) budget for non-infrastructure measures and in the role of politics (politicians tend to choose for capacity expansion). To alleviate the current challenges, it is not just a matter of implementing adaptive planning, but it's a matter of change of behaviour (R5, R12, R14, R15). An aspect of this change of behaviour can be in the selection of assignments and projects. Based on the interviews, the

general tendency is that considerations must be made in a different way and the focus should not be solely on infrastructure. The Mobiliteitsfonds can help in this consideration.

#### **5.4 Mobiliteitsfonds and future-proof mobility planning**

In the theoretical part, three main characteristics of future-proof mobility planning were formulated. The first characteristic is that governments should clearly set out the policy objectives they are seeking to achieve. The second characteristic is that societal needs should always be reflected in the project and collaboration is crucial to be able to reflect those societal needs. Relevant stakeholders should be involved in the early phases of the process. Third, the collaboration between the central and decentral governments should be re-imagined to implement future-proof mobility planning. Those characteristics were presented to the respondents and they were asked to explain if they expect that the Mobiliteitsfonds can help to fulfil those characteristics.

##### **5.4.1. CLEAR POLICY OBJECTIVES**

This characteristic of future-proof mobility planning seems to contradict certain characteristics of adaptive planning. Infrastructure used to have a central role and adding capacity used to be the policy goal within a MIRT-process. This clear objective is becoming the vaguer goal to improve the accessibility of an area. The solution does not have to be more infrastructure – but the solution is kept open to explore a wide variety of possible solutions. R9 mentions this as adaptivity: the space to deviate from your goals. This is acknowledged by R3, who argues that the policy objective during the A2 exploration changed: from improving the traffic flow to improving the accessibility of the area. Later, another goal was added, namely, to improve traffic safety. *“Between start decision and now, we have seen a change in policy objectives.”* Respondent 15 adds that *“it is a hard task to define clear objectives in the mobility domain”*.

##### **5.4.2. REFLECTION OF SOCIETAL NEEDS**

Respondents were more pronounced on this feature of future-proof mobility planning. Respondents perceive the current planning as already collaborative and perceive a significant role for stakeholder involvement. The importance of involving citizens in the process has already been elaborated on in paragraph 5.3. Citizens and residents are involved in an early stage of a MIRT-exploration. Participation is a key characteristic of the Dutch infrastructure planning and is argued to be one of the most critical parts in a MIRT-exploration (R2) and is very common in large MIRT-projects (R4, R12, R13). R14 stresses the importance of the reflection of the societal needs in the A67- exploration. They are currently trying to understand the whole system within the area, answering themselves the following questions: why people work here, where are the schools located and what do the people in this area want. That is

what they try to do and that is how they try to reflect the societal needs within the exploration. This respondent labels SmartwayZ as a programme that enables to reflect these societal needs. This is emphasized in DA67.1, stating that the environment functions as a community, contributing to the social design.

In addition, R3 describes that not only infrastructure is considered as a reflection of societal needs. The focus shifts from how can we improve infrastructure in the area to what is needed in this area? What kind of amenities are available in the area? With a focus that goes beyond infrastructure, the societal needs are better reflected. R10 adds to this statement that the Mobiliteitsfonds is the reflection of a societal tendency. Coincidentally, R10 argues, there are already some projects that worked like this before the establishment of the Mobiliteitsfonds. Finally, according to the minister (DG4), the Mobiliteitsfonds is a reaction to *“the changing playing field”*. *Our mobility behaviour changes gradually* (e.g. increase of electric bicycles and decrease of car usage amongst young people). *This requires safe, smart and sustainable mobility and flexibility in the long-term planning of infrastructure assignments.*” Hence, both respondents and the minister consider the Mobiliteitsfonds as a way to reflect societal needs.

