

# Transport equity in decision-making processes

Conceptual research on the inclusion of transport equity in the decision-making process of transport projects in sparsely populated areas in the Netherlands

Master thesis  
J.M. Scholte



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by

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# Summary

As the call for a more inclusive society grows louder, fair access to transport has become a pressing concern—especially in rural areas where mobility is increasingly under pressure. This thesis explores how transport equity can be meaningfully integrated into decision-making processes for transport projects in sparsely populated regions of the Netherlands. It focuses on the MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport), the central framework guiding large-scale transport infrastructure planning in the country.

The concept of broad welfare, which goes beyond economic performance to include social, environmental, and health outcomes, underscores the crucial role of mobility for participation in society. Yet, rural areas continue to face limited transport options, leading to growing risks of social exclusion, transport poverty, and declining regional vitality. While policymakers increasingly acknowledge the need for equitable transport, existing approaches remain fragmented, theoretical, and rarely implemented in practice. This thesis addresses that gap by answering the following research question:

*How can transport equity be included in the decision-making process of transport projects in sparsely populated areas in the Netherlands?*

Using a qualitative multi-method approach, the study combines literature and policy analysis, stakeholder mapping, and in-depth interviews with twelve experts involved in Dutch transport planning. The findings reveal key barriers: the vagueness of the equity concept, limited political prioritisation, fragmented governance, and the absence of operational tools and definitions.

Transport equity has proved to be a vague concept, and the lack of a single definition has hindered its consistent application in evaluation methodologies and policy frameworks. Political and ideological factors significantly influence how equity is prioritised, highlighting the importance of strong political support to ensure that social considerations are also considered alongside goals like economic growth and cost-effectiveness. The study also found that equity should be considered from the earliest stages of project development, preferably during the Integral Mobility Assessment. Coordination between national, regional and local governments remains complex, with differing priorities and interpretations of equity contributing to fragmented approaches. Furthermore, financial barriers increase inequality in project selection, as some municipalities, particularly smaller or financially weaker ones, struggle to meet co-financing requirements, thus limiting their ability to implement transport projects and exacerbating regional disparities. Additionally, as the concept of broad welfare and transport equity expands, it becomes increasingly difficult to operationalise effectively, with the sheer number of indicators complicating decision-making and potentially leading to inefficiencies or contradictory policies. Lastly, while transport equity is widely discussed in policy debates, its practical implementation remains limited, with a gap between rhetoric and action.

In response, a long-term strategy is proposed to establish a national framework for transport equity (Figure 2). This strategy includes the development of a clear, standard definition of transport equity. Political support will be gained by linking transport equity to broader policy objectives such as sustainability and inclusion. A division of responsibilities between levels of government is needed to avoid institutional ambiguity and streamline efforts. In addition, evaluation methods need to be refined to include social and economic impacts, using tools such



as the cost-benefit analysis and multi-criteria analysis. In addition, the participatory value evaluation is seen as promising because it directly involves local communities in decision-making, allowing for better identification and consideration of different needs in policy development. The MIRT process should be adapted to include equity considerations, and funding mechanisms should be better revised to reduce financial barriers, particularly for smaller municipalities. These steps, implemented in a phased approach, will enable the practical application of transport equity principles and improve the equity of the transport system.

	Who?	When?	How?
Understand the needs of the citizens	MinlenW, provinces, municipalities, citizens,	Short term	Conduct PVE, interviews, focus groups, citizen panels, and local consultations; compare findings to perceived/measured accessibility
Develop a clear definition of transport equity	Government, academics, stakeholders, residents	Short term	Organise workshops, dialogue sessions, interviews, focus groups, and public consultations
Create broad political support	Political parties, media, interest groups, MinlenW	Short term	Awareness-raising campaigns, link equity to wider policy goals (e.g. sustainability), engage political leaders, provincial lobbying
Divide responsibilities	MinlenW, provinces, municipalities, academics	Short term	Establish an interdepartmental working group, define roles, and hold regular coordination meetings
Refine evaluation methods	Academics, MinlenW	Medium - long term	Revise and test CBA, combine with MCA/PVE, develop equity indicators with academics and pilot them in real projects
Adapt MIRT process	MinlenW, provinces	Long term	Develop MIRT-specific guidelines on equity, embed them in each planning phase
Embed equity in funding mechanisms	MinlenW, Ministry of Finance, provinces, municipalities	Long term	Integrate equity criteria into budgeting, adjust co-financing rules, and create dedicated funds/subsidies for inclusive transport projects

**Figure 2:** Long-term strategy for achieving a national transport equity framework

While the study is limited by its small interview sample and qualitative nature, it lays the foundation for future work on equity-informed mobility planning. This thesis has taken a first step in exploring how transport equity can be integrated into institutional decision-making structures. For academics, this study highlights the need to move beyond abstract models and toward actionable, standardised equity frameworks. For policymakers, the key lies in embedding equity from the start, translating broad welfare goals into concrete, measurable impacts on mobility access. Future studies should include perspectives from additional provinces, regions, and smaller municipalities to understand transport equity in the Netherlands better. In addition, looking into citizens' perceptions, especially those directly affected by transport inequities, is recommended. Lastly, directly comparing the CBA, MCA, and PVE and their combinations could provide valuable insights into the trade-offs between efficiency, equity, and public acceptability.

# Preface

This report contains my final thesis for obtaining the master's degree in Transport, Infrastructure and Logistics. This research project is conducted under the supervision of Witteveen+Bos and the Delft University of Technology, from September 2024 until May 2025. Throughout this last part of my studies, I have been studying transport equity and the role it can play in decision-making for transport projects.

I would first like to thank my graduation committee for their support during my thesis. Jan Anne, thank you for your clear and concrete feedback and for always responding so quickly when I had questions. Niels, thank you for your honest and straightforward feedback, which helped me to improve my work. I also really appreciated our discussions about starter jobs and the opportunities you gave me to attend events - I really enjoyed attending them. And Lisa, thank you for the weekly supervision, either with useful feedback and brainstorming sessions or just for a chat. I also really enjoyed the lunch walks with tasty Italian sandwiches and you showing me around Witteveen+Bos - it made everything feel much more personal and welcoming. Lastly, thank you all for your patience and concern while I was recovering from my concussion; it meant a lot to me.

I would also like to thank all my interviewees for taking the time to talk to me and share their insights. They enhanced the content of this research by providing valuable and diverse perspectives.

Finally, to my family and friends, thank you for your endless support, encouragement and for celebrating every milestone with me, whether small or large. Your constant belief in me helped me through the sometimes challenging moments.

*Josephine Scholte  
Rotterdam, May 2025*

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# Abbreviations

The abbreviations used in this report are bundled in Table 1.

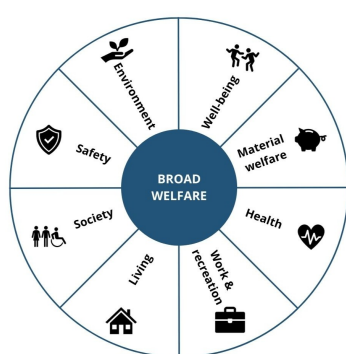
**Table 1:** Abbreviations

Abbreviation	Definition
BO MIRT	Yearly administrative consultation MIRT
CBA	Cost-benefit analysis
IMA	Integral mobility analysis
MCA	Multi-criteria analysis
MER	Environmental impact analysis
MinlenW	Dutch Ministry of Infrastructure and Watermanagement
MIRT	Multi-Year Programme for Infrastructure, Space and Transport
NMCA	National Market and Capacity Analysis
PT	Public transport
PVE	Participatory Value Evaluation
STOMP	Walk, Bike, PT, MaaS, Private car
TRSE	Transport-related social exclusion

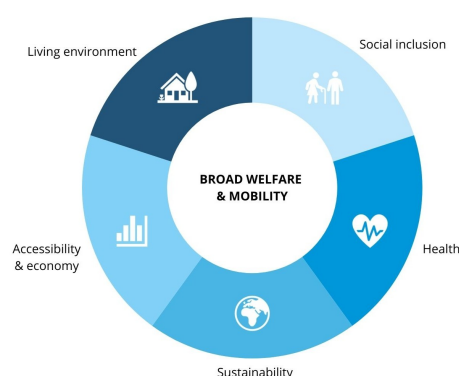
# 1

## Introduction

Attention to broad welfare is growing rapidly in Dutch politics. Although the Netherlands is a generally prosperous country, there are persistent and significant differences between regions. According to the CBS Monitor of Broad Welfare, residents of peripheral and rural areas consistently experience lower levels of broad well-being than those living in or near urban regions (Centraal Bureau voor de Statistiek, 2023b). Broad welfare is a multidimensional concept that acknowledges that well-being is not solely dependent on economic productivity but also on social cohesion, ecological sustainability, and the overall quality of life of citizens (Centraal Bureau voor de Statistiek, 2023a). Various dimensions can be distinguished within this broad concept, ranging from safety and health to environment and social participation, as visualised in Figure 1.1a. Figure 1.1b shows how mobility contributes directly to several of these, including accessibility & economy, social inclusion, health and sustainability - underlining its key role in achieving broad welfare.



(a) The eight dimensions of broad welfare (Ecorys, n.d.)

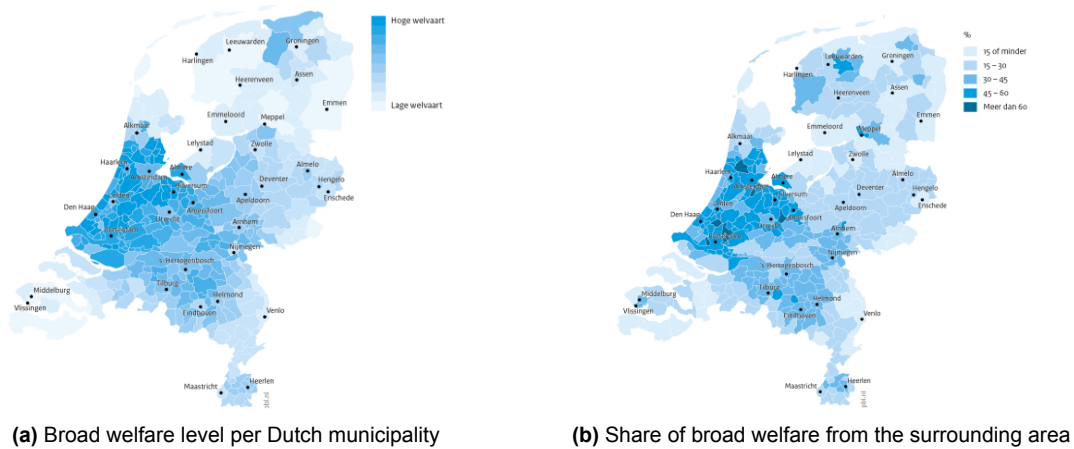


(b) Broad welfare and mobility (Goudappel, 2025)

**Figure 1.1:** Broad welfare: dimensions and the role of mobility

While urban populations benefit from high accessibility, abundant employment opportunities, public services and public transport, broad welfare in many sparsely populated areas lags behind. In regions such as North-East Groningen, Zeeuws-Vlaanderen and North-West Friesland, citizens face more difficulties participating fully in society (Centraal Bureau voor de Statistiek, 2024). These differences are apparent in limited access to work, basic services, health care and mobility. Geographical location and the degree of connectivity with surrounding areas play a crucial role. The Dutch Environmental Assessment Agency (Planbureau voor de Leefomgeving in Dutch, PBL) emphasises that broad welfare is determined not only by

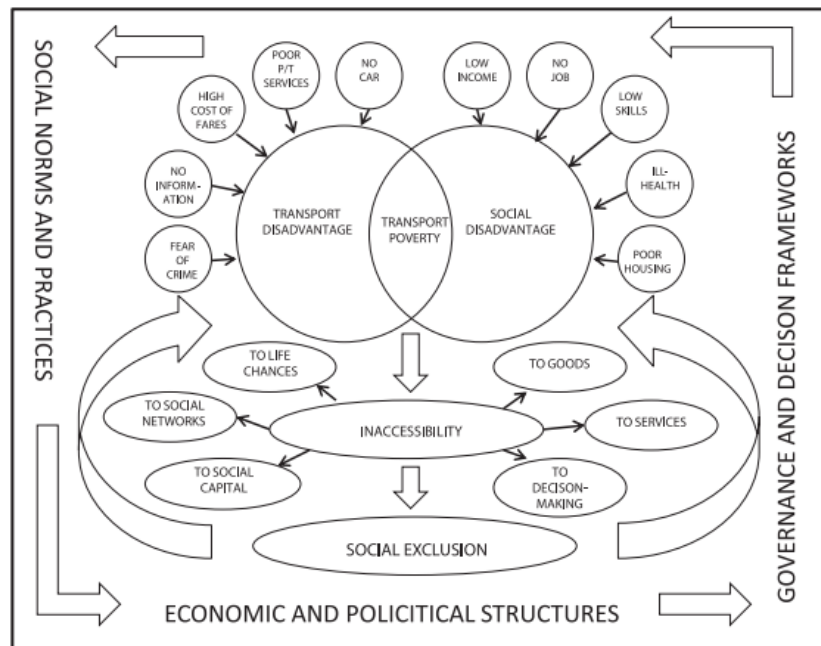
what is available within a municipality but also by the extent to which it benefits from nearby networks and facilities. Communities more integrated into their regional environment tend to score higher on wellbeing indicators (Thissen & Content, 2022). Peripheral areas often lack this kind of regional cohesion, as seen in Figures 1.2a and 1.2b.



**Figure 1.2:** Broad welfare in Dutch municipalities (Thissen & Content, 2022)

The advisory report "Every Region Counts!" (Elke regio telt! in Dutch) shows that these peripheral regions systematically score lower on several welfare indicators - such as health, access to education and employment, and satisfaction with the environment in which they live (Rli et al., 2023). People in these areas also report feeling more often unseen and unheard by government institutions (De Voogd & Cuperus, 2021). While these inequalities are not new, they have become more pressing in recent years. The Dutch government now recognises that for too long national policy has focused disproportionately on strengthening already strong regions and is shifting towards actively tackling regional disparities (Weterings et al., 2024).

Mobility plays a key role in this: accessibility determines whether people can reach jobs, education, healthcare and social networks. In sparsely populated areas, accessibility is increasingly under pressure. The strong emphasis on efficiency and economic returns in transport policy makes it difficult to initiate projects in peripheral areas. Investments are harder to justify when they serve fewer passengers. The result is a vicious circle of decline: less transport leads to fewer amenities, which in turn leads to a decline in population and economic activity, and thus even less transport (Jorritsma et al., 2023). The decline of public transport, rising private transport costs and demographic changes such as an ageing population mean that people are becoming more isolated. This leads to so-called transport poverty: a situation in which people do not have adequate access to transport for essential daily activities (Donkers, 2017; Martensen & Arendsen, 2024). Figure 1.3 shows how poor transport availability and pre-existing social disadvantages contribute to transport poverty. This, in turn, results in inaccessibility and ultimately leads to social exclusion.



**Figure 1.3:** The relationship between transport and social exclusion (Lucas, 2012)

Transport inequality is increasingly recognised as a pressing issue, both in the Netherlands and internationally. Within academic and policy circles, this has led to growing interest in the concept of transport equity: the principle of ensuring fairness in mobility and accessibility, aiming to meet the needs of all community members. Transport-related social exclusion (TRSE) is related to transport equity. When transport equity is lacking, it can lead to situations of social exclusion. TRSE refers to the situation where individuals or groups cannot access necessary transportation services, leading to limited mobility and reduced opportunities to participate in social, economic, and cultural activities. The dimensions of Transport-Related Social Exclusion defined by Bruno et al. (2024) are used to explore transport equity in this thesis further. In this context, transport equity addresses geographical exclusion; this occurs when public transport is unavailable near certain locations, making it difficult for people in rural areas to access services. This is closely connected to exclusion from facilities and time-based exclusion. These forms of exclusion can affect individuals living in sparsely populated regions, where public transport services may be infrequent, distant, or entirely absent.

Although various studies—such as those by Thomopoulos and Grant-Muller (2013), Hananel and Berechman (2016), and Te Boveltd et al. (2020)—have attempted to include equity in transport decision-making, no widely accepted or practically applied framework yet exists, particularly outside urban contexts. Most approaches remain theoretical or case-specific and often overlook the political and institutional dynamics of real-world planning. As Hrelja et al. (2024) and Lewis et al. (2021) argue, this creates a persistent gap between academic theory and practical application. Moreover, the assumption that decision-making follows a purely rational logic underestimates the role of power, stakeholder influence and governance complexity. As a result, equity remains an underdeveloped and inconsistently applied concept in transport policy and project planning.

This study addresses this gap by exploring how transport equity can be more systematically and meaningfully included in decision-making processes, particularly in the context of sparsely populated regions in the Netherlands. While the importance of fair accessibility is growing, policymakers still lack clear tools to translate this into action. This study explores how trans-



port equity can be meaningfully included in decision-making on transport projects in sparsely populated regions in the Netherlands. This is a conceptual study due to limited knowledge on the subject. The goal is to develop a broader, more holistic vision of transport equity that can contribute to more equitable transport networks. This leads to the main research question:

*How can transport equity be included in the decision-making process of transport projects in sparsely populated areas in the Netherlands?*

To be able to answer the main research question, several sub-questions are answered first:

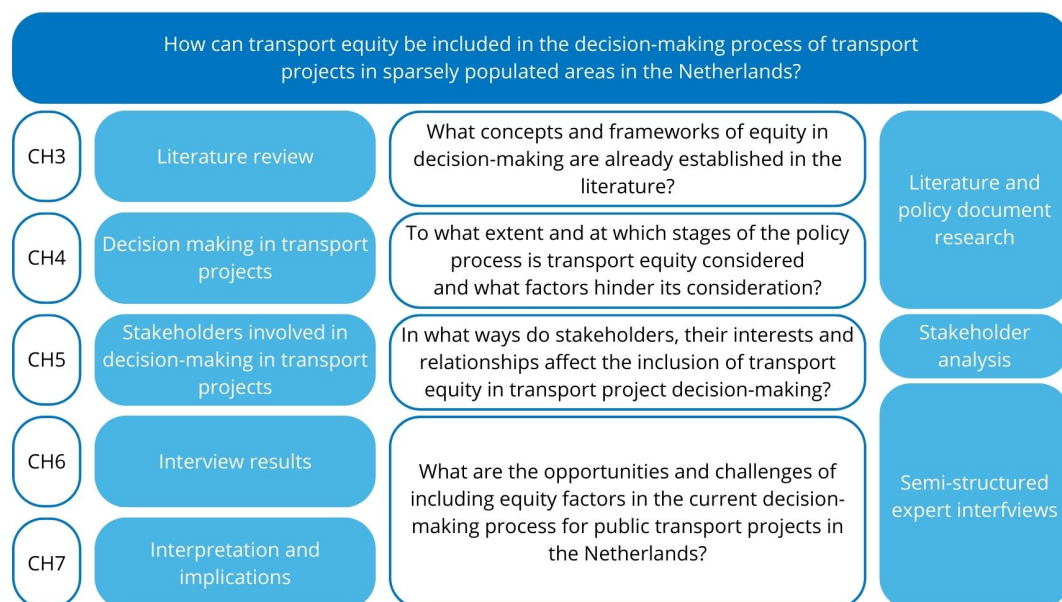
1. What concepts and frameworks of equity in decision-making are already established in the literature?
2. To what extent and at which stages of the policy process is transport equity considered and what factors hinder its consideration?
3. In what ways do stakeholders, their interests and relationships affect the inclusion of transport equity in transport project decision-making?
4. What are the opportunities and challenges of including equity factors in the current decision-making process for transport projects in the Netherlands?

These sub-questions will be answered in the following chapters. First, Chapter 2 presents the methodology and the project approach. The main methods used to gather insights on these research questions are interviews and literature and policy documents study. Chapter 3 elaborates on the literature on existing concepts and frameworks of equity in decision-making, evaluation methods and the definition of transport equity. Then, in Chapter 4, the decision-making process is analysed in general terms and specific for the Netherlands. Next is a stakeholder analysis in Chapter 5. An analysis is performed because the extent to which equity considerations are included in current planning processes also depends on the stakeholders involved and their influence on decision-making. The results of the interviews are presented in Chapter 6 and interpreted in Chapter 7. Finally, the conclusion, discussion and recommendations are presented in Chapter 8.

# 2

## Methodology

This section explains the methods that will be used to answer the main research question and the sub-questions. In Figure 2.1, for each Chapter it is indicated which sub-question is answered and which methods are used.



**Figure 2.1:** Overview of Chapters, research questions and methods used

A combination of literature study, policy document analysis, stakeholder analysis and semi-structured interviews is used to answer the research questions effectively. The first sub-question required an understanding of both formal frameworks and practical implementation. A literature and policy document study was essential to map existing decision-making processes and assess the extent to which transport equity factors are considered. A scientific literature study is useful, as it provides a theoretical foundation and a broader understanding of decision-making processes and transport equity. Government reports, academic papers, and policy documents provide a baseline understanding of the formal procedures guiding public transport projects, but official documents may not fully reflect how decisions are made in practice. To bridge this gap, interviews were conducted with several stakeholders. Firstly, these stakeholders are identified via a stakeholder analysis. A stakeholder analysis helps in understanding the behaviour, interests, intentions and interrelations of stakeholders (Varvasovszky

& Brugha, 2000). The interviews allowed for an in-depth exploration of how transport equity is considered in real-world decision-making, whether it is a priority or remains secondary to other factors like cost efficiency or political interests. They also helped identify key challenges, such as institutional barriers, conflicting priorities, and the lack of clear evaluation criteria.

