

Decision Quality in the Exploration Phase of MIRT Structured Projects in the Netherlands

A combination of theoretical and practical insights in decision quality



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Preface

You are at the beginning of reading my master thesis written for the study Complex Systems Engineering & Management at the TU Delft. This marks the end of my time as a student and the conclusion of my student life. With this, my time in Delft will also come to a close, where I have enjoyed the student life since my bachelor's and have been shaped into the person I am today. But now, it is truly time to transition to professional life and begin building a career where I can apply all the knowledge I have acquired in practice. The passion for complex projects and the drive to look at problems from various perspectives remain.

It must be said that this thesis could never have been accomplished without the help of various people, whom I would like to thank in this preface.

Firstly, I would like to thank my supervisors for their assistance during this process and their confidence in the success of this research. Mark de Bruijne, thank you for guiding me through this research and for the numerous coffees during our brainstorming sessions. Jan Anne Annema, thank you for your guidance during the feedback sessions and providing the necessary feedback. Lastly, Saar Bijman, thank you for the trust in hiring me as a graduate intern at Witteveen+Bos and for the good collaboration with you as well as for getting to know the organisation. I am very grateful to all of you for this!

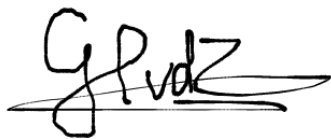
Additionally, I would like to thank the two groups I worked with at Witteveen+Bos, Projectmanagement Planstudies and Omgevingsmanagement en Projectcommunicatie, for showing interest in my research and providing the assistance needed. In particular, I would like to thank Niels Wäckerlin, who guided me in The Hague and to whom I could address all internal questions.

I would also like to thank all the people who made time in their busy schedules to participate in an interview with me. The interviews really helped me to understand the practical side and provided entirely new perspectives on the problem.

Finally, I would like to thank my family and friends for their support during the writing of this thesis. Whenever I needed a distraction or wanted to discuss the progress of my thesis, they were there for me. Without these people, the process would have been much less enjoyable.

This ending is also a beginning of a new chapter. I am already looking forward to the future and what lies ahead!

Enjoy reading this thesis,

A handwritten signature in black ink, appearing to read 'G. v.d. Zant', with a long horizontal flourish extending to the right.

Gino van der Zant
Leiden, 23th of April 2024

Summary

In recent years, there has been a notable increase in large-scale infrastructure projects with some complexity. Despite restrictions on launching new projects due to nitrogen regulations, there are still projects for strengthening and renovating existing structures. These projects involve numerous stakeholders, competing interests, and a lot of complexity. Throughout these projects, various decisions need to be made that shape their direction and ultimately determine their feasibility. To guide these choices, there is often a focus on making well-founded or "high-quality" decisions. Yet, the question remains: how do we define what constitutes a high-quality decision, and what are the elements that contribute to decision quality?

This is one of the questions from which this research arose. Witteveen+Bos had questions about how decision quality could be measured and which aspects define it within the context of public infrastructure projects. Although quantifying such aspects poses challenges, research could identify the key elements that drive decision quality. Furthermore, the literature shows that studies on decision quality have been conducted in fields like healthcare and business, but there's a noticeable gap in the public administration perspective, which is essential for understanding decision quality in public projects.

For this research, a more focused approach was used to ensure a targeted examination of decision quality. This research focusses on projects following the MIRT structure. MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport) was established after 2008, evolving from the MIT. This program primarily encompasses large infrastructure projects, with an increasing focus on spatial planning. MIRT has established a structure with four distinct phases: MIRT Study, MIRT Exploration, MIRT Plan Elaboration, and MIRT Realisation. Each of these phases has its own guidelines, indicating what generally needs to be accomplished in each stage of the phase. This structure should help the people working in these phases, because it offers them a clearer guidance on what to do. This structure has also been adopted by other programs, such as HWBP and PAGW.

As an extra scope for this research, the focus will be on the MIRT Exploration phase. This phase involves numerous decisions that shape the plan's development. It consists of defining the problem, outlining the scope of the research, creating alternatives, and evaluating these alternatives. The final output of this phase is the preferred alternative, which does not necessarily have to be a single option. It can also consist of a set of possible solution directions.

This study aims to identify the key aspects that determine decision quality in the MIRT Exploration phase. A qualitative approach was used to get to these aspects. The first step was a literature review, where various criteria were extracted from existing theories and studies to form groups. These groups were then defined as aspects of decision quality. However, these aspects were not linked to the Exploration phase of projects within the MIRT structure. To bridge this gap, interviews were conducted with professionals in the field. These interviews aimed to determine whether the interviewees' responses aligned with the theoretical criteria, and whether they could provide additional insights. For this study, interviews were conducted with three groups engaged in the decision-making process: advisory/engineering firms, the bureaucratic sector, and decision-makers. Each group has a unique perspective on decision quality and can offer different insights into what they consider most critical for decision quality in the context of MIRT-based projects. Ultimately, the findings from the field were integrated with theoretical insights to create a framework of aspects from theory and practice.

The literature review first needed a starting point. The ideas of Spetzler et al. (2016) were used, who researched decision quality from a business-oriented perspective. Their framework serves as a solid starting point because they outline six aspects that, in their view, must be met to achieve high-quality

decision-making. However, these aspects alone are insufficient for the context of public projects with a MIRT structure, the focus of this study. Therefore extra theories from other fields were explored. First studies on decision quality from other domains were looked into, which introduced a few additional criteria. Subsequently, theories related to good governance, public administration, and process management were examined, each contributing unique criteria to the framework. The process of adding these criteria was iterative, gradually enriching the framework with broader insights to better fit the context of this study.

In the end, all criteria were checked one more time and considered whether they really say something about decision quality or whether they mainly focus on the process, something that is outside the scope of this study. After these considerations, the criteria were grouped and 10 aspects emerged from the theory:

- Appropriate frame
- Clear values & tradeoffs
- Commitment to action
- Creating alternatives
- Integrity
- Legal foundation
- (Political) support
- Public participation
- Relevant & reliable information
- Sound reasoning

The 10 theoretical aspects were used as a starting point for the interviews. The interviews were semi-structured, providing a set of guiding questions without requiring specific answers. Interviewees were encouraged to elaborate on any aspect they considered particularly important. The purpose of the interviews was to ascertain whether the interviewees would mention the aspects identified in the theory, or if they would bring up new aspects that had not been addressed in the literature. If an aspect was not mentioned, it was possible in the interviews to ask the interviewees about this aspect and their opinion about it. A total of 8 interviews were conducted: 5 with representatives from advisory/engineering firms, 3 from the bureaucracy side, and 1 with a decision-maker.

Overall, the interviews confirmed the importance of all the theoretical aspects. Although some aspects were rated more important than others, all were considered significant for decision quality. Additionally, some interviews provided insights into how decision quality could be assessed and offered suggestions on improving it. Below, Table 1 presents an example of one of the aspects examined in this study.

Tabel 1 - Example of aspect

Aspect	What do we need to check for quality?	Tips to improve quality
Appropriate frame	<ul style="list-style-type: none"> • Do we have a clear scope? Is it neither too narrow nor too broad? • Have we clearly defined the problem for the project? • Have we sought alignment with stakeholders for the frame? • Does our research not lead to deterioration of another? 	<ul style="list-style-type: none"> • The Scope and Level of Detail Note sharpens the frame. • Involve stakeholders in this process from the outset, rather than engaging them only once underway. • A decision calendar can also enhance clarity and organisation. • Strive for consensus on this frame among all involved parties.

Upon completing this research, it is evident that defining decision quality is quite challenging due to its complexity. This study does not provide a precise definition of decision quality or measure its value in current projects. But it does offer insights into the aspects that constitute decision quality. This was achieved through a literature review, identifying various theories and their associated aspects, and through interviews with practitioners who provided additional insights. The theory by Spetzler et al. (2016) served as an effective starting point but lacked certain aspects when considering public sector projects within a MIRT structure. To complement their theory, four additional aspects were identified: (political) support, legal foundation, public participation, and integrity.

From the interviews, the following aspects emerged as the most relevant to decision quality: (political) support, relevant & reliable information, sound reasoning, public participation, and appropriate frame. This does not imply that the other aspects are unimportant, but these were the aspects that should be prioritised in public projects within a MIRT structure. Moreover, the interviews highlighted another aspect that practitioners valued highly, namely team composition.

Ultimately, this study is valuable for both theory and practice, as it provides insights that have not previously been documented. Practitioners now have a more structured framework of aspects that are crucial for decision quality. These aspects can serve as a checklist during projects to ensure that every effort is made to achieve high decision quality. For a scientific perspective, this study has identified key aspects that determine decision quality in this type of project, offering a solid foundation for future research. Future studies could delve deeper into each aspect and try to quantify them. These aspects could also be tested in other phases of the MIRT structure or other types of projects. Further, the research pointed out certain tensions that can be researched. For instance, there is no clear answer on how team composition should be structured, as there are varied opinions about this by practitioners. Additionally, there remains the question of whether aspects should be seen purely as content-related or if they are intertwined with process-related aspects.

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1 Introduction

This chapter will provide the background of this research and certain knowledge necessary prior to this study. Some concepts need explanation, as they will later be considered as established knowledge. Next the problem will be presented, followed by an outline of the structure of the remainder of the thesis.

1.1 Background

In recent years, large infrastructure projects have become more complex, not just in the Netherlands but also in other countries. Examples of projects in the Netherlands are the North/South Line, the High-Speed Line (HSL), the Betuweroute, and Maasvlakte 2 (Vreeswijk et al., 2009). These represent a selection of major infrastructure projects in the Netherlands, but they have been covered in the news a lot. For instance, the North/South Line faced issues with high sunk costs and ground subsidence in the surrounding area (NOS, 2016), while the Betuweroute experienced considerable delays in completion and also higher costs (NOS, 2017). News reports often focus only on the outcomes of various investigation phases, once a decision has been made. However, each decision first has a lengthy process during which various choices are made, along with justifications for those choices. This complex decision-making process receives less public attention but has become increasingly complex over time. As a result, there are numerous points at which the quality of a decision can be assessed. Despite the common desire for a positive outcome, sometimes the best decision from a quality perspective is to decide to discontinue the project.

1.1.1 Complexity of infrastructure projects

Infrastructure projects come in various sizes and types. They range from the construction of a small bicycle path next to a road (small-scale) to projects like the construction of the North-South metro line (large-scale). This study will focus on large-scale infrastructure projects. Large-scale infrastructure projects are "the most expensive infrastructure projects that are built in the world today, typically at cost per project from around a hundred million to several billion dollars" (Flyvbjerg, 2005:578). These large infrastructure projects have characteristics such as long-term planning horizons, multi-actor decision-making processes often with conflicting interests, and the use of non-standard technology (Flyvbjerg, 2005). Clegg et al. (2002) confirm this and identify characteristics of such projects as uncertain, complex, politically sensitive, and involving a large number of partners. Also there is more pressure on these projects, which are "conditions of high uncertainty, ambiguity, and complexity with extremely tight deadlines and a limited budget" (Dunović et al., 2014:730). The complexity leading to extensive research is evident from a study conducted by the Elverding Committee (2008). In their report Sneller & Beter, they examined 118 different projects up to 2007. Besides suggesting areas for improvement, such as developing a new phase structure, they also concluded that the average duration of infrastructure projects in the Netherlands ranged from 9 to 15 years (Commissie Elverding, 2008).

In the history of projects, it can be observed that complexity is increasing and being researched more and more. Additionally, efforts are made to comprehend this complexity and anticipate its implications. Mueller et al. (2007) have made a figure of the evolution of complexity since it is first mentioned in literature (Figure 1). This figure illustrates the addition of more complexity to projects and the evolving perspectives on projects and complexity.

In more recent literature, complexity is delineated into six different layers: technical, social, financial, legal, organisational, and temporal/time (Hertogh & Westerveld, 2009; Shi et al., 2020). These layers of complexity are often applicable to large infrastructure projects. Additionally, Senge (1990) has further distinguished two different types within each layer: detailed complexity and dynamic complexity. "Detailed complexity represents a large number of components with a high degree of correlation, and dynamic complexity represents the potential for development over time or limited understanding and limited predictability" (Senge, 1990).

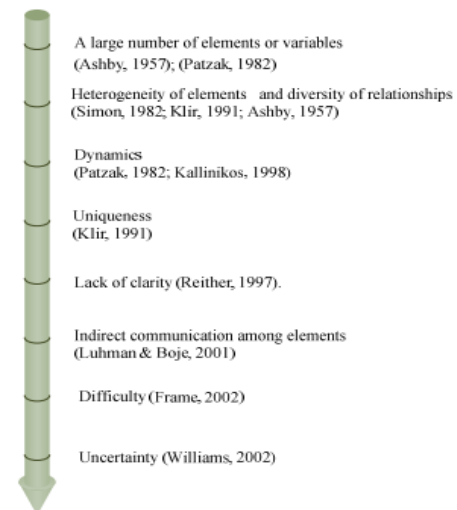


Figure 1 – Evolution of complexity (Senge, 1990)

In conclusion, complexity has undergone a significant evolution in projects and currently is a broad concept embedded in the process. This complexity also contributes to the increased difficulty in decision-making, as more comprehensive justifications are demanded.

1.1.2 Decision-making in projects

The decision itself can be seen in various ways within projects. It can range from a minor decision, such as whether or not to publish results in another language, to a substantial decision, like determining the continuation or termination of a project that has already seen multimillion-dollar investments. Both types of decisions need to be made, but one may be more straightforward than the other. Moreover, the complexity associated with each decision type varies significantly.

Decision-making can be viewed in two ways. Firstly, one can examine the content of the decision to be made and the necessary content for it. Secondly, one can consider the process leading to the decision. Both aspects influence the decision that will be made. It is crucial to acknowledge that these points are both present, raising the question of whether they can be viewed separately or if they are intertwined. This is something that is also questioned by McDevitt et al. (2006) in their research in which they integrated process and content together in the more ethical side of decision-making.

1.1.2.1 Process side of decision-making

Literature describes three conceptual models of complex decision-making: the phase model, the flow model, and the round model (Teisman, 2000), which show the process side of decision-making. Each conceptual model offers its perspective on the decision-making process, accompanied by its unique advantages and disadvantages. Firstly, there is the phase model, as can be seen in Figure 2. Researchers about the phase model say that decision-making involves "the succession of different situations in the formulation, adoption, implementation, and evaluation of policy" (Bryson & Crosby, 1992). This study focuses on the path to the decision, omitting the evaluation for now. The initial phase of this model (policy formulation) is defined as 'the collecting and analyzing of information and the formulating of advice regarding the policy to be followed' (Bryson & Crosby, 1992). In this phase, not only is all necessary information gathered, but alternatives are also generated and evaluated to determine which of these alternatives should be considered in the next phase. In the second phase (policy adoption), choices are made regarding the content of the policy, selecting an alternative and deciding what actions follow this choice. Lastly, in the final phase (policy implementation), all components are brought together. The aim is to get an optimal outcome to emerge from these phases (Teisman, 2000).

The phase model has some remarks. It suggests that one phase must be completed before moving on to the next, which is more challenging in reality due to overlap between the phases. Additionally, determining when to proceed to the next phase can be difficult. At least one actor is needed to make the ultimate decision about the outcome, allowing entry into the next phase. Researchers also note that the phase model assumes the decision-making process is problem-focused (Scharpf, 1997). Forming the problem definition is therefore a critical step in this model. Lastly, Bryson & Crosby (1992) assume that a decision can be made at one moment, distinguishing it from the subsequent models to be mentioned.

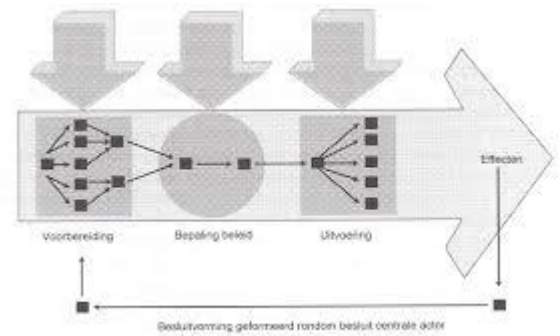


Figure 2 - Phase model (Teisman, 2000)

Whereas the phase model focuses on a vertical separation of the process, the flow model concentrates on a horizontal separation (Teisman, 2000). The flow model consists of three distinct flows: problems, solutions/policies, and politics (Kingdon, 1984). These three flows can function independently, each having its own outcomes. Throughout the entire process, the level of participation varies, contributing to the 'unpredictable development' of this process. As the flows can operate independently, each has its own dynamics and rules (Kingdon, 1984). The flows rely on each other to reach an outcome, and 'major policy changes' occur when all three flows converge. This is a phenomenon referred to as a policy window (Kingdon, 1984), as can be seen in Figure 3.

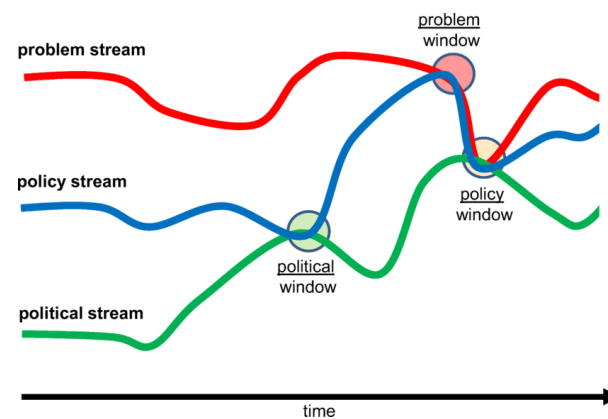


Figure 3 - Flow model

Lastly, there is the round model. In contrast to the phase model, researchers here assume that problems and solutions are not linked to a single actor, eliminating the necessity for a fixed moment to make decisions. Many actors are involved in this model for complex decision-making, each offering a unique perspective on the problem, potential solutions, and political considerations (Teisman, 2000). The focus of this model lies in the interaction among involved actors. This model combines ideas from both the phase and flow models. It incorporates a 'vertical classification' in the series of choices made over time and a 'horizontal classification' in interactions on the same subject, even when actors are unaware of each other's choices (Teisman, 2000). In this model, phases are replaced by rounds. Each round is termed a 'decision-making round,' concluding in a decision that initiates a new round (Teisman, 2000). An example can be seen in Figure 4.

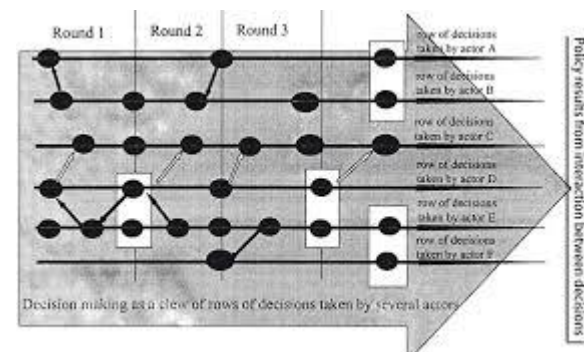


Figure 4 - Round model (Teisman, 2000)

1.1.2.2 Content side of decision-making

In addition to models illustrating how the decision-making process can be structured, there is another aspect of decision-making to consider: the content over which the decision is made. McDevitt et al. (2006) show the importance of incorporating content-related variables into decision-making. They have identified various fields such as individual, job context, organisational context, and external environment content variables (McDevitt et al., 2006). Although their research leans more towards the ethical dimension of decision-making, it underscores the importance of content variables to be considered and demonstrates a relationship between process and content.

This section on decision-making primarily highlights the various perspectives through which decision-making can be examined. These perspectives should be kept in mind throughout the research process. Moreover, they facilitate a clearer distinction between process and content later in the study. Additionally, process-oriented models provide insights into the structuring of specific projects or project phases.

1.1.3 MIRT

In the Netherlands, large, complex infrastructure projects are consolidated under the MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport). The MIRT, established in 2007, integrates significant national projects and programs from a national fund (Rijksoverheid, n.d.). Prior to this program, it existed under various names, initially embedded in the Tracéwet and later as the MIT. The space aspect (R) was added later, recognising that alterations to infrastructure and transport had a direct impact on the environment and vice versa.

MIRT projects follow a defined structure outlined in a comprehensive document of rules (RWS, 2010), which can also be seen in Figure 2. This structure is also employed in other programs/projects, such as projects under the Flood Protection Program (HBWP), and Programmatic Approach Major Waters (PAGW). The structure comprises four phases: MIRT Study, MIRT Exploration, MIRT Plan Elaboration, and MIRT Realisation (Ministerie I&W, 2017). As depicted in the Figure 5, decisions are indicated between each phase. Each phase concludes with a specific decision, marking the beginning of the next step. This aligns with the round model discussed in the previous section.

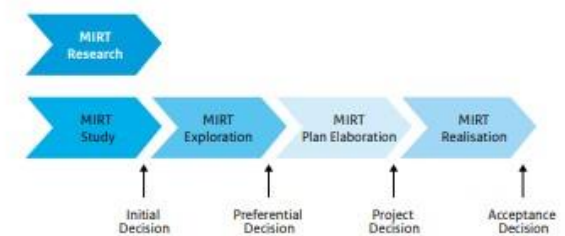


Figure 5 - MIRT structure (RWS, 2010)

The concept of different phases did not emerge out of thin air; multiple commissions have conducted research on the decision-making process for projects in the Dutch infrastructure. Firstly, there was the Temporary Committee on Infrastructure (TCI) in 2004, which investigated the Betuweroute and HSL-Zuid (Weimer, 2007). The goal of this committee was "...to arrive at a manageable framework for the House of Representatives to improve its role in decision-making and monitoring the implementation of major infrastructure projects" (TCI, 2004:5). However, they did not propose changes to the then-existing MIT rules. Subsequently, the Luteijn Committee conducted research on the approach to the A4, drawing conclusions solely on the project's progress. As stated in their final report: "Lengthy decision-making processes lead to decisions on planned infrastructure being postponed or, once adopted, designs not being adapted to the latest mobility developments" (Commissie Luteijn, 2003:24). The most extensive research was conducted by the Elverding Committee in the report 'Sneller & Beter' (Commissie Elverding, 2008). This committee is one of the founders of the current MIRT rules. The improvements they suggested focused on 'governance culture, preparation, the decision-making process, and legislation, primarily aiming at time savings' (Commissie Elverding, 2008). They are also the architects of the current four phases of the MIRT.

1.1.4 Quality of a decision

Decision quality is found in the literature, in a different context, primarily addressing the more social (psychological) and business-oriented aspects. A decision is described from a psychological perspective as "a commitment to a course of action that is intended to produce a satisfying state of affairs" (Yates et al., 2003:15). This can also be linked to the business and administrative perspective. Defining a concept for decision quality is challenging in current literature. Various researchers delve into components contributing to the quality of a decision but do not provide a direct definition (Ratliff et al., 1999). For instance, research in the healthcare sector extensively explores decision-making and its

quality. Sepucha et al. (2007:262) assert that "the quality of a preference-sensitive clinical decision can be defined as the extent to which the implemented decision reflects the considered preferences of a well-informed patient," while O'Conner et al. (2009) propose that "decision quality can be measured by knowledge about the options and outcomes, realistic perceptions of outcome probabilities, and agreement between patients' values and choices".

The conclusion drawn from attempts to formulate a definition is that "decision quality was complex; it was important to avoid dependence on the outcomes of decisions" (Edwards & Elwyn, 2009:144). This perspective is affirmed by research from the business side. There exists a distinction between a good decision and a favourable outcome, with the theory emphasising that decision quality is determined at the moment in time when the decision is made, not when the outcomes are known (Spetzler et al., 2016).

Spetzler et al. (2016) delve into decision quality from the business perspective. They identify six aspects that determine the quality of a decision, serving as a starting point for the literature review in this study. Although they do not provide a definition for decision quality, they do suggest that defining decision quality in terms of aspects and assessing whether these aspects are applied effectively does ultimately allow for the determination that the decision has been made in a qualitative manner (Spetzler et al., 2016). It is crucial to note that this perspective stems from business studies, where decisions often revolve around whether they are financially lucrative or not. This outcome is not always the goal from a public administration perspective (the context of this study). Additionally, other aspects, such as community involvement and legal regulations, will weigh in. Information on these aspects is limited in the literature, necessitating exploration through other theories.

1.2 Problem

The previous paragraphs provide an overview of the key considerations in this study and highlight areas where certain knowledge is lacking. Defining decision quality is challenging, as there is no single definitive answer. Nonetheless, attempts have been made to gain insight into what determines quality from a business perspective. However, this offers a limited view of decision quality when placed in the context of projects structured within the MIRT structure. This context involves more of a public administration aspect which has not been researched that much. The missing understanding of decision quality in projects under the MIRT structure is what this study aims to explore, with the intention of identifying the aspects that determine decision quality within the scope of this research.