#### 5.4.3. RETHINKING THE ROLE OF CENTRAL AND DECENTRAL GOVERNMENTS

This paragraph does not contain a lot new information, since collaboration has already been discussed as one of the features of adaptive planning. The increased integral consideration, allowed by the Mobiliteitsfonds, influences how decentral and central governments work together. Currently, this collaboration is already subject to change, as the assignments become already more and more integral. This integral approach requires renewed collaboration. R6: *“in order to tackle the mobility task more integrally, we are searching for collaboration in which several governments work together”*. Moreover, it is argued above that the both cases have to some degree a collaboration that can be characterised as innovative and renewed or as the reflection of the societal needs. The reason for this is the more systematic view on mobility (R4, R6, R9, R10 and R11). R15 explains that the Mobiliteitsfonds plans to be a framework wherein national money can easily be fluid to decentral governments, facilitating the renewed role of central and regional governments in the changing playfield mobility. However, renewed collaboration may cause difficulties for the central governments.

## 6. Conclusion

This conclusion will consist of two parts. The first part will formulate an answer to the research question. This answer is built upon the answering of the subquestions, which will be elaborated on in the second section of this conclusion.

### 6.1 Answering the research question

The formulated research question of this research was as follows:

*To what extent can it be expected that the establishment of the Mobiliteitsfonds will lead to more adaptive planning, contributing to a more future-proof mobility planning in the Netherlands?*

It is important to notice that the Dutch infrastructure planning has a long-term and traditional focus. The focus is to tackle capacity problems and it is vital to give residents clarity as soon as possible. This feature is not expected to change and for this reason, the Dutch infrastructure planning will not be completely utterly in the near future. The notion of adaptive planning and contradicts to be able to give clarity. To provide clarity entails an early formulation of objectives, whereas being able to move along with developments and adjust objectives based on monitoring and evaluation is fundamental to adaptive planning.

However, to some extent is adaptivity already possible. This is seen in both the cases that were subject to the study, the MIRT-explorations A67 Leenderheide- Zaarderheiken and A2 Deil-Vught. Both cases show to some extent adaptive characteristics, but some things could improve to be more adaptive. The current planning practice lacks sufficient evaluation and a certain focus on learning. Moreover, respondents conclude, there could be more emphasis on doing experiments. Personal characteristics of the members of the project team play a role in the extent to which a team has an experimental focus. Currently, there are barriers to conduct experiments. The focus on asphalt and road widening and budgetary constraints to conduct experiments are formulated by respondents to be barriers. The Mobiliteitsfonds should allow experiments to be conducted without financial barriers and therefore, the Mobiliteitsfonds can contribute to adaptive planning.

The main contribution of the Mobiliteitsfonds to adaptive planning is that the Mobiliteitsfonds will promote an integral consideration of possible solutions and modalities. The bulkheads between modalities are removed and one will consider other solutions than infrastructure solely (new roads or the widening of existing roads). In this way, the Mobiliteitsfonds will contribute to a better reflection of societal needs and, therefore, future-proof mobility planning.

Namely, a more integral consideration of modalities can provide more handles to react to societal developments. This can also promote new regional/ national collaboration, another feature of future-proof mobility planning. Also, Mobiliteitsfonds will lead to a more efficient flow of money from the central governments to decentral governments and can contribute to a renewed central/ decentral collaboration. Interestingly, tensions between central and decentral governments was formulated as one of the current challenges in infrastructure planning. Possible, this tension can be taken away with the Mobiliteitsfonds. The feature of clear policy objectives will not be reached with the Mobiliteitsfonds. Policy objectives may become vaguer due to the Mobiliteitsfonds and more adaptive planning, due to this integral consideration.

In conclusion, adaptive planning is already possible in the Dutch infrastructure planning practice. It is not necessarily expected that the Mobiliteitsfonds will contribute to a complete adaptive and future-proof planning practice, but the more integral consideration of modalities and the fact that national investments can flow to the region will contribute to a more future-proof mobility planning. However, the Mobiliteitsfonds should be considered as the confirmation of a transformation, as evolution instead of revolution. It is the next step in making the planning practice more future proof, not the final step.