Stakeholder analysis is an approach, a tool or set of tools for generating knowledge about actors – individuals and organizations – so as to understand their behaviour, intentions, inter-relations and interests; and for assessing the influence and resources they bring to bear on decision-making or implementation processes.

This mixed-method approach allowed for a comprehensive analysis of the barriers to transport equity and the potential strategies to overcome them, indicated by both science and practice.

## 2.1. Literature and policy document study

A literature study, consisting of both academic and non-academic sources, will be conducted for the first two sub-questions. The first sub-question—*What concepts and frameworks of equity in decision-making are already established in the literature?*—will be answered using academic literature, while the second sub-question—*o what extent and at which stages of the policy process is transport equity considered and what factors hinder its consideration?*—will be addressed through policy document analysis.

### 2.1.1. Literature study

Relevant literature is identified through a structured search strategy to address the first sub-question. Initially, a broad exploration of topics related to equity in transportation is conducted, followed by a more focused search on the inclusion of equity in transport decision-making processes. The search strategy involves a combination of keyword searches in academic databases, primarily Scopus and Google Scholar, with additional access to full-text articles via Elsevier and ScienceDirect. To ensure a comprehensive review, both backward and forward snowballing techniques is employed, tracing citations and references of key papers. One difficulty with literature reviews is information overload, making it difficult to determine which elements are relevant. As the topic is quite broad, the literature review focuses on a few key concepts and deliberately excludes some areas to be comprehensive. It is tried to include different views to avoid bias and to make a stronger argument.

Table 2.1 presents keyword combinations used in the search process. The majority of the selected papers is from the past ten years, reflecting contemporary developments in the field. Several exclusion criteria led to the removal of irrelevant articles. Exclusion criteria included non-English or non-Dutch studies with unrelated objectives or methodologies and inaccessible, such as those restricted by paywalls. Additionally, the search was restricted to the fields of social sciences, engineering and decision sciences, as these fields are the closest related to the theory searched for.

### 2.1.2. Policy Document Search and Selection

Policy documents are analysed to understand the commonly used decision-making process for public transport projects in the Netherlands to address the second sub-question. The focus is on identifying and analysing the procedures, stakeholders, and criteria used in planning and decision-making processes for PT projects in the Netherlands. For this, national and regional governmental documents, policy guidelines, and institutional reports are used. This will provide insight into how PT projects are initiated, planned, evaluated, and approved in the Netherlands.

**Table 2.1:** Search strategy for literature review

Concept groups	Equity, transport, decision-making	
Synonyms	Transport equity	Fairness, inclusive mobility, equality, welfare, accessibility, social exclusion, equity
	Transport	transportation, transit
	Decision-making	Assessment, appraisal, cost-benefit analysis, multi-criteria analysis
Keywords	(transport AND equity) AND transportation AND decision-making	96 documents
	(fairness OR equity) AND transport AND (MCA OR CBA OR appraisal)	47 documents

## 2.2. Stakeholder analysis

Decision-making processes involve several stakeholders. Identifying stakeholders with an interest in including equity in transport decision-making is important for understanding the interrelations between stakeholders and the various influences on policy development and project implementation. The information gathered via the policy document study and the interviews are used to do a stakeholder analysis in Chapter 5.

The questions that are answered in stakeholder analysis are the following, defined by Cernesson et al. (2005):

- Who are the major stakeholders?
- What are their major concerns?
- How do they see the topic of transport equity and decision making?
- What are their resources?

First, a preliminary list is made. This list of stakeholders is made using general knowledge and knowledge of previous projects. Then, after consideration with the graduation committee, this list was revised. A stakeholder makes it to the list if they apply to one or more of the following criteria: have an interest or are affected in transport equity and/or decision-making of transport projects, can contribute to or block the inclusion of transport equity in decision-making processes and are needed for implementation. A power-interest grid is made to visualize the stakeholders. The stakeholders were placed in this grid based on their power and interest.

Additionally, an overview was made of the stakeholders including their attitude towards transport equity and decision-making. This provides insight into whether a stakeholder will likely cooperate or work against it. Stakeholders with high influence and interest should be managed closely. In Chapter 7, it is advised how to keep the stakeholders engaged.

## 2.3. Interviews

Next to a literature study, interviews were conducted to gain information on the current decision-making practice and to what extent transport equity is included. Conducting interviews is useful in understanding how mechanisms that are not implicitly mentioned in guidelines work in practice. Within politics and decision-making processes, decisions are regularly made face-to-face, and not everything is recorded (Pritzlaff-Scheele & Nullmeier, 2018), which shows the usefulness of qualitative interviewing. Interviews offer participants a platform to share their emotions

and perspectives on various experiences in their work or within other settings (Dunwoodie et al., 2023). It is important to get a wide range of perspectives to understand the context better; this is especially useful for equity as it is a subjective value (Mathers et al., 2000).

There are three main types of interviews: structured, unstructured and semi-structured interviews. In a structured interview, all questions are predetermined and are asked in a fixed order. On the contrary, in an unstructured interview, no questions are predetermined. Semi-structured interviews combine structured and unstructured interviews in which the questions are predetermined but allow for flexibility (George, 2022). In Table 2.2, an overview is shown of the differences between the three types.

**Table 2.2:** Differences between structured, semi-structured and unstructured interviews (George, 2022)

	Structured	Semi-structured	Unstructured
Fixed questions	✓	✓	✗
Fixed order of questions	✓	✗	✗
Fixed number of questions	✓	✗	✗
Option to ask additional questions	✗	✓	✓

With semi-structured interviews, interesting topics can be discussed more deeply. Wilson (2014) states that semi-structured interviews are suitable when you want to bring facts, attitudes and opinions together and when you want to "collect data on subjects where the interviewer believes the main issues have been identified, but also encourage users to introduce any new topics that are significant to them by asking open-ended questions". An overview of the advantages and disadvantages of semi-structured interviews is shown in Table 2.3. This applies well to this research topic; thus, it was chosen to perform semi-structured interviews.

**Table 2.3:** Advantages and disadvantages semi-structured interviews (George, 2022) (Wilson, 2014)

Advantages	Disadvantages
A framework ensures essential questions are addressed consistently across interviews while allowing flexibility to explore new topics through follow-up questions.	The interviewer's background, demographics, or perceived expertise may influence the interviewee's responses, also known as social desirability bias.
Provides opportunities to explore unexpected or previously unknown topics.	Leading questions by the interviewer may lead to observer bias.
Enables interviewers to dive deeply into nuanced or complex subjects and clarify responses for more detailed insights.	Variations in interviewers' approaches or questions can limit the generalisability of the findings.
Interviewers can steer the conversation back to the main topic if the discussion digresses too far.	Some training and experience are necessary to ensure that interviewers avoid putting words in the interviewee's mouth.
A predetermined set of questions provides interviewers with a clear starting point, reducing the amount of preparation needed.	Analysing the resulting combination of quantitative and qualitative data can be time-consuming.

To ensure the quality and validity, six steps will be followed in performing the interviews, shown in Figure 2.2.



**Figure 2.2:** Interview steps

*Determine the information to be obtained.*

First, it was determined what information needed to be obtained from the interviews. The goal of the interviews was to get insights into the position of equity in the current decision-making process and the difficulties experienced with including equity factors. The goal of the interviews was to gather insights on the topics shown in Table 2.4. These topics arose from the literature, see Chapter 3 and policy document review, see Chapter 4. The literature review provided a theoretical foundation and identified recurring themes such as the definition of transport equity and evaluation methods. Meanwhile, the policy analysis highlighted how these themes are present in the Dutch context, particularly within the MIRT process. The questions sought to capture real-world experiences, challenges and perspectives that may not be fully reflected in existing academic research or policy frameworks.

*Prepare the interviews.*

In the second step, the interview questions were formulated. The questions were open-ended questions to encourage interviewees to provide detailed responses and to let them speak freely. The interviews followed a semi-structured format, meaning that both the questions and their sequence were planned in advance. However, the structure remains flexible, allowing the interviewer to adapt the conversation based on the interviewee's responses. A list of questions served as a guide during the interviews, helping to ensure that key topics are covered. The topics discussed in the interviews are shown in Table 2.4. The interview script can be found in Appendix C. The preparation also involved thinking about potential follow-up questions to further explore interviewees' responses or clarify their answers.

Most of the interviews were conducted in Dutch, as most participants were Dutch-speaking. Conducting the interview in their native language allowed them to express themselves more freely and accurately. For this reason, the interview script was prepared in Dutch. However, some interviews were conducted in English, depending on the language preferences of certain participants. In such cases, the questions and supporting materials were adapted accordingly. Finally, participants were provided with introductory information about the interview, including its purpose, format, and any relevant background details. This introduction helps set expectations.



**Table 2.4:** Topics discussed in interviews

Theme	Discussed topics
Current Decision-Making Process	Steps in the decision-making process for transport projects
	Key stakeholders and their role in different project phases
Evaluation Methods and Tools	Use of evaluation tools such as cost-benefit analysis
	Influence of these tools on decision-making
	Balancing measurable data with qualitative insights into inequality
Stakeholders and power dynamics	Influence of different stakeholders in the process
	Inclusion of user interests and public participation
	Political influence and power distribution in decision-making
Role of the CBA	Extent to which broader effects such as transport equity are considered
	Possibilities and limitations of the CBA in addressing social and geographical inequality
Transport equity in decision-making	Definition and understanding of transport equity
	Indicators and guidelines for measuring transport equity
	Stages in the decision-making process where equity can be integrated
	Responsibility for monitoring transport equity
Barriers and opportunities	Challenges in integrating transport equity into decision-making
	Possible solutions and improvements
	New tools, techniques, or policies that could contribute to a fairer decision-making process

#### *Find the interview participants.*

A list of potential interviewees was compiled and several individuals were contacted to assess their willingness to participate. These participants were approached through various channels, including connections within Witteveen+Bos, contacts of the TU Delft supervisors and personal contacts. To gain a comprehensive understanding, individuals and institutions from various sectors were identified as relevant for interviews. The potential interviewees were categorised into three main groups: government, consultancy and knowledge institutes. Within the government sector, decision-makers at various levels were targeted, including representatives from municipalities, provincial authorities and the Ministry of Infrastructure and Water Management. These individuals were selected because they could provide valuable insights into their experiences with equity in decision-making processes. Given their different roles and responsibilities, each level of government offered a different perspective on the importance of equity. For example, municipalities tend to prioritise the needs of the local population, whereas the national government focuses on broader, nationwide interests. In addition to governmental officials, consultants were also interviewed. These professionals brought an independent and practical perspective, as their work often involves a variety of transport projects. Finally,

representatives from knowledge institutions such as Delft University of Technology and TNO were included. These experts provided insights into ongoing research and innovation in the field of equity and decision making. This diverse selection of participants ensured a wide range of viewpoints and helped to highlight the multifaceted nature of equity in transport decision-making. An overview of the interviewees can be found in Chapter 6 and Appendix E.

#### *Conduct the interviews.*

Once potential participants agreed to take part, the interviews were scheduled and conducted. Depending on the preferences and availability of the participants, the interviews were held either in person or digitally. Whenever possible, the interviews were recorded to ensure accurate documentation of the conversations. Recordings were made with Microsoft Teams when the interview was conducted online. Interviews in person were recorded with a mobile phone. Also, notes were taken during the interview on topics that needed extra research.

#### *Process the interviews.*

After each interview, the recorded conversation or notes were quickly processed to ensure no information was lost. When a recording was available, a transcription of the interview was created, capturing the exact words and phrases used by the participants. Transcriptions were made in several ways. If the interview was conducted via Microsoft Teams, the automatic transcription function was used and adapted when needed. Recordings made with a mobile phone were transcribed manually. This transcription formed the basis for further analysis.

#### *Analyse the interviews.*

The transcriptions and notes were systematically analysed to identify patterns, similarities, and differences across the interviews. This process involved coding key themes, categorizing responses, and comparing perspectives from different participants. Qualitative coding is a valuable tool for the analysis of interview data. Organising excerpts into categories makes it possible to easily identify themes and patterns. By systematically examining the data, the validity is increased. Furthermore, coding enhances transparency and openness, enabling other researchers to verify the analysis. Additionally, coding helps equally representing all interviewees (Delve, n.d.). By examining the data in this manner, it was possible to uncover recurring viewpoints, contrasting opinions, and unique insights that contributed to a deeper understanding of how equity is perceived and implemented across various sectors and institutions. The software tool Atlas.ti is used for coding the interviews.

# 3

## Literature review

The aim of this literature review is to provide a comprehensive overview of the key concepts, theories, and methodologies related to transport equity and its inclusion in decision-making processes for transport projects. This Chapter answers the first sub-question: *what concepts and frameworks of equity in decision-making are already established in the literature?*

The literature review begins by examining the structured processes involved in decision-making for transport projects. It then delves into the definition of transport equity. Following this, the review discusses the methods and challenges associated with measuring transport equity, providing insights into how equity currently is measured and quantified. Next, the inclusion of transport equity into decision-making processes is then explored, discussing traditional evaluation methods such as the cost benefit analysis and multi-criteria analysis. The review identifies the limitations of these methods in addressing equity and suggests alternative approaches that could better incorporate equity considerations. This section also highlights the potential of participatory approaches, such as the participatory value evaluation, in engaging communities and ensuring that transport projects reflect societal preferences and equity goals. Finally, the literature review examines various tools and frameworks proposed to integrate equity into transport project evaluations.

### 3.1. Decision-making in transport projects

Transport projects are usually planned and executed through a structured process. Such a process generally consists of the steps shown in Figure 3.1 (Dickey et al., 1983).



**Figure 3.1:** Transport planning process

These steps, while typically followed in sequence, can also include feedback loops where earlier phases may be revisited based on new information or changing circumstances. The process, deprived from Dickey et al. (1983), is as follows:

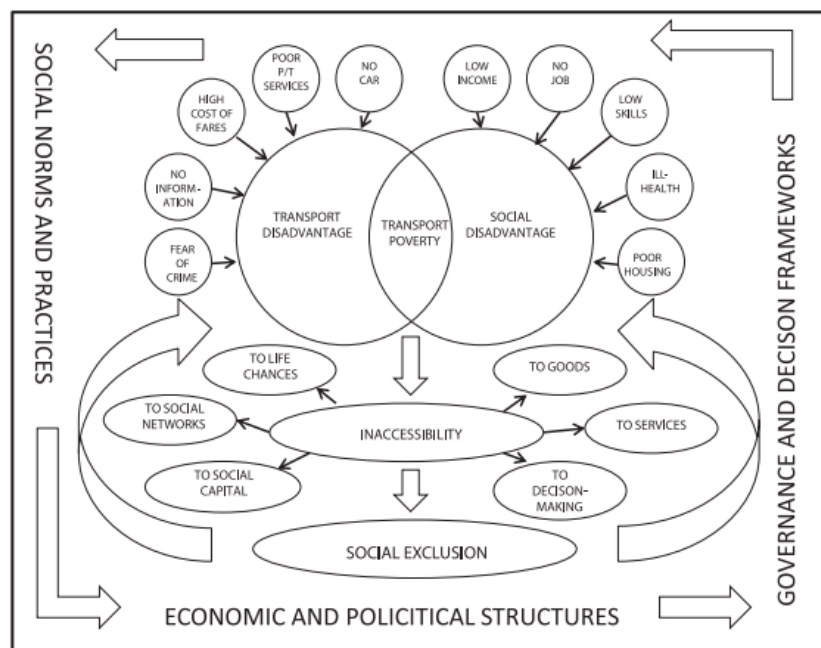
1. System definition: defining the transport system involves understanding its scope and context, identifying key components and establishing boundaries. A clear system definition sets the stage for subsequent planning activities.
2. Problem definition: identifying and defining transport problems helps to set specific objectives for the project. Accurate problem definition is critical to targeting the right issues and developing effective solutions.
3. Search for solutions: exploring potential solutions involves brainstorming and generating a wide range of alternatives.
4. Analysis of performance: in this phase, each solution is assessed on its functioning within the defined system. This helps in understanding the feasibility and potential outcomes of each alternative.
5. Evaluation of alternatives: alternatives are compared against a set of criteria such as economic efficiency, environmental impact, social equity and technical feasibility. The assessment helps to identify the most appropriate options.
6. Choice of project: the most promising alternative is chosen using the evaluation outcomes. The chosen project is then prepared for detailed planning and execution.
7. Specification and construction: the details of the chosen project are specified and its construction or implementation is carried out.

### 3.2. Definition transport equity

Equity is an increasingly discussed topic in transportation planning, but there is no consensus on its definition. The Cambridge Dictionary defines equity as "the situation in which everyone is treated fairly according to their needs, and no group of people is given special treatment" (Cambridge Dictionary, 2024). Social exclusion is closely linked to accessibility, as limited

access to transport, infrastructure and services can lead to exclusion from essential activities such as work, education, and social events, particularly for vulnerable groups.

Lucas (2012) illustrated in Figure 3.2 the cyclical relationship between transport poverty and social exclusion. In this model, she showed that various factors impact transport disadvantage, such as not having a car and poor PT services, and social disadvantage, such as low income and poor housing. The combination of transport and social disadvantage leads to transport poverty. This leads to inaccessibility, meaning individuals cannot reach the places and activities essential for full social and economic participation. This inaccessibility, in turn, leads to social exclusion, where individuals or groups are cut off from opportunities and resources. Social exclusion then increases both social and transport disadvantages, and these, in turn, lead to further exclusion. This creates a vicious circle in which exclusion is reinforced. Surrounding and shaping this cycle are broader structural and institutional factors that influence both access and exclusion. Lucas (2012) identifies three contextual dimensions: social norms and practices, such as car-centric cultures, economic and political structures, such as neoliberal market policies, and governance and decision-making frameworks, such as including whose voices are heard in planning processes and how resources are allocated. These external forces not only condition who is vulnerable to disadvantage and exclusion, but also determine the kinds of transport systems that are prioritised, and for whom. This conceptualisation aligns with the framework of Van Wee and Geurs (2011), highlighting the interaction between transport infrastructure, land use, personal constraints, and temporal dimensions in shaping accessibility. Both frameworks emphasize that exclusion is not simply a matter of physical distance, but of intersecting social, economic, and institutional barriers.



**Figure 3.2:** The relationship between transport and social exclusion (Lucas, 2012)

In transport, equity is often interchangeably used with fairness and justice (Lucas et al., 2019). Litman (2022) refers to social equity as "the distribution of benefits and costs, and the degree that distribution is considered appropriate". According to Di Ciommo and Shiftan (2017), equity in transport involves the fair distribution of benefits and costs across society, focusing on what transportation benefits are evaluated, which population groups are considered, and the method for distributing these effects. Lucas et al. (2019) believes that various perspectives,

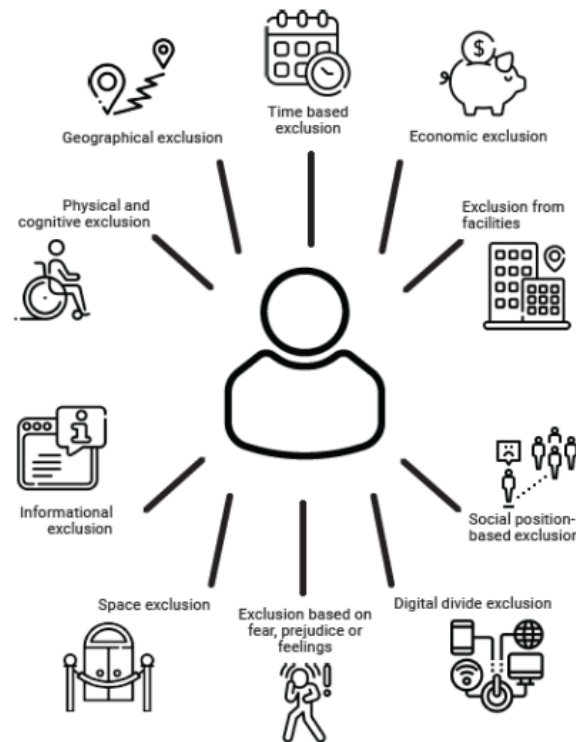
positionings and contexts are possible on transport equity. However, they identified four primary dimensions in the analysis of transport equity: a fair allocation of transport resources, a fair opportunity to access essential activities, the reduction of adverse effects of transport systems and widening participation in the decision-making process.