1.3 Thesis outline

The background has been elaborated in this introduction, leading to the identification of the problem. In Chapter two the research design will be clarified. The goal, objective, scope, and the research questions will be presented in this chapter. Chapter three will elaborate on the methodology used for this study. The next chapter consists of the literature review on decision quality and related theories, concluding in the development of a theoretical framework. Chapter five will detail the conducted interviews, aligning them with the theoretical framework for validation and potential augmentation. Finally, Chapter six will provide the conclusion of the study, accompanied by limitations and possibilities for future research.

2 Research design

This chapter will elucidate the design of the research. It will clarify the research's objectives and how it has been scoped. Additionally, it will discuss the research questions and the approach used in this study.

2.1 Research goal & objective

This research has two objectives, one scientific and one practical. From a scientific perspective, the aim is to understand decision quality within the context of this study which focusses on the exploration phase of projects following the MIRT structure. The goal is to identify the aspects that determine decision quality, integrating perspectives from both the business and public administration literature. This integration will conclude in a framework that can be used in projects executed in this context. The practical objective stems from practitioners, such as Witteveen+Bos, who are collaborating on this research. Their aim is to develop a framework to assess whether all aspects of decision quality have been considered in the exploration phase or if any are lacking. This framework can enhance the justification of their decisions during this process.

The objective is therefore to ultimately develop a framework on decision quality that is suitable for the context of this research by integrating various theoretical perspectives and insights from practice.

2.2 Research scope

To ensure that the research remains feasible within the expected time and scope, it is crucial to delineate the study appropriately. A balanced consideration is necessary regarding the level of scoping, as excessive scoping can result in a study that is too specific and short.

Firstly, the decision was made to limit the type of projects. 'Projects' exist in various forms, ranging from local to national, short to long timeframes, and small to large impacts. To establish a boundary, the choice was made to focus on projects following the MIRT structure. This approach captures large, complex projects while ensuring that all these projects work towards the same goal in each phase. This ensures that everyone to be interviewed has an understanding of the decision-making process and has roughly followed the same steps.

Limiting the projects alone is not sufficient. The MIRT consists of four distinct phases, each with its own timeline and decision-making process: MIRT Study, MIRT Exploration, MIRT Plan Elaboration and MIRT Realisation. To focus specifically on one type of decision, the exploration phase was chosen for this study. This phase involves crucial decisions, such as defining the problem, scoping, and conducting initial environmental assessments. Additionally, this phase concludes with a significant decision: the preferred alternative. So the conclusions will also be based on exploration phases of projects that follow the MIRT structure.

Finally, it is important to consider that two types of individuals or parties are involved in projects: those involved in decision-making and those involved in the project. Since this study focuses on decision quality, the focus will be only to those involved in decision-making. Within this scope, three groups have been identified for interviews: the advisory/engineering firms, the bureaucratic side, and the decision-makers. These groups have varied roles in the exploration phase and may have different perspectives on the aspects influencing decision quality.

2.3 Research questions

Using the problem definition from Chapter 1 and the objectives and scope outlined in this chapter, the following main research question can be formulated:

- **What determines the quality of a decision in the exploration phase of planning studies of a project following the MIRT structure (MIRT, HWBP, PAGW)?**

This main research question is deliberately broad to attempt to gain an understanding of the quality of a decision. Additionally, there will be sub-questions to provide substantiation to answer the main research question:

- **What aspects determine the quality of decisions according to literature?**
- **Which aspects for the quality of a decision within the scope of this research emerge from practice?**
- **Is there a difference between the aspects that emerge from the literature and practice?**
- **Do the same aspects emerge from the three groups (the administrative side, the governmental side, and the advisory side), or is there a difference in the importance of the aspects?**

2.4 Research approach

Given the different types of research approaches available, ranging from qualitative methods such as literature research to quantitative approaches like surveys, researchers can choose to design their own product/idea or delve into existing theories. With these diverse options, it is crucial to make a well-defined choice before initiating the research process. Additionally, ensuring that sub questions are appropriately formulated and closely aligned with the chosen approach is integral to the research design. This clarity at the outset enhances the effectiveness of the research.

Initially, a decision must be made between qualitative and quantitative research, each having its own set of advantages and disadvantages. Qualitative research offers the advantage of concentrating on a smaller sample, enabling more in-depth questioning in interviews, for instance (Customeyes, 2023). However, the drawback lies in the difficulty of generalising findings due to the smaller sample size (Scribbr, 2021). On the other hand, quantitative research allows for drawing conclusions from a larger sample, facilitating generalisation (Right Marktonderzoek, n.d.). However, a disadvantage may arise from the potential lack of certainty regarding the interpretation of numerical data (Scribbr, 2021).

For this study, a qualitative research approach will be chosen. This decision is made on the nature of this research, which delves into a relatively unexplored area with limited existing literature. That is also why the research will be exploratory, aiming to generate knowledge that has not yet been documented. The intention is to construct a framework based on the gathered insights, providing guidance for both the academic and practical domains on this subject. Also a quantitative approach was considered, wherein the criteria for decision quality would be quantified and tested across projects. However, it raised concerns about the meaningful interpretation and added value of numerical values in a field with minimal existing knowledge. Given the exploratory nature of the research and the challenge in quantifying decision quality, a qualitative research approach was chosen.

Sub-questions 1 and 2 will be answered through literature review. The second sub-question will be elaborated upon per theory, gradually expanding the theoretical framework. Sub-question 3 and 4 will be answered through interviews. For sub-question 4, it is important to conduct interviews from different groups to make the distinction. With these research questions, it is evident that both the theoretical and practical aspects are being addressed in this study, which adds value for TU Delft and Witteveen+Bos.

3 Methodology

In this chapter, the methods employed to address the research questions outlined in Section 2.3 will be presented. Two central methods will be emphasised for this research: literature research and interviews. This chapter will describe these two methods, their contributions to the research, and explain on how they complement each other in the investigative process. Additionally, the research steps will be delineated in this chapter, accompanied by an explanation of the Research Framework Design (RFD).

3.1 Literature research

The first method used in this study is a literature research to identify potential theories and studies that can be linked to the concept of decision quality. The objective of the literature research is to create an understanding of various aspects that contribute to decision quality. Each aspect can consist of several criteria. These criteria will be derived from existing theories to build the framework of relevant aspects. It is essential to consider the scope of the study, making sure that the derived aspects are applicable to the types of projects defined in the context of the study

For the literature research, various research databases were used to find relevant studies. Initially Scopus and Web of Science were used, because these two databases contain published studies. The following queries have been used on these databases:

- **("decision-making" OR "decision quality") AND "infrastructure"**
- **("decision-making" OR "decision quality") AND "infrastructure" AND "projects"**

Given that the focus is on decision quality, these queries were designed to gain initial insights into the topic. The inclusion of "decision-making" was justified by its reference in Chapter 1. In there a distinction was made between process and content, suggesting that criteria could be extracted from studies on decision-making. These queries resulted in several studies, but it was crucial to check if the researches were performed in relevant fields. For example, studies focusing on criteria for decision quality in healthcare were deemed irrelevant for this research. Additionally, it was important that the studies provided specific criteria.

Simultaneously a literature research was conducted to search for studies related to the MIRT framework and the link of MIRT with decision quality. However, it quickly became apparent that there was little to no published research on MIRT projects involving decision-making or decision quality. So an alternative approach was to use Google Scholar, where master theses and other non-published research might be found. While these are not formally published, they can still offer valuable insights into MIRT projects and decision quality. The following query was used on Google Scholar:

- **("decision-making" OR "decision quality") AND "MIRT"**

This search yielded several master's theses and a few studies that were relevant to the review. These were then incorporated into the literature review.

Lastly, it was important to explore other theories and studies that could still be related. These additional theories emerged through "snowballing" from other studies and guidance from the study's advisors, suggesting potential related concepts. This process led to the identification of additional theories. These theories were then subjected to similar queries as mentioned earlier, with "decision-making" replaced by the relevant term for each theory.

In the end a theoretical framework can be created with this literature review. All the criteria gathered from the literature were grouped into a set of aspects. These aspects then served as a starting point for the next method: interviews. The interviews aimed to ascertain whether practitioners from the field would identify these same aspects or propose new ones that had not emerged from the literature.

3.2 Interviews

To validate the theoretical framework and gather potential practical insights in decision quality, interviews will be conducted with experts about projects they have been involved in. These interviews will delve into the framework and be assessed against projects in which the interviewees have been involved. The primary focus during the interviews is to check whether the interviewees also mention the aspects that have been gathered during the literature research or if they indicate that a particular aspect is not relevant. Finally, there is also room for the interviewees to propose new aspects that have not yet emerged from the theory or are less emphasised from a theoretical standpoint. The interviews help to provide additional validation to the framework and ensures that perspectives from both theory and practice are represented.

This interviewing approach aligns with a semi-structured interview format, as described by Alsaawi (2014). In this type of interview, the questions are pre-planned but open-ended, allowing interviewees the space to elaborate on their responses. In this research, this approach is considered suitable for interviews, as diverse aspects of decision quality should emerge from the interviewees rather than being dictated by the interviewer. This approach makes sure that you do not only receive yes/no answers, which ensures depth and richness in the interview content (Bryman, 2008).

Interviews will be conducted from various perspectives, so all relevant perspectives will be used in this research. As mentioned in the introduction, complex projects involve numerous stakeholders, with different actors playing distinct roles. In the decision-making process, three key perspectives are crucial: 1) advisory/engineering firms, 2) bureaucratic, and 3) decision-maker. The first two parties typically contribute to the decision-making process beforehand, so the lead-up to the decision. Both advisory/engineering firms and the bureaucratic side aim to provide the decision-maker with the necessary information to reach a decision. The decision-maker is situated more toward the project's conclusion. The decision-maker makes the final decision, determining whether a project can progress to the next phase.

3.2.1 Interviewees

Various types of individuals were interviewed, as mentioned at the start of this section. They all had experience with MIRT projects or projects that follow the MIRT structure. The interviews lasted between one and one and a half hours and focused on the aspects that determine decision quality during a project phase. A total of eight interviews were conducted with individuals from different groups. In Table 1, 2 & 3 a list of the projects of the interviewees is shown. Due to privacy concerns, no names and roles are mentioned in this research. However, you can see the pseudonyms used for each interviewee.

Since this research was conducted in collaboration with Witteveen+Bos, it was easier to find people from advisory/engineering firms to participate in the interviews. Ultimately, five people from this group agreed to be interviewed. These individuals hold various roles within the company and have been involved in different projects. A list of the interviewees and the projects they have worked on from this group can be seen in Table 1.

Table 1 - Interviewees from advisory/engineering firms

Type of respondent	Company	MIRT structured projects
Consulting (W+B 1)	Witteveen + Bos	<ul style="list-style-type: none">• MIRT Exploration Zandhonger Oosterschelde• Follow-up study Bereikbaarheid Ameland• Net ten noorden van de Waddeneilanden

Consulting (W+B 2)	Witteveen + Bos	<ul style="list-style-type: none"> • Krachtige IJsseldijken Krimpenerwaard • Programma Aansluiting Wind Op Zee (PAWOZ) • 380 kV hoogspanningsverbinding Noord-Holland • Net ten noorden van de Waddeneilanden
Consulting (W+B 3)	Witteveen + Bos	<ul style="list-style-type: none"> • MIRT Exploration Dijkversterking Zwolle-Olst • MIRT Exploration Deil-Vught • 380 kV hoogspanningsverbinding Noord-Holland • MIRT Plan Elaboration Grebbendijk
Consulting (W+B 4)	Witteveen + Bos	<ul style="list-style-type: none"> • MIRT Plan Elaboration A7/A8 • MIRT Plan Elaboration A9 • Additional Research A12 • Non-statutory measures A1
Consulting (W+B 5)	Witteveen + Bos	<ul style="list-style-type: none"> • MIRT Plan Elaboration A9 • Damwanden langs het Kanaal

Additionally, interviews were conducted with individuals working on the governmental side, involved in preparing decisions. These individuals collaborate with consulting firms to provide information to the responsible authorities. Leveraging the network established at Witteveen+Bos, two individuals involved in MIRT structure projects were interviewed—one from the Ministry of Infrastructure & Water Management and the other from the Water Board Drentse Overijssel. Similar to the advisory/engineering firms, the names and roles of these individuals are withheld, as can be seen in Table 2.

Table 2 - Interviewees from bureaucratic side

Type of respondent	Company	MIRT structured projects
Bureaucracy (I&W)	Ministry of I&W	<ul style="list-style-type: none"> • MIRT Elaboration Spoor-goederenvervoer • Follow-up Elaboration Amsterdam Centraal – Eindhoven • MIRT Study Rotterdam – Den Haag • MIRT Elaboration A2 Deil – Vught • Goederenvervoercorridor Oost-Zuidoost
Bureaucracy (WDO)	Water Board Drentse Overijssel	<ul style="list-style-type: none"> • Dijkversterking Stenendijk • MIRT Elaboration Veilige Veght

Lastly, efforts were made to interview a decision-maker. While it was not feasible to interview a current decision-maker, an individual who recently served as a deputy of the Overijssel Province was interviewed. Despite not currently holding office, this individual possesses 15 years of experience and has contributed to multiple MIRT projects, rendering them a representative figure. Due to the demanding schedules of decision-makers, only one interview could be arranged. However, it became apparent from this interview that decision-makers may have slightly less familiarity with the procedural side, suggesting that interviewing individuals from the other two groups may be more informative. Table 3 below highlights the projects in which this individual was involved.

Table 3 - Interviewee from decision-maker

Type of respondent	Company	MIRT structured projects
Decision-maker (GED)	Province Overijssel	<ul style="list-style-type: none"> • N35 • Spoor Zwolle-Enschede • Spoorlijn Zwolle-Kampen

3.2.2 Coding interviews

The process of coding the interviews is typically characterised in the literature as consisting of three steps. Before coding can commence, transcripts of all conducted interviews must first be generated. This ensures that every word uttered by the respondents is documented, facilitating subsequent analysis. Subsequently, three steps are undertaken. Initially, open coding is performed, wherein all quotes per respondent that can be linked to a particular aspect are transcribed along with a brief description of their content. Next, axial coding is conducted, wherein quotes with similar themes are grouped together under broader, overarching themes. Finally, selective coding can be applied, allowing for the development of theoretical constructs based on the interviews. This step enables the identification of relationships and connections within the data.

However, the process differs slightly when coding these interviews. All steps are still followed, but there is already knowledge about the emerging themes (aspects in this research). This is because it is linked to the aspects obtained from the literature. However, during the interviews, an open perspective was maintained to explore the possibility of new aspects. Therefore, open coding was used but this occurs during the analysis phase when searching for new aspects.

Furthermore, the detailed mapping of quotes and aspects/themes will not be included in the main text for many of the analyses. Instead, these will be presented in Appendices II & III. The text in the results will solely present the final results.

3.3 Research flow diagram

The research is build up out of several chapters. Each chapter is a step in gathering knowledge to be used in subsequent steps. To visualise this a bit more, a research flow diagram (RFD) has been created, as can be seen in Figure 6. This diagram illustrates the relationships between the chapters and the type of information covered in each one. It also shows that the first three chapters are primarily focused on building the foundation for the research and collecting preliminary information. Afterward, the literature review begins, indicating that the initial focus is on studies related to decision quality, followed by other theories. This has already been mentioned in Section 3.1. Following the literature review, interviews are conducted. After this a framework will be designed, based on both theoretical and practical insights. Once this framework is established, the study moves on to conclusions, discussion, and recommendations.

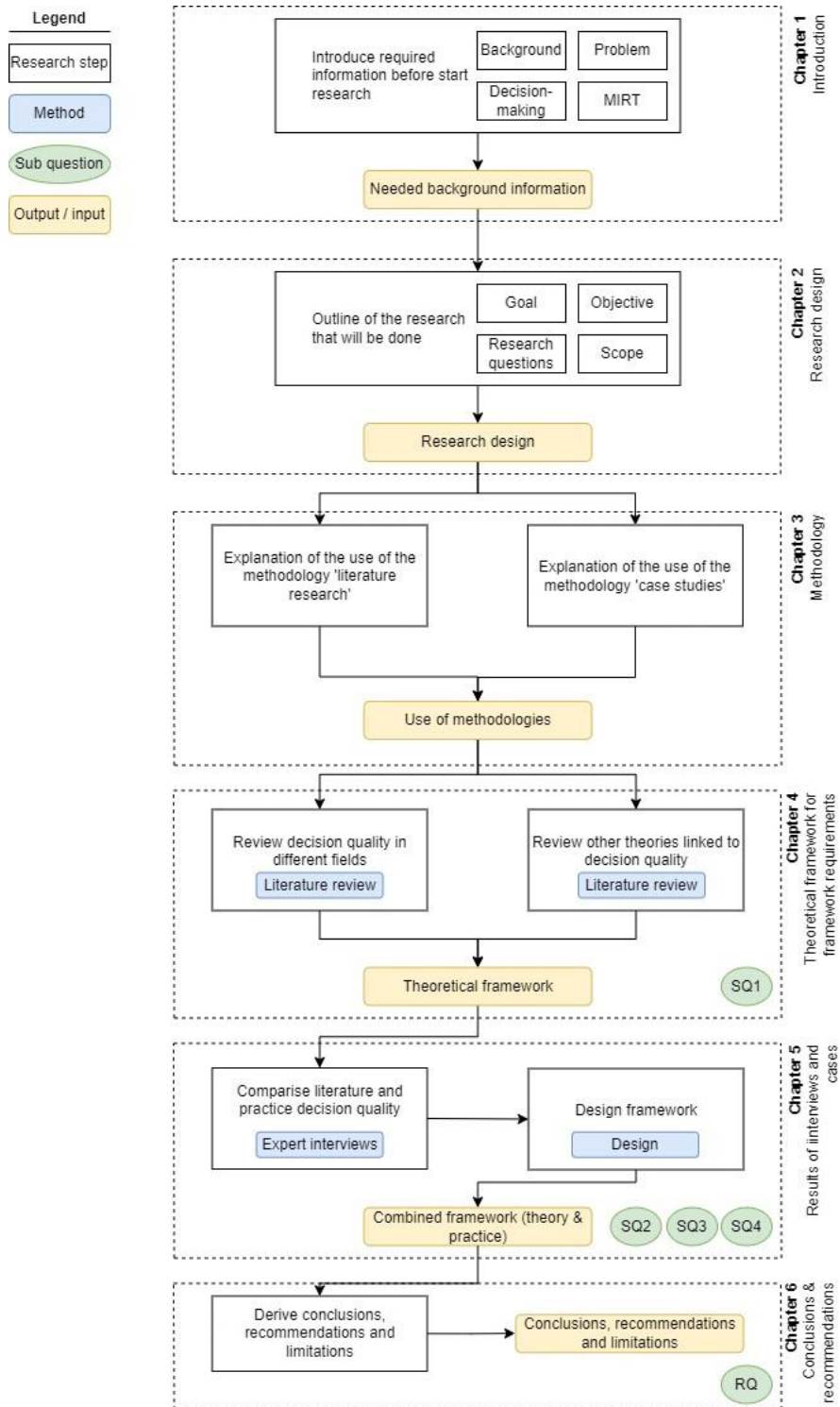


Figure 6 - Research flow diagram (RFD)

4 Literature research

This chapter aims to conceptualise decision quality from a theoretical perspective. Various theories will be looked into to determine their contributions and to identify any contradictions or supplemental insights to construct a framework. Before delving into these theories, the chapter starts with refining the context in which decisions are made by clarifying the type of decision-making involved. This provides a clearer lens through which to understand decision quality. As a starting point, the business perspective on decision quality is chosen, given its clear elaboration in a well-regarded book that delves deeply into specific aspects relevant to decision quality. However, the context for this study requires an additional perspective from the field of public administration. To achieve this, the chapter incorporates insights from other theories or studies, thereby enhancing the theoretical framework to better fit the context of the study.

4.1 Type of decision-making

Before delving into the aspects from various theories, it is crucial to establish a framework for decision-making methods. There are different approaches to decision-making, each with its own merits and drawbacks. While rational decision-making is often pursued, there are also instances where strategic decision-making, group decision-making, or individual decision-making are applied (Eisenhardt & Zbaracki, 1992; Tang & Liao, 2021; Carmerer, 1998). None of these methods are inherently right or wrong, but for the purpose of analysis, we need a standpoint from which to select the aspects.

The establishment of the structure for the MIRT involves deliberation with a certain idea in mind, weighing all values, and ultimately choosing the best outcome. This aligns closely with how people want to make a rational decision. Uzonwanne (2016:2) defines rational choice theory as follows: "rational choice theory is that cumulative social behavior results from the behavior of individual actors, each of whom is making their individual decisions." These decisions need to be aggregated, and collaborative efforts are required to arrive at a collectively desired decision within the context of the MIRT. Referring to Whitworth et al. (2000), they outline six elements of rational decision-making: alternatives, criteria, model, information, analysis, and decider. Given that the MIRT structure has the goal to make the most well-considered choice possible, this research assumes a rational perspective in decision-making. Therefore, the criteria derived from this literature review primarily focus on this perspective.

Another point to consider is if the problems in the projects in the context of this research can be described as structured or unstructured, the so-called wicked problems. The use of the MIRT structure aims to bring order to the process and systematise the problem. But it is challenging to assert that these problems are fully structured. When checking the characteristics of a wicked problem (Lönngren & Van Poeck, 2021), public projects meet all the criteria. This does not imply that these problems have no answer, but rather that there are no absolute right or wrong answer. Therefore the optimal approach to addressing these problems is to optimise the outcomes, a strategy also applied to projects within a MIRT framework. So despite these projects meeting the criteria for wicked problems, there is a continuous effort to structure them as much as possible. Mapping decision quality in this context serves as a mean to introduce more structure to these types of projects

4.2 Business decision quality

Describing decision quality is a challenge in current literature. A clear definition of a decision exists, as described by Yates et al. (2003:15) as "a decision is a commitment to a course of action that is intended to produce a satisfying state of affairs." However, determining what constitutes a "good" decision remains hard to do. As noted by Chen & Chien (2009:87): "Without a clear definition of a 'good' decision, it is like shooting the dart without a dartboard." But as they and other researchers suggest, forming a singular definition is difficult due to the subjective nature of describing what constitutes a "good" or "right" decision. There are varying perspectives on the concept of quality across different fields. In the absence of a definitive definition of decision quality, particularly within the context of this research, a framework will provide insights into what is required to make a "good" decision.

The theoretical framework begins with the work of Spetzler et al. (2016), who approach decision quality from a business perspective. Although they do not provide a formal definition of decision quality, they emphasise that decisions are often made too easily. This will lead to decisions that are just "good enough" rather than optimised for quality. In their book, they propose six aspects to evaluate the quality of a decision: 1) appropriate frame, 2) creative alternatives, 3) relevant and reliable information, 4) clear values and trade-offs, 5) sound reasoning, and 6) commitment to action. They suggest that following these aspects can improve the quality of the decisions made.

Additionally, they point out that these aspects function as a kind of chain, where each aspect is interlinked with the others. To ensure high-quality decision-making, all aspects must be present (Spetzler et al., 2016), as can be seen in Figure 7. Each of these aspects will be briefly elaborated on later in this section.

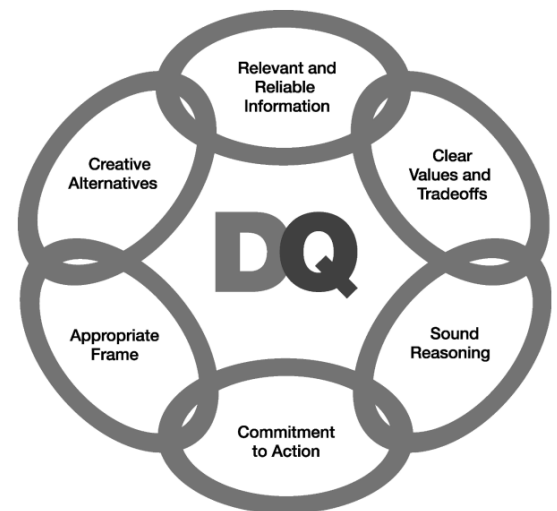


Figure 7 - Decision quality chain (Spetzler et al., 2016)

It's important to note that the approach by Spetzler et al. is from a business perspective. While their framework can be applied to the context of this study, which focuses on decision quality in the exploration phase of projects following a MIRT structure, some aspects may be missing. At the end of this section, its strengths and weaknesses, will be discussed.

4.2.1 Appropriate frame

First and foremost, an appropriate frame is required when addressing the problem. The primary question to be answered here is: What is the problem, and how do we intend to approach it (Spetzler et al., 2016)? This consists of clarifying the goal and objective, defining the scope, determining the approach, and considering the perspectives involved. It is essential to carefully consider all these aspects. Maintaining too broad a focus will prolong the process and raise doubts about whether a decision will ultimately be made regarding the desired outcome (Spetzler et al., 2016). Conversely, an overly narrow focus risks examining only one component of the problem, potentially necessitating further research later on. It is important to note that an appropriate frame is sought rather than a perfect one, as there may not always be a single optimal option (Spetzler et al., 2016).