## **6.2 Answering sub questions**

The first sub question was to what extent the Infrastructuurfonds and the Mobiliteitsfonds could be connected to theoretical concepts regarding planning. To investigate the impact of the change of funds, it is important to know the differences between both the funds. Respondents tend to describe the current planning practice, so according to the Infrastructuurfonds, as long-term, with a focus on road enlargement, traditional and procedural. Theoretically speaking, this can best be connected to traditional and technical-rational planning or classic-project management. Interestingly, respondents describe the current practice as such while acknowledging that they can already plan adaptive (in the two cases). This is according to the current focus on monitoring and evaluating and the degree of collaboration. The focus on learning, doing experiments and the shared vision are characteristics that could be improved. Especially regarding doing experiments, it is expected that the Mobiliteitsfonds can contribute to a more adaptive planning practice. In addition, the more integral consideration of solutions will contribute to a more adaptive planning practice. Academically, this is described as programmed flexibility. Programmed flexibility occurs when the general direction of the change is known, but the precise nature of changes is unknown (Rauws, Zuidema and de Roo, 2019). This is what is encountered in the A2-case, with the quick-wins programme. Solutions are left open to be able to react. Respondents foresee a role for the Mobiliteitsfonds to allow this to happen, due to the more integral consideration.

The second question entails how the Mobiliteitsfonds can enhance adaptive capacity and how this will affect the sieve method and the NMCA. Policy documents and the interviews answer this question. According to a variety of policy documents, the Mobiliteitsfonds can promote a more integral consideration of modalities. Moreover, pilot projects and experiments can be funded from the Mobiliteitsfonds. This will improve the adaptive capacity since respondents' state to perceive a missing focus on doing experiments and learning capacity. Moreover, the integral consideration of modalities can improve variation and selection of possibilities. As stated, the package of quick wins was considered an adaptive asset. Due to more integral consideration, a consideration that goes beyond asphalt, more possibilities can be explored, and this creates opportunities for variation and selection to occur.

However, not on all features expect respondents the Mobiliteitsfonds to enhance adaptive capacity. On the one hand, respondents argue, the Mobiliteitsfonds is sticking a label on an ongoing transition. Adaptivity and adaptive measures are already possible to some extent, for example regarding collaboration (e.g. SmartWayZ), monitoring (e.g. adjusting quick wins), and focusing on learning. For this reason, respondents argue that the Mobiliteitsfonds will not foster adaptive planning drastically. On the other hand, it is argued that the Mobiliteitsfonds will remove the bulkheads between modalities and, therefore, improve integral consideration. This is a feature that will lead to more adaptive capacity.

Regarding the instruments, respondents are quite satisfied with the sieve method and argue that people (residents) want clarity. Working towards a clear goal is therefore important. The sieve method can give grip to work towards this clear goal, funnelling from many solutions to a few promising alternatives. However, within this funnel approach, stakeholders tend to focus on infrastructure solutions. The Mobiliteitsfonds may shift this focus towards mobility solutions, as the integral consideration increases.

The NMCA is considered to be an important instrument. There must always be a reason to make major investments and the NMCA can map future bottlenecks, justifying these expenditures. However, it is argued, more developments (e.g. Smart Mobility, societal developments) should be included in the NMCA and the NMCA should analyse not only capacity bottlenecks. To map a wider variety of developments, it is stated, expert judgements could become more important in the NMCA.

The third question, on challenges and the extent to which adaptive planning can alleviate those questions, showed some unexpected results. The most important challenges that respondents formulated were the difficulties invest in non-infrastructure measures, tensions between

central and decentral government, the importance of giving clarity and the role of politics. Interestingly, respondents do not expect that adaptive planning can alleviate those challenges. The challenges are more deep-rooted and swaddled in the procedures and political preferences. To alleviate these challenges, a new way of thinking should be developed. The Mobiliteitsfonds can contribute to this new way of thinking with less focus on infrastructure measures. However, the Mobiliteitsfonds solely will not revolve the current paradigms in infrastructure planning. To achieve a new way of thinking, shifting from infrastructure to mobility, all stakeholders should acknowledge the importance of other measures than asphalt.

The final question was to what extent the Mobiliteitsfonds will meet the conditions for future-proof mobility planning. Three conditions were constructed in the theoretical study: clear policy objectives, reflection of societal needs and rethinking the role of central and decentral governments. The policy objectives are not expected to become clearer when the Mobiliteitsfonds is established. In fact, the Mobiliteitsfonds may lead to more vague goals, such as improving the accessibility of an area instead of reducing capacity problems. Respondents do expect that the Mobiliteitsfonds can provide a better reflection of societal needs. As the focus goes beyond infrastructure, real societal issues and needs can possibly be better reflected. The Mobiliteitsfonds is a reaction to societal developments and therefore, the aim is that the Mobiliteitsfonds can better reflect societal needs.