Litman (2022) identifies two main types of equity used in transportation: horizontal equity and vertical equity (Litman, 2022). Horizontal assumes that individuals with similar needs and abilities should receive equal treatment, while vertical equity assumes that those who are disadvantaged should receive preferential treatment. Addressing horizontal and vertical equity can be attributed to underlying ethical theories. Utilitarianism is one of those theories which emphasises maximising the common good for the greatest number of people. This is the principle on which the cost-benefit analysis (CBA) is based. An alternative theory is egalitarianism, which advocates for equal treatment for all individuals, and as such, it can be seen as the basis of horizontal equity (Litman, 2022). Rawls' theory of justice is important in egalitarianism. Rawls argued that each individual should have equal availability of certain primary goods, such as freedom and welfare. Also, the focus should be on providing the greatest benefit for the least advantaged individuals in society. Rawls' theory of justice can be seen as the underlying theory for vertical equity. Although Rawls never mentioned accessibility, Van Wee and Geurs (2011) argued that accessibility can be seen as a primary good as it is important to have access to some basic destinations. From this perspective, it may be beneficial to prioritise improving accessibility for those with the lowest access levels. Providing bus services to remote rural areas with low-income households might then be considered more valuable than according to traditional approaches. The third most common ethical theory of distributive justice is sufficientarianism. Sufficientarianism focuses on ensuring that everyone has access to a minimum level of amenities, such as accessibility to key destinations. A challenge here is to define what 'sufficient' means, as this standard may change over time, usually towards higher standards (González et al., 2022). An example of sufficientarianism is that an ambulance should arrive within 15 minutes after calling in the Netherlands.

Transport-related social exclusion (TRSE) is closely linked to transport equity. When transport equity is lacking, it can lead to situations of social exclusion. TRSE refers to the situation where individuals or groups cannot access necessary transportation services, leading to limited mobility and reduced opportunities to participate in social, economic, and cultural activities. This often affects socially disadvantaged populations, such as those with low income, unemployment, disabilities, or elderly individuals (Lucas et al., 2019). Yigitcanlar et al. (2019), Luz (2021) and more recently Bruno et al. (2024), among others, made an overview of various TRSE dimensions. An overview of the ten dimensions of TRSE made by Bruno et al. (2024) is shown in Figure 3.3.

Transport equity refers to the principle of ensuring fairness in mobility and accessibility, aiming to meet the needs of all community members, including those in rural areas with limited transportation options. The dimensions of Transport Related Social Exclusion by Bruno et al. (2024) are used to further define transport equity for this thesis. In this context, transport equity addresses geographical exclusion; this occurs when public transport is not or hardly available near certain locations, making it difficult for people in rural areas to access services. This is closely connected to exclusion from facilities and time-based exclusion. Exclusion from facilities is similar, referring to having no access or being at an excessive distance from key opportunities like healthcare and education. Lastly, time-based exclusion occurs when the transportation system is either not fast enough or does not operate when passengers need it. All three are related to the exclusion of rural areas of public transport: public transport is sometimes limited, either not nearby, running only a few times a day, or completely unavailable in rural areas, thereby excluding individuals from accessing services and opportunities.





**Figure 3.3:** The ten dimensions of transport-related social exclusion (Bruno et al., 2024)

### 3.2.1. Perceived accessibility

When considering the concept of transport equity, it is essential to ask how residents perceive their accessibility. Transport equity extends beyond the mere distribution of transport resources and infrastructure; it also encompasses how different population groups experience these systems. Perceived accessibility is defined by F. J. Pot et al. (2021) as the perceived potential to participate in spatially dispersed opportunities. Perceived accessibility highlights the subjective aspect of access, which is often shaped by individual experiences, social factors, and psychological barriers. Two individuals with equal objective access to transport may have very different experiences, influenced by their expectations, concerns about safety, or the financial and physical feasibility of using the system. This underscores the importance of assessing transport equity not only through measurable infrastructure but also by considering how individuals perceive and feel included or excluded from the system.

Recent studies by Felix Pot ((F. J. Pot et al., 2021; F. Pot et al., 2023a, 2023b)), demonstrate the complex relationship between perceived and spatial accessibility. F. J. Pot et al. (2021) found that calculated accessibility measures based on spatial data cannot fully capture accessibility and should instead be seen as proxies for how accessibility is perceived and used by individuals. In the spatial distribution of perceived accessibility, residential self-selection plays a significant role, as people may choose to live in areas that align with their preferences for access to out-of-home activities (F. Pot et al., 2023a). This self-selection can lead to a mismatch between the opportunities provided by the transport and land use system and how accessibility is actually perceived. Rural areas, in particular, face challenges due to limited residential freedom and a higher reliance on car mobility (F. Pot et al., 2023b). In these areas, the loss of local facilities can quickly bring perceived accessibility below a critical threshold, increasing social and economic exclusion.

### 3.3. Measuring transport equity

Several studies have been carried out on the measurement of equity. Lucas et al. (2019) took the perception that there is "no single correct approach to measure equity". (Martens et al., 2019) found that transport equity indicators can be divided into three components: benefits and burdens, population groups and normative standards. Equity analysis requires identifying the benefits and burdens of transport systems and how they affect different social groups. These groups can be categorised by factors such as income, gender, age, ethnicity, ability and location to determine who is advantaged or disadvantaged. A clear normative standard is essential to define a fair distribution of these benefits and burdens and to serve as a benchmark for evaluation.

Martens et al. (2019) also gave several examples of equity indicators, such as bikeability for measuring health and available walking infrastructure for measuring traffic safety. Regarding measuring traffic safety and air pollution, quite some research has been done. Among others, Carrier and Apparicio (2019), Davis and Pilkington (2019) and Melis et al. (2019) looked into the assessment of health inequalities. Similarly, Yigitcanlar et al. (2019) made a framework consisting of 15 key indicators and 47 sub-indicators which can be used to measure physical, economic, temporal, spatial, psychological, and information dimensions. Creger et al. (2018) determined twelve mobility equity indicators connected to three overarching goals: increase access to mobility, reduce air pollution and enhance economic opportunity. These indicators can be used by policymakers to weigh the benefits and burdens of transport projects in an equity analysis. In the Netherlands, a list of around fifty indicators across four dimensions—living environment, safety, accessibility, and health—has been developed to measure broad welfare and mobility (Vonk Noordegraaf et al., 2021). This is proposed as an initial set of indicators, which should be seen as a starting point for further research.

The measurement of broader social outcomes related to transport provision, such as economic and social participation, well-being, social exclusion and quality of life, is less developed in the academic literature (Lucas et al., 2019). This is partly due to the subjectivity of these social aspects. Reardon et al. (2019) raised two concerns. First, there are concerns about the validity and reliability of self-reported measures of well-being, as individuals may interpret questions differently, have different thresholds of satisfaction, or provide inaccurate answers influenced by their mood. Despite these problems, research shows that subjective well-being scores correlate well with objective indicators, and the use of multiple questions helps to reduce random variance, making these measures reliable for assessing well-being at a group level. The normative concern, however, lies in the potential gap between an individual's self-assessment and external assessments of well-being. This occurs because personal aspirations or acceptance of one's circumstances may lead individuals to view their lives as satisfactory, even when their situation is objectively poor.

In conclusion, while the methods discussed provide valuable insights into measuring broader social outcomes related to transport, they are not yet fully used in current practices for assessing the positive and negative impacts of transport on these outcomes. Although these themes are recognised within the transport policies of many countries, their specific application in the context of transport equity or in evaluating transport investments at the aggregate level is still limited and underdeveloped (Lucas et al., 2019). This highlights a significant difficulty in including transport equity in decision-making.

### 3.4. Transport equity in decision-making

The challenge of clearly defining what transport equity means and measuring equity makes it hard for researchers and planners to consequently incorporate equity into the evaluation of projects. Bruzzone et al. (2023) concluded that it is necessary to identify new analysis and evaluation methods to evaluate equity. (Rothengatter, 2019) looked into different evaluation methods, especially into included assessment methods, a combination of an economic impact assessment and an environmental and equity analysis. He concluded that although the conventional CBA has a clear decision rule, included assessment methods provide a more holistic approach in which wider economic impacts can be better valued. In recent years, several approaches and frameworks have been developed to incorporate transport equity into the decision-making process of transport projects.

The first notable approach is the three-step method established by Te Boveldt et al. (2020), which involves assessing how fairly burdens and benefits are distributed among stakeholders. This method allows for the application of both utilitarian and egalitarian principles within a single evaluation. The steps involved include the selection and classification of stakeholders, the assessment of impacts on each stakeholder, and the partial aggregation of evaluation results. This approach emphasizes the importance of considering both social and spatial differentiation and provides a detailed understanding of how different groups are affected by transport projects. It allows for the use of any MCA or other evaluation method that results in a rating or ranking of project alternatives, making it flexible and adaptable to various contexts.

In contrast, the SUMINI approach proposed by Thomopoulos et al. (2009) and further elaborated on by Thomopoulos and Grant-Muller (2013) complements the traditional CBA by incorporating wider transport impacts. The SUMINI approach consists of eight stages, including the identification of project objectives, the identification of decision makers and additional stakeholders, the elicitation of stakeholder judgments on equity, the quantification of equity impacts, the assessment of indicator values, and the analysis of results. This method links predetermined project objectives with diverse stakeholder viewpoints and the project's equity impacts, providing a quantified output to inform decision-making and strategic planning. Thomopoulos and Grant-Muller (2013) suggests looking first at which forms of justice are important and only then choosing an evaluation method that matches them. Martens (2011) agrees with this. He said that how the equity analysis is done depends on how concerned the decision-makers and/or the public are about equity.

Another approach described by Martens (2007) integrates equity analysis alongside regular CBA. This method generates two equity indicators in addition to traditional efficiency indicators, providing a combined set of results to inform decision-makers about both efficiency and equity aspects of transport projects. The key steps include data gathering, conducting regular CBA and equity analysis using a distributive approach, and producing a set of efficiency and equity indicators. This approach highlights the importance of considering equity alongside efficiency in transport project evaluations.

González et al. (2022) recommended a more general five-step plan for incorporating equity into transport project decision-making. This plan involves determining policy equity goals, selecting suitable equity concepts, defining variables, designing indicators, and conducting ex-post evaluations to measure intended and unintended (distributional) effects. This method provides a clear and structured approach for ensuring that equity goals are systematically addressed throughout the decision-making process.

The Mobility Equity Framework proposed by Creger et al. (2018) is also a more general frame-

work (see Figure 3.4). It consists of three steps: community needs assessment, mobility equity analysis, and community decision-making. This framework emphasizes the importance of engaging communities in identifying mobility needs through outreach, education on mobility equity, and brainstorming project ideas. Participatory budgeting processes are recommended to facilitate community participation and ensure that projects reflect community preferences and equity goals. The equity analysis prioritizes sustainable and equitable transportation options, addressing community-identified needs, and the decision-making process involves voting and prioritization to ensure that projects align with equity objectives.



**Figure 3.4:** Mobility equity framework (Creger et al., 2018)

The examination of existing approaches and frameworks for including transport equity in decision making reveals a variety of methodologies, each from a different angle. However, their implementation in practice remains limited. These methodologies are often limited to theoretical discussions or case studies, with little integration into mainstream transport planning. As a result, transport equity remains an academic concept rather than a standardised practice in decision-making processes.

### 3.5. Evaluation tools

Traditionally, decision-making has focused on economic efficiency, often at the expense of social equity. In multiple papers, the balance between efficiency and equity is mentioned ((Abdul & Cui, 2024), (Hrelja et al., 2024)). Hrelja et al. (2024) highlighted a gap in research regarding how to weigh social benefits against other more usual goals like efficiency, cost reduction, and environmental concerns. Currently, two widely used standard decision-making methods are the MCA and CBA. Both methods have their origin in utilitarianism and look for the social optimum. A more recent evaluation method is the Participatory Value Evaluation (PVE). This evaluation method enables communities to be actively involved in planning new transport projects. In Table 3.1, the benefits and limitations of the CBA and MCA found in the literature are summarised. These are further elaborated on below.

The CBA is a widely used evaluation method that allows decision-makers to compare alternative projects using a single value, the cost-benefit ratio. Its key strength lies in its ability to quantify all impacts in monetary terms, making it easier for policymakers to report and prioritize projects (Thomopoulos et al., 2009). Additionally, its strong theoretical foundation have made it an attractive choice for decision makers (Shang et al., 2004). The CBA has been extended to also include social and indirect impacts, but this is still limited by the need to convert the measured impacts into monetary terms (Saitua, 2007). The CBA has more notable drawbacks. With the CBA, societal and spatial dimensions are often overlooked, and including equity factors is challenging according to Te Boveldt et al. (2020) and Van Wee and Geurs (2011). Van

**Table 3.1:** Overview benefits and limitations of CBA and MCA

	Benefits	Limitations
<b>CBA</b>	Quantifies all impacts in monetary terms, simplifying comparison and prioritization (Thomopoulos et al., 2009)	Struggles with non-monetary impacts and discount rate inconsistencies (Van Wee & Geurs, 2011)
	Based on strong theoretical foundation (Shang et al., 2004)	Difficult to convert equity considerations into monetary terms (R. M. Shortall & Mouter, 2021; Van Wee & Roeser, 2013)
	Useful for efficiency and effectiveness (Van Wee & Roeser, 2013)	Often neglects unequal socio-spatial distribution of benefits and burdens (Te Boveldt et al., 2020; Thomopoulos et al., 2009)
<b>MCA</b>	Evaluates multiple, often conflicting goals (Barfod et al., 2011)	Introduces subjectivity due to reliance on decision-maker value judgments (Browne & Ryan, 2011; Thomopoulos et al., 2009)
	Does not rely solely on monetary values (Browne & Ryan, 2011; Thomopoulos et al., 2009)	Arbitrary assigned weights can lead to inconsistencies (Browne & Ryan, 2011; Thomopoulos et al., 2009)
	Enhances transparency and inclusivity through stakeholder participation (Browne & Ryan, 2011; Thomopoulos et al., 2009)	Requires extensive data, and unreliable information can result in incomplete assessments (Browne & Ryan, 2011; Thomopoulos et al., 2009)
	Accommodates qualitative and quantitative indicators (Browne & Ryan, 2011; Thomopoulos et al., 2009)	

Wee and Geurs (2011) mentioned the difficulty of converting equity considerations - such as travel time and accessibility - into monetary terms, which is needed for the CBA. Te Boveldt et al. (2020) and Thomopoulos et al. (2009) also mentioned that these traditional evaluation methods, which focus on aggregated societal welfare, often neglect the unequal socio-spatial distribution of benefits and burdens. Van Wee and Roeser (2013) concluded that the CBA is handy for efficiency and effectiveness but generally lacks equity considerations. R. Shortall and Mouter (2021) also addressed the shortcomings of the CBA in including social and ethical factors. Abdul and Cui (2024) recognised the need to incorporate equity into the CBA and highlighted the importance of a careful balance between equity and efficiency in CBA.

Unlike traditional CBA, in which financial costs and benefits are often the deciding factors, MCDM enables the evaluation of multiple, often conflicting goals, including social justice, sustainability and economic efficiency. MCDM offer a more flexible approach by allowing multiple dimensions and perspectives to be integrated into project evaluation (Barfod et al., 2011). Unlike CBA, MCA does not rely solely on monetary values but instead assesses diverse technical, socio-economic, environmental, and political factors. Its participatory nature ensures that stakeholders contribute to the decision-making process, enhancing transparency and inclusivity (Browne & Ryan, 2011; Thomopoulos et al., 2009). Additionally, MCA can accommodate a

mix of qualitative and quantitative indicators, making it particularly useful in cases where some project impacts are difficult to monetize. However, MCA is not without limitations. The reliance on decision-makers value judgments introduces subjectivity, making the process open to bias (Browne & Ryan, 2011; Thomopoulos et al., 2009). Its robustness is also questioned due to the arbitrariness of assigned weights, which can lead to inconsistencies. Moreover, MCA requires extensive data, and unreliable information can result in incomplete assessments.

The CBA is highly structured and quantitative but struggles with non-monetary impacts, discount rate inconsistencies and equity. The MCA is more flexible and participatory but is prone to subjectivity and data limitations. It is also researched if a combination of these two evaluation methods could be beneficial. R. Shortall and Mouter (2021) and Thomopoulos et al. (2009) concluded that an MCA approach is useful for incorporating indirect socio-economic impacts and equity considerations in evaluating transport projects. Also Barfod et al. (2011) concluded that a combination of CBA and MCA can effectively support in the appraisal of large transport projects. Annema et al. (2015) sketched an approach in which a CBA is combined with MCDM to show the trade-offs between efficiency (CBA) and other criteria such as equity (MCDM). This followed from the opinions of interviewed politicians about their views on CBA. Politicians were often more interested in trade-offs of a transport policy than in solely the benefit-to-cost ratio. Van Wee and Roeser (2013) suggested a combination of MCDM and CBA as well but also thought it might be possible to add ethical considerations in the CBA. Dean (2020) and Lucas et al. (2016) both indicated some drawbacks that apply to both methods. Lucas et al. (2016) concluded that both CBA and MCA require evaluators to make judgments on measuring and prioritising criteria, as there is no universally accepted method; the process depends heavily on the moral values, standards, and norms of the relevant social groups. Dean (2020) added that this highlights a gap between science and practice. They say that evaluation methods proposed in academic literature can be very sophisticated and idealistic, which is why they are rarely used in the real world. Beukers et al. (2012) addressed this for the CBA and concluded that in literature, the focus tends to be on content-related issues instead of the practical process and related issues.

An approach which is used more recently in decision-making processes is the Participatory Value Evaluation (PVE), where communities are actively involved in planning new transport projects. This addresses one of the key issues of Lucas et al. (2019) that those experiencing transport inequities should have a meaningful role in shaping policies that address these disparities. Macharis and Bernardini (2015) concluded that although the integration of stakeholders in the decision-making process is seen as important, it is not yet very commonly applied in transport projects. The PVE is a method in which individuals select their preferred government projects given a constrained public budget. The societal preferences for government projects and their impacts can be determined based on these choices (Mouter et al., 2021). The difference between PVE and CBA is explained by Mouter et al. (2021). PVE determines the desirability of government projects based on public input on how the public budget should be allocated towards the impacts of these projects. In contrast, CBA assesses the desirability of government projects by analysing how people weigh the trade-off between their private income and the projects' impacts. Mouter et al. (2021) researched whether PVE and CBA lead to different policy recommendations by applying both methods to sixteen car, bike, pedestrian and PT projects and comparing the results. Car projects scored the best using a CBA, while pedestrian and bike projects scored better using PVE. With both methods, PT projects were not highly scored. However, this research was carried out with projects in high-density urban areas, so it is questionable whether policy recommendations would be different if these methods were applied in systems with different local characteristics, such as rural areas.



### 3.6. Conclusion

This literature review has provided an extensive overview of key concepts, theories, and methodologies related to transport equity and its inclusion in decision-making processes for transport projects. The review has answered the first sub-question: "What concepts and frameworks of equity in decision-making are already established in the literature?" by exploring the definition of transport equity, methods for measuring equity, and the integration of equity into decision-making frameworks.

Transport equity is defined broadly as the fair distribution of transport benefits and costs, aiming to ensure that all members of society, including disadvantaged groups, have equitable access to transport services and opportunities. The review highlights the complexity of measuring transport equity due to the various dimensions involved, such as the ten forms of transport-related social exclusion. Perceived accessibility adds an extra layer in understanding transport equity, emphasizing the subjective experiences of individuals.

Several approaches and frameworks have been proposed to incorporate transport equity into decision-making processes, including the three-step method by Te Boveldt et al. (2020), the SUMINI approach by Thomopoulos et al. (2009), and the Mobility Equity Framework by Creger et al. (2018). While these methodologies offer valuable insights, their practical application remains limited, often constrained to theoretical discussions or case studies.

The review also examined traditional evaluation tools such as the CBA and MCA. The CBA is highly structured and quantitative but struggles with non-monetary impacts and equity considerations. In contrast, MCA offers flexibility and inclusivity but is prone to subjectivity and data limitations. A combination of CBA and MCA has been suggested as a beneficial approach for evaluating transport projects and balancing efficiency and equity. The participatory value evaluation is identified as a promising approach for actively involving communities in decision-making processes, addressing the need for inclusive and equitable transport planning.

The main findings of this literature review are summarised in Table 3.2. This literature review underscores the need for further research and practical implementation of transport equity frameworks in decision-making processes. Including equity in transport planning and decision-making processes requires a balanced approach that combines theoretical insights with real-world applications.

**Table 3.2:** Main findings of the literature review

Key concepts	Main findings
Transport equity	No consensus on definition; defined broadly as the fair distribution of transport benefits and costs, aiming to ensure that all members of society have equitable access to transport services and opportunities.(Litman, 2022; Lucas et al., 2019)
	Several forms of transport-related social exclusion are identified, including geographical exclusion, to show reasons why people can be excluded from transportation systems, resulting in reduced participation in society (Bruno et al., 2024; Luz, 2021; Yigitcanlar et al., 2019).
	Perceived accessibility adds to the understanding of transport equity. Perceived accessibility is the perceived potential to participate in spatially dispersed opportunities and can differ from accessibility measures (F. J. Pot et al., 2021; F. Pot et al., 2023b).
Measurement of Equity	Several lists of equity indicators are made, but they are not yet fully used in current practices for assessing the positive and negative impacts of transport (Creger et al., 2018; Yigitcanlar et al., 2019).
	The measurement of broader social outcomes related to transport provision, such as economic and social participation and social exclusion, is less developed in academic literature (Lucas et al., 2019).
Inclusion in Decision-Making	Various proposed frameworks aim to integrate equity systematically, but there is limited practical application; mostly theoretical or case studies (Creger et al., 2018; González et al., 2022; Te Boveldt et al., 2020; Thomopoulos & Grant-Muller, 2013).
	Transport equity remains an academic concept rather than a standardised practice in decision-making processes.
Evaluation Methods	CBA: Quantifies impacts in monetary terms, useful for efficiency but struggles with non-monetary impacts and equity (Mouter et al., 2021; Te Boveldt et al., 2020; Van Wee & Roeser, 2013).
	MCA: Flexible and participatory, accommodates qualitative and quantitative indicators but introduces subjectivity (Barfod et al., 2011; Browne & Ryan, 2011; Thomopoulos et al., 2009).
	Combination of CBA and MCA can balance efficiency and equity (Annema et al., 2015; Van Wee & Roeser, 2013).
	PVE: Engages communities, reflects societal preferences and equity goals (Mouter et al. (2021)).