However, what constitutes an appropriate frame? There is no definitive answer to this question, but certain criteria can be used to assess whether the frame aligns with the decision-maker's perspective. Meeting these criteria indicates that the frame has been suitable. Firstly, consider the purpose of the decision. Understanding the problem being addressed, how it will be tackled, what is to be achieved, and how will be determined if the decision was successful is crucial. Additionally, incorporating all

perspectives is essential for forming an appropriate frame. Each perspective offers a unique viewpoint on the situation and the decision to be made. Acknowledging and presenting these perspectives ensures that all stakeholders understand each other's points of view. Lastly, defining the scope is crucial. What choices fall within and outside the scope? Choices that fall outside the scope need not be considered in this decision. Therefore, it is important to clearly delineate the scope's boundaries and level of detail.

When framing a decision, care must be taken to avoid certain pitfalls. Firstly, there is the comfort zone bias. The problem is confined to the comfort zone because it is easier to solve there, but ultimately fails to address the real issue (Spetzler et al., 2016). Additionally, there is narrow framing, where focus is placed on the easiest and quickest path to frame formation (Spetzler et al., 2016). This approach avoids conflicts and speeds up the start of the research, but may result in an inadequate frame requiring redoing the research later on.

4.2.2 Creating (creative) alternatives

Furthermore, it is essential to create (creative) alternatives to make a decision. Searching for alternatives is always crucial because if no alternatives exist, no choice needs to be made (Spetzler et al., 2016). These alternatives must also be creative and compelling, as they must provide added value. Hence, it is essential to have a broad set of alternatives, all well-supported. By focusing on this aspect, all facets of the problem are illuminated, facilitating a better decision-making process. As Spetzler et al. (2016:14) emphasise: "a decision can't be better than the best alternative."

Ultimately, the alternative with the greatest added value will be chosen. Therefore, having good alternatives is crucial for achieving quality. According to Spetzler et al. (2016), if the following criteria are met, we have qualitative alternatives:

- Creative
- Significant difference between alternatives
- Represent a broad range of choices
- All alternatives are contenders for selection
- Convincing
- Feasible
- Manageable in number, not too many alternatives

It is crucial to avoid falling into the "good enough trap" when generating alternatives. This trap occurs when an initial alternative is found and it is assumed to be a suitable solution. Further exploration of other alternatives will stop at this moment, which can lead to potentially overlooking better options. Therefore, it is essential to maintain a broad perspective and avoid stopping too early in the search for alternatives.

4.2.3 Relevant & reliable information

Thirdly, it is crucial to ensure the availability of relevant and reliable information. Relevant information encompasses "anything important that we know, would like to know, or should know about the outcomes of the decision" (Spetzler et al., 2016). Reliable information is defined as "trustworthy, unbiased and comes from authoritative sources" (Spetzler et al., 2016). This aspect presents a significant challenge, as acquiring data is not always straightforward. Therefore, research must be conducted in practice, alongside an examination of past studies, trends, and expert opinions, while avoiding biases and pitfalls (Spetzler et al., 2016).

However, there are several pitfalls to be mindful of when gathering this information. Especially when aiming to make a qualitative decision, it is essential that the information obtained is genuinely relevant

and reliable. One must be cautious of biased sources, data inaccuracies, and information from non-experts (Spetzler et al., 2016). Lastly, consideration must also be given to the decision-maker's overconfidence. There is a risk that they may rely solely on their own expertise, dismissing the importance of additional information.

4.2.4 Clear values & trade-offs

Clear values and trade-offs are also crucial for the quality of a decision. Making a decision becomes easier when there is a clear list of values against which each alternative must be measured. Often, multiple values are deemed important, necessitating a trade-off between them (Spetzler et al., 2016). Without clarity on both the values and the trade-offs, it is unlikely that the chosen path is the best one (Spetzler et al., 2016).

It is essential for the decision-maker and stakeholders to engage in discussions regarding these aspects and determine the basis for making the decision. Ultimately, the decision-maker has the final say and can therefore make the trade-off at the end. However, certain pitfalls must be considered, including poorly defined values, excessive focus on indirect values rather than direct ones, and insufficient correction for risks (Spetzler et al., 2016).

4.2.5 Sound reasoning

The first four elements aid in selecting an alternative, as they form the basis of the decision: what can we do, what do we know, and what do we want (Spetzler et al., 2016). Therefore, sound reasoning is required to substantiate the decision ultimately. Sound reasoning is often facilitated through tools such as decision trees or tornado diagrams (Spetzler et al., 2016).

The challenge lies in providing adequate justification, as many individuals often overlook this explicitly. While individuals may contemplate the information they receive and what actions to take, they sometimes fail to maintain focus and proceed to steps such as constructing decision trees or specifying probabilities. Additionally, clarity in expression is crucial. This is achieved by minimising complexity, although care must be taken not to oversimplify, which could potentially distort outcomes (Spetzler et al., 2016).

4.2.6 Commitment to action

If the preceding five steps have been successfully navigated, then the alternative with the best value becomes evident. To ultimately translate this value into practice, it is crucial to have a commitment to action. Otherwise, the earlier steps may have been taken, but the plan may never be realised. It is important to recognise the distinction between "decision and action" (Spetzler et al., 2016). While we may know what needs to be done (decision), it also needs to be implemented (action).

In addition, it is essential to consider the consequences of the decision and determine who will be responsible for those consequences. This includes evaluating the costs that will be incurred, identifying who will bear these costs and understanding the rationale behind the cost distribution. This aspect requires careful attention to ensure accountability and transparency.

However, this step presents several pitfalls that need to be considered:

- Disagreement may arise regarding whether a decision needs to be made at all.
- There may be doubts about the quality of the steps before.
- Decisions for the future always entail a degree of uncertainty.
- It might be hard for decision-makers to change from the "decision mode" to the "action mode", which can lead to unwillingness to delegate tasks to others.

4.2.7 Advantages & disadvantages of this perspective

The use of the ideas of Spetzler et al. can have both advantages and disadvantages. An advantage is that their research provides a detailed explanation of the aspects and outlines the steps needed to achieve decision quality. This level of detail offers a clear understanding of the aspects, facilitating easier communication and explanation. But it is crucial to remember that they have a business perspective, which might not directly align with the context of this research. In this research the focus is on exploratory phase of projects within the MIRT structure. These projects have distinct characteristics, such as different evaluation criteria, the involvement of a wider range of stakeholders, and greater complexity. As a result, the work of Spetzler et al. offers a valuable starting point, but it requires additional perspectives from a governance and public administration context to fully address the unique challenges of these types of projects.

4.3 Decision quality & decision-making

In the first section of this literature research six aspects have emerged with which the decision quality can be assessed. This provides a starting point for the framework. These ideas put forth by Spetzler et al. (2016) are used by other researchers in different fields or contexts (Rausch & Anderson, 2011; Van der Meer et al., 2020), which can also offer valuable insights. It is important to highlight the criteria found in these papers and examine whether they contribute anything significant. If they do, these aspects will be integrated into the framework. This process may lead to the emergence of new aspects or serve as complementary additions to the existing ones.

4.3.1 Additions from "decision quality & decision-making" for framework

Research in guidelines for decision-making (comparable to ideas Spetzler et al.)

Research specifically focused on decision quality is scarce. But why is there limited investigation into this concept? Rausch & Anderson (2011) offer several reasons for this phenomenon, such as: (1) the difficulty in measuring quality, (2) the failure to recognise that decisions are applicable in diverse contexts, and (3) the varied interpretations of the term "decision" itself. They propose guidelines to be employed in the decision-making process. With this guidelines they are aiming to enhance the quality of decisions. Interestingly, these guidelines align quite closely with the ideas put forth by Spetzler et al. (2016). Rausch & Anderson (2011) primarily focus on the information necessary for generating alternatives and how these alternatives are ultimately selected and implemented. They delve deeper into the evaluation of alternatives. While Spetzler et al. (2016) emphasise the importance of generating creative and feasible alternatives, Rausch & Anderson (2011) also stress the evaluation of alternatives and the selection of the most desirable one. This corresponds to the concept of "clear values & tradeoffs" by Spetzler et al. (2016), articulated slightly differently. Furthermore, Rausch & Anderson (2011) explicitly underscore the significance of communication in the decision-making process, not only between clients and contractors but also involving stakeholders and the broader community. Lastly, they emphasise the importance of appropriate participation in the decision-making process (Rausch & Anderson, 2011). Involving stakeholders, such as the local community, can foster greater understanding and potentially enhance the quality of both the process and the decision.

Another noteworthy aspect of their research is the scaling of each aspect based on the level of detail it can encompass. They do not assert that one level is superior to another but rather provide a range of options. Ultimately, this could serve as a valuable tool in this study to make certain aspects of decision quality measurable.

Research that uses the ideas of Spetzler et al.

The ideas presented by Spetzler et al. (2016) are used by Van der Meer et al. (2020) to link decision quality to a multi-criteria analysis of alternatives. In their study, they provide further clarity on the concept of decision quality. They suggest that the quality of a decision can be viewed from two perspectives: (1) by the process of making a decision and (2) by the various outcomes of a decision (Van der Meer et al., 2020). From the perspective they adopt, which aligns with the MIRT context, they primarily focus on the first point. As they state, "The main idea is that the quality of the decision is not influenced by the outcome of the decision but merely by the quality of the analysis and thought while making the decision" (Van der Meer et al., 2020:173). Vlek (1984) confirms that assessing the outcome is not useful in the decision-making process. They mentioned that the attention should be directed towards the stakes and odds (Vlek, 1984).

Van der Meer et al. (2020) refer to the ideas of Spetzler et al. (2016) and provide their own interpretation of the aspects. For instance, they emphasise the importance of scope and how framing this scope determines the choice to be made, which may vary for each project (Van der Meer et al., 2020). This can be linked to 'appropriate frame'. As an addition to 'creative alternatives,' they also stress the importance of these alternatives being feasible. Investigating alternatives that are inherently unattainable wastes resources and is impractical for both the client, contractor, and eventual

stakeholders. Lastly, they emphasise the importance of information being 'unbiased,' whereas Spetzler et al. (2016) consider this aspect of information to be less crucial.

Moreover, Van der Meer et al. (2020) attribute a different meaning to one aspect. They introduce 'desired outcome' instead of 'values and trade-offs' (Van der Meer et al., 2020). The term 'desired outcome' contrasts with what Spetzler et al. (2016) propose. They argue that the focus should primarily be on the quality of the process leading to the decision. A well-formed decision does not always lead to a favourable outcome.

Decision quality used in different models

The notion that decision quality cannot be explained within a single definition is reaffirmed by Sculpher et al. (2000). They examine the quality of a decision in combination with cost-effectiveness analysis, highlighting the absence of a fixed definition and the need for assessment across multiple dimensions. While their study primarily focuses on the quality of a model, they delineate aspects that are relevant to decision quality. Their context pertains more to research conducted on patients, focusing on disease and its progression.

They characterise the 'appropriate frame' as 'structure.' They emphasise the importance of a clear problem statement and contextual clarity for quality. They suggest that considering the perspective from which the problem is approached and reasoning accordingly can promote collaboration among stakeholders (Sculpher et al., 2000). They refer to 'alternatives' as 'options,' emphasising the necessity for all options to be feasible, a notion also mentioned by Van der Meer et al. (2020) in their research. Additionally, there is an apparent overlap between 'data identification' and 'relevant and reliable information.' Sculpher et al. (2000) stress the importance of substantiating model parameters with reliable sources, an aspect mentioned by Spetzler et al. (2016) and Van der Meer et al. (2020), only linking to the information used in research.

Beyond aspects exclusive to modelling, Sculpher et al. (2000) also mention several elements that could contribute to determining decision quality. They suggest that the 'time horizon' of a project could be significant, particularly in framing and eventual commitment to action. A predefined time horizon with a specific agenda provides clarity on the progression, enabling periodic assessments of the process. Two other points raised by Sculpher et al. (2000) are 'internal & external consistency.' It is crucial for the process to proceed smoothly, with clear expectations for each phase or step. Indicating a focus on the procedural aspect could also be relevant for determining quality.

Wood & Klass (2008) approach the quality of decision-making using a distinct framework termed the Innovation in Decision Quality (IDQ) framework. This framework, derived from another model (ETE model), primarily focuses on organisational activities (Wood & Klass, 2008). The aim is to ensure that the team maximises its potential from the project, striving for an optimal outcome. This contrasts with the notion presented by Spetzler et al. (2016), who argue that quality should stem from the process leading to a good decision rather than necessarily resulting in a favourable outcome. These aspects are seen as distinct from each other. Interestingly, Wood & Klass (2008) suggest in their research that attention should be paid to decision outcomes, yet all the aspects they mention primarily focus on the preceding process.

Wood & Klass (2008) emphasise the importance of establishing a clear foundation before commencing the decision-making process. As they assert, "...to enable quality decisions to be made, proper framing and contextualization is required" (Wood & Klass, 2008:4). Hence, the aspects they add to the framework are oriented toward the first aspect of Spetzler et al. (2016): appropriate frame. They highlight the importance of 'sensemaking,' which primarily focuses on identifying where crucial information should be sourced, who is responsible, what the frame entails, and the contextual parameters within which one must operate (Wood & Klass, 2008). Clarity in these aspects facilitates the initiation of a robust process, something also mentioned by previous researchers (Spetzler et al., 2016; Van der Meer et al., 2020; Sculpher et al., 2000). Additionally, they underscore the significance of team formation at the outset of the process. By recruiting the needed expertise and fostering collaboration towards a shared objective, the team its maximum potential is realised. This will help

both the team and the process (Wood & Klass, 2008). While the team remains integral throughout the entire process, its formation occurs in the initial phase. Hence, 'team capital' will be linked to 'appropriate frame.'

While Wood & Klass (2008) primarily focused on the 'appropriate frame', Ge & Helfert (2006) concentrate on the quality of information utilised in decision-making and the factors influencing it. They mention that "low-quality information will adversely impact the quality of any decision dependent on such information" (Ge & Helfert, 2006:1). In their study, they identify specific aspects that affect decision quality. In contrast to previous studies mentioned, they also highlight aspects that should be minimised to enhance decision quality. They indicate that 'personal preference,' 'information quantity,' and 'decision maker's experience' influence decision quality (Ge & Helfert, 2006). Having experience can be beneficial, as it provides insight into navigating the decision-making process and its requirements. When mentioning it like this, it could enhance quality. However, experience may also lead to the imposition of personal preferences, steering decisions in a particular direction rather than considering the broader context. Therefore, experience should be used in the right way and personal bias should be minimised. Having more information can also be beneficial, as it reflects increased research and knowledge. However, it is essential to ensure that additional research adds value and not merely conducted due to hesitation in decision-making.

Decision quality research in other countries

Research by Drazkiewics et al. (2015) and Woodruff & Stults (2016) translates decision quality into real-world projects. Drazkiewics et al. (2015) examine quality aspects in four case studies from Germany, while Woodruff & Stults (2016) test these criteria in local plans in America. Drazkiewics et al. (2015) mainly focus on the environmental aspect, but also identify quality aspects applicable in general. They make a distinction between decision quality and quality of implementation, linking the second to 'sound reasoning' and 'commitment to action' as proposed by Spetzler et al. (2016). Additional aspects identified, supplementing the evolving framework in this study, include 'openness of the process' and 'perceived fairness of the process' (Drazkiewics et al., 2015). Opening the process to everyone enhances understanding among external stakeholders, providing insights into decision-making processes and fostering stakeholder acceptance through perceived fairness. Furthermore, Drazkiewics et al. (2015) suggest that solutions should be innovative and locally applicable, leveraging insights from the community to generate more viable alternatives tailored to the specific context. In the end this can lead to better solutions.

Woodruff & Stults (2016) examined 44 projects in America, assessing them based on seven plan quality aspects, which are also relevant to decision quality. These aspects include 'goals' (appropriate frame), 'strategies' (alternatives), and 'implementation' (commitment to action) (Woodruff & Stults, 2016; Spetzler et al., 2016). Their study emphasises the importance of 'fact-based' information, stressing the need for information rooted in the local environment. They also highlight the importance of 'coordination,' which may refer to coordination at the outset of the decision-making process and throughout its execution. Additionally, Woodruff & Stults (2016) mention 'uncertainty' as a factor influencing quality, with greater uncertainty necessitating more deliberations and making decision-making challenging.

Both studies also underscore the importance of 'public participation' (Drazkiewics et al., 2015; Woodruff & Stults, 2016), urging active engagement of the community in projects to enhance their involvement and garner support. Drazkiewics et al. (2015) found that involving the community contributed to better solutions and increased support.

4.3.2 Framework after additions from “decision quality & decision-making”

From the literature research into the first researchers, several aspects have emerged that can be incorporated into the framework. These aspects are summarised in Table 4 for clarity.

Table 4 - Aspects from 'decision quality & decision-making'

Researcher(s)	Aspect
Rausch & Anderson (2011)	Appropriate participation Communication Coordinating and stimulating cooperation Evaluating alternatives
Van der Meer et al. (2020)	Creative and feasible alternatives Desired outcome Unbiased information
Sculpher et al. (2000)	Awareness raising among stakeholders Data identification External consistency Internal consistency Options Structure Time horizon
Wood & Klass (2008)	Sensemaking Team capital
Ge & Helfert (2006)	Decision maker's experience Information quantity Personal preference
Drazkiewics et al. (2015)	Innovative solutions Locally adjusted solutions Provision of 'lay' knowledge
Woodruff & Stults (2016)	Coordination Fact based Strategies Uncertainty

In Figure 8, the framework thus far, including the added aspects, is shown. Some aspects align with the ideas proposed by Spetzler et al. (2016). The aspects from Spetzler et al. (2016) are indicated in white, while the additions from this section are highlighted in yellow. It is also evident that some aspects are independent of the ideas by Spetzler et al. (2016). This may be because they constitute a new aspect or provide insights into the context. Further elaboration on these aspects can be provided with the integration of additional theories in subsequent sections.

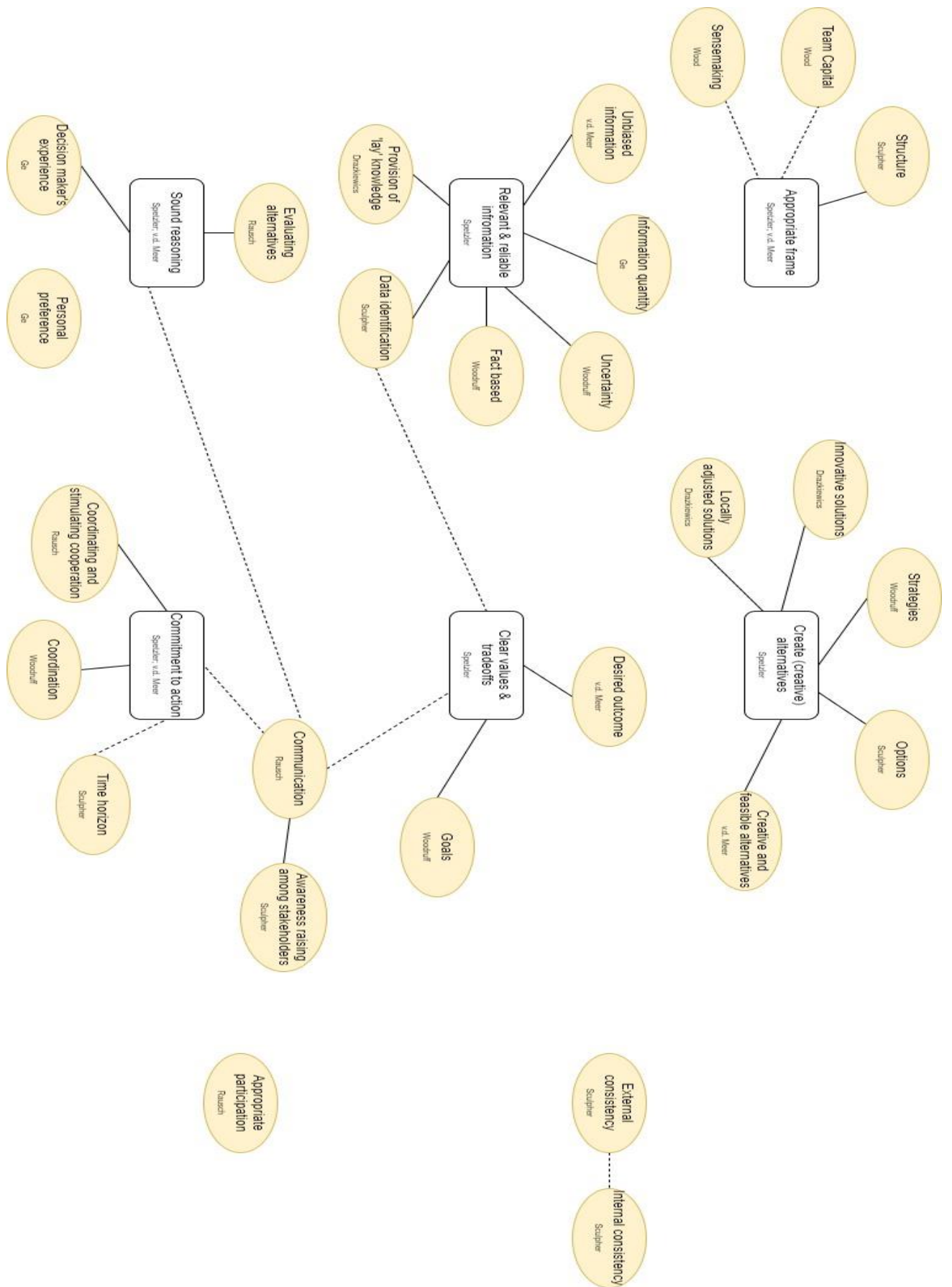


Figure 8 - Current framework after Section 4.2 & 4.3

4.4 Good governance

As mentioned in the previous paragraph, public participation can influence the process and ultimately the quality of the decision-making process. Public participation is one of the aspects mentioned in good governance. Addink (2019:16) describes good governance as follows: "Good governance is not only about the proper use of the government's powers in a transparent and participative way, it also requires a good and faithful exercise of power." Furthermore, Keping (2018:4) provides the succinct conclusion: "... good governance refers to the public administration process that maximizes public interest."

The reason this theory can be linked to this study is not only due to its connection with public participation. The aim of this research is to incorporate an administrative perspective into the existing theory that has a business perspective. Good governance is primarily focused on the administrative aspect, viewing governance from the standpoint of government bodies. This perspective can also be applied at the provincial, regional, and local levels, all of which can be involved in public projects within the context of this study. They may serve as stakeholders or they could be the project client. This reason explains the deeper examination of this aspect, which could reveal additional elements relevant to the framework for decision quality.

4.4.1 Additions from "good governance" for framework

The theory of good governance is well-established in the literature, with broad consensus regarding its associated principles and their significance in achieving success. Sari (2023) clarifies the six principles of good governance in his paper, a framework confirmed by Ali (2015), Biswas et al. (2019), Keping (2018), Van Doeveren (2011), and Young et al. (2011). Sari's (2023) study is chosen as the foundation here due to its more recent analysis, incorporating the latest findings on good governance and its principles. Some of these studies will be further expounded upon later, as they offer additional insights.

Five principles of good governance

The first principle outlined by Sari (2023) is transparency, which entails government operations being conducted openly, providing relevant information, and granting access to this information. It is noteworthy that this aligns closely with the concept of 'relevant and reliable information' proposed by Spetzler et al. (2016). The addition from the good governance perspective emphasises the importance of operating transparently, a notion supported by other scholars (Ali, 2015; Biswas et al., 2019; Keping, 2018; Van Doeveren, 2011; Young et al., 2011). Van Doeveren (2011) further elaborates that transparency encompasses openness, providing an alternative description.

The second principle is participation, representing the link between decision quality and good governance. According to Sari (2023), good governance necessitates active engagement of the community in the decision-making process. This ensures that the voices of the community are heard, enabling a focus on their needs and expectations. Failure to use these voices may lead to decisions lacking community support, potentially resulting in resistance or protests. This can lead to impeding or necessitating reevaluation of the process. Other researchers also affirm that community participation is crucial for good governance and decision-making quality (Ali, 2015; Biswas et al., 2019; Van Doeveren, 2011; Young et al., 2011). However, the extent and impact of participation on decision quality remain subject to scrutiny, necessitating careful consideration and planning throughout the process.

The next principle is accountability, signifying that government officials and institutions are responsible for their actions and decisions. As elected representatives, they bear a responsibility to the citizens they serve, constituting vertical accountability (Ali, 2015). Additionally, there exists a mutual accountability within these organisations, with individuals being answerable for their own actions, representing horizontal accountability (Ali, 2015; Keping, 2018). This principle is embedded in the entire decision-making process, but can best be linked to Spetzler et al.'s (2016) concept of 'sound reasoning'. Enhanced accountability, both vertically and horizontally, correlates with higher process

quality. The significance of accountability in good governance is further affirmed by other scholars (Biswas et al., 2019; Van Doeveren, 2011; Young et al., 2011).