Finally, it is expected that the Mobiliteitsfonds will lead to new collaborations and that the role of central and decentral governments will be re-imagined. This is for the same reason as the reflection of societal needs: the more systematic view on mobility. Besides this, the Mobiliteitsfonds should allow national money to flow to decentral governments, enabling new collaboration to flourish.



## 7. Discussion

This study's qualitative approach allowed me to investigate the cases in detail and formulate an answer to the research question. However, the making of research decisions comes with discussion, reflection, and limitations. This chapter will elaborate on the limitations of this research, reflect on the theoretical body, and formulate the implications of this research, both scientific and societal.

### 7.1 Limitations

#### 7.1.1. EXPECTATIONS

A first, main limitation of this research is the fact the Mobiliteitsfonds has not been implemented yet. The results are based on expectations instead of facts, expectations instead of experiences. However, this is inherent to an exploring research as this one. Because of the complex nature of infrastructure planning in the Netherlands, it was impossible to compare this change of funds with other countries. As Marshall (2012) states: *"much of what is said about planning approaches will not travel well to other regions."* For this reason, the comparison with other countries could not be made and the results are based on expectations and policy documents.

However, in qualitative research, it is always hard to make results completely reliable and replicable. The nature of qualitative research is to capture personal experiences, beliefs, and interpretations. Circumstances can be different at other times, in other cases. In addition, to capture those expectations, respondents were informed extensively about the research, until the intentions of this research were clear. The methodological chapter elaborates on how the validity and reliability, despite being based on expectations, were guaranteed.

One of the consequences that the Mobiliteitsfonds has not been implemented yet is that not all respondents had detailed knowledge of the properties of the Mobiliteitsfonds. Also, for this reason, respondents were informed extensively about the research. The fact that not all respondents were informed in detail on the Mobiliteitsfonds, contributes to the results and symbolizes the evolution instead of revolution. If the Mobiliteitsfonds would impend a comprehensive difference, this would likely be reflected in the professionals' experiences and knowledge.

#### 7.1.2. SELECTION OF CASES

It is challenging to draw general conclusions based on two cases. I have encountered that individual characteristics or local circumstances can affect the case drastically. For example, a project manager who emphasizes adaptive planning, an alderman who prioritizes

sustainable development. These examples can impact results. For this reason, it is hard to generalize the cases or draw national conclusions. The two cases in this study appeared to be very adaptive, but the results may have differed when a more traditional case was selected, with an increase of capacity as the only goal. It would also have been interesting to investigate the adaptive capacity in such a “regular” exploration. However, to generalize and draw conclusions that could be replicable, general respondents were spoken. These respondents could reflect on the insights given by respondents who are involved in the two cases. These respondents could provide insights into what extent the case-findings could apply nationally.

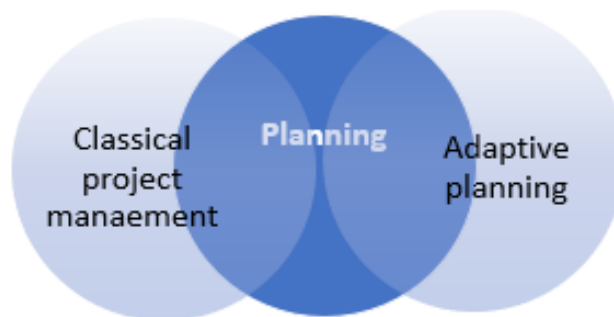
## **7.2 Theoretical reflection**

The results of this study vary somewhat to the expectations I had before analysing the data. For this reason, some theoretical reflection is appropriate. Firstly, a clear distinction was made between adaptive planning and mobility planning. In practice, this distinction is hard to make. The distinction between mobility and infrastructure is exactly what the Mobiliteitsfonds tries to take away and in practice, one is planning instead of infrastructure or mobility planning. Infrastructure is just one of the means to provide in mobility (Leendertse, 2020).