# 4

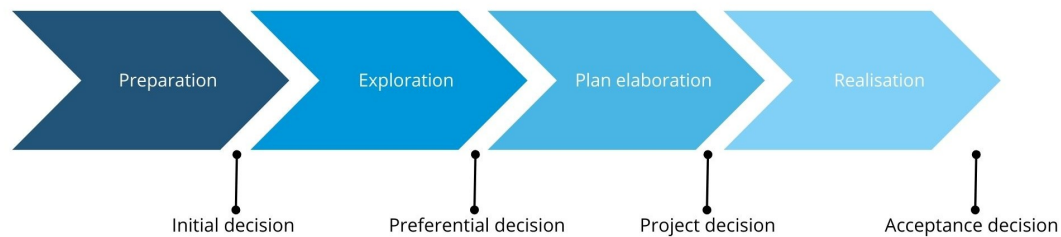
## Decision making in transport projects

This chapter investigates the extent to which transport equity is considered within the Dutch decision-making process for transport infrastructure. It analyses where and how equity is addressed—and what factors hinder its effective integration into policy and project selection. This answers the second sub-question: *To what extent and at which stages of the policy process is transport equity considered and what factors hinder its consideration?*

In the Netherlands, transport projects are executed on several levels. Transport projects that are large-scale or require substantial investment, such as highways, railways and major water works, can be included in the MIRT. The MIRT acts as the national government's investment programme for infrastructure, land and water, and includes both studies and implementation projects. In the MIRT, the national government works together with the provinces, municipalities, transport regions and the water authorities (Waterschappen in Dutch). Projects enter the MIRT through a multi-stage process of agenda-setting and coordination between governments. This often starts at the local or regional level, where bottlenecks are identified, or ambitions are formulated. Through area agendas and regional investment programmes, provinces, transport regions, and municipalities propose projects. In cooperation with the national government, these are then discussed in administrative consultation: the BO MIRT (Bestuurlijk Overleg MIRT in Dutch). There, they are assessed based on usefulness and necessity, spatial integration, sustainability and financing possibilities. Only projects that meet these conditions and fit within the national policy priorities are finally included in the MIRT and can count on (co-)financing by the national government.

The MIRT procedure consists of four steps which are shown in Figure A.1. Generally, three key decisions shape this process: the initial decision, the preferred decision, and the project decision. Before the initial decision, authorities assess whether a problem exists and if potential solutions require further exploration. The project then enters a more detailed analysis phase, where alternatives are developed and evaluated. The selection of a preferred alternative marks the completion of this phase, allowing the project to proceed. The chosen alternative is then further refined and prepared for implementation. At the end of each phase, a go/no-go decision is made, and as the procedure progresses, the project becomes more and more concrete (Ministerie van Infrastructuur en Waterstaat, 2022). After the exploration phase, no big changes to the project can be made. By then, the preferred alternative has been chosen, which is further detailed in the plan elaboration phase. Therefore, transport equity should be incorporated before this preferential decision. This procedure corresponds largely with the general decision making process by (Dickey et al., 1983) shown in Chapter 3. The situation and problem definition are part of the preparation phase. In the exploratory

phase, alternatives are searched, and their performance is analysed. Furthermore, the alternatives are evaluated and an alternative is chosen. In the plan elaboration, this preference alternative is further specified and finally, it is constructed in the realisation phase. Further detailing on the MIRT steps can be found in Appendix A



**Figure 4.1:** MIRT procedure

Projects are mainly identified through the IMA (Ministerie van Infrastructuur en Waterstaat, 2022). The IMA is conducted to provide a comprehensive overview of national mobility trends, bottlenecks, and expected future challenges. The IMA helps determine whether new transport interventions are needed and informs strategic decision-making at the national level. The IMA is the successor to the National Market and Capacity Analysis (NMCA) and considers more aspects, such as climate change, public health and inclusiveness, but understanding the effects of mobility policies on these aspects and broad welfare is not easy (CROW, 2021). For the next IMA, IMA 2025, the parliament is therefore looking at how broad welfare can have a firmer place in the accessibility analysis and how distributional effects of accessibility and related indicators can be given a place (Rijksoverheid, 2023).

Funding for mobility measures by the national government, including infrastructure investment, is provided through the mobility fund (mobiliteitsfonds in Dutch). As the volume of submitted policy requests exceeds the available space within this fund the coming years, careful consideration is required to determine which proposals qualify for a preliminary financial reservation (Visser, 2024). The rationale for funding from the mobility fund requires that policy requests be assessed against four main elements. Firstly, solution capacity: the extent to which a measure contributes to the theme for which it has been submitted. Second, cost: an estimate of the expected investment, including risks, based on expert judgement. Third, feasibility: this includes legal feasibility, environmental factors, capacity and the possibility of phased implementation. Finally, the contribution to overall well-being is explicitly considered, including the impact on the living environment, health and socio-economic opportunities. The mobility fund, thus, gives already attention to broad welfare.

#### 4.1. Structural barriers to transport equity in Dutch transport decision-making processes

The decision-making process for transport projects in the Netherlands faces several structural challenges limiting transport equity inclusion. Firstly, the IMA has been widely criticised for relying heavily on macro-level indicators, often failing to reflect regional and local mobility issues ((Verkade, 2020),(Redactie Gebiedsontwikkeling.nu, 2020)). The result is that the IMA tends to promote solutions that address the greatest common denominator, while smaller yet locally significant mobility problems are overlooked. This system lacks the flexibility to address specific local mobility needs, which can lead to inequalities in access to transport. The focus on congestion and traffic jams as measures for subsidy allocation and project selection, combined with the rigidity of the IMA, makes it difficult to implement sustainable and equitable

mobility solutions. This creates a challenge for projects aiming to improve access for vulnerable groups, such as enhancing public transport in remote areas, which struggle to secure necessary funding and priority.

Following the IMA, there are also critics on the MIRT. As mentioned by Verkade (2020), the MIRT procedure is characterised by the fact that provinces depend on the central government for project funding. This creates a system where provinces must align their plans with the preferences and requirements of the national government. This leads to a paradox: provinces that wish to promote mobility must first create congestion or other traffic bottlenecks in order to qualify for funding. This distorts policy development, as projects that contribute to sustainable mobility or address the needs of less accessible regions often do not receive priority unless they visibly increase traffic in the short term. This system offers little room for more integrated, long-term approaches to mobility, such as promoting multimodal infrastructure or improving mobility for vulnerable groups. Furthermore, the current system for distributing infrastructure funds through MIRT is often viewed as too rigid and market-driven (Redactie Gebiedsontwikkeling.nu, 2020). The focus is primarily on projects that provide immediate economic benefits, such as major motorways or arterial roads, while projects aimed at improving regional mobility or promoting sustainable transport options, such as public transport or cycling infrastructure, are often less likely to succeed. This increases inequalities in mobility, with well-connected areas benefiting most and more remote and economically weaker regions receiving insufficient attention.

Finally, the selection of projects for inclusion in the MIRT involves a complex interplay between national and decentralised authorities. In the early stages, representatives from local, regional, and national governments convene during the BO MIRT to discuss which projects merit further exploration and potential funding. In practice, informal power dynamics and political bargaining frequently shape which projects advance. Decentralised authorities employ various strategies to strengthen their proposals, including hiring professional lobbyists and organising site visits. According to interviewed politicians, the effectiveness of these lobbying efforts often determines a project's success (Mouter, 2016). This means that even within a formally structured process like the BO MIRT, outcomes are significantly influenced by behind-the-scenes negotiations rather than objective policy criteria—undermining efforts toward equitable mobility planning.

## 4.2. Conclusion

So far, not much has been done to integrate transport equity into decision-making. Where there have been changes is in the Mobility Fund and the IMA, although more could be done in the latter. Funding allocation through the mobility fund already includes aspects of equity, evaluating policy requests based on their contribution to overall well-being. In the Netherlands, transport equity can be considered throughout various stages of the decision-making process, particularly within the IMA and in early stages of the MIRT. There are opportunities to address equity during initial identification and agenda-setting, where bottlenecks and ambitions are formulated at local or regional levels and discussed in administrative consultations. The exploration phase is crucial for incorporating equity before the preferred decision is finalized, as subsequent phases involve detailed planning and implementation, where changes become more challenging.

Several factors limit attention to transport equity. The IMA's reliance on macro-level indicators often overlooks regional and local mobility issues, reducing flexibility to address specific local needs and contributing to inequities. The focus on congestion and traffic metrics for subsidy

allocation and project selection hinders the prioritisation of equitable and sustainable mobility solutions. The rigid, market-driven approach of the current system for distributing infrastructure funds favours projects with immediate economic benefits, creating inequalities in mobility where well-connected areas benefit most while remote and economically weaker regions receive insufficient attention. Furthermore, political bargaining and informal power dynamics significantly influence project selection, with lobbying efforts often determining outcomes, undermining objective criteria and equitable mobility planning.

# 5

## Stakeholders involved in decision-making in transport projects

Ensuring equity in public transport decision-making presents both opportunities and challenges, as highlighted in the literature review. However, the extent to which equity considerations are included in current planning processes also depends on the stakeholders involved and their influence on decision-making. Furthermore, knowing how changes in decision-making processes impact them can shed light on their stance on this topic. Insights into the interrelations between the stakeholders show the complexity of the stakeholder network. This chapter aims to answer the following sub-question: *in what ways do stakeholders, their interests and relationships affect the inclusion of transport equity in transport project decision-making?*.

### 5.1. Overview stakeholders

Identifying stakeholders interested in including equity in transport decision-making is important for understanding the various influences on policy development and project implementation. Stakeholders, for example, citizens, governmental bodies and public transport operators play a significant role in shaping transport policy by providing expertise, setting priorities and influencing funding and regulatory frameworks. Their involvement can either facilitate the inclusion of equity considerations or hinder progress if conflicting interests arise. A comprehensive stakeholder analysis can identify power dynamics, potential synergies and barriers to equitable decision-making. In this Chapter, a part of the stakeholders involved in this topic is elaborated on. It is not a complete overview of all stakeholders involved. Analysing a large number of stakeholders can result in losing overview (Varvasovszky & Brugha, 2000). For example, citizens can be divided into many stakeholder groups. It is now chosen to make a division between minorities and majorities to address the effect of inequity. Description of the stakeholders can be found in Appendix B. In Figure 5.1, the stakeholders that are elaborated on in this Chapter are shown. The stakeholders close to the centre have the highest influence or interest in the topic. In the outer circles, this becomes less. More on this follows in the analyses below.

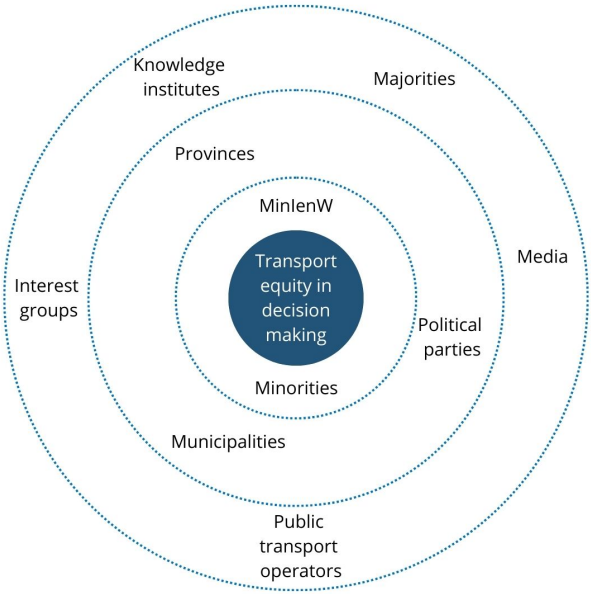


Figure 5.1: Stakeholders overview

The stakeholders involved in the transport equity discussion encompass a diverse range of roles, interests, and levels of influence, each contributing differently to the overall landscape. The identified stakeholders in transport projects each have varying degrees of power and interest in including equity in decision-making.

Figure 5.2 shows the stakeholders in a power-interest grid. Stakeholders in the upper right corner of the grid should be closely managed and actively involved, as they have both high interest and power. The other stakeholders should be regularly informed and may be involved depending on the situation. Of these stakeholders, three groups, indicated with a blue box, are interviewed, of which the results are presented in Chapter 6. Specifically, the two stakeholders with the most power and interest, the Ministry of Infrastructure and Water Management and the province, are interviewed. Additionally, knowledge institutes and consultancies are interviewed due to their expertise and insights.

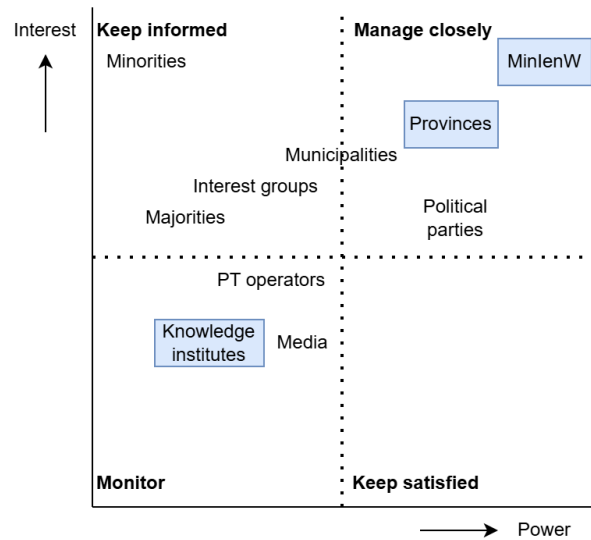


Figure 5.2: Power-interest grid stakeholders

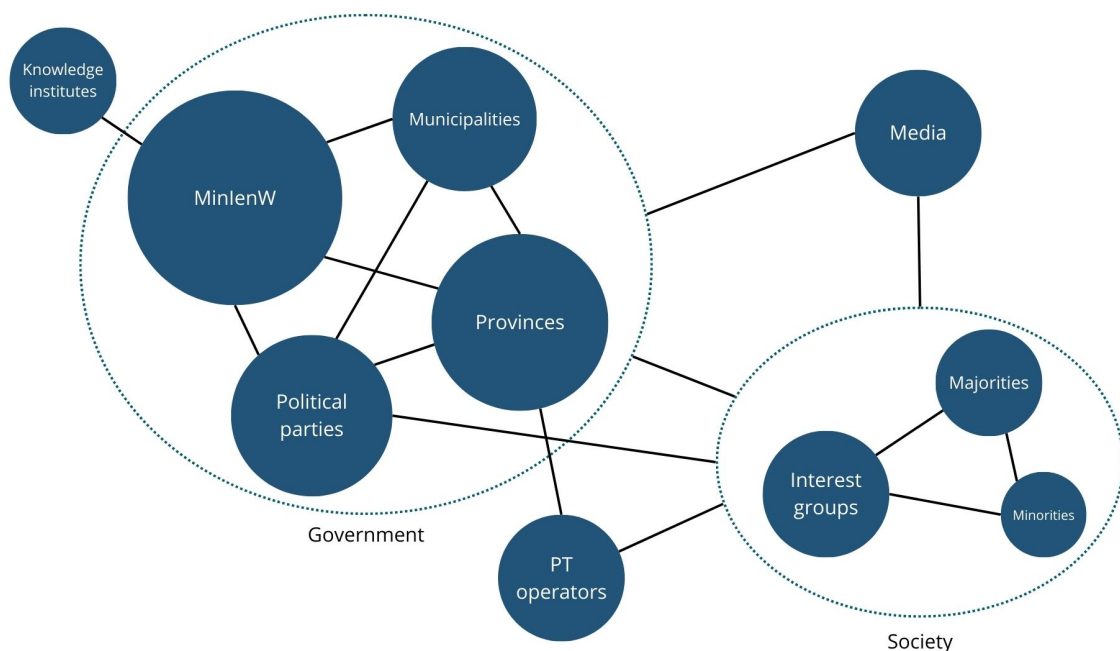


Stakeholders with both high power and high interest, such as the Ministry of Infrastructure and Water Management, provinces and municipalities, are key decision makers. They need to be closely managed to ensure that transport equity is embedded in policy. These stakeholders have significant authority over funding, regulations and planning processes. Active engagement through direct consultation and collaboration is essential to align their objectives with equitable transport solutions.

Political parties also have considerable power, but may have varying levels of interest in transport equity depending on their ideological stance. They should be engaged through policy debates to maintain political support for equitable transport initiatives. On the other hand, citizen minorities have a strong interest in transport equity but lack significant decision-making power. They should be kept well informed through participatory processes, public consultations and transparent policy discussions. Citizen majorities should also be kept well informed. Their power is somewhat greater because they are more numerous, even though their interest is somewhat smaller than that of citizen minorities.

Public transport operators and the media have relatively little interest and power. The media can shape public perception and should be monitored. Public transport operators have operational control, but may not prioritise equity without incentives or regulatory mandates. They need commitment through contractual agreements and performance-based incentives to incorporate equity measures.

To show the relationships between the stakeholders, a stakeholder relationship network diagram has been made, which can be seen in Figure 5.3. In this diagram, the size of the bubble shows the power of the stakeholder, corresponding with Figure 5.2. It is chosen to group the MinlenW, political parties, provinces and municipalities into an overarching government group and minorities, majorities and interest groups into a society group to keep the overview. This diagram shows different relationships that reflect the complex network of interests and influences in the transport sector. Not all relationships are shown as some are more indirect.



**Figure 5.3:** Stakeholder relationship network

For example, the relationships between knowledge institutions and the MinlenW are focused on sharing knowledge and scientific insights, which influence policy-making. The relationships between MinlenW, municipalities and provinces mainly focus on cooperation and coordination of regional and local infrastructure projects and mobility policy measures. Political parties play a central role in relations with provinces, municipalities and society, influencing policy and representing the interests of different social groups. The relationship between political parties and society reflects the political influence on public opinion and the voice of various population groups. There is also an interaction between public transport operators and both society and provinces, which focuses on providing efficient and accessible services to society tendered by provinces. The media influences society and government by influencing public opinions and policy discussions, while interest groups represent the interests of minorities and majorities.

The complexity of the relationships shows the intricate web of interdependencies, competing interests, and influences that shape transport policy and infrastructure. Each stakeholder interacts with multiple others, sometimes in supportive ways, such as knowledge exchange between research institutions and the Ministry of Infrastructure, and at other times in more negotiated terms, as seen in the relationships between political parties, municipalities, and society. The interplay of power dynamics, varying levels of influence, and differing priorities among stakeholders—ranging from political ideologies to societal needs—creates a constantly shifting landscape where decisions are made not in isolation but through continuous dialogue, negotiation, and compromise between stakeholders.

## 5.2. Conclusion

This chapter has explored the different stakeholders involved in transport decision-making and their influence on the inclusion of equity considerations in public transport projects in the Netherlands. In conclusion, the inclusion of transport equity in transport project decision-making is significantly influenced by a diverse range of stakeholders, their interests, and their relationships. In Table 5.1, a summary of the role, interests and influence of the stakeholders is shown.

The Ministry of Infrastructure and Water Management holds considerable power and interest, making them key players in embedding transport equity into policy. Their authority over funding, regulations, and planning means their active engagement and collaboration are crucial for achieving equitable transport solutions. The interests of the various levels of government in transport equity vary: municipalities and provinces are often more invested in equity due to their proximity to the local population. Political parties may have varying interest levels depending on their ideological stance, requiring engagement through policy debates to maintain political support for equitable initiatives. On the societal front, citizen minorities have a strong interest in transport equity but lack substantial decision-making power. They should be kept well informed through participatory processes, public consultations, and transparent policy discussions to ensure their concerns are addressed. Citizen majorities, while more numerous and somewhat more powerful, should also be kept informed to establish broader support for equity measures.

The relationships between stakeholders reveal a complex web of interdependencies, sometimes competing interests, and influences. Effective transport equity inclusion requires a comprehensive understanding of these relationships and interests, ensuring that all voices are heard in the decision-making process.