Responsiveness is also regarded by some as a principle of good governance, closely related to accountability and participation. It entails governments being responsive to the needs and issues of society (Keping, 2018; Sari, 2023). For instance, they may be required to address community complaints promptly (Sari, 2023). Ali (2015) and Young et al. (2011) also underscore the importance of responsiveness. While Van Doeveren (2011) notes its inclusion in some studies but not all, Biswas et al. (2019) omit this aspect altogether.

The fifth principle, as described by Sari (2023), is law-oriented. It dictates that all government activities must comply with applicable laws and regulations (Sari, 2023). Adherence to legal frameworks fosters a stable, predictable environment and prevents corruption (Ali, 2015; Keping, 2018). While Sari (2023) uses the term 'law-oriented', Ali (2015), Keping (2018), Van Doeveren (2011), and Young et al. (2011) refer to it as the 'rule of law'. Complying with laws and regulations in decision-making enhances process quality and facilitates addressing objections effectively.

Lastly, Sari (2023) mentions fairness as a principle, advocating for equal treatment of all individuals without discrimination or favoritism. This principle, aligned with notions of justice, overlaps with the previous principle (law-oriented/rule of law) and is named 'equality' by Biswas et al. (2019). Some scholars consider fairness to be subsumed under the principle of law-oriented/rule of law and do not treat it separately. However, for the purpose of delineating aspects comprehensively in this study, fairness will be addressed as a distinct component in the framework.

Extra criteria next to the five principles of good governance

It is noteworthy that Sari (2023) does not address effectiveness and efficiency in his research. Van Doeveren (2011) synthesises various studies to delineate the principles mentioned, revealing that almost all researchers include effectiveness and efficiency. Even the EU and UN mention this principle (Van Doeveren, 2011). Ali (2015:73) describes this principle as "...processes and institutions produce results that meet the needs of society while making the best use of resources at their disposal". It is further emphasised that projects must be completed within the predetermined timeline (Biswas et al., 2019). Quality can thus be determined by examining the duration of the process and assessing whether resources are optimally utilised.

Moreover, Biswas et al. (2019) and Sari (2023) also emphasise the importance of planning and organisational clarity. This aligns with the concept of 'appropriate frame' by Spetzler et al. (2016) and touches upon the external and internal consistency mentioned by Sculpher et al. (2000). Planning serves as a roadmap, ensuring that everyone understands the objectives and the direction of the endeavour (Biswas et al., 2019; Sari, 2023). A clear plan can facilitate a clearer delineation of the decision-making process, thereby contributing to higher quality. Sari (2023) also focuses on the allocation of roles and tasks within governments, a step that should be undertaken before commencing the decision-making process. It is interesting to note that while Biswas et al. (2019) identify planning and organisation as principles of good governance, Sari (2023) suggests they are more related to public management. Nevertheless, this study's framework incorporates them.

Biswas et al. (2019) incorporated additional criteria into their research to assess good governance, ultimately identifying 11 main criteria. Most of these have been previously mentioned, but two criteria from their theory can be utilised for the framework. Firstly, security, primarily linked to equality and accountability, allows room for conflicts to arise but ensures their resolution and enables freedom of expression (Biswas et al., 2019). Secondly, the criterion of relationship, crucial for quality, pertains to the interpersonal bonds among individuals involved in the decision-making process (Biswas et al., 2019). A positive relationship fosters clarity regarding individuals' objectives in the process and promotes receptiveness towards others' perspectives, enhancing overall quality.

Additionally, Biswas et al. (2019) also highlight the criterion of legitimacy, partially intersecting with the rule of law and transparency. This criterion is also addressed by Keping (2018), who defines it

as "the state or quality that social order and authority are voluntarily recognized and obeyed." It encompasses bureaucratic aspects such as tendering processes (Biswas et al., 2019). The higher the quality of legitimacy, the greater the quality of the decision-making process.

Van Doeveren (2011) examined several lists of criteria for good governance in her research, including guidelines from the EU and UN. From her list, additional criteria can be added to the framework. Firstly, devolution, which can be linked to the 'appropriate frame' (Van Doeveren, 2011), pertains to delegating tasks to lower-level governments, but can also be linked to participation (Van Doeveren, 2011). However, it should be noted that from this perspective, the participation complement tasks rather than entirely do tasks. Therefore, devolution is not directly linked to participation. However, Van Doeveren (2011) underscores a side note, cautioning against excessive delegation that might impede genuine progress due to diminished autonomy. Moreover, Van Doeveren (2011) also mentions equity and inclusiveness, closely related concepts focusing on the avoidance of group exclusion, which can be associated with the equality criterion by Biswas et al. (2019).

Inclusiveness is reaffirmed by Ali (2015) in his research. Additionally, he introduces another criterion: consensus-oriented (Ali, 2015). This entails working towards solutions that benefit all parties involved, ensuring that each stakeholder can justify the decision to their constituents. This is particularly linked to the 'sound reasoning' concept by Spetzler et al. (2016).

4.4.2 Framework after additions from "good governance"

In this section different aspect have been discussed, which can be incorporated in the framework. These aspects are summarised in Table 5. There are some aspects that are in italic. If an aspect is in italics, then it is mentioned by different researchers.

Table 5 - Aspects from 'good governance'

Researcher(s)	Aspect
Ali (2015)	<i>Accountability</i> <i>Consensus oriented</i> <i>Effectiveness & efficiency</i> <i>Inclusiveness</i> <i>Transparency</i> <i>Responsiveness</i> <i>Rule of law</i>
Biswas et al. (2019)	<i>Accountability</i> <i>Equality</i> <i>Legitimacy</i> <i>Planning</i> <i>Public participation</i> <i>Relationship</i> <i>Security</i> <i>Transparency</i>
Keping (2018)	<i>Accountability</i> <i>Effectiveness & efficiency</i> <i>Legitimacy</i> <i>Responsiveness</i> <i>Rule of law</i> <i>Transparency</i>
Sari (2023)	<i>Accountability</i> <i>Fairness</i> <i>Law-oriented</i>

	<i>Organisation</i> <i>Public participation</i> <i>Responsiveness</i> <i>Transparency</i>
Van Doeveren (2011)	<i>Accountability</i> <i>Devolution</i> <i>Effectiveness & efficiency</i> <i>Equity</i> <i>Fairness</i> <i>Inclusiveness</i> <i>Openness</i> <i>Transparency</i>
Young et al. (2011)	<i>Accountability</i> <i>Effectiveness & efficiency</i> <i>Responsiveness</i> <i>Rule of law</i> <i>Transparency</i>

Figure 9 shows the framework so far with the added aspects from good governance. The aspects added from good governance are highlighted in green. It is evident that two new aspects are beginning to emerge alongside the six from Spetzler et al. (2016). One aspect primarily addresses the legal dimension, while the other focuses on (public) participation.

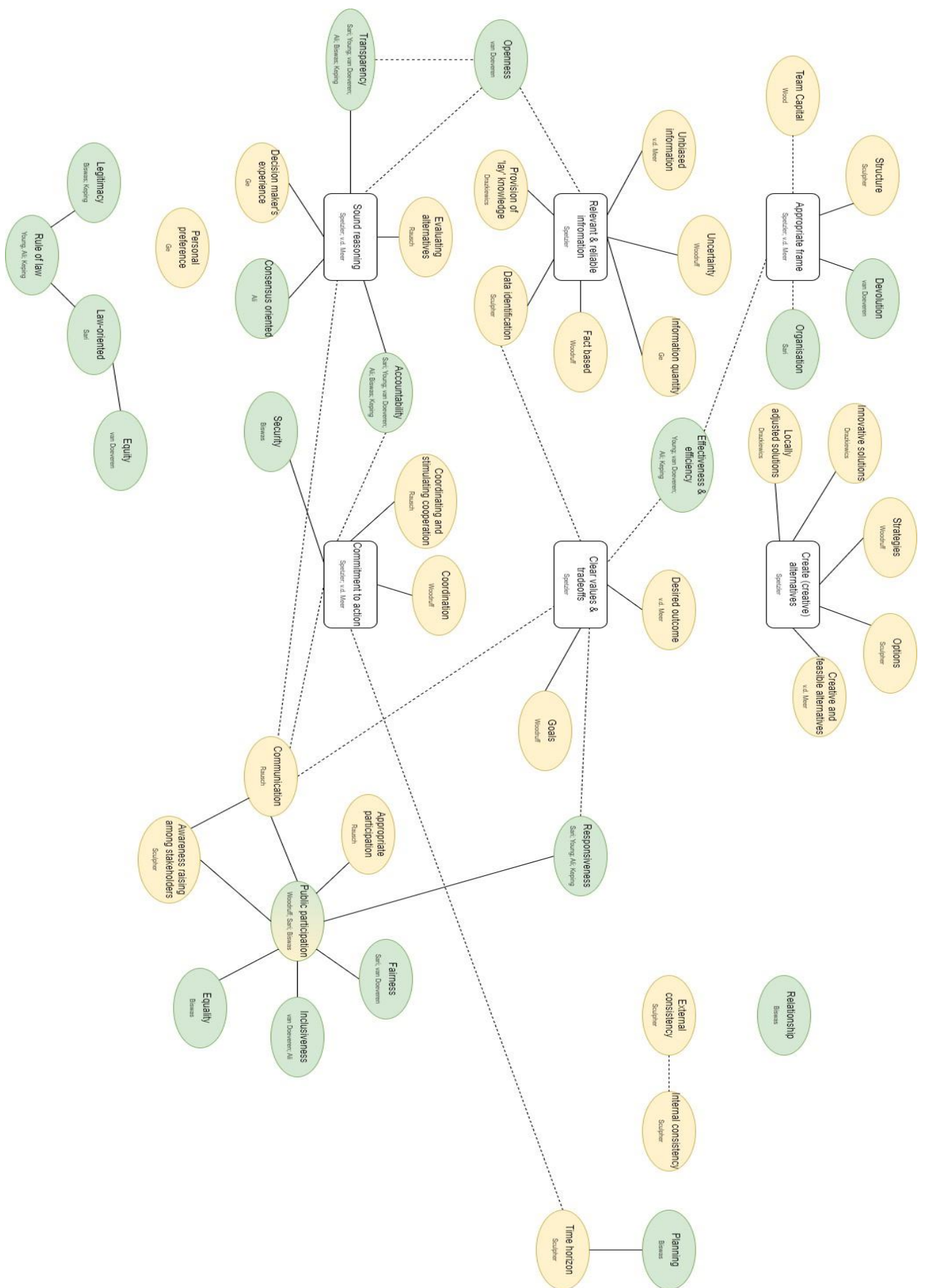


Figure 9 - Current framework after Section 4.4

4.5 Public administration

The following theory is one that relates to the theory of good governance. As Bovens et al. (2007:28) indicate in their book, "the criteria of good governance represent a unique position of public administration in society". These criteria have ultimately been used to form four dimensions for public administration.

But what is public administration? Bovens et al. (2007:19) describe it as "the totality of organisations and activities primarily aimed at governing society." The aspect of governance comes from steering and is linked to the establishment and implementation of decisions (Bovens et al., 2007). The researchers referenced in this paragraph primarily contextualise public administration within the Dutch context, focusing on the manner in which governments are structured here.

4.5.1 Additions from "public administration" for framework

As indicated, Bovens et al. (2007) propose four dimensions linked to the quality of decision-making processes and outcomes in public administration. Firstly, they underscore the importance of democracy in public administration. Governance must be responsive and operate on the basis of popular sovereignty. Actions and decisions are undertaken on behalf of and in representation of the population. The researchers acknowledge that actions inconsistent with the preferences of the majority may impact future support for governance initiatives. De Graaf & Huberts (2011) corroborate the significance of this dimension for public administration.

Additionally, Bovens et al. (2007) highlight legality as another crucial dimension for public administration, a notion affirmed by De Graaf & Huberts (2011). While governments possess certain monopolies, such as taxation, mechanisms must exist to constrain their exercise of power and prevent overreach. Clear legal frameworks are essential to prevent violations of democratic principles and the potential slide into dictatorship.

Efficiency and effectiveness are also identified as dimensions of public administration (Bovens et al., 2007; De Graaf & Huberts, 2011). Governance should strive to be both effective in achieving its objectives and efficient in its resource utilisation, aligning with principles emphasised in the good governance theory (Ali, 2015; Van Doeveren, 2011; Young et al., 2011).

Lastly, integrity is highlighted as a dimension of public administration (Bovens et al., 2007; De Graaf & Huberts, 2011). All individuals working in public administration are expected not to exploit their positions or powers for personal gain. De Graaf & Huberts (2011) delve deeper into integrity, exploring integrity policies within municipalities. They emphasise integrity as adherence to prevailing moral values, norms, and associated rules (Huberts, 2003; De Graaf & Huberts, 2011). Values are regarded here as "such as legality, honesty, and collegiality, they are qualities appreciated because they constitute, or contribute to, what is good or beautiful, or deserving of our admiration or praise" (De Graaf, 2003; De Graaf & Huberts, 2011). Norms express guidelines that clearly delineate what is permitted or prohibited in a given situation (De Graaf & Huberts, 2011). This concept of integrity can be linked to aspects of the decision quality theory, particularly personal preferences and decision maker's experience (Ge & Helfert, 2006), wherein abuse of power may stem from personal biases.

Furthermore, De Graaf & Huberts (2011) stress the importance of transparency in governance towards those who elected the governing body. This notion resonates with the principles of good governance, which have been echoed by various researchers (Ali, 2015; Biswas et al., 2019; Sari, 2023; Van Doeveren, 2011; Young et al., 2011). The logical connection with the good governance framework is evident, as these dimensions are formulated based on ideas derived from the theory of good governance.

4.5.2 Framework after additions from “public administration”

The aspects that have been found in the public administration theory are shown in Table 6. These aspects will be incorporated in the framework. Aspects in italics are mentioned by different researchers.

Table 6 - Aspects from 'public administration'

Researcher(s)	Aspect
Bovens et al. (2007)	<i>Democracy</i> <i>Effectiveness & efficiency</i> <i>Integrity</i> <i>Legality</i>
De Graaf & Huberts (2011)	<i>Democracy</i> <i>Effectiveness & efficiency</i> <i>Integrity</i> <i>Legality</i> <i>Transparency</i>

In Figure 10, the framework is now depicted with the additions from the public administration theory, highlighted in blue. What is evident in the framework now is that some aspects overlap with the good governance theory. These aspects are therefore coloured in both colours, indicating their presence in both theories. Additionally, it is noticeable that a new group is forming under 'Sound reasoning', one of the aspects by Spetzler et al. (2016). By adding 'Integrity', a few aspects are linked together. As a separate group begins to emerge here, it should be noted that a new aspect may potentially arise. Furthermore, it is also observed that the aspect 'Democracy' remains separate in the framework. For now, it is included, as it may be linked by a subsequent theory.

4.6 Process management

To achieve a high-quality decision, it is important to undergo the decision-making process. Embedded within the term is another aspect worthy of focus: 'process'. From a theoretical standpoint, there exists a management approach that addresses this: process management. As highlighted by Pleijte et al. (2006), relying solely on project and program management is insufficient, particularly when managing complex area developments effectively. Project management assumes that the environment, problems, and solutions are identifiable, clear, and stable, which often proves untrue in practice (Weimer, 2007), making process management a more suitable option. This approach demands more from decision-making involving multiple stakeholders, as Mees (2006) states, "process management is strongly focused on other actors; in collaboration with various stakeholders, a problem will be addressed."

Process management is defined across various fields. From a software perspective, Florac et al. (1997:3) describe the goals of process management as "to ensure that the processes within the organization are performing as expected, to ensure that defined processes are followed, and to make improvements to the processes so as to meet business objectives." Additionally, Lee & Dale (1998) shed light on process management from a business context, delving into the critical factors of business process management. Within the Dutch context and the context of our projects, De Bruijne et al. (2002) authored a book dedicated to process management. They advocate for it as a valuable addition to the management arsenal (De Bruijn et al., 2002; Dresen, 2009).

It is important to keep in mind that this research focuses on decision quality. Aspects that only address the process side are therefore not useful, as decision quality is more concerned with the content side. However, this theory remains interesting, because it might still offer insights into aspects relevant to decision quality.

4.6.1 Additions from "process management" for framework

Core elements of process management

De Bruijn et al. (2002) delve into various core elements applicable to process management in their book. They indicate that for a successful process, all four of these elements must be met, with these aspects derived from both literature and empirical research (Dresen, 2009). Dresen (2009), Heurter (2007), and Weimer (2007) have also incorporated this theory into their theses, thereby furthering its insights. They largely confirm or utilise the ideas of De Bruijn et al. (2002).

The first aspect highlighted is openness, which entails that the initiator not only makes decisions but also adopts an open attitude (De Bruijn et al., 2002). This allows other parties to contribute to the decision-making process and raise relevant issues (Dresen, 2009). Here transparency about the decision-making process is crucial, enabling actors to understand their roles, the process flow, and who else is involved at different stages (Heurter, 2007). Interestingly, an overlap is indicated between openness and transparency, aspects also derived from the good governance theory and public administration with the notion of their overlap (De Graaf & Huberts, 2011; Van Doeveren, 2011).

The second aspect that emerges is safeguarding core values (De Bruijn et al., 2002). Some parties may perceive openness as revealing their vulnerabilities, allowing others to exploit them (De Bruijn et al., 2002; Dresen 2009). Ensuring that core values are clear and understood by all parties enables progress in the process (Heurter, 2007). Parties understand potential losses but are willing to proceed if they know they are not alone. This point aligns with Spetzler et al.'s (2016) concept of having clear values and trade-offs. When everyone's values are known, they understand where trade-offs are made and their basis. It also touches upon the interrelationship between parties, as emphasised in the good governance theory (Biswas et al., 2019).

Thirdly, De Bruijn et al. (2002) stress the importance of ensuring progress in process management. Incentives must be maintained for parties to continue participating, while decisions must also be made (De Bruijn et al., 2002; Dresen, 2009). While numerous discussions can facilitate progress, conclusions must ultimately be drawn. De Bruijn et al. (2002) also link this point to environmental management, which is crucial for process continuity. This can be linked to participation, which emerges from decision quality and good governance theories (Woodruff & Stults, 2016; Sari, 2023; Biswas et al., 2019). For now this aspect will be added to the framework, however a consideration needs to be made if this has a content aspect in it or if it just a process aspect. If so, it should be excluded from the framework.

Lastly, it is noted that content can be significant (De Bruijn et al., 2002). While the process is managed, the content must not be overlooked (De Bruijn et al., 2002; Heurter, 2007; Dresen, 2009). The process should be structured to accommodate relevant and substantive insights (De Bruijn et al., 2002; Heurter, 2007).

Extra insights from research in process management

Additionally, De Bruijn et al. (2002) outline arguments for the application of process management. They suggest that involving stakeholders at an early stage and making them part of the process can lead to greater stakeholder support (De Bruijn et al., 2002; Heurter, 2007). This can also be linked to the notion of legitimacy mentioned by Bovens et al. (2007) in their dimensions of public administration. Collaborating with all stakeholders and sharing their problems and knowledge can also reduce substantive uncertainty (De Bruijn et al., 2002; Heurter, 2007). This aligns with Spetzler et al.'s (2016) aspect of 'relevant & reliable information'. Incorporating stakeholders' information can enrich problem definitions and solutions (De Bruijn et al., 2002), which corresponds to Spetzler et al.'s (2016) notion of generating alternatives.

Finally, De Bruijn et al. (2002) argue that depoliticising decision-making can enhance the decision-making process. They suggest that ensuring stakeholders focus not on the outcome but on the collaborative process can reduce resistance (De Bruijn et al., 2002). However, it remains questionable whether this can be achieved in the context of this research. These are large, complex projects with lengthy durations. There will always be an underlying need for support from the community and political spheres to ensure project realisation. While this aspect is included for now, its feasibility needs reassessment in the future.

In addition to De Bruijn et al. (2002), Lee & Dale (1998) and Trkman (2010) have also discussed process management, focusing on business process management (BPM). Both address critical factors necessary for BPM success. They emphasise the importance of appointing a process owner who ensures clarity, reviews process performance, and facilitates improvements (Lee & Dale, 1998; Trkman, 2010).

Trkman (2010) further notes the significance of employees' specialisation levels. Specialists possess in-depth knowledge and familiarity with project operations, facilitating smoother project navigation. However, caution is warranted to prevent person influence/preference without proper justification.

Lastly, Trkman (2010) highlights the impact of process standardisation on BPM success, which can also influence quality. Standardised processes ensure that all stakeholders understand the workflow, enabling timely access to necessary information and potentially quicker project lead times.

4.6.2 Framework after additions from “process management”

From this theory some aspects have emerged that can be used in the framework, which are shown in Table 7. Aspects in italics are mentioned by different researchers.

Table 7 - Aspects from 'process management'

Researcher(s)	Aspect
De Bruijn et al. (2002)	Content of decision Depoliticising decision-making Enriching problem definitions and solutions Ensure progress Openness Protecting core values Reducing content uncertainty Standardisation of process Supporting base (draagvlak) Transparency
Lee & Dale (1998)	<i>Appointment of process owners</i>
Trkman (2010)	<i>Appointment of process owners</i> Level of employee's specialisation Standardisation of process

In Figure 7, the addition of the last theory used in this literature review, process management, is depicted. The aspects stemming from this theory are highlighted in red. The incorporation of this theory reveals even more overlap between the theories. For instance, examining 'Transparency', it is evident that it now appears in three theories. Consequently, this aspect has been outlined with a blue border. Furthermore, there is overlap with 'Openness' from the good governance theory. Additionally, it is apparent that additional aspects are being added to various groups. Lastly, 'Ensure progress' and 'Supporting base (draagvlak)' connects aspects into a group, potentially forming a new aspect for the total process. Moreover, an aspect from process management, 'Depoliticising decision-making', is introduced, which does not align with any existing aspect. It raises questions regarding its logical inclusion in this framework, considering the contextual nuances of this research. If politics can be separated from the decision-making process remains debatable.

4.7 Main findings of literature research

As shown in the figure from the previous section, there is now a framework that outlines various criteria that can influence decision quality. This framework demonstrates that criteria from different theories can be linked to each other, creating clusters of criteria that align in similar directions. To increase clarity, the framework has been structured into groups, allowing for a more clear list of aspects.

4.7.1 Checking added criteria

Before grouping the criteria derived from the literature research, it is important to review whether all the identified criteria are applicable to this study. Some may need to be excluded from the framework due to insufficient relevance to the context of this research (exploratory phase of projects within the MIRT structure) or because they do not align well with other criteria. In this section there will be an explanation which criteria are excluded or require additional consideration.

Depolitisation of decision-making

Given the context in which this study is situated and the perspective through which we examine decision-making, it is not feasible to address decision-making in a depoliticised manner. Despite any intention to separate from political influence, the involvement of decision-makers (at various levels) and the national programs within which these projects are embedded make this separation impractical. Since funding for these projects comes from the national ministry or the central government, it is impossible to detach them from the political sphere and the associated decision-making processes. Therefore, this criterion is not applicable and must be excluded from the framework.

Process criteria

Additionally, the current framework includes some aspects that focus only on the process rather than content. These criteria do not directly influence decision quality and are therefore not suitable for this study. While they might be useful for a different type of research, they are not relevant to this research and will be excluded from the framework. The following criteria are deemed process criteria and will be removed: external consistency, internal consistency, ensuring progress, standardisation of processes, time horizon and planning.

Legal justification criteria

Furthermore, at the bottom, a group of criteria mainly focuses on the legal aspect of the decision-making process. This group is not strongly linked to other criteria but is nonetheless important. A robust legal justification of a decision is considered essential upon its delivery, as it mitigates potential issues in the future. A clear legal rationale strengthens the defence of compliance with laws and regulations and facilitates the justification of permits, for instance. It may be somewhat linked to 'sound reasoning', but this justification comes from a different perspective. It is chosen to include this group and to examine whether there is confirmation from the practical side regarding these criteria.

4.7.2 Grouping of criteria

Several criteria form a single aspect within this framework. Although they belong to the same group, they may represent slightly different perspectives on an aspect. To improve clarity in the framework, these criteria have been grouped into a smaller set of aspects, which will later help in concretising the mentioned aspects during the interviews. Figure 12 illustrates how the criteria have been grouped into 10 aspects. The following sections will elaborate on what these aspects mean.



Figure 12 - Grouping of criteria

Below is an explanation of what these groups will entail. Table 8 also shows if the aspects are only focussed on content or if they are also partly a process aspect:

Appropriate frame

- This aspect applies at the beginning of the decision-making process, specifically during the scoping phase in this research. It is essential to have a clearly defined problem, a well-defined scope, and a structured approach. The level of detail and breadth may vary for each project, but it is crucial for all stakeholders to consider these factors before entering the decision-making process. Unclear parameters can lead to incorrect, overly narrow, or overly broad investigations, resulting in delays and additional costs if adjustments are needed.