Secondly, the expectation was made that the Mobiliteitsfonds would be the catalysator of a transition from classic project management towards adaptive planning. One of the results is that the Mobiliteitsfonds itself cannot foster this transition. Moreover, it is argued that the long-term, traditional, and classic approach still the best approach is, or that one cannot be fully adaptive due to the need for clarity. Hence, I do not think that a clear transition towards adaptive planning will occur, as was stated in the conceptual framework. The conceptual framework assumed a clear transition from classic project management to adaptive planning, but the reality is more hybrid (see figure 9 and 10). For this reason, I think that the approach will remain traditional and classical, but it can have more adaptive influences. This corresponds with the view Rauws, Zuidema and de Roo (2019) have on adaptive planning. They argue that planning with adaptive capacity does not differ from usual forms of planning, but that governments should sharply acknowledge what societal and public values they pursue. According to them, planning should occur as usual, but the planning becomes adaptive when governments are aware of the possibilities and limitations they face in influencing the dynamic and complex system they operate in. A plea for adaptive planning is by no means an argument for replacing existing planning approaches (Zuidema, 2017). Salvini, Majoor and Salet (2015) argue that extremes (classical project management – adaptive planning) need each other and can be considered complementary. Zuidema (2017) enhances the notion of *hybrid institutional frameworks*.



*Figure 8: Planning as assumed in conceptual framework*



*Figure 9: Planning as seen in practice*

Another interesting theoretical reflection entails the tensions that the doing of experiments can bring. As argued in the theoretical framework, experiments are a key feature of adaptive planning, but the possible tensions seem to be underexposed in the academic body. In this study, it appeared not always possible to experiment due to the expenditure of public money. In addition, the importance of clarity and clear goals is evident. Rauws, Zuidema and de Roo (2019) seem to be one of the scholars stressing these tensions. As they argue, an emphasis on experiments, learning and giving space for spontaneous development can be at the expense of concrete actions in the here and now. The choice to be adaptive and especially to conduct experiments isn't without consequences, as is also argued by Savini, Majoor and Salet (2015).

### **7.3 Practical implications**

#### **7.3.1 SHOW THE POSSIBILITIES**

When the Mobiliteitsfonds succeeds in taking away the barriers to divide between modalities, the more integral consideration will be improved. A more integral consideration may require a broader stakeholder's perspective. According to this research, there is still a certain focus on road widening, solving capacity issues and asphalt. The two cases show it is already to some extent possible to be adaptive and consider other options than road widening, but the focus on asphalt is swaddled in Dutch infrastructure planning. The top capacity issues derived from

the NMCA are included in the coalition agreement, the sieve methods 'sieves' towards an asphalt solution. Moreover, it is argued that individuals can make differences regarding the willingness to look further than asphalt. For this reason, it may be advisable to embrace the change of funds. Respondents were not always fully aware of the change of fund and this is a missed opportunity. Therefore, show policymakers adaptive examples such as the A2 and show them that these kinds of measures are possible— especially when the Mobiliteitsfonds has taken place. Show policymakers that it is possible to invest in for example nudge measures, public transportation, and bicycle solutions at this moment and when the fund has come into place. The transition towards a focus on mobility instead of infrastructure is an evolution instead of a revolution, but this evolution can be set in motion on purpose. The stakeholders, especially involved in the MIRT-exploration, have the key to work towards the evolution. The Mobiliteitsfonds will allow them even more to work adaptively.

COVID-19 shows how easily Dutch people can *adapt* and shows how fundamental traffic changes when a part of the population works from home. Even now, in August, when offices have started to reopen, the first look throughs of new standards of working are visible.

A quarter of people who have started working from home more and a third of people who meet remotely more often expect to continue to do so in the future. One in five Dutch people thinks that they will walk or take the bicycle more often (KiM, 2020). When this group works 2 days from home from now on, 10 percent fewer cars will be on the road daily and this will resolve almost all the traffic jams. Still, another possibility is the shift away from public transportation to individual transport (RAI, 2020). It is essential to be able to deal with those changing circumstances. Hence, it is important to be adaptive. The virus and other disruptive societal situations underline the importance of adaptive planning for future-proof mobility planning. Society should learn from the crisis and remain committed to developing a more flexible and sustainable mobility and infrastructure policy. The Mobiliteitsfonds is part of the solution and to do so, the opportunities the Mobiliteitsfonds offers should be embraced.