**Table 5.1:** Summary stakeholder analysis

Stakeholder	Role	Interest	Influence	Attitude transport equity
Citizen minorities	Underrepresented communities using transport infrastructure	Fair accessibility and social inclusion	Low influence	Strongly positive
Citizen majorities	General population using transport infrastructure	Efficient and accessible transport services	Low to medium influence	Positive to neutral
Interest groups	Advocate for the interests of citizen groups	Good and affordable transport for everyone	Low to medium influence	Positive
Ministry of Infrastructure and Water Management	Making regulations regarding transport and infrastructure, decision making power and financier	Efficient, sustainable, and cost-effective transport system	High influence	Varying attitudes
Provinces	Regional governments responsible for provincial infrastructure and public transport. Decision making power and financier	Regional connectivity and economic development, increasing accessibility for inhabitants	Medium to high influence	Varying attitudes
Municipalities	Local governments responsible for urban mobility planning. Decision making power and financier	Increasing accessibility and livability for inhabitants	Low to medium influence	Varying attitudes
Public Transport operators	Operators providing public transport services	Service efficiency, profitability, and ridership	Medium influence	Neutral
Political Parties	Influencing policy and decision-making	Aligning transport policies with political ideology	High influence	Varying attitudes
Media	Reporting and shaping public opinion on transport issues	Public awareness and engagement	Medium influence	Neutral to varying attitudes
Knowledge institutes	Universities and Research Institutes	Scientific, data-driven solutions for long-term impact	Medium influence	Varying attitudes

# 6

## Interview results

The previous Chapter, it was delved into the stakeholders concerned with the consideration of transport equity in the decision-making of transport projects. This chapter presents the results of the interviews conducted with representatives from governmental bodies, knowledge institutes and consultants. These interviews provide insights into the practical challenges and opportunities for including equity in decision-making and contribute to a deeper understanding of the factors that shape current practice. Interviewing these representatives is relevant as it allows for the collection of diverse perspectives and firsthand experiences from those directly involved in the field. It helps to capture the nuances and complexities that might not be evident through theoretical analysis alone. Moreover, these interviews can highlight discrepancies between policy intentions and practical implementation, helping to create better ways to address equity concerns. With this Chapter, the fourth sub-question will be answered: *what are the opportunities and challenges of including equity factors in the current decision-making process for public transport projects in the Netherlands?*

### 6.1. Expert interviews

A list of around fifty potential interviewees was made by brainstorming with members of the graduation committee on persons involved with or interested in this topic. This consisted of experts from various sectors relevant to public transport planning and policy in the Netherlands. The list included individuals from knowledge institutes, consultancy firms and government agencies. The interviewees were sourced through a combination of methods. Some were contacts of the graduation committee, while others were drawn from own contacts. Additionally, several interviewees were recommended by participants during the course of the interviews. Initially, fifteen potential participants were contacted, and in the end, a total of eleven interviews were conducted with thirteen participants. The first interview conducted was also used as a test for the interview script. After this interview, the questions were a bit refined for the subsequent interviews. Next to governmental bodies, independent organisations -knowledge institutes and consultants- were interviewed. An overview of the interviewees can be seen in Table 6.1 and interview summaries can be found in Appendix E. References to the interviews appear as [R#], corresponding to respondent numbers.

Experts from the knowledge institutes TU Delft, TNO and KiM provided research-based insights. Witteveen+Bos offered practical experience of how equity considerations are applied in real projects. The governmental bodies interviewed are the Ministry of Infrastructure and Water Management and the province of Zeeland. They offered insights regarding the regulatory frameworks, funding priorities, and policy implementation processes. By including insights

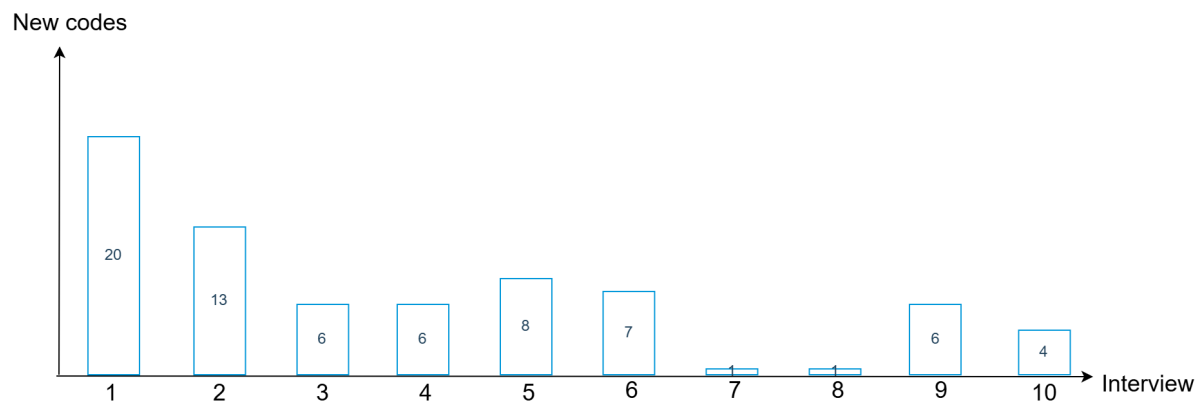
from these different institutions, quite a broad view is gained. Input is missing from municipalities and citizens directly affected by transport policies. Including these perspectives would give a more complete picture of transport equity across different levels of governance and make the findings more representative.

**Table 6.1:** Participants with their function, company and appendix with their interview

Interviewee	Function	Company	Category
Bert van Wee	Professor Transport Policy	Delft University of Technology	Knowledge institute
Diana Vonk Noordegraaf	Senior Consultant Strategy and Policy	TNO	Knowledge institute
Matthew Bruno	Postdoctoral Researcher on Inclusive Mobility	Delft University of Technology	Knowledge Institute
Pauline Wortelboer	Knowledge Line Manager Policy Evaluations and the Role of Government	Kennisinstituut voor Mobiliteitsbeleid (KiM)	Knowledge institute
Hilke van Strijp-Harms	Stakeholder manager and Project Manager	Witteveen+Bos	Consultancy
Dirk-Jan de Vries	Policy Coordinator Innovation and Strategy for Mobility	Ministry of Infrastructure and Watermanagement	Government
Annelieke Melters	Policy Officer Innovation and Strategy for Mobility	Ministry of Infrastructure and Watermanagement	Government
Abel Knipping	Environmental and Social Impact Assessment expert and	Witteveen+Bos	Consultancy
Eric Holtrop	Project Manager Public Transport and Mobility	Witteveen+Bos	Consultancy
Niek Mouter	Associate Professor and Scientific Director	Delft University of Technology, Populytics	Knowledge institute
Wim Kant	Senior Advisor Accessibility	Provincie Zeeland	Government
Martijn Ernest	Team Coordinator and Senior Advisor Accessibility	Provincie Zeeland	Government

The interview results provide a detailed exploration of how equity is currently perceived and addressed in public transport decision-making in the Netherlands. They highlight the perspectives of the interviewees and reveal both the opportunities and challenges of integrating equity into transport planning. The interviews have been coded in order to properly process the qualitative data and extract as much information as possible from the interviews. In Figure 6.1, a saturation graph is shown in which you can see that most new information was heard in the first interviews. In interviews 8 and 9, less information was heard because of previous interviews with people from the same field. It can also be seen that saturation is not completely reached, indicating that conducting more interviews can be useful. Considerable information has been gathered on evaluation tools, differences in definitions and the place of equality in the decision-making process. The relationship between local and national government has been explored from the perspective of local authorities, but not from that of national government. This is an interesting direction for further research. Information on policy instruments such as the Beleidskompas remains limited but these could be useful for considering equity.

Conducting interviews with representatives from another province or municipality, or directly with citizens, could provide deeper insights into public perspectives and bring the research closer to the experiences of the citizens. Because of the limited time, it was chosen to stop after these eleven interviews. The coding can be found in Appendix D.



**Figure 6.1:** Saturation interviews

First, the different views on the definition of transport equity are presented. The interview analysis then looks at the mechanisms by which equity is - or is not - integrated into transport projects. It examines the stages of decision-making where equity considerations are most prominent, as well as the influence of evaluation tools. The findings also shed light on the political and institutional dynamics that shape how equity is addressed. Finally, the findings highlight key barriers and potential solutions. By structuring the findings around these themes, this Section provides a comprehensive understanding of how transport equity is currently addressed in practice and where improvements can be made.

### 6.1.1. Definition of transport equity

Firstly, respondents were asked how they would define transport equity. The interviews revealed that the interviewees have different interpretations and definitions of transport equity. Table 6.2 shows the definitions given by the interviewees and the number of times they were mentioned.

**Table 6.2:** Definition codes and groundings

Code label	Grounded
Broad welfare multifunctional concept	1
Distribution of mobility	6
Ethical theories	7
Everyone should have access to transport	3
Lack of transport limits participation in society	1
Mobility is basic right like water safety	2
Moral fairness	1
Procedural justice	2

A recurring interpretation of transport equity across interviews was that everyone, regardless of background or location, has the right to have a minimum level of access to transport. [R3] defined equity as everybody's transportation needs to be taken into account. [R5] put it simply: "the right to be able to move freely wherever and whenever a person wants". [R2] linked

equity to the concept of broad welfare and distributional effects and referred to the definition of broad welfare of CBS: "Broad welfare refers to the quality of life here and now and the extent to which it is at the expense of the broad welfare of future generations or of people elsewhere in the world". Broad welfare is about 'everything of value' and takes into account locations, time periods, groups and distributional effects. [R2] mentioned that equity is linked with the distributional effects. Others linked transport equity to transport poverty. [R6] mentioned the definition of transport poverty of the KiM: "The inability or difficulty to reach activity locations (in terms of difficulty) due to inadequate transport facilities (both objective and perceived), combined with the socio-economic and spatial conditions people face and their skills. As a result, they are constrained in their participation in social life, negatively affecting quality of life". [R6] indicates that transport equity involves the degree to which individuals can fully engage in society, influenced by factors such as income, health, and mobility opportunities. Transport equity is for some interviewees a multifaceted concept that can be viewed from different perspectives. According to [R1], equity has to do with distributions, for example the distribution of accessibility. But equity applies not only to accessibility, but also to nature, environment and health. [R10] divides transport equity into two parts: distributive equity and procedural equity. Distributive equity is about how transport resources and benefits are distributed. Procedural equity is about whether the decision-making process is fair. He also mentioned that equity is context-dependent and varies between transport projects.

In summary, the concept of transport equity is multifaceted and interpreted differently by various interviewees. While there is general agreement on the importance of distributive and procedural justice, definitions vary. Some interviewees stress the universal right to transport, enabling everyone to move freely and participate in society. Others link transport equity to broad welfare, considering distributional effects and quality of life impacts. Transport equity is also associated with transport poverty, highlighting the barriers individuals face in accessing activities due to inadequate transport facilities and socioeconomic conditions, which negatively affect their quality of life. Context dependency, varying between transport projects, is also noted. The lack of a clear, universally accepted definition of transport equity is seen as a significant obstacle to its effective inclusion in decision-making processes. This ambiguity makes it challenging to implement equitable transport policies consistently, as stakeholders may have differing views on equity. Further details on barriers to including equity in decision-making are discussed in Subsection 6.1.4.

### 6.1.2. Current state of transport equity in the Netherlands

Following the exploration of various definitions of transport equity, this section explores various perspectives and practical challenges associated with transport equity and the current state of transport equity. In Table 6.3, the codings associated with the context around transport equity can be seen.

**Table 6.3:** Context codes and groundings

Code label	Grounded
Growing interest in broad welfare	7
Growing interest in equity	7
Perceived accessibility	4
Public transport not profitable, but desired	2
Transport poverty	6
Trade-offs broad impact or inclusion	4



Transport equity is receiving increasing attention in Dutch mobility policy. In almost every interview, respondents mentioned a shift towards broad welfare thinking and equity considerations. This shift is reflected in different policy frameworks. For example, the province of South Holland has developed a comprehensive welfare monitor, while North Brabant is researching how citizens experience welfare. At the national level, broad welfare is now getting embedded in key strategies such as the National Mobility Vision and guidelines for CBA. According to [R2], provinces are taking the lead, with the Ministry of Infrastructure and Water Management gradually following.

Despite this positive shift, some interviewees expressed scepticism. Terms such as 'broad welfare' are seen by some as vague or even fashionable jargon. [R12] described it as "a bit of a catch-all" and [R5] observed that consultants are increasingly using broad welfare as a buzzword in their proposals, strategically incorporating it in tenders to capture the attention of clients. [R4] pointed out that "attention to equity was minimal until recently - now it's everywhere". While this rapid rise is encouraging, it also creates uncertainty about what equity really means in practice.

A recurring theme in the interviews was transport poverty - situations where people are unable to access essential services because of inadequate transport. Interviewees acknowledged that awareness is growing, but practical solutions are often limited by financial and political realities. Examples of the tension between inclusiveness and cost-effectiveness given were cases such as Zeeland and Den Bosch, where decision-making tends to favour high-impact investments over equitable access. These examples are illustrated below.

#### Example 1 - Province of Zeeland

In the Province of Zeeland, the consequences of limited transport access are strikingly visible. Several public transport lines have been discontinued in recent years, leaving certain communities — especially schoolchildren, elderly residents, and those without access to a car — isolated. For many students, accessing higher education means commuting over 100 kilometres or relocating entirely. As [R12] explained, "living at home is hardly an option for many students anymore."

Despite receiving relatively high mobility funding per capita, Zeeland struggles to implement infrastructure projects. One reason lies in national frameworks like the IMA, which prioritises congestion problems and thus tends to overlook sparsely populated areas. Consequently, projects in Zeeland often do not make it onto the MIRT agenda.

Accessibility in Zeeland is not just limited — it is perceived differently as well. [R12] contrasted the region's experience with that of urban areas, stating: "They suffer from congestion because they have so much; we suffer from scarcity and just want to get somewhere. That's a completely different mindset."



### Example 2 - 's-Hertogenbosch

The city of 's-Hertogenbosch offers a clear example of how transport equity can be unintentionally neglected in practice. Currently, the train station is being upgraded with MIRT funding — a major infrastructure investment. Yet, as [R9] pointed out, there is no budget to improve the adjacent bus station, even though buses are primarily used by residents with lower incomes who rely on them for daily mobility.

While the train station project moves forward, the bus station — essential for inclusive transport access — remains outdated and underfunded. This illustrates a broad pattern in transport policy: large-scale projects that are more visible and politically attractive often receive funding first, while lower-profile services that serve the most vulnerable populations are deprioritised.

In addition to funding and planning barriers, several interviewees pointed out a discrepancy between measured and perceived accessibility. While data may suggest that a region is well-served, residents may still experience mobility limitations. [R1] noted that “what is considered fair on paper may not align with people’s daily experiences.” [R12] emphasised that people in rural areas adapt to limited transport options, making the issue less visible — even if the consequences are real. Meanwhile, [R8] offered a contrasting view, suggesting that in an international context, the Netherlands’ mobility issues may seem relatively minor.

In conclusion, the interviews reveal a complex landscape surrounding transport equity, influenced by various contextual factors. The growing interest in broad welfare and equity indicates a positive shift towards more inclusive policy frameworks, as seen in initiatives in Zuid-Holland and Noord-Brabant. However, practical challenges remain, particularly in sparsely populated areas like Zeeland, where the discontinuation of public transport lines exacerbates accessibility and social exclusion issues. Financial viability is a critical concern for public transport, which, despite its importance for social inclusion, often struggles to be profitable. The market-oriented approach focusing on equal costs per citizen fails to address the unique needs of isolated communities, leaving them underfunded and overlooked in major investment programs like MIRT. Addressing this issue involves complex decisions about resource allocation—whether to invest heavily in facilities for a few or to maximize impact for many. This dilemma underscores the need for a balanced approach that considers both broad impact and inclusivity.

#### 6.1.3. Decision-making processes and transport equity

So while broad welfare is already being considered in different places, it is not yet a common idea. In the interviews, it was also discussed how equity is or can be considered in decision-making processes and when in the process it should be considered. In this section, the position of equity in decision-making processes, evaluation and measurement tools and the role of stakeholders are discussed. The times when it can be considered in decision making vary. Respondents were asked when they thought equity could be considered in the decision-making process. The interviewees indicated several stages where equity considerations can play a role, see Table 6.8. Most commonly, they emphasized the importance of addressing equity before the project decision, during problem identification and the formulation of policy objectives. It was also seen as an option to look into equity during the detailing of the preferred alternative. Finally, it was suggested that equity should be considered throughout the entire process.

**Table 6.4:** Positioning codes and groundings

Code label	Grounded
After the preferential decision	3
At the beginning of the project	5
Effort scales with the project	2
Equity as a project objective	3
Throughout the entire project	2

Several interviewees highlighted the importance of addressing equity in the very beginning of the process. [R12] emphasized that equity should be considered even before a starting decision is made, at the point when the problem or bottleneck is first identified. He stressed that this should be part of the policy development process. [R4] views equity as an objective of a project, a perspective [R7] agrees with. She explained, "If you place equity at the centre as a goal or guiding principle, it shifts the conversation compared to projects focused solely on traffic flow and road congestion." [R2] underscored the importance of the preliminary phase of policy development, including participation and fieldwork, for informed decision-making, urging that more attention be given to this stage in discussions on broad welfare. [R9] pointed out that during the starting note and variant consideration stages of policy development, there is an opportunity to explore equity considerations. [R10] thinks that it is crucial to examine which forms of equity are relevant to the task or decision from the beginning. In conclusion, the interviewees consistently stressed the need to address equity early in the decision-making process, especially during the problem identification and preliminary decision stages.

Equity can also be considered after the preferential decision according to several interviewees ([R3],[R6]). [R6] thinks that you can look in that phase at what you could add to a transport project to make it more accessible or to improve it for more groups. When weighing up the alternatives, he thinks it will not be so distinctive. Others think that equity can be considered during the evaluation of alternatives ([R2],[R8],[R9],[R10]). [R10] thinks that equity can be part of the weighing of alternatives: "that you also can value equity aspects just like you value travel time savings". He suggests carrying the identified important forms of equity throughout the entire process.

#### Evaluation and measurement tools

As decision making is also influenced by evaluation methods and measurement tools, these subjects were also discussed to understand what tools are being used and how effective they are perceived to be. In the literature review, it has already been looked into two widely used standard decision-making methods: the CBA and MCA. In the interviews, a relatively new instrument was discussed: the PVE. There are different opinions on the suitability of these tools. Opinions also differ on the effect of evaluation instruments. First, the advantages and disadvantages of the evaluation instruments are presented. In Tables 6.5 and 6.6, an overview is given of the advantages and disadvantages.

**Table 6.5:** Advantages of the CBA, MCA and PVE mentioned in the interviews

	Advantages	Grounded
CBA	Can partly cover broad welfare	4
	Distribution effects can be taken into account	3
MCA	Can cover qualitative effects	2
PVE	Wide range of interests	2

**Table 6.6:** Disadvantages of the CBA and MCA mentioned in the interviews

	Disadvantages	Grounded
CBA	Taken less seriously when obligatory	1
	Difficult to include broad effects	7
	Difficult to include future	3
	Private perspective	1
MCA	Meaning of results	2
	Underpinning weights	2

The CBA is widely used in transport decision making because it provides a structured and theoretically based approach to evaluating projects. [R4] pointed out that CBA can capture a wide range of impacts, including aspects of welfare and accessibility, especially at the national level. In addition, [R4] emphasised that CBA allows for the systematic weighing of different factors, helping policy makers to compare different impacts in a structured way. He argued that CBA should not be seen as an opposing framework to broad welfare evaluations, but rather as a complementary tool that ensures efficiency while allowing for additional considerations. [R3] also noted that CBA can help quantify the value of non-economic travel, such as social and active travel, which contributes to public health and welfare.

However, several interviewees highlighted important limitations of the CBA. A major concern is that it does not always capture the full range of social and long-term impacts. [R3] pointed out that CBA tends to focus on attracting new users, rather than considering how existing users benefit over time. For example, he explained that when evaluating improvements to wheelchair accessibility, CBAs tend to consider only the immediate economic benefits - such as increased employment opportunities for people with disabilities - while failing to consider the long-term benefits for all users, including those who may develop mobility impairments in the future. Similarly, [R4] and [R1] found that the CBA struggles to incorporate experiential aspects such as comfort, perceptions of safety and environmental impacts beyond national borders. Another challenge is that when CBA is mandatory, it can become a procedural requirement rather than a meaningful tool for decision-making. It was observed that policymakers sometimes treat CBA as a box-ticking exercise, leading to its results being overlooked. [R10] added that decision-makers often find CBA results incomplete because they exclude critical factors such as equity and wider welfare effects. [R10] also noted that while institutions such as CPB recommend monetising as many impacts as possible, some factors - such as biodiversity - are difficult to quantify due to a lack of research or methodological challenges. In addition, [R10] criticised the reliance on private willingness-to-pay measures in CBAs, arguing that they fail to capture collective societal preferences. Instead, he suggested the use of public willingness-to-pay measures, where people are asked about their support for tax increases to fund socially beneficial projects.

The MCA is also mentioned multiple times in the interviews. [R1] and [R5] emphasised that MCA is particularly useful for assessing aspects of broad welfare that are not easily quantifiable. Unlike CBA, which focuses primarily on monetary valuation, MCA allows for qualitative assessments by assigning values to different impacts, such as environmental quality, social inclusion and public health. This makes it possible to integrate different societal values into decision-making. [R4] also noted that MCA allows policy makers to systematically compare different factors, making it a valuable tool for balancing different policy objectives.

On the other hand, [R10] argued that a major weakness of MCA is that the weights used to compare different factors are often arbitrary and difficult to justify. Unlike CBA, which is based on established welfare theory, MCA lacks a clear theoretical foundation, making it difficult to interpret its results. He also emphasised that policymakers may find it difficult to understand what MCA results actually mean, as there is no standardised way of drawing conclusions from the method.