Creating alternatives

- During the scoping phase, efforts are made to identify a preferred alternative. It is crucial to consider a wide range of potential alternatives beforehand, otherwise it cannot be considered a decision. Points such as being locally adjusted, creative, and feasible are emphasised, requiring careful consideration. While there is no fixed number of alternatives to be considered, starting with alternatives across the entire spectrum and then assessing feasibility is important. Practical experiences may provide further guidance, but this can also vary depending on the project. It is essential to strike a balance between the feasibility, evaluation, and breadth of alternatives in this context.

Relevant & reliable information

- High-quality and relevant information ultimately lead to better decision-making. Striving for objectivity in the information provided is essential. However, there is a balance to strike regarding the sufficiency of information. Theory suggests that information becomes sufficient when it no longer adds value, but practical experiences may offer insights into this aspect.

Clear values & tradeoffs

- This aspect is crucial for evaluating alternatives. A robust evaluation framework facilitates better-informed decision-making. It is important to determine trade-offs and prioritise values. Clear delineation of these aspects beforehand ensures comprehensive consideration of all relevant factors. These are considerations that must be made collaboratively, primarily in collaboration with the client and stakeholders. They will have certain values against which measurements need to be taken, after which priorities must be decided through mutual agreement. It is also essential to have clear goals and scope outlined from the aspect of 'appropriate frame'. Furthermore, this aspect is also aligned with 'creating alternatives,' as these values will form the evaluation criteria for filtering across the aspects. It is crucial to carefully consider the depth of these values per sieve and whether they remain consistent across sieves or vary. Practical insights can confirm these practices and provide insights into their implementation in projects.

Sound reasoning

- Providing a clear reasoning for decisions and the overall process is vital for quality. Openness and transparency during the process enhances understanding and fosters trust among stakeholders. This facilitates understanding and clarity for the stakeholders by elucidating the choices made and the rationale behind them, thereby enhancing comprehension. Practical experiences can shed light on the extent to which this transparency is maintained and the methods employed.

Commitment to action

- This aspect emphasises the continuity beyond the decision-making phase. While decisions are made in the current phase, it is crucial to recognise that further action is required in subsequent phases. Therefore, ensuring that individuals understand their role in the larger project and are committed to the entire process is essential for quality.

Integrity

- This pertains to the understanding that individuals work within a group or team environment, where collective decisions are made. It is crucial to avoid one person imposing their decision, which may result in others feeling unheard or disengaged. For decision quality this will be mostly focused on the team that is preparing the decision.

Legal foundation

- This refers to the legal justification underlying a decision. It encompasses considerations of compliance with laws and regulations, permit feasibility, and potential impacts on designated areas such as Natura 2000 sites. Enhancing stakeholder and community understanding of this legal foundation throughout the process is essential. In MIRT processes, communities have the opportunity to lodge objections, making clear legal justifications beneficial in potential legal challenges. The extent and manner of utilisation will be assessed during interviews. This aspect could be associated with 'relevant & reliable information' because it involves gathering the correct information needed for justification. However, this aspect is frequently mentioned in various theories, leading to the decision to consider it as a separate aspect.

(Political) support

- This aspect primarily focuses on having support, whether from the community or political entities. It may seem at odds with objectivity, as decisions ideally remain impartial to political influences. However, given that decisions are ultimately made by policymakers, political support becomes necessary. Interviews will explore the extent to which this factor is considered and weighted. Community support is crucial for process quality, as it fosters project endorsement, reducing opposition and delays.

Public participation

- Public participation aligns closely with the preceding aspect, involving the engagement of communities in the decision-making process. This can range from inviting residents to public forums to actively involving them in planning discussions. In the context of decision quality, it is crucial to determine what information needs to be gathered from the community. Residents often have extensive knowledge of their environment, typically because they have lived there for an extended period. To extract the most useful information from them, it is essential to consider how frequently they should be consulted and the extent to which they should have input in the decision-making process.

Table 8 - Type of aspect

Aspect	Process or content?
Clear values & tradeoffs	Content
Creating alternatives	Content
Legal foundation	Content
Relevant & reliable information	Content
Sound reasoning	Content
Appropriate frame	Content & process
Commitment to action	Content & process
Integrity	Content & process
(Political) support	Content & process
Public participation	Content & process

All these aspects will now be utilised in the next phase of this research. During the interviews, an examination will be conducted to ascertain whether these aspects are mentioned and to check the perspectives of the interviewees on them. These aspects provide a specific framework for guiding the interviews to be conducted. It will be intriguing to observe whether the interviewees spontaneously bring up these aspects and to explore their perspectives on them. Furthermore, interviewees are also given the opportunity to introduce additional aspects, potentially enriching the existing theoretical framework. Hence, it is essential to approach the interviews with an open mind.

5 Results

After conducting the literature review, the next step in the research involves conducting interviews with practitioners. The aim of these interviews is to determine whether the aspects derived from theory align with practical experiences and to identify any additional insights that may emerge from practice. This chapter presents the analysis of the interview results using three distinct analyses, each providing a deeper exploration of the research findings. Finally, this chapter concludes with a discussion on the updated framework, incorporating the additional elements derived from practice.

5.1 Interview analysis

This chapter will present multiple analyses of the data collected from the interviews conducted for this research. The first analysis will focus on if the interviewees mentioned the aspects identified during the literature research. This step assesses whether these aspects were explicitly mentioned, later confirmed, or absent in the interviews. This initial analysis provides a preliminary understanding of which aspects are deemed important. In the next analysis there will be delved deeper into the interview data to identify additional aspects emerging from the interviews that do not align with the 10 predefined aspects. If new aspects are found, they will be explained and incorporated into the framework. The final analysis will evaluate the perceived importance of the various aspects, examining whether there are differences in significance across groups. Additionally, the five most critical aspects will be further analysed and discussed in greater depth.

5.1.1 Analysis 1: Aspects mentioned

In this initial analysis will be examined whether an aspect has been mentioned by an interviewee or not. This will be accomplished by reviewing the interviews to ascertain whether the interviewees themselves indicate that the aspect is relevant to quality. The analysis per interviewee can be found in Appendix II.

Table 9 - Mentioned aspect per interviewee

	W+B 1	W+B 2	W+B 3	W+B 4	W+B 5	I&W	WDO	GED
Appropriate frame								
Creating alternatives								
Relevant & reliable information								
Clear values & tradeoffs								
Sound reasoning								
Commitment to action								
Integrity								
Legal foundation								
(Political) support								
Public participation								

Table 9 displays how interviewees mention each aspect. This can occur in three ways: they mention this theme themselves (green), consideration of the theme only arises when it is tested (orange), or the theme does not come up at all in the interview (red). Ideally, all aspects emerge through way 1 or 2. Testing the other aspects can be done at the end of the interview. However, it is observed that some aspects are not mentioned by certain respondents at all. This is primarily due to the time constraints imposed on the interviews, which led to not all the aspects being tested.

With the help of this table, a brief analysis can still be conducted on the aspects, even without considering the respondents' perspectives on the aspects. The aspects 'Creating alternatives', 'Clear values & tradeoffs', '(Political) support', and 'Public participation' are most frequently mentioned by the respondents themselves. For example, creating alternatives was mentioned by every interviewee except one. In the exploratory phase, efforts are always made towards a preferred alternative or decision. This necessitates the creation of alternatives before one can be chosen. For this individual, it had been some time since this interviewee had worked on explorations, and the interviewees recent focus had been more on the subsequent phase after exploration, the planning phase. When this point was raised, this respondent acknowledged its importance.

Additionally, 'Public participation' is frequently mentioned by many interviewees. They consider it important to involve the community in the projects, which they claim has become increasingly more common in recent years. One interviewee cited an example where including the community was crucial, as the residents might have lived in the area for a long time and possess valuable local knowledge. This knowledge can contribute to the content aspect of decision quality. The interviewees also emphasised that community involvement should be consistent and occur at multiple stages of the project. However, simply involving the community does not necessarily guarantee better decision quality. It is still important to structure these contact moments, which can lead to more improved information gathering. This can result in more substantiated decisions.

'(Political) support' is a point that almost all interviewees bring up directly. It is interesting to note that different interviewees approach this issue from varied perspectives, resulting in different interpretations of its importance. Interviewees from advisory/engineering firms and the bureaucracy side suggest that political support is crucial to advance a decision to the next phase, but emphasise that it should not be the sole focus. Concentrating too heavily on political backing might lead to the exclusion of certain alternatives that could otherwise be the best option based on established criteria. This raises the question of how objective the research can be if political considerations are integrated during the exploration phase. One interviewee from this group suggests that political support can be considered at the end of the process, providing recommendations to the political decision-maker. They showed in a recommendation which option might have more support from a municipality, province, or ministry. After that it is up to the decision-maker to determine the course of action. The emphasis in this group leans toward community support, which can reduce opposition during decision-making, foster a sense of involvement, and provide valuable information that might otherwise be overlooked.

On the other hand, the decision-maker, regards political support having a larger role. This interviewee confirmed that the research must be conducted objectively, however political support cannot be disregarded.

Based on these findings, it might have been more effective to separate support into two distinct aspects: community support and political support. This would have provided clearer differentiation. However, for the purpose of this analysis, the current approach of combining these under one aspect will be maintained.

Two aspects were mentioned significantly less frequently by the interviewees: 'Commitment to action' and 'Integrity'. The lower frequency of 'Commitment to action' might be due to the fact that the interviewees had not specifically considered this step or only thought about it when it was brought up

during the interviews. Also to some interviewees the definition of this aspect was not clear, which prevented them from providing a relevant answer regarding its impact on decision quality. 'Integrity' is a more sensitive issue. As discussed in Section 4.7, this concept primarily addresses the need for project team members to avoid pushing their own influence or using a sort of "veto power" because they have the most experience. Addressing this with the interviewees could have been perceived as a personal attack, which was not the intention. Also two interviewees indicated that sometimes a decision needs to be made by a project leader to make sure the project keeps progressing. These interviewees acknowledged that they might be imposing their personal views, but felt it was necessary and that they had the experience to justify these decisions.

Based on this analysis, a preliminary outcome can be established. It cannot be definitively stated that all aspects hold the same level of importance for decision quality, but it can be acknowledged that each aspect has a certain impact on decision quality which interviewees take into consideration.

5.1.2 Analysis 2: Extra aspect(s)

During the interviews, an open mindset was maintained to explore the possibility of adding additional aspects. Many topics were discussed during the interviews that could potentially be relevant to decision quality, but most of them could be classified under existing aspects. However, one aspect emerged that was identified more important in practice than in the theory.

Team Composition

The first theme to consider is the composition of the team, briefly linked by Wood & Klass (2008) to the 'appropriate frame' as "team capital". Trkman (2010) further connects this concept to the 'level of employee's specialization', although this aspect is largely overlooked by other researchers, who primarily focus on the process itself rather than the individuals involved on the execution side. While stakeholders and the environment are mentioned, the individuals executing the tasks are not given much attention. Due to the limited emphasis on this aspect in the literature, it has been decided to encompass all these considerations under the 'appropriate frame'.

However, the interviews reveal that much more attention needs to be given to this aspect. One respondent even considered this the most critical point for decision quality. As this interviewee stated, "What I feel is especially important for decision quality is a good multidisciplinary team." It was explained that forming a good team is crucial, emphasising the need to highlight various roles. The respondent highlighted the importance of having a stakeholder manager, a technical manager, a contract manager, and a planning study manager. These are all roles described in an Integrated Project Management (IPM) team, as used by Rijkswaterstaat (RWS, n.d.). Another respondent echoed similar sentiments, stating that all roles are essential in such a project. They explained, "...because you need that craftsmanship to act in this way. Because if I don't have that craftsmanship, I have to have everything researched to acquire that knowledge, to eventually make choices. That takes a lot of money and time."

But a different perspective was provided by another interviewee, who indicated that the IPM model lacks a scientific basis, stating, "Before 2003, we did make good projects. We built the Afsluitdijk and the Oosterscheldekering... we didn't have a technical manager, environmental manager, or contract manager back then." Nevertheless, the respondent acknowledged that these should be elements that teams are aware of but cautioned against compartmentalising teams. This could lead to a focus on individual interests rather than collaborative problem-solving. A similar analogy was drawn by another respondent, who likened the project to three tracks: one for content, one for process, and one for the legal aspect. These tracks run parallel but must also utilise switches to work together on a track. All tracks are important and must collaborate to achieve an outcome.

Other insights

Additionally, a few other points from the interviews are noteworthy but are not included as additional aspects:

- It is crucial to maintain effective communication with the community. Clearly outline when they can provide feedback and what will be done with their suggestions.
- Demonstrate engagement with the community by visiting project locations or speaking with affected individuals, if applicable.
- Foster strong relationships within the project team, emphasising clear communication to promote better collaboration.
- Keep in mind that projects under MIRT or HWBP often have specific budget constraints, so costs need to be managed carefully.

The most significant insight mentioned by multiple interviewees is that you can make aspects relatively generic, allowing them to apply to various projects. However, this often does not work seamlessly in practice. Be aware that certain considerations need to be made per project.

5.1.3 Analysis 3: Significance of aspects and potential enhancements

Firstly, this analysis will examine how respondents perceive the importance of certain aspects related to decision-making quality. This will be achieved through a brief overview, highlighting the initially mentioned aspects (Table 10). Subsequently, the five most mentioned aspects will be explored based on interviewees perspectives and potential areas for improvement. Examples utilised in practice by interviewees will also be cited. This approach allows for an evaluation of how the quality of these themes manifests in practice.

Table 10 - Aspects mentioned as most important by interviewees

Interviewee	Aspect(s) mentioned as most important	Remarks
W+B 1	<ul style="list-style-type: none">• Public participation• (Political) support• Relevant & reliable information• Sound reasoning• Clear values & tradeoffs• Creating alternatives• Appropriate frame	"You need support on the process, but also support on the content of a decision."
W+B 2	<ul style="list-style-type: none">• Relevant & reliable information• Sound reasoning• Public participation• (Political) support	"All aspects are important, but these are the most important. However you can question in political support reflects quality."
W+B 3	<ul style="list-style-type: none">• Relevant & reliable information• Clear values & tradeoffs• Public participation• Sound reasoning• Appropriate frame• (Political) support	"The truth is that everything is important. What I find particularly crucial is that it's comprehensive, ensuring that neither the content nor the political process dominates on the way to the final decision."
W+B 4	<ul style="list-style-type: none">• (Political) support• Appropriate frame• Sound reasoning• Relevant & reliable information	"A decision, in my opinion, is effective when it is stable and parties do not later retract from it."
W+B 5	<ul style="list-style-type: none">• Sound reasoning• Relevant & reliable information	-

	<ul style="list-style-type: none"> • Appropriate frame • Clear values & tradeoffs • (Political) support 	
I&W	<ul style="list-style-type: none"> • Team composition • Sound reasoning • Relevant & reliable information • Integrity • Public participation • (Political) support 	“So, those two aspects: a good IPM team on the client's side and a strong multidisciplinary team considering technology, the environment, and societal issues on the contractor's side. That's the foundation for success ... And also a decision-maker that has the balls to make a decision.”
WDO	<ul style="list-style-type: none"> • Creating alternatives • Public participation • Clear values & tradeoffs • Appropriate frame • Relevant & reliable information 	“... we use some guiding principles ... One of them is good engagement with the community ... We use an assessment framework with three aspects. The first is whether the chosen solution truly addresses the core problem. The second is the environmental impact. The third is the costs and benefits.”
GED	<ul style="list-style-type: none"> • (Political) support • Integrity 	“... the most important is to have one voice from the region”

Table 11 - Percentage of interviewees mentioning aspect

Themes	% of respondents
(Political) support	87,5%
Relevant & reliable information	87,5%
Sound reasoning	75,0%
Public participation	62,5%
Appropriate frame	62,5%
Clear values & tradeoffs	50,0%
Creating alternatives	25,0%
Integrity	25,0%
Team composition	12,5%
Commitment to action	-
Legal foundation	-

As evident from Tables 10 and 11, nearly all aspects are identified, albeit with varying frequency. It is apparent that '(political) support', 'relevant & reliable information', 'sound reasoning', 'public participation', and 'appropriate frame' emerge as the five most prominent aspects. This does not imply that the interviewees had less to say about other aspects; rather, these aspects are spontaneously raised by interviewees during interviews.

In this chapter, the five most frequently cited aspects will be elaborated on, highlighting their quality aspects and any suggestions for improvement to ensure smooth functioning or enhance effectiveness. It was decided not to delve into all aspects, as the explanation for less-mentioned aspects is relatively brief. Greater emphasis can be placed on distinguishing certain components within these five aspects, allowing for a more comprehensive examination. The order of Table 11 will be maintained for the

explanation of aspects. Appendix III will present how each respondent perceives a specific alternative, while Appendix IV will include the remaining aspects requiring further elaboration.

It should be noted beforehand that most aspects are generally considered important by the interviewees. With a few exceptions where some aspects were not entirely understood, all interviewees provided feedback on each point. However, two caveats should be mentioned. Firstly, there are instances where interviewees provided brief responses such as "Yes, I also consider that important." In such cases, interviewees may not have deeply reflected on the matter, raising questions about the value of their response. Secondly, the decision was made to include the new aspect in this analysis. As these aspects are novel, they were not specifically queried, resulting in fewer responses from interviewees unless they spontaneously addressed them. Consequently, these two tables have relatively fewer entries for these aspects. Detailed tables can be found in Appendix IV, which will focus on how quality is assessed, criteria for evaluation, and potential avenues for improvement.

The recommendations for enhancing quality will not be extensively elaborated upon; they primarily reflect insights provided by interviewees. A brief overview of these recommendations will be provided in the discussion chapter, where they will be further addressed.

(Political) support

This aspect can be divided into two components, both of which are considered important. Firstly, there is support from the local community and stakeholders for the decision that will be made, which is particularly emphasised by advisory/engineering firms but also by the bureaucratic side. Additionally, political backing is mentioned by these parties, although it holds a more prominent position within the decision-maker side.

Table 12 - (Political) support criteria

Aspect	What do we need to check for quality?	Tips to improve quality
(Political) support	<ul style="list-style-type: none"> • Have we considered all interests of the involved parties? • Have we reached a decision that no one will ultimately contest? • Can all parties explain their decision to their constituencies? • Is there sufficient acceptance from stakeholders? • Does the outcome provide benefits for all involved parties? 	<ul style="list-style-type: none"> • Decisive and realistic leadership. • Balance between societal interest and local or private interest. • A governance counterpart can serve as a bridge between two worlds. • Establishing relationships among stakeholders, including informal settings.

As evident from Table 12, there are several considerations to take into account within this aspect to ascertain compliance or fulfillment. Particularly, the evaluation with politics is crucial, depending on the perspective of the project. "To what extent do I want to factor this into my decision, and does that align with the project's expectations?" was mentioned by one interviewee. Interviewees make some distinctions here. While some argue that community support and political support should be considered separately, others contend that politicians (and therefore, the decision-makers) are elected by the community and represent their voices. In that case they cannot be seen separately.

If it is about community support or political support, it is important to have support throughout the entire phase. Stakeholders do not necessarily need to agree 100% with the decisions that are made, but they should understand the reasoning behind them. Support is especially critical at the end of the exploratory phase. Ideally, there should not be significant resistance from the community or political entities once a preliminary decision has been made. Therefore, it's vital to ensure that there is sufficient support at that stage. Support can be enhanced during this phase by building strong relationships and

express understanding to the relevant parties, which can help them accept the decisions made by the decision-maker (and earlier by the advisory/engineering firms and bureaucracy side).

Relevant & reliable information

This theme is one that almost all respondents deem highly significant. They argue that the decision quality ultimately hinges on this aspect, emphasising the necessity of having relevant and reliable information. Such information informs recommendations to decision-makers, enabling them to advise government ministers effectively. All three groups of individuals interviewed underscore the importance of this aspect: both advisory/engineering consultants and bureaucratic officials emphasise the importance of providing accurate information to decision-makers, while decision-makers stress the need for comprehensive information to effectively advocate their ideas during governmental deliberations.

Table 13 - Relevant & reliable information criteria

Aspect	What do we need to check for quality?	Tips to improve quality
Relevant & reliable information	<ul style="list-style-type: none"> • Do we have sufficient depth in the information? • Have we found the information that aids in achieving our objectives? • Do we now possess enough information that nothing distinctive remains undiscovered? • Have we made the information accessible? • Can we substantiate all queries adequately? • Are we considering all categories of information on an equitable level? 	<ul style="list-style-type: none"> • Bear in mind what is feasible, what fits within the budget, and what aligns with the timeframe. • Establishing an assessment framework for required information facilitates differentiation. • Ensure proper application of models being utilised.

Due to the high significance of this aspect, interviewees emphasise the importance of assessing whether the information possesses adequate depth, whether it is distinctive, and whether it contributes to achieving the objectives (Table X). However, the interviewees also note the challenge in determining when it can be said that sufficient information has been gathered. For instance, the use of an assessment framework is suggested to facilitate better differentiation. Additionally, experience plays a role in discerning when information remains truly distinctive and in making the decision to conduct further research. Critical examination of the decision-making process, particularly the choices made by the governing body, is essential, as sometimes additional information is sought to postpone decisions. Moreover, it is crucial to verify whether the queries from stakeholders can be addressed or if further research is necessary for improved responses.

This aspect can be found throughout the entire phase and is equally significant at every point. In each study or investigation conducted during this phase, it is essential to consider whether this aspect is relevant and necessary.

Sound reasoning

The third aspect is 'sound reasoning.' This aspect is mentioned by all interviewees and is generally regarded as important. But there are slight variations in how it should be applied. Everyone agrees that the reasoning should be clear and consistent with the information gathered during the phase. However,

there are differences in opinion on whether complexity should be reduced to make it accessible to everyone or whether doing so might lead to weakened justification.

Table 14 - Sound reasoning criteria

Aspect	What do we need to check for quality?	Tips to improve quality
Sound reasoning	<ul style="list-style-type: none"> Is the reasoning logical based on the information gathered and the studies conducted? Is the reasoning consistent? Is the reasoning clearly documented? Does the reasoning provide a clear description for the decisions that have been made? 	<ul style="list-style-type: none"> Limit the logical framework to the main points. Specify and simplify complex concepts. Present the process in layers. Utilise digital tools to broaden reach. Cross-viewing sessions can aid in verifying the logical framework. Exercise caution with filtering, as excessive filtering may lead to loss of information!

The most important elements of this aspect is that the reasoning must be logical, consistent, and have solid argumentation, as can be seen in Table 14. However, different parties may approach this aspect in varied ways. As noted earlier, the trade-off is between ensuring the work remains comprehensible to everyone (with the risk of oversimplifying) or maintaining technical jargon, which could lead to miscommunication to those who do not understand it. A balanced approach must be taken to meet the needs of all stakeholders.

This aspect plays a role throughout the entire phase. At each intermediate step, the reasoning must remain clear and logical, grounded in the information gathered. The most critical stage is at the end of the phase. In this part it is important to have clear, consistent reasoning so you can minimise opposition from the community and other stakeholders. While not everyone may agree with the final decision, they should at least be able to understand the reasoning behind the choices made.

Public participation

The next aspect under consideration is 'public participation', which primarily concerns engaging with the community and how to involve them. What is noteworthy here is that all interviewees regard this as important, irrespective of their group affiliation. They particularly emphasise the significance of gathering information from the community, as this often leads to insights that were not previously considered. Of interest is the variation observed among respondents regarding the frequency of community input and the way the community gets involved.

Table 15 - Public participation criteria

Aspect	What do we need to check for quality?	Tips to improve quality
Public participation	<ul style="list-style-type: none"> Is the community adequately involved? Is the community engaged with sufficient frequency? Have we clearly identified the interests of the community? Have we avoided excluding any groups? 	<ul style="list-style-type: none"> Create a schedule for moments when input is expected from the community and when they have a say. Always seek input from minority voices (deep democracy). Stakeholder empowerment can aid in obtaining better

	<ul style="list-style-type: none"> • Are we operating from a shared interest? • Have we assigned the residents/community a clear role in the process? 	<p>information from the community.</p> <ul style="list-style-type: none"> • Value engineering can also assist in garnering more input from the community. • Utilise digital tools as well.
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What is predominantly evident from Table 15 is the emphasis on whether we have adequately involved the community, to what extent, and whether we have effectively identified their interests. This aspect recurs frequently in the interviews, with statements such as "The community must be well engaged" and "Opposition from the community is actually beneficial; you need to incorporate it to work towards a better solution." So interviewees clearly recognise the value of utilising public participation.

However, the interviewees vary in their utilisation of this approach at different stages of the exploration phase, and they have differing perceptions regarding its frequency of use. It should also be noted that the extent of engagement with the community is highly project-specific. The frequency of interaction and the role of the community do not have a standardised explanation but rather adapt according to the project and its context.