### 7.3.2. DARE TO EXPERIMENT

Another important aspect of the shift towards a focus on mobility is the possibility to experiment, which is currently compromised. As argued in the theoretical reflection, the doing of experiments can have its pitfalls, but it is also an important feature of adaptive planning. For this reason, stakeholders should be more able to conduct experiments. A start has been made, with the experiment legislation for self-driving cars (implemented July 2019, RDW). The idea is that experiments can be paid from the Mobiliteitsfonds, but stakeholders tend to have difficulties conducting experiments due to public investment expenditure. For this reason, the national government should provide more tools for the conducting of experiments, more than

just the Mobiliteitsfonds. An example could be the policy rule that came into force in 2018 to conduct experiments in automated sailing on national waterways or the abovementioned experiment legislation for self-driving cars. These examples may contribute to normalizing and standardizing doing experiments, removing barriers to conduct experiments.

#### **7.4 Agenda for future research**

Having clear objectives was formulated as one of the features of future-proof mobility planning and respondents argue that clear objectives and being able to give clarity to citizens on those objectives is very important. However, this is difficult to reconcile with adaptive planning. As Leendertse (2020) argued, the master to control results in less capacity to adapt to new circumstances. Adaptive planning means to be able to deal with changing circumstances. This can affect the set goals, those goals that are considered to be very important for future-proof mobility planning (both theoretically as is concluded in this study). It would be interesting to conduct comprehensive research on the tension between formulating clear policy objectives and the ambition to be adaptive. It would be especially interesting to track down residents' perceptions and interpretations when the formulation of goals would become more adaptive. How will they respond to increasing uncertainty about their residential environment? This study did not have the objective to capture residential perceptions on the setting of goals and the adaptive capacity, but a study to capture the residential perceptive would, therefore, be interesting. One could think of setting out a widespread survey amongst the residents of an area that has to deal with infrastructure developments. It would be of academic value to determine what kind of balance can be found between clear policy goals and the intention to be as adaptive as possible? This research underlines the importance of having clear policy goals, but in terms of infrastructure planning, developments can emerge rapidly that change planning fundamental. An example, the worldwide pandemic COVID-19, is given above. For this reason, research to the tenacity of clear objectives during changing circumstances would be of added value to the academic debate on adaptive planning and future-proof mobility planning, and other academic debates. Adaptive planning is relevant in various sectors and debates.

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## Appendix 1: Interview guide

### Introductie

- Hartelijk bedankt voor uw tijd;
- Vertrouwelijke omgang met gegevens;
- Vertellen over toestemmingsformulier.

### Mijzelf

- Simon de Crom, 23 jaar oud;
- Masterstudent Urban Governance in Rotterdam;
- Afstudeeropdracht voor AT Osborne;

### Thesis

- Onderzoek naar de transitie van het Infrastructuurfonds naar het Mobiliteitsfonds en in welke mate dit bijdraagt aan een betere mobiliteitsplanning in Nederland door het gebruik van adaptief plannen.
  - o Adaptief plannen: het systeem zo inrichten dat het kan meebuigen met veranderende omstandigheden

### De respondent

- Wat is uw functie binnen uw organisatie?
- Hoe bent u betrokken bij mobiliteitsplanning in Nederland?

### Huidige infrastructuurplanning in Nederland

- Hoe zou u de huidige infrastructuurplanning, dus volgens de regelingen van het Infrastructuurfonds, karakteriseren?
  - o Termijn
  - o Tempo
  - o Formeel/ informeel
  - o Efficiëntie
- **Merkt u dat er bepaalde uitdagingen of inefficiënties** zijn, die komen door de reikwijdte van het Infrastructuurfonds?
  - o Zo ja, wat zijn deze uitdagingen of inefficiënties?
  - o Wat is de rol van het gebruik van de beleidsinstrumenten in deze mogelijke inefficiënties?
  - o Kan dit komen door de vroegtijdige inzet (tijdens de MIRT-verkenning) van deze lange termijn ramingen?
    - NMCA
  - o Het gebruik maken van de trechtermethode, waarbij in een vroeg stadium veel verschillende methoden afvallen?
  - o Verwacht U dat het Mobiliteitsfonds kan zorgen voor veranderingen in de inzet van deze instrumenten?
    - Zo ja, hoe, en wat voor gevolgen zal dit hebben?
  - o Hoe ziet u de wisselwerking tussen deze lange termijn instrumenten en een van de beoogde doelen van het Mobiliteitsfonds, om adaptief te kunnen plannen?