In contrast to these methods, the PVE offers an alternative approach by actively incorporating public preferences into decision-making. PVE has several advantages in transport decision-making, particularly in terms of legitimacy and inclusiveness. [R10] emphasised that PVE allows policy-makers to incorporate public preferences by gathering input from a broad and diverse group of citizens. This makes decision-making more transparent and helps to ensure that policy decisions are in line with societal values. He pointed out that in projects such as the Oude Lijn, PVE involved 7,500 participants, including young and old, residents, travellers and stakeholders with different interests. Such large-scale participation increases the democratic legitimacy of decisions and allows policy makers to better justify their choices. In addition, PVE enables the evaluation of social and accessibility aspects that are often overlooked in traditional evaluation methods. For example, [R10] noted that PVE can capture the perceived value of minimum accessibility levels and the inclusiveness of public transport for people with disabilities.

Furthermore, some other tools were mentioned by interviewees that can help to better include broad welfare aspects and impacts on social exclusion into decision-making. Frameworks such as the Verhees ladder, the STOMP principle and tools developed by TNO offer additional insights and approaches for assessing the social impact of mobility projects. An elaboration on these tools can be found in the boxes below.

#### Indicators for broad welfare and transport equity

Several indicators were mentioned in the interviews to measure equity in transport planning. These sets of indicators can help add social dimensions to decision-making that are overlooked by traditional tools such as CBA. First, TNO's 42 indicators were multiple times cited as a valuable toolkit for assessing accessibility and distributive impacts ([R2],[R4],[R9]). These indicators allow decision-makers to tailor evaluations to the local context and specific objectives of a project. [R2] noted that selecting contextually relevant indicators is key to keeping the evaluation comprehensive and feasible. Furthermore, [R3] indicated that the ten forms of TRSE can also be used for quantifying transport equity. It helps to identify which forms of exclusion (e.g. spatial, temporal, affordability) are relevant to a given project.

### STOMP and Ladder van Verhees

Respondents pointed to the STOMP principle (Walk, Bike, Public Transport, MaaS, Private Car) as a valuable framework for embedding equity in transport planning ([R5],[R9]). A similar approach is offered by the Ladder of Verhees, which proposes a stepwise logic for infrastructure planning. It begins by questioning whether travel demand can be avoided or shifted to more sustainable modes, and considers road expansion only as a final option ([R5]). Both frameworks encourage policymakers to prioritise sustainable and inclusive modes of transport before considering car infrastructure. This hierarchy supports the idea that access to mobility should first be ensured through universally accessible options, which aligns with the principle of mobility as a right.

The interviewees had different views on the impact of evaluation tools on decision-making. The codings can be found in Table 6.7.

**Table 6.7:** Effect evaluation codes and groundings

Code label	Grounded
Accessibility indicators for equity	2
Broad welfare indicators to uncover problems	1
Impact of CBA varies	7
Impact of evaluation instruments is substantial	5
IMA integral approach	3
Justification is very important	1
Policy compass allows for broad welfare	2
STOMP principle as a basis for equity	3
TRSE assigns value to trips	1
TRSE to uncover problems	2

Some interviewees emphasized their strong influence, while others noted that their impact is often overstated. Some interviewees highlighted the strong influence of evaluation tools. [R5] stated that these tools play a crucial role in decision making, and policymakers need to take them seriously. She mentioned that EIAs are always taken into account when selecting a preferred alternative, along with the achievement of objectives and the assessment of costs. [R10] gave concrete examples, stating that the PVE had a significant influence on the design of preferred alternatives in projects such as the Lelylijn and the Oude Lijn, where decisions on station area development were based on PVE results.

[R5] provided an example of a project where a negative CBA resulted in the decision not to proceed, as no alternative justification was accepted, and a more cost-effective solution was sought instead. However, she noted that decisions are sometimes made even when a CBA scores poorly, as long as there is a strong, well-founded justification emphasizing the project's additional social benefits. [R6] gave the example of the Amsterdam Zuidasdok project, a massive redevelopment costing around €2 billion, where political and strategic considerations outweighed the lack of a positive CBA. [R12] agreed with this view, noting that if a compelling case is made, for example, about the benefits for urban quality of life and housing development around stations, decision-makers are often willing to go ahead despite unfavourable assessments. This illustrates that while CBAs are influential, a well-supported argument for wider benefits, such as social impact, can sometimes change the decision. [R11] and [R12] indicate

that a CBA has no added value for peripheral areas because the projects there are often not large enough to carry out a CBA.

In conclusion, the evaluation methods and measurement tools used in transport decision-making play a crucial role in shaping policies and addressing equity. The interviews revealed varying opinions on the suitability and effectiveness of tools such as CBA, MCA, and PVE. The impact of these evaluation tools on decision-making varies. While some interviewees highlighted their strong influence, others noted that their impact can be overstated. Tools like EIAs are crucial in selecting preferred alternatives, and instruments like PVE have significantly influenced the design of projects. However, decisions do sometimes proceed despite negative evaluations if there is a compelling case for broad societal benefits.

### Role of stakeholders

In the decision-making process of transport projects, stakeholders play a pivotal role in shaping outcomes. To understand the influence and involvement of stakeholders, this subsection will delve into their roles, interests, and interactions within the context of transport decision-making. In Table 6.8, the codings associated with the role of stakeholders are shown. These are further discussed below.

**Table 6.8:** Stakeholder codes and groundings

Code label	Grounded
Equity is a government duty	2
Governors sensitive to broad welfare	2
Minister decisive in MIRT	2
Opinions of citizens underrepresented	2
Political support needed for policy action	3
Shifting policy objectives	2
Stakeholder support	3
Steering group with professional stakeholders	1

Stakeholders also play an important role in decision-making processes. The national government is seen as one of the most important stakeholders. [R2] highlighted that the national government is the investing party. In various interviews, it was mentioned that equity in transport is seen as a responsibility of the government ([R2],[R7],[R9],[R10]). [R8] said the state should ensure that even the poorest people with transport can do what we think a citizen should be able to do. [R10] said that citizens also expect the government to take responsibility for equity. Studies have shown that people value basic access to essential services, such as hospitals and general practitioners, much more than saving a few minutes on their commute. In addition to the national government, [R12] sees lower authorities, such as provinces and municipalities, as responsible for ensuring justice.

The importance of stakeholder support was emphasized by [R5], [R8] and [R6]. [R5] gave an example where, when two alternatives have the same impact, the one with the most support is chosen. She also noted that decision-makers are becoming increasingly sensitive to concepts like broad welfare and equity. Political support is seen as a crucial factor for successfully integrating equity into decision-making. [R11] and [R12] mentioned that the current cabinet shows more interest in regional issues, which is expected to help. [R12] noted that while policy over the past 25 years has been largely cost-oriented, there is now a shift toward reconsidering the importance of proximity to essential facilities. [R5] also observed this shift, stating: "I have witnessed a number of projects that have been running for a long time, where the objectives



initially focused very much on traffic flow. Over time, however, you now see that the objectives from the coalitions and politicians have shifted much more toward liveability and accessibility.”

Regarding the role of citizens, [R10] highlighted that efforts are improving, particularly through the Participatory Value Evaluation method, which allows for gathering people’s opinions in addition to traditional public consultation evenings. This evaluation method is shortly discussed in Subsection 6.1.3. [R2] expressed that, although there is much discussion about participation and including the citizen’s perspective, it still happens very infrequently in practice. She emphasized the need to better involve not only current travellers but also non-travellers and residents who might be affected by certain infrastructure decisions. According to [R2], citizens’ voices are crucial but remain challenging to properly represent in decision-making processes. While citizen involvement is increasingly being used in some cases, there are still many projects where it is not fully implemented.

#### 6.1.4. Barriers and challenges

Finally, it was asked what the interviewees see as the barriers to considering transport equity and decision making, and how these can be overcome. All interviewees recognised that there are barriers to including transport equity in decision-making processes. They identified a wide range of barriers, ranging from general to very specific. There were a number of barriers that emerged in several interviews. Those barriers are shown in Table 6.9.

**Table 6.9:** Problems and barriers identified in the interviews

Problems and barriers	Grounded
Complex subject, how to keep it simple	4
Definition of equity is unclear	6
Different perspectives	7
Difficult to quantify	6
Gap between policymaker and citizen	2
Lack of knowledge	3
Lack of cooperation between stakeholders	10
Support of stakeholders	7

One of the main obstacles is the lack of consistency and agreement on basic concepts such as ‘broad welfare’ and ‘transport equity’, which makes it difficult to integrate these considerations into transport policy. As [R5] put it, “it’s a vague concept”. [R2] remarked: “I think there is still quite a bit of confusion about what exactly we are talking about, because people have slightly different definitions and different perspectives or expectations of what it should be”. Similarly, [R1] suggested that “there is still no consensus on which, if any, ethical principles should be used. There is also no consensus on which indicators should be assessed”. Such a lack of consensus on how to define and operationalise equity tends to create challenges in incorporating equity into the decision-making process. The difficulty of encompassing both the quantitative and qualitative aspects was also pointed out. [R5] and [R7] suggested that it is difficult, and in some cases an exercise in futility, to monetise complicated social impacts.

The obstacle of different perspectives on equity is closely linked to the lack of a clear definition of transport equity. Without a universally accepted definition, individuals and stakeholders interpret transport equity through their own lenses, influenced by political and personal values. [R2] points to the confusion surrounding the concept of equity, noting that people have different definitions and expectations of what it should encompass. [R10] agrees that perspectives on equity differ from person to person, with some prioritising a basic minimum for all, oth-

ers focusing on equality of distribution, and still others valuing overall growth. [R4] and [R1] emphasise that equity is inherently linked to political ideologies, with different political parties weighing the importance of equity in different ways. These different views make it difficult to develop a consistent approach to integrating equity into transport planning.

The need for broad support is recognised, but a barrier exists in the fact that it is a topic that does not attract everyone. [R2] states, "Equity has a normative charge, and not everyone is eager to have a conversation about it or to think about it." [R3] adds that it may get lost among other objectives. [R1] expresses frustration that some people immediately set aside equity or broad welfare due to the lack of a solid theoretical foundation. He points out that it took decades to clarify the debate around the CBA. "So yes, it's unreasonable to expect a final position on broad welfare, or even just distributional effects, to be taken within two years," he concludes.

The issue of lack of integrated collaboration is highlighted by [R2], who argues that common definitions of broad welfare often focus too heavily on choices and trade-offs. However, the process of decision-making is heavily influenced by the information available, the people at the table, the perspective from which the data is viewed, and the approach taken in forming decisions. She believes that this aspect is underemphasised in the broad welfare debate. Therefore, [R2] stresses that, alongside elements such as time, areas, groups, and distributional effects, integrated working, participation, and fieldwork are also crucial. [R2] and [R10] highlight a gap between research and practice, noting that researchers are sometimes disconnected from real-world applications. [R2] emphasises the importance of researchers being actively involved in projects, offering advice and practical solutions, rather than just providing theoretical frameworks. [R10] also points to the need for continuous development to ensure that research results are useful for policy-making. [R2] also emphasises the importance of including citizens, as they are often underrepresented in the data, which predominantly reflects the business traveller moving from A to B, rather than a more diverse representation of the public's interests.

The lack of integrated collaboration is a significant issue in transport decision-making, as various interviewees point out. [R2] notes that current definitions of broad welfare often overlook who is involved in the decision-making process and how different perspectives are integrated. She stresses the importance of stakeholders working together in an inclusive way, considering not only technical factors but also social and equity issues that impact citizens. [R9] sees a gap in the cooperation between national and provincial levels. For example, the separation of investment decisions at the MIRT level and exploitation decisions made by concessionaires. [R12] sees that some progress is being made at integral working at the national level, but that the provincial and local governments are already working more integrally.

Another obstacle is the difficulty in quantifying equity, as several interviewees highlight. [R3] points out that many indicators used to assess accessibility may meet legal or technical requirements, but they often overlook the broad, qualitative aspects of the user experience. [R5] also acknowledges the challenge of quantifying broad concepts of welfare, especially when trying to measure social and economic impacts on communities. The difficulty lies in translating these complex, qualitative factors into tangible, measurable data. Similarly, [R7] and [R10] stress the pressure to express effects in financial terms, as that tends to be easier to evaluate and more persuasive for political decision-making. However, this approach does not work for some aspects of equity, that can't easily be reduced to numbers, such as the experiences of individuals or the long-term social impacts of transport decisions.



Finally, there are some obstacles that are only mentioned a few times, but which are worth to share. [R8] and [R7] think that transport equity is a complex topic and question how to keep this simple. [R2] offers the example that one can feel overwhelmed by the indicators of broad welfare. [R2] and [R10] note that there is still a lack of knowledge, as knowledge about equity and broad welfare is still developing. [R2] believes that this makes it difficult for smaller municipalities to work actively with broad welfare. [R2] and [R12] also see a lack of knowledge, but the other way around. They think that it is important that the national government also knows what happens in the regions. Both gave examples of inviting the minister to Zeeland to experience the limited accessibility themselves.

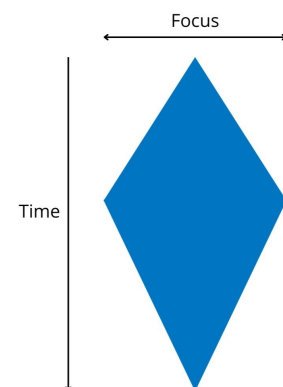
### 6.1.5. Possible solution directions for including transport equity in decision-making processes

Now that the interviewees have identified many problems, the next step is to look at possible solutions. The five most suggested solutions can be found in Table 6.10.

**Table 6.10:** Solutions proposed by the interviewees

Solution directions	Grounded
Distributive effects in CBA	7
General national approach	5
More integral cooperation	5
Tailoring per project	7
Use of commonly used tools	6

Several interviewees think that it is useful to work toward a general national approach ([R1],[R2],[R8],[R10]). [R8] indicates that if you want equity, you have to approach it at the national level. [R2] and [R10] would include it in existing guidelines, for example in the CBA and the Beleidskompas. The Beleidskompas acts as a framework for structuring and evaluating policy decisions across various domains, including transport. It provides a structured approach to decision-making. [R1] and [R2] believe that the implementation of a general national approach will take quite some time. [R1] explained this by making a comparison with a kite (Figure 6.2). The discussion begins with claims of unfairness supported by anecdotal evidence. This is followed by exploring all kinds of dimensions regarding the topic: "at the widest point, you want to map roughly the whole world. That becomes too much anyway, and then you narrow it down again". Ultimately, the aim is to balance comprehensiveness, communicability, and manageability. According to [R1], this process currently remains in the broadening phase.



**Figure 6.2:** Kite model

One of the identified barriers was the lack of cooperation between stakeholders. A solution proposed for this is the opposite: cooperate more integral. [R10] sees value in more cooperation between philosophers and more quantitative researchers within research institutes, consultancies and governmental bodies. She also stresses the importance of representing citizens. [R2] notes that data often represents the business traveller, which is not representative of all citizens and their different interests. [R3] argues that it is important to always listen to the users of the system so that their voices are not lost in the decision-making process.

Interviewees stress the importance of customisation on a project-by-project basis when applying indicators and assessing equity in transport decision-making. [R10] notes that equity considerations may differ from one decision to another. He argues that it is important to consider which forms of equity apply to each decision, and that this may vary from project to project. [R2] adds that it is not necessary to use all 42 indicators, that have been developed for broad welfare, for every project. [R1] and [R7] support the idea of tailoring, pointing to stakeholder preferences and the specific impacts that are important from a broad welfare perspective.

The interviewees gave also their thoughts on the use of commonly used tools in transport decision making. [R2] thinks it is useful to link to common tools that are already known and widely used. She says that this can help in the consideration of equity in decision making as she points out that policy makers often have little time to learn about new concepts and therefore need practical and immediately applicable support. [R1] and [R4] suggested that quantitative and qualitative approaches can be used complementary, such as the MCA and CBA. They argue that these methods can be used together to provide a more comprehensive assessment. [R1] and [R9] suggest that equity can be added as an additional layer to existing evaluation tools. [R9] proposes using equity as a 'check' within existing modality hierarchies like STOMP: "STOMP with a halo of equity".

Some interviewees agreed that the possibilities of the CBA should be better used, in particular including distributional effects within the CBA. [R4] points out that the CBA guidelines already allow for the identification of who benefits or suffers from a project, but that there was no interest in it up til a few years ago. [R1], [R7] and [R10]s advocate for a more comprehensive CBA that includes equity aspects. [R1] further explains that CBA, which typically focuses on direct benefits like travel time savings, can be enriched by incorporating broad welfare measures, such as access to jobs, hospitals, and schools. Although these measures are not yet fully integrated due to valuation challenges, they can complement the CBA. [R7] said that soon new CBA guidelines will be presented in which broad welfare and indirect equity a larger role play.

## 6.2. Conclusion

The findings from the expert interviews highlight the growing recognition of equity as an important aspect of transport planning. However, despite this increasing attention, stakeholders expressed varied views on its definition and practical implementation. Transport equity is seen as a multifaceted concept, interpreted differently by various stakeholders, ranging from ensuring minimum access for all to considering broad welfare impacts. This chapter aimed to answer the fourth sub-question: *What are the opportunities and challenges of including equity factors in the current decision-making process for public transport projects in the Netherlands?*.

The practical challenges associated with transport equity were explored, highlighting the stages of decision-making where equity can be considered. Most interviewees emphasized the importance of addressing equity early in the process, during problem identification and formulating project objectives. However, equity can also be considered when detailing the preferred alternative and throughout the entire project lifecycle.

Evaluation methods and tools play a crucial role in shaping transport policies. The interviews revealed varying opinions on the suitability and effectiveness of tools such as the CBA, MCA and PVE. While CBA is widely used for its structured approach, it struggles to capture broad social and long-term impacts. MCA allows for qualitative assessments but lacks a clear theoretical foundation, making its results difficult to interpret. PVE offers a more inclusive approach

by incorporating public preferences, thereby enhancing democratic legitimacy. Despite the strong influence of these evaluation tools, their impact on decision-making varies. While some interviewees highlighted their significant influence, others noted that their impact is often overstated and that factors such as power and personal interests also have a substantial influence.

The role of stakeholders is pivotal in the decision-making process of transport projects. The national government is seen as a key player, responsible for ensuring equity in transport, including providing basic access to essential services. Lower authorities like provinces and municipalities also play a role in ensuring justice. Stakeholder support is crucial for integrating equity into decision-making, as well as political backing. Recently a shift is seen to a focus on liveability and accessibility.

The interviews identified several barriers to including transport equity in decision-making processes. These include the lack of consistency and agreement on basic concepts, the complexity of quantifying equity, different perspectives influenced by political and personal values, and the need for broad stakeholder support. The difficulty in encompassing both quantitative and qualitative aspects further complicates the integration of equity into transport planning.

Several potential solutions were suggested to address these barriers. These include incorporating distributive effects in CBAs, adopting a general national approach, fostering more integral cooperation among stakeholders, tailoring equity considerations on a project-by-project basis, and utilizing commonly used tools in transport decision-making. The implementation of a general national approach will take time, but it is seen as useful for ensuring a consistent and comprehensive inclusion of equity in decision making. The interviewees also highlighted the importance of integrated collaboration among stakeholders, including the representation of citizens' voices. Customisation on a project-by-project basis allows for the consideration of relevant forms of equity and specific impacts. The use of existing tools, such as quantitative and qualitative approaches, can complement each other and provide a more comprehensive assessment.

Insights from the interviews provide valuable entry points for further improvement. In the following chapter the identified challenges and opportunities of the interviews are combined with the findings of the literature.

# 7

## Interpretation and implications

This chapter analyses and interprets the results of the literature review, interviews, and policy document analysis to understand how transport equity is addressed within the Dutch decision-making process. Section 7.1 presents the main findings, highlighting patterns and tensions that emerge from the different sources. Particular attention is given to how insights from interviews align with or diverge from existing literature and official planning frameworks. Building on this analysis, the chapter proposes in Section 7.2 a strategy for more systematically including transport equity in the planning and decision-making process for public transport projects.

### 7.1. Findings

Table 7.1 presents an overview of the key complexities to transport equity identified through interviews, literature review, and policy document analysis. Each of these challenges will be examined in detail in this Section. First, the finding is presented. Then, the findings are examined to see if they are consistent with the literature, policy documents and stakeholder analysis.

**Table 7.1:** Complexities identified in literature and interviews

Complexities	Source
There is no consensus on the definition of transport equity, making it difficult to consistently consider.	Literature and interviews
Different perspectives and political ideologies influence the interest and sense of urgency on transport equity, leading to inconsistency in policy and decision-making.	Interviews
There is a need for early consideration of equity in the decision-making process	Interviews
Cooperation between different levels of government and different stakeholders is complex.	Policy documents and interviews
There is a lack of knowledge and expertise regarding transport equity and broader welfare	Interviews
It is difficult to measure and monetise transport equity aspects.	Literature and interviews
Financial barriers reinforce inequality in project selection	Interviews
Broad welfare and transport equity are becoming overly broad and difficult to operationalise.	Interviews
Discussing transport equity is prioritised over implementing it in practice	Literature review

*There is no consensus on the definition of equity in transport, which makes it difficult to consistently include in evaluation methods.*

The first challenge in including transport equity in decision-making processes is the lack of consensus on its definition. Transport equity is a multifaceted concept that encompasses fairness in access to transport, affordability and distribution of transport benefits. However, there is no universally agreed definition, either in the literature or in policy documents. Different perspectives on transport equity range from abstract, philosophical approaches to more practical approaches focusing on accessibility and tackling transport poverty.