What matters most to the interviewees is the clarity regarding the type of information sought from the community and the extent to which this information is valued. For instance, one interviewee suggests that involving the community is beneficial but stresses the importance of ensuring that their contributions add value. Participants should not be tasked with designing something without adequate knowledge. This concern can be addressed through stakeholder empowerment, wherein community members are briefed on the topic and design considerations before engaging in the design process. This approach enables them to better understand the choices designers face and make informed decisions.

Furthermore, the interviewees highlight the importance of hearing from all groups and identifying all interests. It is crucial to seek the perspectives of groups that may not be vocal but still have a stake in the project and its outcomes. This approach fosters greater community support and reduces resistance to specific decisions later on.

'Public participation' encompasses both process and content aspects. It involves determining when to involve the community and ensuring that their input adds value to the project. Therefore, both aspects must be carefully considered to assess quality effectively.

Appropriate frame

The final aspect to be addressed is 'appropriate frame'. Although not explicitly named as such, all interviewees consider this aspect important. Instead, they often refer to the scope of the study or the boundaries within which the research operates, focusing more on a component rather than the entire aspect. Additionally, it is noteworthy that some interviewees establish a clear framework in advance to ensure they always have something to refer back to. Conversely, others claim to have sufficient experience to quickly grasp and maintain an understanding of what is necessary and what falls outside the scope without the need for explicit framing.

Table 16 - Appropriate frame criteria

Aspect	What do we need to check for quality?	Tips to improve quality
Appropriate frame	<ul style="list-style-type: none"> • Do we have a clear scope? Is it neither too narrow nor too broad? • Have we clearly defined the problem for the project? 	<ul style="list-style-type: none"> • The Scope and Level of Detail Note sharpens the frame. • Involve stakeholders in this process from the outset, rather

	<ul style="list-style-type: none"> • Have we sought alignment with stakeholders for the frame? • Does our research not lead to deterioration of another? 	<p>than engaging them only once underway.</p> <ul style="list-style-type: none"> • A decision calendar can also enhance clarity and organisation. • Strive for consensus on this frame among all involved parties.
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Within this frame, the focus lies primarily on ensuring a clear scope that is neither too broad nor too narrow, and on having a clear understanding of the problem and objective (Table 16). All respondents emphasise the importance of this aspect. Moreover, one respondent emphasises the significance of predefining the scope of the decisions to be made, involving all stakeholders to align their interests with the decision-making framework.

This aspect primarily centres on the content of process design. These are largely the initial steps taken at the beginning of the exploration phase and it is worth investing some time to ensure they are properly established. As one interviewee pointed out, it is crucial to set this up clearly from the outset. Doing so often helps avoid having to revisit and correct misaligned points in the frame later on. Revising the frame with potential changes could lead to delays, which is why clear and consistent process design is essential early on.

5.1.4 Perspective on MIRT structure

Lastly the interviewees are shortly questioned about the MIRT structure. All interviewees were familiar with the report by the Elverding Commission, which was also one of the starting points of this study. In their 2008 report, they outline points where processes in projects theoretically could become faster and better. With this idea in mind, all respondents were posed with a concluding question: "Do we now find that, with the use of this MIRT structure devised by the Elverding Commission, processes have indeed become faster and better?" It should be noted that interviewee GED had heard of the report, but this individual is more involved in the decision-making side. This interviewee was also asked this question, but indicated not being able to provide a satisfactory answer. The same applies to interviewee W+B 4. This interviewee lacked the experience of both pre and post the MIRT structure to make a statement on this matter.

Table 17 - Perspective on MIRT structure per interviewee

	W+B 1	W+B 2	W+B 3	W+B 4	W+B 5	I&W	WDO	GED
Does the utilisation of the current MIRT structure result in a faster process?	No	No	Yes/No	N/A	Yes	No	No	N/A
Does the utilisation of the current MIRT structure result in a better process?	Yes	Yes	Yes/No	N/A	Yes	Yes	Yes	N/A

As indicated in Table 17, the interviewees share a consistent view of the MIRT structure. They say that the use of the structure helped in improving the quality of the process, however they are not sure if the process actually has sped up. Notable points regarding the good quality included the clarity of the methodology, the defined roles within the project and the established steps to be taken in each phase. However, the requirement to go through all these steps could result in a longer process, suggesting that the MIRT structure might not necessarily lead to a faster workflow. Drawing concrete conclusions about whether the process is truly faster or better is challenging, as this perspective is

based on brief responses from six interviewees. At first glance, it appears that while the quality of the process has improved but it may not be quicker.

Furthermore, there is one interviewee who has marked both points with a yes/no. This is because this interviewee believes that the aspects cannot be seen separately. According to this individual, reducing the duration actually leads to lower quality, and vice versa. However, this interviewee does mention that daring to make a decision does increase speed. If there is no further recourse to additional research, this can contribute to acceleration. Although interviewee GED did not respond to this question, this interviewee did indicate that it is sometimes difficult to make decisions. This is because for the interviewee's department, there were only two managerial meetings, making decision-making moments scarce. This interviewee also mentioned that sometimes a minister may want to postpone a decision, for example, due to lack of funds. Both of these factors contribute to an unfavourable total duration.

A final interesting point raised in a few interviews is the question of where to start measuring the time of the process. It is suggested here that investing time at the beginning to clarify the problem, scope, and goal we are working towards will only help in the rest of the process. While this phase may require more time, it can lead to shorter durations in subsequent phases. For example, there is also mention of investing attention in good substantive information now, reducing the need for objections and perspectives later. This reduces the risk of project delays due to pronouncements by, ultimately, the Council of State, which may require further investigation or the redoing of (parts of) phases.

5.2 Framework after consultation of practice

Using the theory and these analyses of interviews from the field, the framework can be enhanced. Some additional criteria will be added to the framework, particularly focusing on the aspects that have emerged (Table 18). This framework now illustrates the additional criteria originating from practical considerations, providing an overview of the concepts derived from both theory and practice. Additionally, the locations of all aspects in the field will be briefly shown. As depicted in Figure X, criteria in purple have now been incorporated. These points arise from the interviews and warrant inclusion in the framework.

Table 18 - Extra criteria from practice

Aspect	Added criteria
Team composition	<ul style="list-style-type: none">• Roles in team• Team responsibilities
Creating alternatives	<ul style="list-style-type: none">• Affordability• Applicability• Makeability
Relevant & reliable information	<ul style="list-style-type: none">• Accessibility of information
Clear values & tradeoffs	<ul style="list-style-type: none">• Clear assessment framework
Integrity	<ul style="list-style-type: none">• Avoiding tunnelvision
Public participation	<ul style="list-style-type: none">• Clear communication• Frequency of communication

Furthermore, Figure 14 illustrates how the themes are now represented in the framework. It is evident that 'team composition' has been added to the aspects.

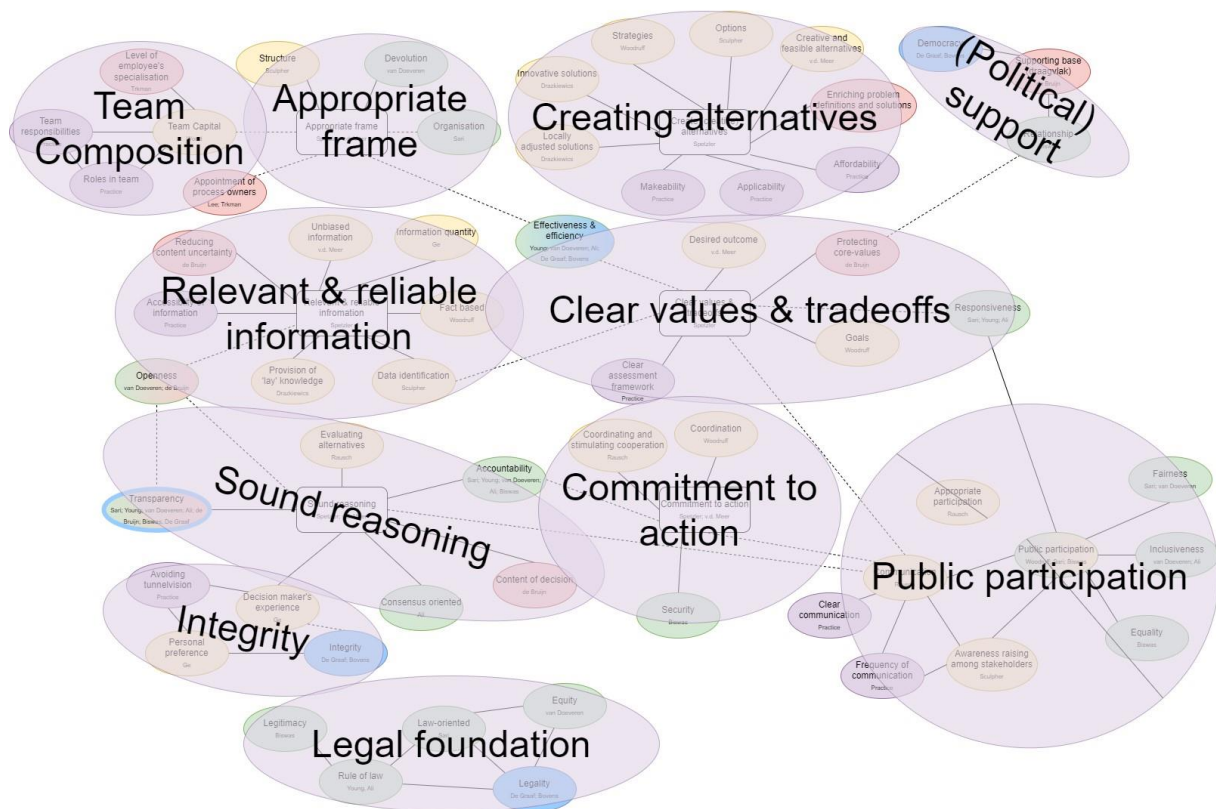


Figure 14 - Grouping of criteria in framework with criteria from practice

6 Conclusion

This study aimed to determine what constitutes decision quality in the exploration phase of projects following a MIRT structure. This was an ambitious question, with the understanding from the start that addressing it would be challenging. **Decision quality is a complex concept, which is really difficult to define.** Consequently, this research does not provide a conclusive answer on what precisely defines decision quality in the exploration phase of MIRT-based projects. However it does identifies key aspects that influence decision quality in these type of projects. It is crucial to recognise that each project is unique, which means certain aspects might be more important in some projects than in others. However, the findings of this study are valuable both theoretically and practically. From a theoretical perspective, the research offers insights into critical aspects within this specific context, showing the boundaries of the theoretic field and indicating which elements play are important. For the practical side, the study provides a list of aspects that practitioners can consider. This will allow them to substantiate their decision quality in future projects. So while this research may not have answered the question of decision quality completely, it has given an understanding to decision quality in this context that can guide both academic inquiry and practical applications.

Spetzler et al. (2016) provide a solid starting point for analysing decision quality in projects, in which they outline the key aspects that define decision quality. They establish a clear theoretical framework and elaborate on the essential factors, while also identifying potential pitfalls and offering guidance on how to mitigate them. Their research has served as a foundational reference for subsequent studies, indicating its robustness and credibility.

However, it is important to note that the research by Spetzler et al. is framed within a business context. The concepts outlined by Spetzler et al. did not entirely capture the elements necessary for decision quality in the context of this research. **In the decision-making processes of public projects following the MIRT structure, there are additional relevant aspects, including political and community support, legal grounding, public participation, and integrity.** This study explores these additional dimensions and underscores their significance. By including these new aspects, a more comprehensive set of criteria will be shown to evaluate decision quality within the context of this research. This broader perspective contributes to a more precise understanding of the factors that should inform decision quality.

The aspects (political) support, relevant & reliable information, sound reasoning, public participation, and appropriate frame seem to be the most significant for decision quality in the exploration phase of projects with a MIRT structure. These aspects emerged as the most prominent in the interviews with the practitioners. The theoretical framework suggests ten aspects, which were also validated by the practitioners. However, the greatest emphasis is placed on these five key aspects. As a preliminary step in quality control, it is advisable to focus on these five aspects before checking the others.

The aspect of team composition is another factor that practitioners consider critical to decision quality. Although this aspect was represented by a single criterion in the theoretical framework, it is highly valued in practice. A well-composed team ensures that different perspectives on the problem are considered, and effective collaboration is achieved. The configuration of the team, however, has some associated tensions, which are further elaborated in the discussion.

Attempts were made to distinguish aspects between process and content, but in some cases, these were too intertwined to separate. The study indicates that the primary focus should be on content, as this is where decision quality is most apparent. However, the findings suggest that some aspects cannot be easily detached from the process, and this should be taken into account. Despite this, the emphasis in this research remained on content-focused aspects.

All groups involved in this study (advisory/engineering firms, the bureaucracy side, and decision-makers) recognise the importance of considering decision quality. Thinking about quality early on leads to proactive steps that benefit the entire exploration phase. It also promotes a critical evaluation of the work of people involved in this phase. When everyone has a better idea of what decision quality consists of, the search for answers becomes more focused. This will eventually lead to faster quality improvements.

However, these groups place varying emphasis on different aspects of decision quality. **Advisory/engineering firms and the bureaucracy side do focus more on gathering the necessary information, making sure that it is clearly formulated, and involving the relevant stakeholders.** These two groups are engaged throughout the entire phase, from beginning to end, working together towards providing advice to decision-makers. **While decision-makers also value these aspects, they emphasise the importance of political and community support.** Besides making sure that the community supports the decision, it must also be positioned on the political agenda and be backed by the minister. It is worth noting that this is not necessarily about decision quality itself, as that primarily revolves around information gathering and substantiating choices. However, without this political support, projects cannot proceed, making the initial analysis relatively useless.

This study offers valuable insights for both theory and practice, presenting a new perspective on decision quality that delineates the boundaries of the field. Projects with a MIRT structure are not previously been examined this way, connecting theory and practice. The practitioners now have a clearer view of the aspects of decision quality and how to incorporate them into their work.

It is important to note that some conclusions are based on 8 interviews, with only one decision-maker interviewed. This study is still valuable, because it uniquely examines decision quality by integrating theory and practice and interviewing different stakeholders. However the findings are based on a limited sample and should not be generalised to all projects. Further elaboration on this point is provided in the discussion.

7 Discussion

The most important question to start this discussion with is: What have we learned from this study that we did not know before? The main contribution of this research is that decision quality has been examined from various theoretical perspectives. Combining different aspects into a framework within this context has not been done before, providing greater clarity in the existing theory. It also serves as a valuable starting point for further studies, which will be discussed later in this chapter. Next to this point, the assessment of decision quality by practitioners in this context is not documented in the literature. This has revealed that some theoretical concepts, which might seem workable in theory, are perceived differently or deemed less significant by practitioners. This finding offers a critical perspective on the theory and its applicability, highlighting the need for alignment with real-world practices. Overall, this research contributes to academic knowledge and has potential implications for practical applications.

As indicated in the conclusion, it is important to establish the validity of this study to demonstrate its applicability and relevance to both academia and practice. This serves to showcase how this research adds value to both scientific knowledge and practical applications. First the content validity is assessed by ensuring the research measures what it intended to measure. Given the exploratory nature of this study, the goal was to map out the breadth of the subject matter. This was achieved by incorporating as many relevant theories as possible to examine decision quality from multiple perspectives. Although it is always possible to include more papers, theories and data, this study has sufficiently validated its measurement within the scope and constraints of this research project.

Also the internal validity can be confirmed, which focuses on the soundness of the methodology used. Since the research question does not have a straightforward answer, it was necessary to draw from multiple theories to gain insights into factors that contribute to decision quality. Additionally, a practical perspective was essential. Given the open-ended questions, a survey was deemed less effective because it would not allow for the level of discussion and follow-up questions needed to understand the opinions of the interviewees about decision quality. Semi-structured interviews with practitioners proved to be the most suitable approach.

It is also important to note that while these points contribute to establishing validity, it is still limited. The study offers preliminary insights into decision quality within this context, providing a general overview rather than an in-depth analysis. Additionally, the current framework lacks the precise metrics necessary for thorough evaluation. Future studies could build on this groundwork to provide a more in-depth examination of the identified aspects.

Due to the exploratory nature of this study which gives a first insight into the relationship between various theories and practice, it is challenging to compare the findings with data from other studies. Nonetheless, some results are noteworthy for their divergence from initial expectations. Decision quality from a business perspective is often emphasised as a commercial perspective with a focus on profit. However, when applied to a governance context, these theories present a limited view that addresses of the aspects that deemed to be important. Although these business-oriented approaches provide a useful starting point, they require additional elements to be relevant in the context of this study. The inclusion of governance-oriented aspects provides a more total understanding of the field, allowing for a broader assessment of decision quality within the context of this research. This view can help maintain quality throughout the process and serve as a basis for evaluation at its conclusion.

Additionally, there was an expectation (and maybe hope) that insights from practice would support the aspects from the theory, which largely occurred. As noted in the conclusion, five key aspects emerged from the interviews. Prior expectations included that relevant information, political support, and robust justification would be critical. This was anticipated because the exploratory phase revolves around gathering information to identify a preferred alternative. Moreover, there were indications from practitioners that support has become increasingly important in recent years. Notably, support was approached from two angles. The first angle is community support, which is essential to

prevent resistance and delays due to community backlash following a decision. The second angle is political support, required for a project to advance to the next phase. While political support does not necessarily reflect on decision quality, it is crucial for project progression. Although objectivity is desirable, political considerations cannot be entirely disregarded, as they are often critical to project viability. This tension between objectivity and feasibility represents a challenge in determining the proper balance. In light of these results, it is recommended to prioritise objectivity when assessing decision quality. However, political support and other pragmatic considerations should not be entirely excluded, as they can significantly influence project success.

An intriguing point is the emphasis practitioners place on team composition. This aspect does not prominently feature in the theory, but it appears to have a significant impact on decision quality. The composition of the team can influence various other aspects, such as the focus of investigations, the effectiveness of communication, the robustness of justifications, and the overall approach to problem-solving. These factors are crucial to the quality of decisions, the central focus of this study.

However, team composition also presents a source of tension among practitioners. While there is consensus that team structure is important, they have a bit of disagreement in how the roles should be filled in. Some respondents stress the importance of the roles defined by the Integrated Project Management (IPM) model, suggesting that using this structure ensures better problem solving and consequently lead to a higher quality decision. They argue that each role contributes a unique perspective that collectively enhances decision quality. Conversely, other respondents question if it is needed to follow these predefined roles. Using these roles can lead to only thinking in your own role and forgetting that you are a team that needs to work together. The challenge, therefore, lies in striking a balance between clarity in role definitions and flexibility to adapt to the unique requirements of each project. In my professional opinion, clear communication and understanding of roles are essential for effective teamwork and can lead to better outcomes. While the IPM model provides a useful framework for defining roles, it should not be applied without consideration for project-specific needs and dynamics. Practitioners should use the IPM model as a guide, ensuring that roles are clearly understood, while allowing for adaptability and cross-collaboration within the team.

There is also a tension between academia and practice, leading to differing expectations from each side. Academia aims to explore as much as possible and provide broad explanations. This is why the academic approach typically involves drawing from multiple theories, rather than relying on just one. Practitioners, are also interested in theoretical insights but are more focussed on concretising them into criteria they can apply in real-world contexts. To address this, the approach here was to group aspects into fewer, more manageable categories, making them easier to assess and apply. With this effort has been attempted to balance both academic and practical perspectives by being broad where needed and specific where required.

This leads to a potential limitation of the study. The theory from Spetzler et al. (2016) was recommended by practitioners as a solid starting point, which this research adopted and expanded upon. However, this could have introduced some bias by framing the research in a certain direction and shaping the approach to the problem. Moreover, one of the advisors advocated for a broad literature review, encouraging the exploration of numerous theories. This raises the question of whether a narrower focus on a smaller selection of papers, with deeper exploration of these theories, might have been more beneficial. The influence may have restricted the scope of this research, but it can also be seen as an effective convergence of theory and practice.

Another limitation of this study concerns the respondent group used for the research. As noted at the end of the conclusion, the study involved eight respondents. The interviews were in-depth and included individuals from the pre-selected groups, allowing for conclusions based on their practical experience. But it is important to remember that this research specifically focused on exploratory phases of projects within a MIRT structure. The results cannot be generalised to all projects.

Additionally the advisory/engineering firms group could have been broader. Because this research was conducted at Witteveen+Bos, interviewees from this company were more easy to find and willing to participate. However, for a more comprehensive outcome, it would have been better to interview individuals from other consulting firms. Moreover, it would have been ideal to have included an additional decision-maker, since the results from this group were based one individual.

Nonetheless, it is worth mentioning that the study still yielded valuable results and took a novel approach by involving this specific type of respondent group. Although the sample size was relatively small, every effort was made to include all relevant groups and gather diverse insights. This approach was successful, indicating that the results obtained from this study will contribute to both theory and practice despite its limitations.

In the end this study aimed to provide a preliminary insight into the decision quality of exploratory phases of projects with a MIRT structure. However, when using these results and conclusions in further research or practice, two important considerations should be kept in mind. First, because the research was exploratory, it aimed to outline the scope of the field by identifying various aspects, which led to a broader view rather than a deep dive into the specifics of each aspect. This approach means that the aspects were not examined in detail and have not been precisely measured against multiple criteria. Nonetheless, this study can serve something to think about for those involved in these exploratory phases. It encourages them to consider whether they have truly covered all relevant points and done so at a qualitative level. Moreover, the research helps facilitate dialogue among stakeholders by providing a shared understanding of which aspects require attention. Second, this research identified aspects that respondents considered important and where focused attention should be placed. However, this does not imply that other aspects are unimportant. Different projects may demand that certain aspects are deemed more important. This makes it inappropriate to create a strict hierarchy indicating which aspects are most crucial. Rather, the list of aspects can be used as a reference point to determine which elements are most relevant for a given project and how to ensure that these aspects are adequately addressed.

This study creates different options for further research. A particularly promising direction is a deeper examination of one specific aspect, enabling a greater level of detail. The choice between qualitative and quantitative research methods was a consideration at the start of this study. However, when focusing on a specific aspect, a quantitative approach could be more suitable. This approach would require identifying the criteria for measuring the chosen aspect. Once the criteria are defined, they can be applied to data from various exploratory phases to evaluate whether these criteria are met and to what extent. This quantitative analysis can reveal if the aspect is adequately addressed, if certain projects overlook critical factors, or how project outcomes vary based on adherence to specific criteria. This approach would add significant detail to the aspect and make it more measurable, providing a valuable follow-up to this study.

Another options for further research can be to assess the identified aspects in other phases of the MIRT structure. This would involve examining whether the same aspects are applied in other phases or if additional aspects are needed. It would be valuable to understand whether the same aspects hold the same importance in different phases or if other aspects deemed to be more important. Care must be taken when making such comparisons, as different phases may involve distinct research processes or different types of decisions.

Another consideration is the assumption made in this study that decision-makers act rationally. This assumption may not hold in all cases, suggesting that further research could explore the types of choices made during the exploratory phase and their effects on decision-making and decision quality.

Another potential research direction is exploring the concepts of "faster and better" within the context of the MIRT structure. The results indicated that this was briefly touched upon, but no solid conclusions could be drawn from the limited sample of six responses. The initial observation suggests that while the process has improved, however it has not necessarily become faster. This raises

questions about the implications for decision quality and could be explored through a larger-scale study with more targeted questions.

Finally, a recurring suggestion for further research involves conducting additional interviews with more practitioners. This would give a more detailed understanding of the various groups involved in practice. It could also involve interviewing other stakeholders, though it is essential to assess how involved these additional individuals are in the decision-making processes of this type of project.

8 Recommendations

This chapter will provide a few brief recommendations derived from this study. These recommendations will address the applicability of the research and suggest possible next steps for practical implementation.

8.1 Current practical application

For practical application, the framework of aspects can serve as an additional assessment tool during the exploration phase. Two key moments are particularly crucial for evaluating the framework. At the outset of the exploration phase, it is essential to reference this framework. Firstly, this ensures that all stakeholders understand the expectations throughout the phase. Moreover, it facilitates consideration of how to address these aspects, ultimately enhancing the decision quality. Utilising the framework clarifies expectations for everyone involved, creating a more streamlined process.

Furthermore, it is important to reevaluate this list towards the end of the phase, ideally before submitting the final report with the preferred alternative. This allows for a final check to confirm the presence of all necessary quality aspects, ensuring that a high-quality recommendation can be provided and, consequently, a quality decision can be made. If any aspect has not received adequate attention, there is an opportunity to address it further or acknowledge its need for further investigation. This approach results in a more complete recommendation, providing clarity on necessary actions for subsequent phases. Factors such as time constraints or insufficient capacity for assessments at critical junctures may necessitate such adjustments.

To thoroughly evaluate these aspects, continuous application throughout the phase is advisable. As a project leader or manager, refer to the list as a guide at each stage to ensure all necessary steps are considered. This proactive approach minimises surprises and ensures the provision of accurate information, facilitating the making of high-quality decisions.