### **Adaptief plannen**

- Ziet u in het huidige infrastructuurfonds ruimte voor adaptief plannen?
  - o Focus op leren
  - o Het doen van experimenten
  - o Evaluatie
  - o Samenwerking
  - o Het creëren van variatie
- Zo nee, is dat problematisch?
- Verwacht u dat het Mobiliteitsfonds adaptief plannen mogelijk maakt?
  - o Project in hogere mate verbonden met het de omgeving; het project niet meer aanschouwd als een individuele casus.
  - o Invoeging technologische ontwikkelingen
  - o Indien u dit verwacht, verwacht u dan ook dat de planning zal verbeteren en huidige uitdagingen kan verlichten?
    - Zo nee: waarom niet?
    - Wat zou moeten gebeuren om adaptief plannen beter mogelijk te maken?

### **Toekomstbestendige mobiliteitsplanning**

- Verwacht u dat adaptief plannen kan bijdragen aan een meer toekomstbestendige mobiliteitsplanning?
- In welke mate verwacht u dat het Mobiliteitsfonds kan bijdragen aan
  - o Duidelijke formulering van doelen
  - o Het reflecteren van de maatschappelijke behoefte
  - o Een verandering van denken over de rol van overheden in de mobiliteitsplanning
- Verwacht u dat wanneer dit bereikt wordt, mobiliteitsplanning toekomstbestendig gemaakt is?
  - o Zo nee: wat is er nog meer nodig?
- Hoe verwacht U dat u de mobiliteitsplanning kunt karakteriseren wanneer het mobiliteitsfonds in werking getreden is?

### **Casusspecifieke vragen**

- Het programma wordt gekarakteriseerd als een adaptief programma. Er waren 300 mogelijke oplossingen, maar uiteindelijk blijven maar weinig oplossingen over. Hoe kan je adaptief te werk gaan, maar toch gebruik maken van de zeven en veel oplossingen laten afvallen?
- Hoe zijn de zeven af te wegen als het gaat om 'zachte' maatregelen?
  - o Verwacht u dat het mobiliteitsfonds hier verandering in gaat brengen?
- Hoe verhouden de zogenaamde quick wins en korte termijn maatregelen zich tot de NMCA?
- In hoeverre is het mogelijk om Smart Mobility maatregelen mee te nemen in de NMCA?
  - o Wat voor rol speelt dit in het besluitvormingsproces?
  - o Kan het Mobiliteitsfonds hier verandering in brengen?

- Uit beleidsdocumenten blijkt dat de brede samenwerking met partners vernieuwend was, om adaptief plannen mogelijk te maken. Heeft u deze brede samenwerking ervaren als een van de voorwaarden voor adaptief plannen?
- Een onderdeel van de maatregelen zijn afspraken met werkgever om verkeer in de spits te verminderen. Hoe zijn dit soort niet-infrastructurele maatregelen te omvatten in rekeninstrumenten als het NMCA?
- Hoe was er tijdens het proces om te gaan met de verandering van maximumsnelheid naar 100?
- **Monitoring en evaluatie als specifiek onderdeel. Hoe is dat?**

## Appendix 2: Coding scheme

Code	Number of citations
Bulkheads between measures	6
Adaptive mobility planning	3
- Projects in connection with environment	5
- Technological development	1
Adaptive planning	3
- Doing experiments	13
- Evaluation	9
- Way of learning	1
Current infrastructure planning	14
- Consensus	2
- Formal/informal process	9
- Speed of infrastructure planning	7
- Term of infrastructure planning	11
Future-proof mobility planning	3
- Governmental goals	1
- Reflection society needs	4
- Rethinking decentral collaboration	19
Challenges	17
Confirmation of movement	15
Consensus	2
Current adaptiveness	39
Doing experiments	13
Evaluation	9
Formulating goals	4
Governmental/regional tensions	3
Mobiliteitsfonds and adaptiveness	41
Recommendations for adaptive planning	2
Role NMCA	25
- Expert opinions	6
Role of politics	17
Role zeef-methodiek	14
Vision	1