This lack of a standardised definition makes it difficult to debate about this topic consistently incorporate transport equity into evaluation frameworks, which are essential for assessing the fairness and effectiveness of transport projects. As a result, transport projects may overlook or inadequately address equity concerns, leading to potential inequalities in access and benefits. Furthermore, different interpretations of what constitutes equity can lead to inconsistencies in policy implementation, where certain projects may be prioritised over others despite not fully addressing the needs of all affected communities.

*Different perspectives and political ideologies influence the interest and sense of urgency on transport equity, leading to inconsistency in policy and decision-making.*

This obstacle arose in the interviews but was not found in the literature and policy document review. The significance of transport equity often varies depending on the political and institutional backgrounds of policymakers and stakeholders. Some policymakers may emphasize economic efficiency, while others prioritise social inclusion or environmental sustainability. These differing priorities influence how urgently transport equity is perceived and whether it is included in policy decisions. In the Netherlands, for instance, attention to fair distribution in transport and mobility has increased, but there is no guarantee that this focus will be sustained in the long term. An extreme example of such a drastic policy shift can be seen in the USA, where the current president has explicitly rejected concepts like equity, inclusion and accessibility, even prohibiting the term within national government discourse. This highlights how political ideologies can directly influence whether concepts of fairness and equity are embraced or discarded in policy discussions. Without strong political backing, policies aimed at addressing transport equity may lack the necessary funding, attention, or enforcement mechanisms to be effective. This could result in persistent disparities in access to transport, particularly for vulnerable and marginalized communities. Furthermore, without political will, initiatives focused on equity may be sidelined in favor of other priorities, such as economic growth or large-scale infrastructure projects.

*There is a need for early consideration of equity in the decision-making process.*

An essential step in ensuring that transport equity is effectively integrated into decision-making is to consider equity issues at the earliest stages of project development. Transport equity should be prioritised as early as possible, particularly in the early stages as outlined in the MIRT. This approach is consistent with the policy document analysis, which suggests that transport equity needs to be considered before preference decisions are made in order to influence project outcomes. In the IMA, there is also room for improvement. The IMA is frequently criticised for focusing too much on macro-level analysis, neglecting specific regional or local issues. If equity is considered too late in the process, decisions are more likely to overlook or inadequately address the specific needs of marginalised or underserved groups. This can result in infrastructure projects that do not provide equitable access or support for these communities.

*Cooperation between different levels of government and different stakeholders is complex.*

Effective decision-making requires coordination between local, regional and national governments and other key stakeholders, each with their own priorities and remits. Stakeholder interviews revealed that peripheral regions, in particular, sometimes feel unheard and misunderstood, despite the national government's claims to be actively working towards broad welfare and including equity in its policies. This discrepancy highlights a common tension where different levels of government may have different perspectives on what equity should look like and how it should be achieved. The policy document review and stakeholder analysis also highlight the complexity of coordinating efforts across multiple actors. With many stakeholders with different interests and powers, collaboration can often be difficult, leading to fragmented decision-making processes. These complexities make it difficult to implement a holistic approach to transport equity. For example, local government priorities may not always be in line with the broader, national objectives set by central government. As a result, conflicting policies and misaligned actions can undermine efforts to create an equitable transport system, particularly in regions that feel neglected in the broader planning process.

*There is a lack of knowledge and expertise regarding transport equity and broader welfare.*

A significant barrier to effectively addressing transport equity is the lack of knowledge and expertise among many policymakers and stakeholders about its complexity and broader social welfare implications. While knowledge of broad welfare issues, including transport equity, is increasing - particularly through organisations such as KiM and TNO - not everyone has access to this information. Smaller municipalities in particular often struggle with this challenge as they lack the capacity to acquire the necessary knowledge and expertise. This knowledge gap makes it difficult for these municipalities to fully understand the nuances of transport equity and incorporate it into their planning processes.

The lack of sufficient knowledge and expertise on transport equity can prevent decision-makers from adequately considering equity and fairness in the planning and implementation of transport policies. To address this issue, it is useful to invest in training programmes aimed at raising awareness and increasing expertise on transport equity within relevant institutions. These efforts should focus on equipping policy makers, particularly at the local level, with the tools and knowledge necessary to integrate equity considerations into their decision-making processes. Supporting research on best practices and evidence-based solutions for integrating transport equity into policy-making is also essential. Involving experts from different disciplines - such as economics, social sciences and urban planning - can help ensure that transport equity is fully understood and integrated into decisions.

*It is difficult to measure and monetise transport equity aspects.*

A major challenge in integrating transport equity into decision-making is the difficulty in both measuring and monetising its qualitative aspects. According to both the literature and interviews, elements such as social inclusion, the psychological benefits of improved accessibility and the overall sense of fairness within a community are inherently qualitative and not easily captured by traditional data metrics, which tend to focus on more quantifiable factors such as travel times, costs or infrastructure availability. These aspects are critical to understanding the true impact of transport systems on different populations, but are often overlooked in evaluations. Monetising these equity factors for CBA is another challenge. This issue is well documented in the existing literature, which notes that while traditional CBAs focus on measurable economic impacts, they often fail to capture the social and equity benefits that are critical to assessing the true value of a transport project. The inability to translate these equity factors into monetary terms leads to their undervaluation or exclusion from formal evaluations.

*Financial barriers increase inequality in project selection.*

Financial constraints present a significant challenge for local governments in securing funding for transport projects. It was mentioned during the interviews that while provinces receive funding from the national government, the co-financing required to access these funds is sometimes too high for some municipalities to afford. This financial burden can particularly affect smaller or financially weaker municipalities, which may struggle to meet the required contribution because of, for example, lower population densities and less economic activity. As a result, projects may be delayed, scaled back, or even cancelled. This creates an unequal distribution of transport infrastructure, increasing social exclusion and limiting access to essential services for vulnerable groups.

To address these issues, several solutions could be considered. One approach would be to lower the required co-financing, particularly for smaller municipalities or those with limited financial resources, making it easier for them to access national subsidies. Collaborative co-financing between municipalities for shared projects could also help distribute the financial load more evenly. Additionally, spreading the costs of projects over a longer period, or breaking them down into phases, would reduce the immediate financial pressure on local authorities. By implementing these solutions, financial barriers can be lowered, allowing more municipalities to benefit from transport funding.

*Broad welfare and transport equity are becoming too broad and difficult to operationalise.*

Expanding the concept of broad welfare and transport equity is beneficial in that it clarifies the different aspects at play. On the other hand, it makes it difficult to maintain clarity and focus. To demonstrate, TNO has already developed more than forty indicators solely for broad welfare in the mobility domain. This sheer number of indicators makes it difficult to maintain clarity and focus. Without clear guidelines, policymakers risk being overwhelmed by the variety of indicators and potentially losing sight of the key factors. The implication of this is that policymakers may get lost in choosing the right indicators or fail to address the most pressing or impactful issues. Without a clear framework, policymakers risk spending considerable time and resources collecting data on a wide range of indicators, some of which may not ultimately have a significant impact on project outcomes. This could lead to delays, inefficiencies and possibly even contradictory policies.

To address this complexity, the development of tailored decision frameworks is crucial. These frameworks would allow policy makers to prioritise the most relevant indicators based on the specific context of each project. Solutions could include adopting a set of core indicators that are universally applicable and adaptable to local contexts, or using a tiered approach where projects are assessed according to their scale and specific objectives. For example, a project in a large city might prioritise environmental sustainability, while a project in a rural area might focus more on social inclusion. By clarifying the key factors at play in each situation, decision-makers would have better guidance on how to balance competing objectives.

*Discussing transport equity is prioritised over implementing it in practice.*

Transport equity is a concept that is more and more discussed in policy debates, while, its practical implementation is not often demonstrated. Some of the interviewees noted that the term broad welfare nowadays is sometimes employed to promote a service, but without providing a comprehensive explanation of its meaning. The literature review indicated a clear interest in transport equity, although its practical implementation remains to be seen. The real challenge is not to raise awareness, but to translate these ambitions into workable frameworks and tools. This gap between rhetoric and practice undermines the effectiveness of transport equity policies, as they remain at an abstract level without clear, enforceable guidelines or methods of

evaluation. The main implication here is that the gap between rhetoric and practical action could lead to policies that sound good in theory but have no measurable or impactful results.

One potential solution lies in developing detailed, actionable frameworks that allow transport equity goals to be defined, measured and tracked. These frameworks could include specific benchmarks for service coverage, affordability and quality, with clear guidelines for achieving them. In addition, effective communication about the concrete steps to implement equity - rather than just discussing the concept - could help build trust and ensure accountability for achieving real results. In addition, governments could develop pilot projects that demonstrate the practical benefits of transport equity initiatives before attempting wider implementation.

## 7.2. Strategy

This section proposes a long-term strategy for achieving a national transport equity framework. It appeared from the interviews and literature review that developing a national framework for transport equity would be useful and it was indicated in the interviews that the national government should take the lead. A general framework would ensure that equity is approached in a consistent and structured way, regardless of the region or specific project. This will provide all levels of government with a basis for decision making and contribute to a more consistent and responsible application of equity in transport policy. At the same time, there should be room for local adaptation, so that the guidelines can be tailored to the specific needs and circumstances of different regions. As circumstances can vary greatly between different regions, projects and target groups, a 'one-size-fits-all' approach is often ineffective. Developing flexible indicators that can be adapted on a project-by-project basis allows policymakers to better address equity based on local and context-specific needs. Involving regional governments and knowledge institutions in the process of developing these guidelines can enhance the effectiveness and applicability of the national framework. The strategy proposed is shown in Figure 7.1 and will be further elaborated on in this Section.

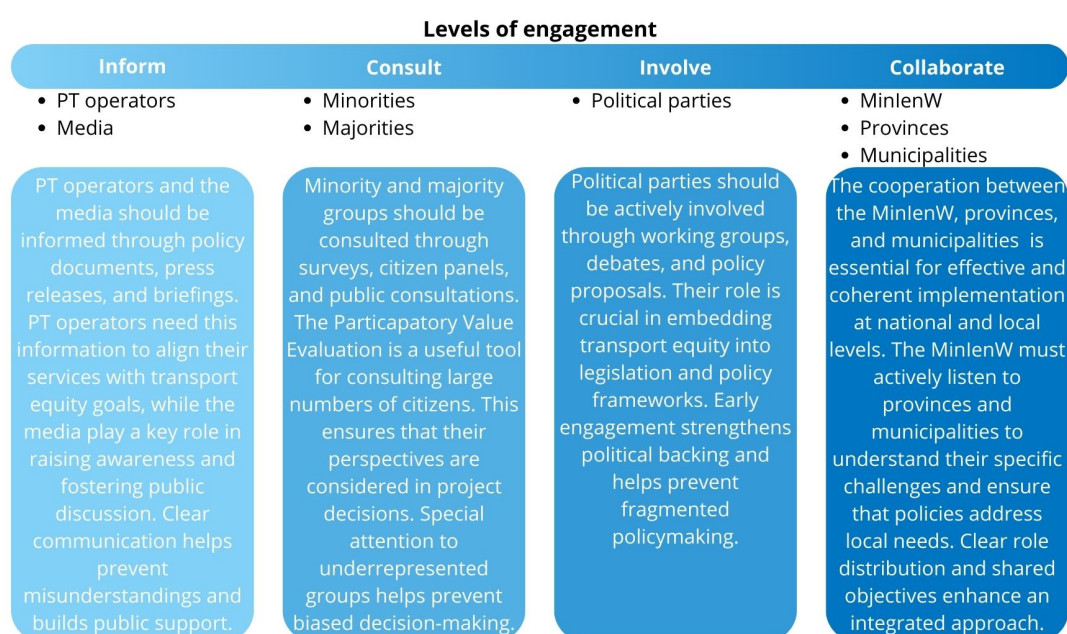
	Who?	When?	How?
Understand the needs of the citizens	MinlenW, provinces, municipalities, citizens,	Short term	Conduct PVE, interviews, focus groups, citizen panels, and local consultations; compare findings to perceived/measured accessibility
Develop a clear definition of transport equity	Government, academics, stakeholders, residents	Short term	Organise workshops, dialogue sessions, interviews, focus groups, and public consultations
Create broad political support	Political parties, media, interest groups, MinlenW	Short term	Awareness-raising campaigns, link equity to wider policy goals (e.g. sustainability), engage political leaders, provincial lobbying
Divide responsibilities	MinlenW, provinces, municipalities, academics	Short term	Establish an interdepartmental working group, define roles, and hold regular coordination meetings
Refine evaluation methods	Academics, MinlenW	Medium - long term	Revise and test CBA, combine with MCA/PVE, develop equity indicators with academics and pilot them in real projects
Adapt MIRT process	MinlenW, provinces	Long term	Develop MIRT-specific guidelines on equity, embed them in each planning phase
Embed equity in funding mechanisms	MinlenW, Ministry of Finance, provinces, municipalities	Long term	Integrate equity criteria into budgeting, adjust co-financing rules, and create dedicated funds/subsidies for inclusive transport projects

**Figure 7.1:** Long-term strategy for achieving a national transport equity framework



### *Understand the needs of the citizens.*

Understanding the mobility needs of citizens is the first step: effective action cannot be taken without first identifying the challenges faced in peripheral regions and ensuring that a broader range of perspectives and needs are taken into account. This should be prioritised in the short term. The Ministry of Infrastructure and Water Management, provinces, municipalities, and representatives of both majority and minority groups should collaborate closely. Participatory methods such as PVE, focus groups, interviews, and citizen panels should be employed to collect insights. These should then be compared against both perceived and measured accessibility, to create a multidimensional understanding of mobility needs across regions and population groups. This helps policy makers to better understand how different groups perceive the impacts of transport projects and what their priorities are. This ensures that policies are better aligned with the real needs of society and that the impact of decisions is more widely supported. In Figure 7.2, an overview of how to engage the stakeholders more actively is provided.



**Figure 7.2:** Engagement of the stakeholders

### *Develop a clear definition of transport equity.*

Creating a clear and supported definition of transport equity is crucial for ensuring that all parties involved in transportation planning have a common understanding and goal. Without it, policy discussions risk remaining abstract. It also serves as a reference point to evaluate whether project goals are being met later. This definition should be developed collaboratively, involving government officials, academics, stakeholders, and citizens. Each group brings valuable insights and expertise essential for creating a supported definition.

Addressing this task in the short to medium term is important, as a well-defined concept of transport equity will enable the selection of appropriate evaluation methods and guide the development of effective policies and projects. Moreover, this conceptual ambiguity complicates conversations about considering transport equity in decision-making. When people do not understand each other well, communication takes place at a parallel level, making it more challenging to include it effectively in decision-making. The definition should address various

dimensions of equity, such as distributive (who gets what) and procedural (who is involved), while also remaining specific enough to inform practical policy tools and frameworks. Collaboration is key to developing a supported definition. Combining knowledge from academic research with practical experience from government practice will create a comprehensive and actionable definition.

*Create broad political support.*

Generating broad political support for equity in transport is essential and this should take place in the short term, given the need for political support to move forward. This can be achieved by framing transport equity as a fundamental part of broader policy objectives such as sustainability, economic growth and social inclusion. Awareness-raising campaigns demonstrating the positive impact of equitable transport systems can build public support and contribute to the political will to support these initiatives in the long term. Public support can be leveraged through awareness campaigns that showcase the positive impacts of equitable transportation, ultimately helping to create the political will necessary to sustain these initiatives over time.

*Divide responsibilities.*

Transport equity exists between several governmental layers, which can lead to institutional ambiguity. Although interest exists, no single party is responsible for acting, creating a risk of passivity. A clear division of roles is essential to translate intention into action. Secondly, in order to develop an effective and supported definition and evaluation methodology, it is necessary to establish a preliminary division of tasks at an early stage. This will ensure that the right parties are involved and that there is a clear structure for working together.

An approach could be to establish a working group responsible for coordinating and implementing the inclusion of transport equity in decision-making. This group should define clear roles and responsibilities across ministries, regional bodies, and municipalities. Regular coordination meetings will ensure that all actors remain aligned and informed, while also creating a feedback loop between national strategy and local implementation. The Ministry of Infrastructure and Water Management should take the lead and should invite, among others, provinces and municipalities. They can establish clear roles and responsibilities for each level of government to ensure that there is no ambiguity about who is responsible for which aspects of transport equity.

*Refine evaluation methods.*

Recent additions to the CBA guidelines already provide scope for better considering the distributive effects of transport projects. Further refinement of these analyses can help policymakers to consider a wider range of impacts when evaluating transport projects, and to balance economic efficiency and social equity more effectively. Promoting the use of distributive impact indicators within CBA can ensure that decisions better reflect the diverse interests of different social groups and that policies become more equitable and just. Another option is to combine the CBA and the MCA. While CBA focuses on the costs and benefits of a project, MCA can assess additional social and environmental criteria that are often outside the scope of traditional CBA. To achieve these refinements, collaboration between academics and government is essential. In the medium to long term, the Ministry of Infrastructure and Water Management should collaborate with academic experts and knowledge institutions to update these methodologies. Existing tools such as CBA should be revised to integrate social and qualitative factors, while complementary tools like MCA and PVE can be deployed for broader public engagement and deeper insight into non-monetised effects. Pilot projects can serve as experimental grounds for these revised frameworks, allowing for gradual refinement before nationwide implementation.

### Adapt the MIRT process.

Once definitions are clear, evaluation methods are refined, and broad political support is established, the next step is to adapt the decision-making process to include transport equity. This involves revising the MIRT guidelines to ensure that equity considerations are embedded throughout project selection, planning, and implementation. It will probably take a long time before this becomes standard, as the previous steps will require significant time and effort. A first idea for moments for equity considerations in the MIRT process is shown in Figure 7.3. By integrating equity concerns at an early stage, the planning process can result in more inclusive projects that better reflect the needs of all affected populations. In addition, evaluation criteria should be regularly reviewed and adjusted to ensure that these considerations are consistently integrated throughout the decision-making process.

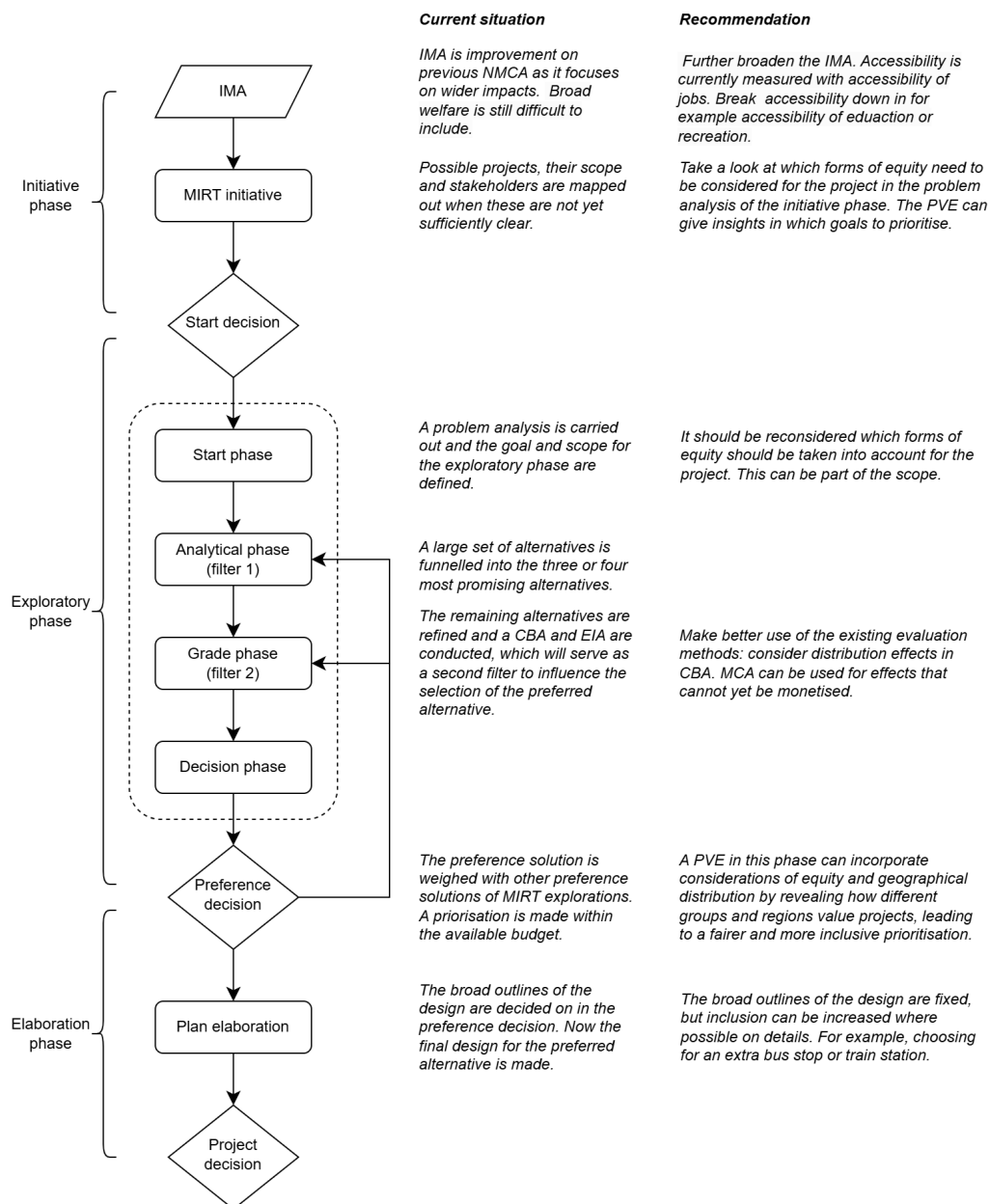
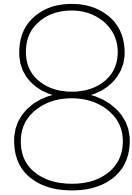


Figure 7.3: MIRT steps with transport equity included

*Embed equity in funding mechanisms.*

A notable finding is that smaller or rural municipalities, particularly in peripheral regions, struggle with the co-financing requirements often attached to national or provincial transport subsidies. This results in a self-reinforcing cycle of underinvestment in the areas that most need support. Without dedicated financial mechanisms, efforts to advance transport equity may remain aspirational.