8.2 Recommendation for first follow-up research

As discussed earlier, there are various directions for future research following this study. However, one approach stands out as potentially having the greatest impact and providing the most significant added value for the practical side. For practice it would be easier to quantify criteria. If criteria remain vaguely defined, it becomes challenging to assess whether an aspect has been fully addressed. This will leave room for subjective interpretation. Therefore, a more in-depth examination of the five most critical aspects and a move toward making them quantifiable is a promising path for future research. This approach would enable the creation of a checklist with specific points to evaluate, allowing decision quality to be assessed using a metric. A checklist of this kind would help practitioners identify areas where a specific quality is lacking and provide guidance on how to improve these areas. However, as indicated in the conclusion, quantifying quality is quite challenging, and pursuing this direction would require a lot of research effort.

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Appendix I – Interview questions

Dit gesprek wordt gehouden voor het afstudeeronderzoek van Gino van der Zant van de masterstudie Complex Systems Engineering and Management (CoSEM) over de kwaliteit van een besluit in de verkenningsfase van planstudies in projecten die de MIRT structuur volgen. Dit onderzoek wordt gedaan als student van TU Delft, afstuderend bij Witteveen+Bos.

Aanleiding voor het onderzoek

Na meerdere commissies die onderzoek hebben gedaan, zoals de Tijdelijke Commissie Infrastructuur (TCI) en de commissie Luteijn, was het laatste onderzoek van de commissie Elverding met het rapport Sneller & Beter. Er is in de afgelopen jaren wel onderzoek gedaan naar de doorlooptijd (sneller) (Klakegg et al., 2016), maar de kwaliteit van het besluit is nog niet veel onderzocht (beter). De interviews zullen gebruikt worden voor perspectieven vanuit de praktijk en mogelijk ook voor bevestiging van ideeën uit de literatuur.

De onderzoeksvragen

Wat is de kwaliteit van een besluit in de verkenningsfase van planstudies van een project dat de MIRT structuur volgt (MIRT, HWBP, PAGW, RWS-wegen)?

Welke aspecten bepalen de kwaliteit van deze besluiten?

Welke aspecten bepalen de context voor het maken van een kwalitatief besluit?

Na een korte kennismaking zal de aanleiding voor dit onderzoek worden toegelicht. Vervolgens gaan we in gesprek over uw ervaringen tijdens verkenningsfasen en uw inzichten in de kwaliteit en aspecten die daar invloed op hebben.

Vertrouwelijkheid van informatie verkregen via het onderzoek

Graag zou ik het gesprek opnemen voor eigen gebruik. Indien er behoefte voor is kan een gespreksverslag worden nagezonden. De interviews en alle data en informatie die via de interviews wordt verkregen blijft vertrouwelijk en zal niet worden gedeeld met derden. Wel kan informatie uit het interview in abstracte vorm worden verwerkt in de definitieve rapportage, maar de informatie zal niet traceerbaar zijn naar respondenten. In alle overige gevallen zal vooraf bij de geïnterviewde om goedkeuring en toestemming worden gevraagd.

Informatie over verkenningen

Aan welke projecten heeft de respondent meegewerkt en wat was zijn/haar rol hierin?

- Aan welke verkenning(en) van projecten heeft u meegewerkt?
- In welk programma zaten deze verkenningen? (MIRT, HWBP, PAGW, RWS-wegen)
- Welke rol(len) heeft u gehad in deze projecten?
- Was u vanaf de startbeslissing tot het voorkeursalternatief (VKA) betrokken bij dit project?
- Wat was de doorlooptijd van uw projecten?
- Ziet u dat uw projecten dezelfde structuur doorlopen als te zien is in de figuur?

Korte inleiding voor volgende vragen:

Vanuit de literatuur kunnen we 3 fases zien van een besluit. Als eerste is het de weg naar het besluit toe. Dat zijn de onderzoeken die van te voren worden gedaan om het besluit te kunnen nemen. Dit wordt vaak gedaan door een samenwerking tussen de ambtenaren en adviesbureaus. Als tweede is er het moment dat het besluit genomen zal moeten worden. Het proces wat hieraan vooraf is gegaan moet genoeg informatie geven aan de bestuurder zodat hij/zij het besluit kan nemen. Tot slot is er de uitkomst. Als een besluit genomen is leidt tot een bepaalde uitkomst. Er moet hier goed rekening worden gehouden met het feit dat een goed besluit niet noodzakelijkerwijs leidt tot een uitkomst, laat staan tot een goede uitkomst. Dat zijn dingen die los van elkaar gezien moeten worden. Daarom wordt in dit onderzoek alleen gekeken naar de fase tot dat het besluit genomen wordt, dus de eerste fase.

Kwaliteit van een besluit

Inzicht krijgen in welke aspecten er van toepassing zijn voor het meten van kwaliteit, of deze zijn toegepast en wat de respondent zelf vond van de uitkomst.

- Wat is er volgens u belangrijk voordat er een besluit genomen kan worden?

- Zou u deze aspecten kunnen toelichten?
- Hoe zijn deze aspecten volgens u gekoppeld aan kwaliteit?
- Vond u dat deze aspecten voldoende zijn op de verkenningen waarop u advies heeft gegeven?
- Waarom zijn deze wel of niet voldoende toegepast?
- Welk aspect of aspecten is/zijn vindt u het belangrijkste voor het vormen van een kwalitatieve onderbouwing van een besluit?

Uiteindelijke besluit dat is genomen (versie adviesbureau & ambtelijk)

Inzicht krijgen of de bestuurder uiteindelijk heeft geluisterd naar het advies of iets anders heeft gedaan en waarom hij/zij dit heeft gedaan.

- Heeft de bestuurder uiteindelijk het besluit genomen wat vanuit u is geadviseerd? *of* In hoeveel procent van de gevallen heeft de bestuurder uw advies overgenomen?
- Wanneer de bestuurder uw advies niet heeft gevolgd, waarom heeft hij/zij voor een ander besluit gekozen?
- Waarvan heeft de bestuurder volgens u zijn keuze het meeste laten afhangen?
- *Hoe heeft volgens u een aspect als draagvlak invloed op de keuze die een bestuurder maakt?*
- *Is draagvlak een aspect wat kwaliteit kan meten of heeft het aspect invloed op het gehele proces?*

Uiteindelijke besluit dat is genomen (versie bestuurder)

Inzicht krijgen op basis van welke kwaliteitscriteria de bestuurder het besluit heeft gemaakt.

- Welke aspecten vindt u het belangrijkste in het maken van uw besluit?
- Welke aspecten worden het zwaarste meegenomen in het maken van uw besluit?
- Heeft u het advies van de adviesbureaus meegenomen?
- Wanneer tegen het advies is ingegaan, waarom is die keuze gemaakt?
- *Hoe heeft draagvlak een invloed op uw keuze?*

Validatie van andere aspecten

Als de respondent uiteindelijk al zijn eigen inzichten heeft gegeven, kan er nog voor gekozen worden om een paar aspecten te toetsen uit het theoretische framework. Dan is er een soort validatie die gedaan kan worden van dit framework. Dit wordt wel op het einde gedaan, omdat er anders al woorden in de mond van de respondent gelegd kunnen worden.

- Uit het theoretisch onderzoek komt aspect X ook nog naar voren, vindt u dat dit aspect ook nog invloed heeft op de kwaliteit?
- Zo niet, waarom heeft dit aspect geen invloed op de kwaliteit?

Rapport 'Sneller & Beter' van Commissie Elverding

De commissie Elverding is de laatste commissie die complexe projecten heeft bestudeerd en de huidige MIRT structuur van het MIRT gevormd. Volgens hun rapport zou het proces met deze aanpassingen sneller en beter moeten verlopen/zijn.

- Op welke wijze ervaart u dat het proces nu sneller verloopt dan voor het vormen van de MIRT structuur?
- Vindt u dat het proces nu beter is dan voor het vormen van de MIRT structuur?
- Wat is volgens u het verschil tussen beide?

Appendix II – Aspects mentioned by interviewees

In this appendix, the data used to illustrate whether an interviewee mentions an aspect is presented. This involves examining what is mentioned in the interview and how it is articulated. For each quote, the question is posed regarding which aspect it is linked to and how it is addressed in the conversation. Since the interviews were conducted in Dutch, the quotes will be provided in Dutch.

Respondent W+B 1

Quote	Aspect	Spontaneous or reaction?
"... gaan we op basis van de informatie die er is richting een voorkeursalternatief"	Relevant & reliable information	Spontaneous
"Uiteindelijk gaat het om hoe neem je de omgeving mee in besluitvorming?"	Public participation	Spontaneous
"Nou wat dus cruciale factoren zijn ... ze ook meenemen in de inhoud, dat de feitelijke basis niet ter discussie staat"	Sound reasoning Relevant & reliable information	Spontaneous
"Ambtelijke organisaties moeten goed worden meegenomen ... expliciet bij hun ophaalt wat zij nodig hebben om tot een besluit te komen"	Clear values & tradeoffs Relevant & reliable information (Political) support	Spontaneous
"... dit kan ook zijn, omdat ze andere belangen hebben"	(Political) support	Spontaneous
"Dus je hebt draagvlak op inhoud en draagvlak op het proces"	Appropriate frame Relevant & reliable information	Spontaneous
"... veel meer in de afweging tussen kosten en baten van ..."	Clear values & tradeoffs	Spontaneous
"... hoe gaat ons afwegings- en beoordelingskader eruit zien?"	Appropriate frame Clear values & tradeoffs Sound reasoning	Spontaneous
"... je hebt meerdere zeven waarin je naar oplossingsrichtingen kijkt"	Creating alternatives	Spontaneous
"Wat ga je wel of niet onderzoeken? ... opstellen van een uitgangspuntennotitie..."	Appropriate frame	Spontaneous
"... in het begin je vertrekpunt vastligt qua uitgangspunten en qua scope..."	Appropriate frame	Spontaneous
"... met een warme overdracht de resultaten presenteren"	Commitment to action Sound reasoning	Spontaneous

Respondent W+B 2

Quote	Aspect	Spontaneous or reaction?
"Punt één, het moet inhoudelijk op orde zijn en vanuit onze rol moet het objectieve beslisinformatie zijn"	Relevant & reliable information Integrity	Spontaneous
"... om aan complexiteitsreductie te doen"	Sound reasoning	Spontaneous
"... meer betrokkenheid vanuit de Omgevingswet"	Public participation	Spontaneous
"Kwaliteit van het besluit kan ook te maken hebben met het draagvlak"	(Political) support	Spontaneous
"... wat zijn nou de onderliggende criteria die het verschil maken?"	Clear values & tradeoffs	Spontaneous
"Wat draagt nou het meeste bij aan het doel"	Commitment to action	Spontaneous
"... allerlei tegengestelde bestuurlijke belangen, waar lokale bestuurders ook een privé agenda hadden"	(Political) support	Spontaneous
"... met name de oplossing gebiedseigen wordt, gebiedsgericht"	Creating alternatives	Spontaneous
"Nou ja, dat was nog uitdagend en heel juridisch..."	Legal foundation	Spontaneous
"Bij elk besluit moet je juridische lijn in orde zijn"	Legal foundation	Reaction
"Zeker, dit sluit ook een beetje aan bij die draagvlakmetingen..."	Appropriate frame	Reaction
"Gelijk speelveld, gelijkheid van informatie..."	Appropriate frame Reliable & relevant information	Reaction
"Wat is het probleem, wat is het doel, wat is het besluit?"	Appropriate frame	Reaction
"... dat doen we vanuit ervaring"	Integrity	Spontaneous
"Nou wat je wel eens ziet is tunnelvisie"	Integrity	Reaction
"Krachtige en goede redeneerlijn is dus heel belangrijk..."	Sound reasoning	Reaction
"Want we wilden die mensen mee laten tekenen..."	Public participation	Reaction

Respondent W+B 3

Quote	Aspect	Spontaneous or reaction?
"Ik vind het belangrijk dat objectief al die aspecten naast elkaar worden gezet..."	Clear values & tradeoffs	Spontaneous
"... heel belangrijk dat ... echt inhoud, het omgevingsproces, de technische inhoud en de impact van de inhoud..."	Relevant & reliable information Public participation	Spontaneous
"... aan de voorkant met elkaar een soort afwegingskader ... of beoordelingskader afspreken"	Appropriate frame Clear values and tradeoffs	Spontaneous
"... waar gaan we überhaupt over besluiten?"	Appropriate frame	Reaction
"... en aan der andere kant de politieke of bestuurlijke belangenafweging"	(Political) support	Spontaneous
"... ik vind het belangrijk dat ja alle belangen in beeld hebt tijdens zo'n besluit"	(Political) support	Reaction
"Dus ik denk het juiste detailniveau bij de inhoudelijke informatie, dat dat heel belangrijk is"	Relevant & reliable information	Spontaneous
"... kan ik het straks maken, is het straks vergunbaar?"	Legal foundation	Spontaneous
"Dat de juiste kennis en ervaring ook aan tafel zit"	Integrity	Reaction
"Je moet niet hebben dat er een dominante techneut of projectleider..."	Integrity	Reaction
"Maar uiteindelijk houdt het voor ons op bij, dit zijn de drie dingen waar je uit kunt kiezen"	Creating alternatives	Spontaneous
"... redelijkerwijs te beschouwen alternatieven ..."	Creating alternatives	Reaction
"We noemen dat ook wel de redeneerlijn op orde ... dat het uitlegbaar is"	Sound reasoning	Reaction
"Vind het wel mooi dat je zegt commitment ... maar als de bestuurders vervolgens niet doorpakken ... dan gaat het nergens over"	Commitment to action	Reaction

Respondent W+B 4

Quote	Aspect	Spontaneous or reaction?
"Een besluit is in mijn ogen goed als het stabiel is en als partijen er niet later op terugkomen ..."	(Political) support	Spontaneous
"Het is zowel het proces als informatie"	Reliable & relevant information	Spontaneous
"... dus de complexiteit weet te versimpelen tot de dingen die bepalend zijn, die onderscheidend zijn"	Sound reasoning	Spontaneous
"... je hebt altijd van grof naar fijn ..."	Creating alternatives	Spontaneous
"... is van tevoren de criteria vaststellen waarop je gaat afwegen, bepalen hoe je dan tot die invulling van die criteria komt"	Appropriate frame Clear values & tradeoffs	Reaction
"Reduceren tot de hoofdlijnen van waar het om gaat"	Sound reasoning	Reaction
"Je hebt stakeholders die bepaalde zeggingsmacht hebben, dus die ook vergunningverlenende zijn en die moet je wel meenemen..."	(Political) support	Spontaneous
"Ook, want daar heb je ook bewonersavonden en omgevingstafels..."	Public participation	Reaction
"Redeneerlijn noemen we dat ook wel eens..."	Sound reasoning Legal foundation	Reaction
"... bij de verkenning ben je echt bezig met alternatieven afwegen"	Creating alternatives	Reaction
"Dat hangt er uiteindelijk altijd wel boven"	Commitment to action	Reaction
"... ja klopt en die raakt ook wel een beetje met unbiased information"	Integrity	Reaction

Respondent W+B 5

Quote	Aspect	Spontaneous or reaction?
"Met name vanuit de traceerbaarheid van de keuze en ten tweede is de mate van diepgang"	Appropriate frame Sound reasoning	Spontaneous
"Vooral de volledige onderbouwing ... en de snelheid waarmee je dat doet"	Relevant & reliable information	Reaction
"Dan ga je in gesprek over hoe lossen we dat dan op..."	(Political) support	Spontaneous
"... het is met professionele stakeholders ..."	(Political) support	Reaction
".. zul je toch moeten kijken maar met welke oplossing je door wil gaan en je uiteindelijk voorlegt aan de besluitnemers"	Commitment to action	Reaction
"... van tevoren moet bedenken dat je in een bepaalde frequentie überhaupt in gesprek bent"	Appropriate frame	Spontaneous
"Dus we zouden meer dilemma's moeten presenteren en minder oplossingen"	Clear values & tradeoffs Sound reasoning	Spontaneous
"Acceptatieruimte voor iets waar je als stakeholder water bij de wijn moet doen, is wel groter geworden omdat je onderdeel bent geweest van de afwegingen in het dilemma"	(Political) support Public participation	Spontaneous
"Als je een contract niet goed schrijft, kun je daar allerlei claims van krijgen"	Legal foundation	Spontaneous
"Niet zozeer dat meepraten, maar ... heel goed over nadenken dat mensen ook echt mee mogen doen op plekken waar ze ertoe doen, maar ook niet meepraten op plekken waar ze er niet toe doen"	Public participation	Reaction
"Wel, maar in kleinere schaal"	Creating alternatives	Reaction
"Borgen van de bedoelingen"	Appropriate frame	Reaction
"... ontwikkeling in contact met de omgeving"	Public participation	Reaction
"Ik hoorde jou zeggen, je kan pas door als partijen zich committeren, maar ik zou zeggen, als je een helder besluit neemt en goed onderbouwd, dan dwing je af dat partijen zich committeren"	Commitment to action	Reaction

Respondent I&W

Quote	Aspect	Spontaneous or reaction?
"Punt een is een goed team ... punt twee, dat is dat je een goede consultant hebt"	Appropriate frame	Spontaneous
"Ga je het überhaupt redden tegen een Raad van State?"	Legal foundation	Spontaneous
"Ga je ook juridisch, ga je dat niet redden"	Legal foundation	Spontaneous
"Als je in bepaalde onhaalbare richtingen gaat denken op grond van tunnelvisies"	Integrity	Spontaneous
"... omgeving en maatschappelijke discussie ... dan ga je ergens komen"	(Political) support Public participation	Spontaneous
"... vertegenwoordigers van werkgroepen, actiegroepen ... dat je daar overleg voor organiseert"	Public participation	Reaction
"Dus ik ben altijd van de absolute openheid en hup over de schutting. Aan de voorkant"	Appropriate frame	Spontaneous
"Ja en juist vooral alternatieven uit de actiehoek of de bewoners groepen..."	Creating alternatives Relevant & reliable information	Reaction
"... maar jouw scope begrenzing moet dus zijn van hoe los ik mijn problemen op..."	Appropriate frame	Reaction
"Maar het dorp heeft gestemd..."	Public participation	Spontaneous
"Dat is ook een hele grote les voor mij geweest van om aan de voorkant heel goed te kijken naar alles wat ze voor opdoet als oplossing"	Creating alternatives Clear values & tradeoffs	Spontaneous
"...roept maar raak: 300 oplossingen. En die gaan door zeef 0 en dan ga je van 300 naar stuk of 15"	Creating alternatives	Reaction
"Daarom hadden we in de regel, je hebt een eindrapport waar het allemaal behoorlijk globaal in staat"	Sound reasoning	Reaction
"Nou, je kunt in een onderzoek wel opnemen dat er voor dit of voor dat weinig of verminderd draagvlak is"	(Political) support	Reaction

Respondent WDO

Quote	Aspect	Spontaneous or reaction?
"We hebben in deze verkenning hebben we eigenlijk heel breed naar oplossingen gekeken en hebben we ook maatregelen in het watersysteem meegenomen als optie voor de dijkversterking"	Creating alternatives	Spontaneous
"Dat heeft als voordeel dat mensen meer betrokken zijn, zijn minder pauzes"	Public participation	Spontaneous
"Een daarvan bijvoorbeeld is dat de omgeving goed aangehaakt moet zijn"	Public participation	Spontaneous
"...of de gekozen oplossing daadwerkelijk voldoet aan de oplossing op het probleem"	Clear values & tradeoffs	Spontaneous
"... werken met 3 toetsingskaders ..."	Clear values & tradeoffs	Spontaneous
"Ja, nou is wel grappig dat je het zegt ... heb ik nog eens een pleidooi gedaan dat we veel meer moeten werken aan draagvlak op de opgave naast het draagvlak op het resultaat, op de oplossing"	Appropriate frame	Reaction
"...de toegankelijkheid van de informatie"	Relevant & reliable information	Spontaneous
"Dan begint het ook weer even met de uitdaging, de opgave, de noodzaak en mogelijk alternatieven, voorkeursalternatief en kosteneffecten"	Appropriate frame Creating alternatives Reliable & relevant information	Reaction
"En je kunt niet op het juiste detailniveau communiceren..."	Sound reasoning	Spontaneous
"Nou we werken hierin ook van grof naar fijn..."	Creating alternatives	Reaction
"Ja, dus daar waar ik ga praten in mijn project met de omgeving, praat ik eigenlijk met de kiezers van het algemeen bestuur ... Dat is dus inderdaad voor een deel is dat politiek"	(Political) support	Reaction
"Ik kan best heel veel sturen op een project, ook wat we op de grenzen van wat hun politieke keuzes zouden kunnen zijn"	Integrity	Reaction

Respondent GED

Quote	Aspect	Spontaneous or reaction?
"Kan soms nog een verrassing uit de hoge hoed komen, doordat de Tweede Kamer opeens iets anders heeft aangenomen"	(Political) support	Spontaneous
"... omliggende en gebruikers van een tracé probeer je te mobiliseren"	Public participation Integrity	Spontaneous
"... belangrijkste is bijna wel 1 geluid vanuit de regio"	(Political) support Commitment to action	Spontaneous
"... je moet de ambitie hebben om iets te realiseren"	Commitment to action	Spontaneous
"Je moet ook zicht hebben op bijvoorbeeld iets als financiële haalbaarheid"	Clear values & tradeoffs	Spontaneous
"Ja, we hebben bijvoorbeeld eerst een planMER nodig"	Relevant & reliable information	Reaction
"Je moet altijd scherp blijven of je alle bouwstenen hebt"	Relevant & reliable information	Reaction
"Soms is het verleidelijk om nog een extra onderzoek in te plannen ... maar dat is niet altijd goed"	Relevant & reliable information	Spontaneous
"Het proces wordt daardoor niet erg transparant"	Sound reasoning	Reaction
"Project moet helder in kaart zijn en de randvoorwaarden duidelijk..."	Appropriate frame	Reaction
"Een bouwsteen voor vergunningen die verleend moeten worden is ook erg belangrijk"	Legal foundation	Spontaneous
"We beginnen altijd heel breed, dat is er belangrijk ... maar ook rekening houden dat er een omgekeerde trechter bovenop zit"	Creating alternatives	Reaction
"Mensen uit het gebied betrekken zorgt over het algemeen voor een beter besluit, wat zij hebben betere kennis over het gebied"	Public participation	Spontaneous
"Die gemeenteraad voelde zich heftig gepasseerd, terwijl zij ook bij wilde dragen"	(Political) support Integrity	Spontaneous

Appendix III – Importance of aspects by interviewees

In this appendix, each aspect will be examined in terms of the interviewees' perspectives on quality. Comments from the interviews will be included, which will be in Dutch. Because the interviews were conducted in Dutch, the quotes are also in Dutch.

(Political) support

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Important	<ul style="list-style-type: none"> • “Beide waren bij wijs van spreken maakbaar en even duur, dus het is aan de politiek om te kiezen welk belang zij zwaarder wegen. Dus het is uiteindelijk een politieke keuze ... Dus daar hebben we specifiek voor draagvlak aangegeven: zo staat die partij er tegenaan, zo staat die partij en op basis van die input kan volgens de minister besluiten.” • Het gebruik van een bestuurlijke sparringspartner kan handig zijn, heeft inzicht wat er gebeurt in de omgeving en bij de bestuurders. Kan een brug zijn tussen beide partijen
W+B 2	Important, but from political side not sure	<ul style="list-style-type: none"> • Rekening houden wie op welk moment betrokken zijn. Ook aangeven wanneer er iets van ze verwacht wordt of niet. • “Voor het draagvlak van het besluit is het altijd goed dat er voor alle partijen wat in zit.” • “De vraag is wel, moet de kwaliteit nou gestoeld zijn op draagvlak? Het is wel heel wenselijk, want het maakt het wel makkelijker.” • Soms is er wel de afweging tussen maatschappelijk belang en lokaal of privaat belang.
W+B 3	Important	<ul style="list-style-type: none"> • Belangrijk om alle belangen in beeld te hebben tijdens zo'n besluit.
W+B 4	Very important	<ul style="list-style-type: none"> • Het uiteindelijke besluit moet stabiel zijn en partijen moeten hier later niet op terug komen. • Je gaat niet komen tot iedereen zijn eigen belang, maar elke partij moet het wel aan zijn achterban kunnen uitleggen.
W+B 5	Important	<ul style="list-style-type: none"> • In gesprek gaan met de professionele stakeholders die betrokken zijn, om inzichten te krijgen in hun belangen. Daarmee proberen de neuzen van deze mensen dezelfde kant op te laten staan.

		<ul style="list-style-type: none"> • Zorgen dat je met een bepaalde frequentie in gesprek bent, zorgt voor meer acceptatieruimte.
I&W	Very important	<ul style="list-style-type: none"> • “Een derde factor, dat is ook nog een beetje realistische bestuurders.” • “...daadkrachtig en continu bestuur. Dat is ook cruciale voorwaarde om ergens te komen.” • “Je kunt in een onderzoek wel opnemen dat er voor dit of voor dat weinig of verminderd draagvlak is”
WDO	Important, but with side note	<ul style="list-style-type: none"> • “Je moet rekening houden met dat het algemeen bestuur is gekozen door de omgeving, dus als ik ga praten met de omgeving dan praat ik met de kiezers van het algemeen bestuur ... dus dat is inderdaad een deel politiek.”
GED	Very important	<ul style="list-style-type: none"> • Overleg met de minister belangrijk. • Een geluid vanuit de regio. • “Goede aansluiting nodig met de politieke agenda van de minister” • Je moet ook af en toe bij mensen op bezoek gaan, helpt voor meer draagvlak.

Relevant & reliable information

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Very important	<ul style="list-style-type: none">• “... ook dat je heel expliciet bij hun ophaalt wat zij nodig hebben om tot een besluit te komen. Dat kan wel eens hele andere informatie zijn dan waar wij inhoudelijk aan denken wat zij nodig hebben.”• Ook belangrijk om hier te valideren of de informatie die is gebruikt nu echt voldoet aan de eisen die aan het begin zijn gesteld.• Bedenk ook om in gedachten te houden wat haalbaar is, past het binnen het budget en binnen het tijdsbestek?
W+B 2	Very important	<ul style="list-style-type: none">• Alles moet inhoudelijk in orde zijn en moet vanuit deze rol ook objectieve beslisinformatie zijn.• Hierbij wel de afweging kunnen maken wanneer iets relevante beslisinformatie is.• Bepalen wat er relevant is kan heel methodisch zijn, dus het maken van een beoordelingskader kan hierbij van belang zijn. Maar gevoeligheid van de omgeving bepaald ook voor een gedeelte wat voor informatie er van belang is.• Zorg dat het gebruik van bepaalde modellen op de goede manier wordt toegepast.
W+B 3	Very important	<ul style="list-style-type: none">• Zorgen dat alle benodigde informatie naast elkaar komt te liggen en dat je deze op een gelijkwaardig niveau meeneemt.• Ook zorgen voor het juiste detailniveau hierin. Moeilijk om te zeggen wanneer dit is, vooral op zoek naar waar echt de onderscheidende informatie zit.• Zorgen dat het betaalbaar en haalbaar is.• Dingen die altijd oplosbaar zijn, zijn nu niet zinvol om uit te zoeken.
W+B 4	Important	<ul style="list-style-type: none">• Belangrijk dat er een onderbouwing is op alle relevante aspecten.• Soms heb je wel de aanvullende zekerheid nodig en moet je een extra onderzoek doen.• Wanneer er genoeg informatie is was niet echt een antwoord op.
W+B 5	Very important	<ul style="list-style-type: none">• “De mate van diepgang is erg belangrijk.”• De volledigheid van het onderbouwen van de keuzes die zijn gemaakt zijn belangrijk.

		<ul style="list-style-type: none"> • Hierin het onderscheid maken tussen feitendocumenten, afweegnotities en beslisnotities.
I&W	Very important	<ul style="list-style-type: none"> • Zorgen voor een goede consultant die de benodigde informatie kan leveren. • Vooral open zijn in het delen van de informatie, zorgt voor veel meer begrip bij de betrokkenen. Bij vraag ook dingen durven geven. • “Binnen verkenningsfase moet je onderzoeken alleen datgene wat onderscheidend kan zijn.”
WDO	Important, but mostly in access to information	<ul style="list-style-type: none"> • Toegankelijkheid van de informatie is erg belangrijk
GED	Important	<ul style="list-style-type: none"> • Belangrijk om hier goed scherp op te blijven, altijd in gedachten houden welke bouwstenen je nodig hebt. • Vaak portefeuilleoverleggen om te horen wat de status is tussendoor.

Sound reasoning

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Important	<ul style="list-style-type: none">• “De andere rapport over de technische haalbaarheid en uiteindelijk is een heel boekwerk, want allemaal verschillende rapporten. Er was een boven het liggend rapport, de integraal effectanalyse en daarin stond de samenvatting van de belangrijkste milieueffecten, technische aspecten en kosten. Daar zat dus nog niet eens de keuze in, maar meer zo scoren de verschillende alternatieven.”
W+B 2	Very important	<ul style="list-style-type: none">• Complexiteitsreductie is belangrijk vanuit deze rol, heel concreet kunnen maken waar je het over hebt en wat je uitkomsten zijn.• Dwarskijkersessies om te kijken of je redeneerlijn op orde is.
W+B 3	Important	<ul style="list-style-type: none">• Zorgen dat je redeneerlijn op orde is en dat het uitlegbaar is.• Proces heel gelaagd aanbieden en zorgen dat er een publieksvriendelijke samenvatting is van wat je wilt delen, zodat iedereen het kan begrijpen.• Ook belangrijk, de toegankelijkheid tot de informatie.
W+B 4	Important	<ul style="list-style-type: none">• De context versimpelen tot de dingen die bepalend en onderscheidend zijn.• Redeneren tot de hoofdlijnen waar het om gaat.
W+B 5	Very important	<ul style="list-style-type: none">• De traceerbaarheid van je keuzes moet duidelijk zijn, dus je wilt een duidelijke redeneerlijn hebben.
I&W	Very important	<ul style="list-style-type: none">• In alles wat je doet is het belangrijk dat de redeneerlijn op orde is.• Onderbouwing van je eindrapport is belangrijk, zorg wel dat je alle informatie levert. Hierbij is het wel belangrijk om het eindrapport behoorlijk globaal te houden, zodat het voor iedereen behapbaar is.
WDO	Important	<ul style="list-style-type: none">• Je moet hier digitale middelen inzetten om het voor de geïnteresseerden concreter te maken.• Pas hier wel op met filteren! Te veel filteren zorgt voor een verlies aan informatie.
GED	Very important	<ul style="list-style-type: none">• Voorbereiding hiervan is ongelooflijk belangrijk, vooral in overleg met de regio.

		<ul style="list-style-type: none">• Zorg dat je transparant bent in het gehele proces.
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Public participation

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Important	<ul style="list-style-type: none">• “... vaarschema ... Dit zijn de momenten wanneer jullie kunnen meedenken. En waar jullie ook feedback kunnen geven op onze producten ...”• “... ook wat zijn de ambities vanuit de verschillende stakeholders”
W+B 2	Important	<ul style="list-style-type: none">• Betrekken is zeker belangrijk in het proces, zorgt voor meer draagvlak.• Wat hierbij helpt is stakeholder empowerment. Geef ze eerst uitleg over iets voordat ze wat gaan ontwerpen/maken.
W+B 3	Important	<ul style="list-style-type: none">• Nadenken over wie er bij betrokken moeten worden, op welke momenten, op welke manier en dat ze hoorbaar worden gemaakt.• Idee van deep democracy, je moet altijd op zoek naar het geluid van de minderheid.• De manier van de omgeving betrekken bij een project is wel echt heel projectspecifiek, vooral belangrijk dat erover wordt nagedacht.
W+B 4	Important	<ul style="list-style-type: none">• Mensen betrekken bij bewonersavonden of omgevingstafels om het geluid vanuit hun te horen.• Wanneer genoeg betrokken is een moeilijke vraag, wel proberen gebruik te maken van digitale middelen.
W+B 5	Important	<ul style="list-style-type: none">• Zorg dat je in een bepaalde frequentie met elkaar in gesprek bent, zorgt voor meer acceptatieruimte.• Zorg dat je niet te veel mensen aan tafel hebt zitten die niet weten waar ze over spreken, ze gaan dan geluid geven maar zeggen iets waar ze geen kennis over hebben.
I&W	Important	<ul style="list-style-type: none">• Betrekken van alle betrokken stakeholders, dus ook actiegroepen.• Overleggen organiseren wat in verschillende vormen kan: vast overleg platform of incidenteel of inschakelen in bepaalde processen.• Gebruik gemaakt van value engineering, wat erg heeft geholpen in een project.• Inrichten van een maatschappelijke omgevingsadviesgroep.

		<ul style="list-style-type: none"> • “Tegengeluid is juist goed, moet je meenemen om naar een betere oplossing te werken.”
WDO	Very important	<ul style="list-style-type: none"> • “De omgeving moet goed aangehaakt zijn” • Om te toetsen of de omgeving goed genoeg is meegenomen doen ze evaluatieformulieren, maar respondent geeft hierbij aan dat deze een beetje een vertekend beeld kunnen geven. • Belangrijk om zoveel mogelijk in belangen te denken en met die gezamenlijke belangen om tafel om tot een gemeenschappelijke deler te komen. • Bewoners daadwerkelijk een rol geven in het meedenken bij het oplossen. • “Representatieve groep nodig”
GED	Important	<ul style="list-style-type: none"> • Belangrijk om ook vanuit de omgeving de politiek te prikkelen dat er een groot belang is voor wat er gedaan moet worden. • Betrekken van de omgeving erg belangrijk, zij hebben vaak kennis over het gebied die er dan nog niet is. • Als mensen zich gehoord voelen, kunnen ze meestal beter leven met een andere uitkomst dan ze gewenst hadden.

Appropriate frame

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Very important	<ul style="list-style-type: none">• “... wat daar heel erg goed heeft gewerkt, is dat we al een soort vaarschema van tevoren met de stakeholders hebben aangegeven. Dit is de opgave, zo gaan we het aanpakken.”• Notitie van Reikwijdte en Detailniveau helpt met het aanscherpen van dit frame.
W+B 2	Important	<ul style="list-style-type: none">• Je kan besluiten ook nemen vanuit het perspectief van doelbereik. Wat heeft de meeste maatschappelijk toegevoegde waarde?• Notitie van Reikwijdte en Detailniveau helpt met het aanscherpen van dit frame, wordt eigenlijk wel gezien als de onderzoeksagenda.• Scope niet te nauw of te breed zetten.
W+B 3	Important	<ul style="list-style-type: none">• Aan de voorkant met z’n allen een afwegings-/beoordelingskader afspreken.• Goed om over na te denken aan de voorkant waar we überhaupt over gaan besluiten.• Afstemming met de betrokken partijen hierbij ook erg belangrijk.• Denk ook na over verwachtingenmanagement.
W+B 4	Important	<ul style="list-style-type: none">• Denken in het ruimtebeslag wat er is.• Afbakenen van een scope met hier gaan we het over hebben en hier niet.• Besluitenkalender kan hier ook onder vallen met wie er op welk moment iets mogen inbrengen.
W+B 5	Important	<ul style="list-style-type: none">• Van tevoren goed duidelijk hebben waar we met z’n allen over praten, zorgt ervoor dat er geen extra dingen bij worden betrokken en geeft onderbouwing van waarom je dit doet.• Ook durven in het nadenken over deze afwegingen bepaalde keuzes te maken.• “Wij hadden een wat wij noemen borgen van de bedoelingen.”
I&W	Important, but not clearly mentioned	<ul style="list-style-type: none">• “Daar heb ik wel klaarblijkelijk een aardig zesde zintuigje voor”• Vooral van belang dat je scope goed in ogen houdt en er geen dingen extra bij betreft, als dit toch moet gebeuren dan is er meer budget nodig.

		<ul style="list-style-type: none"> • Oplossing voor het ene probleem mag geen verslechtering zijn voor het andere, maar het verbeteren van het andere project valt buiten de scope van dit onderzoek.
WDO	Important, after reaction on question	<ul style="list-style-type: none"> • “...dat we veel meer moeten werken aan draagvlak op de opgave naast het draagvlak op het resultaat.” • Meer werken naar collectiviteit onder bijvoorbeeld gemeentes en provincies, werken naar consensus op bestuurlijk niveau. • “Discussie met gemeente en provincie vind ik raar, want we zijn een overheid.”
GED	Important, but no reaction	-

Clear values & tradeoffs

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Important	<ul style="list-style-type: none">• Belangrijk om van te voren in te schatten wat er hierbij allemaal belangrijk is. Kan verschillend zijn per project. Ene moment is betrouwbaarheid belangrijk, andere moment gaat het meer over natuur en veiligheid.• “Maar dus per project kijk je dus in de eerste stap van al die verkenningen, hoe gaat onze afweging- en beoordelingskader eruit zien en ook per fase.”
W+B 2	Important	<ul style="list-style-type: none">• Duidelijk beeld voor jezelf maken wat nou de onderscheidende criteria zijn die een verschil maken.
W+B 3	Important	<ul style="list-style-type: none">• Aan de voorkant met z’n allen een afwegings-/beoordelingskader afspreken.
W+B 4	Important	<ul style="list-style-type: none">• Belangrijk om hier een afwegingskader te hebben waar je uiteindelijk je keuzes op gaat maken.
W+B 5	Important, but not clearly mentioned	<ul style="list-style-type: none">• Probeer hier erg concreet te maken wat voor keuzes je gaat maken, maar zorg ook dat er geen verwarring kan ontstaan over wat een criteria in moet houden.
I&W	Important	<ul style="list-style-type: none">• Belangrijk om een goede lijst met criteria te hebben. Kan zeker van belang zijn bij het selecteren van alternatieven in de zeven bijvoorbeeld.
WDO	Very important	<ul style="list-style-type: none">• Opstellen van een toetsingskader is erg belangrijk, hierdoor is er te toetsen of de oplossing echt voldoet aan de oplossing die nodig is voor het probleem.• Hierbij rekening houden met de technische toets en de kosten.
GED	Important	<ul style="list-style-type: none">• Kaders waarin de afwegingen gedaan moeten worden moeten duidelijk zijn.• Vergeet hier vooral niet in mee te nemen dat het qua kosten haalbaar moet zijn, er moet wel budget voor zijn.

Creating alternatives

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	Important	<ul style="list-style-type: none"> • Gebruik maken van het zeven systeem om hierin te werken van grof naar fijn. Zorg hierbij dat je per zeef wel het afwegings- en toetsingskader in je achterhoofd houdt.
W+B 2	Important, the reason is getting more important over the years	<ul style="list-style-type: none"> • Het maken van alternatieven is belangrijk, maar het wordt tegenwoordig steeds belangrijker dat de oplossing gebiedseigen wordt.
W+B 3	Important	<ul style="list-style-type: none"> • Maken van alternatieven is echt een proces wat je samen moet doen. Informatie van ervaringen onderling, maar ook informatie vanuit de omgeving. • Werken van grof naar fijn, waar je van brede alternatieven toewerkt naar een voorkeursalternatief (of een paar). • Onderzoeken van de redelijkerwijs te beschouwen alternatieven.
W+B 4	Important	<ul style="list-style-type: none"> • Zorgen dat je nu alle mogelijkheden boven tafel krijgt en dat deze niet later terug kunnen komen in een volgende fase. • Probeer zo veel mogelijk te werken van grof naar fijn.
W+B 5	Important, but not really an explanation for explorations	<ul style="list-style-type: none"> • Maak gebruik van het werken van grof naar fijn.
I&W	Very important	<ul style="list-style-type: none"> • Durf ook alternatieven te laten komen uit de kant van de actiegroepen of bewonersgroepen. Hiermee krijg je hun ideeën in kaart en kan je deze uiteindelijk beter weerleggen, wat zorgt voor meer begrip. • Aan het begin breed beginnen, laat mensen maar komen met alternatieven. Daarna steeds meer zeven op haalbaarheid. • Bij het zeefproces ook systematisch de omgeving meenemen.
WDO	Important	<ul style="list-style-type: none"> • Werken van mogelijke alternatieven, naar kansrijke alternatieven naar een voorkeursalternatief. • Werken hier van grof naar fijn. • Ook hierbij een stukje expertise van technuten durven te gebruiken die aan kunnen geven of iets echt niet haalbaar is.
GED	Important	<ul style="list-style-type: none"> • Belangrijk om te werken van breed naar smal, wel rekening houden met andere trechter

Integrity

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	-	-
W+B 2	Important	<ul style="list-style-type: none"> • “Ik heb wel eens meegemaakt dat er een weging gegeven moest worden aan iets en dat moest in overleg, maar uiteindelijk werd dat maar bepaald door 2 mensen” • Niet alleen onderzoek doen voor bevestiging van eigen ideeën, ook willen kijken naar wat er buiten dat idee kan. • Af en toe wel eens gevallen van tunnelvisie.
W+B 3	Important	<ul style="list-style-type: none"> • Ervaring kan belangrijk zijn, kan anders zijn dat onervaren teams te snel te veel detail willen gaan zoeken. • Je moet niet op 1 iemand zijn ervaring voren, je moet altijd iemand zijn ideeën te durven challengen en dat in te brengen. • Eerlijke belangenverdeling.
W+B 4	Not really an opinion on	-
W+B 5	-	-
I&W	Important, but not mentioned that deeply	<ul style="list-style-type: none"> • “Als je in bepaalde onhaalbare richtingen gaat denken op grond van tunnelvisies ... dan ga je nergens komen uiteindelijk.”
WDO	Mentioned from another perspective	<ul style="list-style-type: none"> • Er is een ambtelijk apparaat wat ons hierop controleert. • Soms moet ik een keuze maken tussen twee opties, op basis van bijvoorbeeld de kosten van een optie. • Of het dan echt een verbetering kan zijn voor de kwaliteit is een discussiepunt, want het zorgt voor voortgang van het proces maar kan ook op de lange termijn zorgen voor problemen. • Het is hier goed om andere managers in je team te hebben die tegen je in durven te gaan met een onderbouwing.
GED	Important	<ul style="list-style-type: none"> • Zorgen dat je iedereen betreft en geen meningen buiten beschouwing laat.

Team composition

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	-	-
W+B 2	-	-
W+B 3	-	-
W+B 4	-	-
W+B 5	Important, but with a side note	<ul style="list-style-type: none"> • “Het is een beetje een open deur, hoe beter je mensen, hoe beter samenwerken en hoe makkelijker je naar een goed resultaat komt.” • “Je moet het goed organiseren, bewust organiseren ... het is communiceren, het is durven besluiten, het is aanvoelen wat anderen kunnen hebben.” • IPM model is niet per se nodig om goede projecten te draaien, niet iedereen heeft een bepaalde functie nodig. Het is meer van belang dat de elementen er zijn om de kwaliteit van de materie te overzien. • De rollen zorgen er juist voor dat mensen standalone gaan functioneren en vergeten dat ze in een team werken. • “Dan leg je veel te veel nadruk op het sectorale, op het hokjesdenken, in plaats van op het geheel.” • Conflicten nu te veel in het team in plaats van vertellen wat er nodig is aan de mensen er omheen.
I&W	Very important	<ul style="list-style-type: none"> • Een goed multidisciplinair team is belangrijk, het liefst volgens de IPM rollen. Dus een omgevingsmanager, technisch manager, effecten onderzoek manager en contractmanager. Alle invalshoeken belichten. • Zorgen voor een goede consultant die de benodigde informatie kan leveren. • Projectmanager moet wel iemand zijn die het probleem breed kan bekijken.
WDO	Important	<ul style="list-style-type: none"> • Alle rollen in een team zijn belangrijk, want je wilt het vakmanschap hebben op de plekken waar het nodig is. • Belangrijk om een duidelijk beeld te krijgen van de plus- en minpunten van mensen in je team en het team daar zo goed mogelijk op af te stemmen.
GED	Important	<ul style="list-style-type: none"> • Vaak kunnen we het niet alleen en hebben we echt hulp van buitenaf nodig om onderzoeken goed te kunnen doen.

		<ul style="list-style-type: none">• Onderling ook duidelijk hebben hoe we het gaan doen en niet oneens zijn over technische aspecten onderling.
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Commitment to action

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	No comment about importance	<ul style="list-style-type: none"> “... met een warme overdracht de resultaten presenteren”
W+B 2	Mentioned once, but not spoken about quality	-
W+B 3	Important	<ul style="list-style-type: none"> Uiteindelijk kunnen wij wel dingen beslissen, maar er moet door een bestuurder toch wel een zak geld naast worden gezet zodat we door kunnen naar de volgende stap.
W+B 4	Not sure, geen beeld erbij	
W+B 5	Not really important	<ul style="list-style-type: none"> Heeft hier vooral te maken met een goed bestuur, als er dingen gedaan moeten worden moet er toch een keuze worden gemaakt. Hier juist andersom: als je een goed besluit neemt, dan dwing je af dat partijen zich commiteren.
I&W	-	-
WDO	-	-
GED	Important	<ul style="list-style-type: none"> Vooraf de commitment moet er zijn vanuit iedereen om hieraan te beginnen en het ook af te ronden. Hier 1 geluid geven vanuit iedereen

Legal foundation

Interviewee	Does the interviewee think this aspect is important for quality of the decision-making process?	How do they assure quality or want to improve quality?
W+B 1	-	-
W+B 2	Very important	<ul style="list-style-type: none">• Bij elk besluit moet de juridische lijn in orde zijn, juridische houdbaarheid.• “Als jij een besluit neemt dat uiteindelijk onderuit geschoffeld wordt door: dat je geen onderzoek gedaan hebt, dat je de afweging niet goed gemaakt hebt of fouten in de berekening hebt gemaakt. Nou daar heb je dan echt wel je werk niet goed gedaan.”• Juridische lijn kan je versterken door een jurist in je team te nemen.• In erg gevoelige projecten kan je ook de landsadvocaat mee laten kijken
W+B 3	Important	<ul style="list-style-type: none">• Ook belangrijk om te checken of een keuze uiteindelijk vergunbaar is.
W+B 4	Important, but does not go into it	-
W+B 5	Shortly mentioned, but more on other foundation aspects	<ul style="list-style-type: none">• “Als je een contract niet goed schrijft, kun je daar allerlei claims van krijgen.”
I&W	Important	<ul style="list-style-type: none">• Belangrijk om juridisch een goede onderbouwing te hebben, anders zou het je later op kunnen breken bij de Raad van State.• Urgentie van het probleem duidelijk maken.
WDO	-	-
GED	Important, not really into detail	<ul style="list-style-type: none">• Belangrijk om te zorgen dat het allemaal vergunbaar is en dat het te onderbouwen is.

Appendix IV – Testing criteria for other themes

The main text lists the five most important aspects with why to check. This appendix lists the other aspects.

Clear values & tradeoffs

Theme	What do we need to check for quality?	Tips to improve quality
Clear values & tradeoffs	<ul style="list-style-type: none">• Hebben we een afwegingskader voor de keuze die we moeten maken?• Hebben we de tradeoff duidelijk gemaakt tussen de keuzes?• Hebben we mensen meegenomen in de overweging voor deze criteria?	<ul style="list-style-type: none">• Zorg dat je de criteria die je maakt zo concreet mogelijk maakt, dat er achteraf geen verwarring over kan ontstaan.

Creating alternatives

Theme	What do we need to check for quality?	Tips to improve quality
Creating alternatives	<ul style="list-style-type: none">• Hebben we alle alternatieven over het hele spectrum meegenomen?• Hebben we alternatieven uit alle hoeken?• Hebben we onderbouwing van de filtering van alternatieven op orde?	<ul style="list-style-type: none">• Probeer de alternatieven gebiedseigen te maken.

Integrity

Theme	What do we need to check for quality?	Tips to improve quality
Integrity	<ul style="list-style-type: none">• Heeft iedereen de mogelijkheid gehad om wat in te brengen?• Hebben we niet te veel naar één persoon of groep zijn mening geluisterd?• Zijn we niet te veel in een tunnelvisie gaan onderzoeken?	<ul style="list-style-type: none">• Niet alleen zoeken naar bevestiging van eigen ideeën, ook kijken naar andere.• Soms moet een projectmanager of -leider een keuze maken, maar moet wel zorgen voor een goede onderbouwing.• Stel een team samen waarin de onderlinge relatie zo is dat iedereen wat tegen elkaar durft te zeggen.

Team composition

Theme	What do we need to check for quality?	Tips to improve quality
Team composition	<ul style="list-style-type: none">• Hebben we alle rollen in ons projectteam?• Hebben we mensen die integraal naar het probleem kijken en niet alleen naar hun eigen rol?	<ul style="list-style-type: none">• Belangrijk om de plus- en minpunten van iedereen in kaart te krijgen en daar open over te zijn met elkaar.• Probeer niet te veel in één rol te denken, dat kan zorgen voor interne conflicten.

Commitment to action

Theme	What do we need to check for quality?	Tips to improve quality
Commitment to action	<ul style="list-style-type: none">• Is er steun vanuit iedereen om door te gaan naar de volgende fase?• Is iedereen bereid om de consequenties te dragen van een besluit (denk aan kosten etc.)?	<ul style="list-style-type: none">• -

Legal foundation

Theme	What do we need to check for quality?	Tips to improve quality
Legal foundation	<ul style="list-style-type: none">• Hebben we gekeken of onze plannen vergunbaar zijn?• Zijn onze plannen conform de wet- en regelgeving?• Hebben we onze juridische lijn goed onderbouwd?	<ul style="list-style-type: none">• Juristen in je team nemen kan je hier heel erg mee helpen.• Durf bij grote projecten ook de landsadvocaat in te schakelen.