In the long term, the Ministry of Infrastructure and Water Management and the Ministry of Finance must work together to revise how funding is allocated. Some solution directions were already mentioned. For example, to lower the required co-financing, particularly for smaller municipalities or those with limited financial resources.



## Conclusions, discussion and recommendations

The goal of this thesis was to answer the main research-question: *how can transport equity be included in the decision-making process of transport projects in sparsely populated areas in the Netherlands?* In this chapter, the conclusions of the thesis are drawn by first answering the sub-questions and then the main research-question. The conclusions are followed by the discussion in Section 8.1 and recommendations for science and practice in Section 8.2.

*What concepts and frameworks of equity in decision-making are already established in the literature?*

The literature on equity in transport planning decision making encompasses a variety of concepts and frameworks. Equity involves the distribution of benefits and costs in a way that is perceived to be fair to different social groups. Perceived accessibility adds a subjective layer to transport equity, highlighting the importance of individual experiences and social factors in determining how accessible transport systems feel to different groups. Measuring transport equity involves identifying benefits and burdens and assessing their distribution across population groups. However, the assessment of broader social outcomes such as economic participation, well-being and quality of life remains underdeveloped due to their subjective nature. Frameworks for integrating transport equity into decision-making suggest integrating economic impact assessment with equity analysis. Despite theoretical developments, practical applications in mainstream transport planning remain limited, highlighting the need for standardized methods to comprehensively assess equity in transport projects.

*To what extent and at which stages of the policy process is transport equity considered and what factors hinder its consideration?*

Currently, transport equity has not been extensively considered into decision-making in the Netherlands. Although, in the mobility fund and IMA, some broad welfare aspects are considered. Funding allocation through the mobility fund includes aspects of equity by evaluating policy requests based on their contribution to overall well-being. Opportunities to address equity exist at various stages, especially in the initial identification, agenda-setting, and exploration phases of the MIRT and IMA processes. However, several factors limit attention to transport equity. The IMA's reliance on macro-level indicators often overlooks local mobility issues, reducing flexibility and contributing to inequities. The focus on congestion and traffic metrics for subsidy allocation hinders the prioritization of equitable and sustainable solutions. The rigid, market-driven approach of infrastructure funding favours projects with immediate economic benefits, creating inequalities in mobility where well-connected areas benefit most

while remote and economically weaker regions receive insufficient attention. Additionally, political bargaining and informal power dynamics significantly influence project selection, undermining objective criteria and equitable planning.

*In what ways do stakeholders, their interests and relationships affect the inclusion of transport equity in transport project decision-making?*

Stakeholders influence the inclusion of transport equity in decision-making through their varying levels of power, interest, and interconnected relationships. Government bodies like the Ministry of Infrastructure and Water Management, provinces, and municipalities hold the most influence due to their control over funding and policy, making their support essential for equity integration. Political parties shape the policy agenda but vary in their commitment to equity based on ideology. Citizens, particularly minority groups, have strong interests in equitable transport but limited power, requiring deliberate inclusion through participatory processes. Majorities, while more influential, need clear communication to build broader support. The relationships between these actors create a complex decision-making environment because of interdependencies and competing interests. Understanding and managing these dynamics is key to effectively embedding equity in transport planning.

*What are the opportunities and challenges of including equity factors in the current decision-making process for transport projects in the Netherlands?*

There is a growing recognition of equity and broad welfare in the Netherlands, as seen in national frameworks such as the National Mobility Vision and provincial agendas. This creates opportunities to move towards more inclusive and socially just transport systems. There is momentum: equity is on the agenda. However, moving from intention to implementation is one of the most challenging aspects.

A key challenge is the lack of a standard definition of transport equity. Without conceptual clarity, it is almost impossible to incorporate equity consistently into planning tools or evaluation frameworks. In addition, the term broad welfare is becoming so wide that it risks becoming meaningless in practice. Another issue worth mentioning is that although co-financing promotes shared responsibility, more peripheral municipalities sometimes cannot afford the required contributions. As a result, projects that could improve access for underserved populations do not get off the ground. In addition, the complexity of measuring qualitative equity dimensions, such as social inclusion or perceived accessibility, makes them difficult to translate into traditional evaluation frameworks such as CBA. Although the Dutch guidelines now allow for distributional effects, monetising equity benefits remains weak and risks marginalising the aspects that equity seeks to address. Lastly, fragmented coordination across levels of government and a lack of knowledge, especially in smaller communities, are further barriers. Equity requires collaboration and local knowledge, but those closest to the challenges do not yet have the tools or resources to respond.

This leads to answering the main research question of this thesis, namely:

***How can transport equity be included in the decision-making process of transport projects in sparsely populated areas in the Netherlands?***

This thesis demonstrated that including transport equity in decision-making is feasible and necessary, presuming that it is approached systematically and with political will. Based on this research, a clear and actionable strategy was developed to embed equity more structurally in the planning and execution of transport projects, particularly in sparsely populated regions.

This research led to a concrete strategy (see Figure 8.1):

- **Understand citizens' needs** through inclusive engagement so that decisions reflect the diverse experiences and priorities of communities.
- **Develop a shared definition of transport equity** with input from policy makers, academics, stakeholders and citizens through participatory methods such as PVE.
- **Create broad political support** by aligning transport equity with wider societal goals and raising public awareness of its benefits.
- **Clarify responsibilities** at all levels of government through early coordination and establishing a coordination group.
- **Improve assessment tools** by refining the use of CBA or combining CBA with MCA to incorporate social impacts better.
- **Adapt decision-making procedures**, specifically the MIRT process, to embed equity from the start and make it a structural part of all phases of transport project development.
- **Adjust funding mechanisms** so that small or financially weaker municipalities can access state funding without being held back by unrealistic co-financing requirements.

	Who?	When?	How?
Understand the needs of the citizens	MinlenW, provinces, municipalities, citizens,	Short term	Conduct PVE, interviews, focus groups, citizen panels, and local consultations; compare findings to perceived/measured accessibility
Develop a clear definition of transport equity	Government, academics, stakeholders, residents	Short term	Organise workshops, dialogue sessions, interviews, focus groups, and public consultations
Create broad political support	Political parties, media, interest groups, MinlenW	Short term	Awareness-raising campaigns, link equity to wider policy goals (e.g. sustainability), engage political leaders, provincial lobbying
Divide responsibilities	MinlenW, provinces, municipalities, academics	Short term	Establish an interdepartmental working group, define roles, and hold regular coordination meetings
Refine evaluation methods	Academics, MinlenW	Medium - long term	Revise and test CBA, combine with MCA/PVE, develop equity indicators with academics and pilot them in real projects
Adapt MIRT process	MinlenW, provinces	Long term	Develop MIRT-specific guidelines on equity, embed them in each planning phase
Embed equity in funding mechanisms	MinlenW, Ministry of Finance, provinces, municipalities	Long term	Integrate equity criteria into budgeting, adjust co-financing rules, and create dedicated funds/subsidies for inclusive transport projects

**Figure 8.1:** Long-term strategy for achieving a national transport equity framework

This research also identifies several talking points that deserve further attention. This strategy provides an initial framework. Full consideration of equity in transport decision-making will take time. At present, the issue is still in an exploratory phase, with the main focus being on broadening and deepening the knowledge base. Eventually, this knowledge will consolidate to allow for a more coherent and practical consideration. Second, timing is important: equity needs to be addressed at the earliest stages, ideally at the IMA stage where bottlenecks can be identified. To conclude, meaningful consideration of transport equity requires more than good intentions. It requires political will, courage, clear definitions, institutional alignment, and a willingness to rethink existing instruments and funding models. By following these steps, decision-makers can move beyond abstract ambitions and improve the transport system to meet all communities' needs, whether rural or urban, minority or majority.

## 8.1. Discussion

As one of the interviewees noted in the interview: “I really like what you’re doing, but don’t expect you’re going to find the final answers. We could put a lot of students on a small piece of this topic and even then there would still be a lot to explore.” This interviewee was absolutely right. The research gaps on transport equity and decision-making are certainly not all filled, but some insight has been gained into how this subject is viewed in the Netherlands by policymakers, consultants and scientists.

An important nuance emerging from this research is that full equity in accessibility may not be realistic or even desirable everywhere. While striving for equal access remains a legitimate goal, a one-size-fits-all approach could misallocate resources or result in infrastructure that fails to match local needs. Some degree of variation in accessibility is justified, provided it does not lead to systemic or structural exclusion. Instead of uniform connectivity, decision-makers should pursue differentiated strategies tailored to regional contexts. Urban regions might benefit from high-frequency, high-capacity networks, whereas rural areas might prioritise demand-responsive or flexible services. A long-term vision on what kind of national spatial structure we aim for should guide this differentiation, balancing transport equity with strategic efficiency.

Moreover, although this study focuses on the Netherlands, the issues it touches upon, uneven accessibility, fragmented governance, and vague equity frameworks, are not unique. Other countries, e.g. in the European Union and the UK, face similar challenges in peripheral areas. However, decision-making frameworks vary, and replicating this research abroad would require adjustments to methods and interview strategies. Still, tools like CBA, MCA, and potentially even PVE have international relevance.

The findings of this thesis are generalisable to other forms of exclusion. However, the interviews focused on geographical exclusion, so interviews covering other forms of exclusion may yield different answers. For example, suitable moments in the decision-making process to consider a form of exclusion. For geographical exclusion, the conclusion is that this should be done as early as possible, preferably in the IMA for MIRT. For example, for digital exclusion, it may be more appropriate to look at a later stage, as digital exclusion often has more to do with the availability of technology and digital skills, which can be addressed later in the process, for example during the implementation phase of new mobility services. Digital exclusion can often be addressed through targeted measures such as training or the provision of alternative access methods, which do not directly affect the initial choice of infrastructure.

That said, this thesis provides a broad view of the decision-making process but stops short of examining deeper normative questions. It does not assess which ethical principle, such as utilitarianism or egalitarianism, should guide transport equity decisions, nor does it recommend specific indicators for measuring equity outcomes. These aspects deserve further attention in future research.

### 8.1.1. Limitations of research

This research has some limitations, largely due to the time and resources available. There are also some limitations to the method used: semi-structured interviews. The limitations are on the one hand the number of interviews and on the other hand the biases that can occur with this type of method. In the end, 11 interviews were conducted for this thesis, with a total of 13 participants. This is not a very large number of interviewees and in addition, the interviews did not reach saturation in terms of new information. This means that it is likely that there are



still aspects relevant to this study that have not been discussed. It would have been better to conduct more interviews, because the more respondents, the more reliable the conclusions. In terms of time, however, this was not possible. Not only does it take time to conduct the interviews, but also to process them. In addition, qualitative interviews collect a lot of information, which can lead to a loss of overview. While not exhaustive, this thesis nonetheless offers a valuable initial insight into the perceptions on transport equity and decision-making processes of Dutch policymakers, consultants, and academics.

The interviews were conducted with a fairly diverse group of people. Of the 13 interviewees, 5 were from a knowledge institute, 3 from a consultancy firm and 4 from governmental bodies. The group could have been more diverse. For example, the government interviewees came from the Ministry of Infrastructure and Water Management and the Province of Zeeland. This could have been made more diverse by interviewing another province or municipality. There is also a certain bias in that the people interviewed all had some interest in the topic. Otherwise they would not have participated. Nevertheless, not everyone was enthusiastic about the usefulness of transport justice and there were also some critical perspectives from the interviewees.

An effort was made to phrase the questions so they did not steer participants in any particular direction. Efforts were also made to remain neutral and not to direct participants' answers. Nevertheless, interviewees' responses may have been unintentionally influenced. In semi-structured interviews, each conversation is slightly different. This allows a topic to be explored in depth, but makes it difficult to make accurate comparisons. It can also introduce bias into the processing of the interviews and the interpretation of the results. Although coding was chosen to process the interviews objectively, subjectivity is also involved. In addition, some simplification is reflected in the coding of the interviews. To keep the interview data comprehensible, it was essential to avoid having too many different codes, so overarching codes are used, which may have resulted in some of the complexity of the research topic being lost.

### 8.1.2. Implications for science

This thesis contributes to the growing but fragmented knowledge on transport equity by shifting the focus from why equity matters to how it can be structurally embedded in real-world decision-making. This thesis advances the field by analysing where and how transport equity is currently (not) addressed within the MIRT, a process similar to standard procedures for transport projects. Therefore, it offers a novel institutional perspective that has thus far been underexplored in academic research.

A critical insight from this research is the absence of a clear and widely accepted definition of transport equity. This vagueness hinders methodological development and leads to inconsistent application in both academic studies and policymaking. Future research should prioritise building a shared and workable definition of transport equity, ideally developed through collaboration with experts, citizens, and policymakers.

Furthermore, the thesis highlights the practical uptake of theoretical frameworks experienced by users of these tools. While tools like CBA, MCA, and PVE are regularly discussed in academic contexts, their effectiveness in incorporating equity remains limited in practice. This gap calls for empirical research through case studies or pilots, testing how these tools perform if equity is considered and if that changes project outcomes.

Another contribution lies in emphasising the need for interdisciplinary research. Equity in transport planning is not just a technical issue. It intersects with ethical, economic, and spatial ques-

tions. Researchers should work across disciplinary boundaries to develop holistic frameworks to address these challenges. Equally important is a greater focus on knowledge sharing: research should not stop at publication but be actively translated into tools, training, and policy advice.

### 8.1.3. Implications for policymakers

For policymakers, this research highlights the need for a clear and widely accepted definition of transport equity. Standardised guidelines and frameworks are needed to apply equity considerations across transport projects consistently. It is important to leave room for flexibility and tailored approaches within these general guidelines. As transport projects can vary widely, the specific forms of equity that need to be addressed may differ from project to project. Therefore, the application of transport equity should be adaptable to the unique characteristics of each situation, ensuring that the most relevant equity considerations are identified and appropriately incorporated. A key recommendation is the early integration of equity considerations into transport planning. The findings emphasise that equity should be embedded in the earliest decision-making stages, such as the IMA and MIRT phases. Proactive inclusion of equity in planning can help to put more excluded areas on the map.

Cooperation between government agencies, local authorities and stakeholders is also essential. Strengthening partnerships with civil society organisations and directly affected communities can lead to more inclusive and widely supported transport decisions. In addition, political support remains crucial. Building broad support from both political leaders and stakeholders is key to ensuring that transport equity remains a priority on the political agenda and that dialogue is followed by concrete action. The political will to include equity in transport, together with the active involvement of stakeholders, is necessary to ensure that it is translated into practice and not just theory.

Furthermore, a continuous exchange of knowledge between policy makers and research institutions is essential to bridge the gap between theory and practice. Ongoing engagement with academic experts can provide valuable insights into emerging best practices and innovations, helping to align science with the evolving needs of society. Such collaboration can help accelerate the implementation of equity principles in transport, ensuring that evidence-based decisions are made in line with current research. Stakeholder support is likely to increase if the rationale is theoretically supported. Fostering dialogue between policy and science can narrow the gap between scientific research and practical application.

However, it is important to recognise that the development of general guidelines for equity in transport will take time. The process of establishing a common understanding and standardisation of these frameworks will take many years. This long-term development should not discourage policy makers from thinking ahead and starting the conversation on equity in transport now. While reaching consensus may take time, laying the groundwork early will ensure that future decisions are more informed and equitable.

## 8.2. Recommendations for further research

This thesis has taken a first step in exploring how transport equity can be integrated into institutional decision-making structures. However, the findings also point to several underexplored areas worthy of further research. Future studies could build on the findings of this research by addressing key gaps in the current understanding of transport equity.

One of the key practical challenges is to develop a standardised approach to integrating trans-

port equity into decision-making processes. This study has provided initial recommendations on how to move towards such an approach. However, further research is needed to refine these recommendations and develop a more systematic framework that can be widely adopted. Future studies should contribute to the development of a common conceptual framework that policy makers can use to ensure consistency in equity assessments. Such a framework would need to identify standard indicators, decision rules, and thresholds for evaluating equity in transport projects.

This thesis has primarily examined transport equity from an expert perspective. However, the perceptions of citizens, especially those directly affected by transport inequities, are crucial for a comprehensive understanding of equity. Future research should explore how different groups of the population perceive equity in transport policy, what factors influence these perceptions, and how these insights can be incorporated into decision-making. More expert perspectives can also be obtained. To gain a more comprehensive understanding of transport equity in the Netherlands, future studies should include perspectives from other provinces, regions and smaller municipalities to gain a more comprehensive understanding of transport equity in the Netherlands. Local governments often have a more direct view of the effects of transport injustice, making them valuable sources of information.

The assessment of transport equity remains a methodological challenge, as qualitative aspects such as perceived fairness are difficult to quantify. Future research should focus on improving existing measurement methods to capture qualitative dimensions and translate them into actionable data. Developing improved indicators and refining tools such as CBA and MCA could lead to more helpful assessments of transport initiatives. For instance, researchers could assess how outcomes differ when using CBA alone, CBA in combination with MCA, or CBA alongside PVE. Such a comparison could offer valuable insights into the trade-offs between efficiency, equity, and public acceptability.

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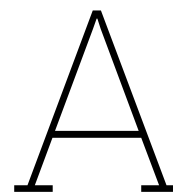
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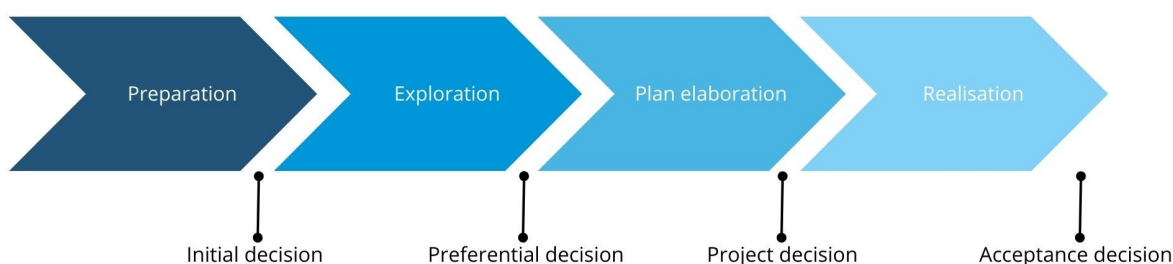




# Decision making in transport projects

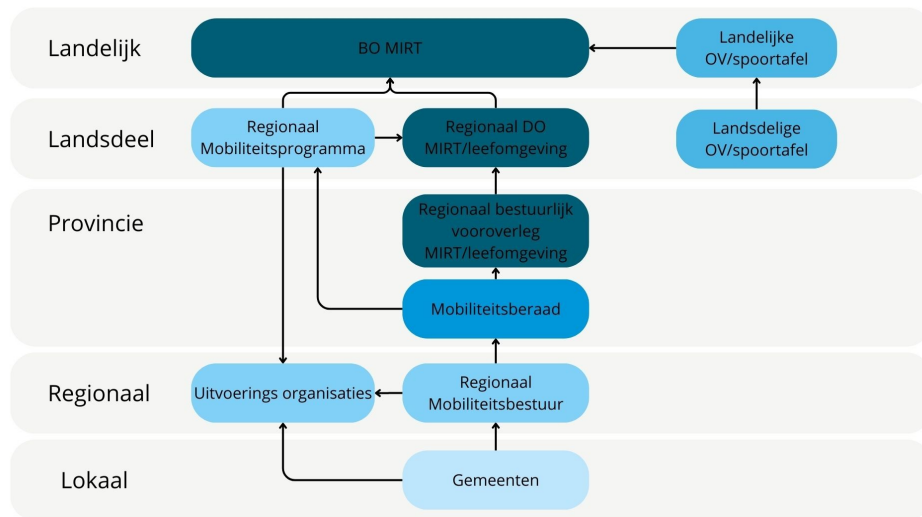
This appendix provides a general explanation on the MIRT process in the Netherlands, adding to the information in Chapter 4.

The MIRT consists of four steps which are shown in Figure A.1. At the end of each phase, a go/no-go decision is made, and as the procedure progresses, the project becomes more and more concrete (Ministerie van Infrastructuur en Waterstaat, 2022). If a no-go is decided, for example, because a project does not get any or limited funding, provinces can continue with projects that are excluded from the MIRT.



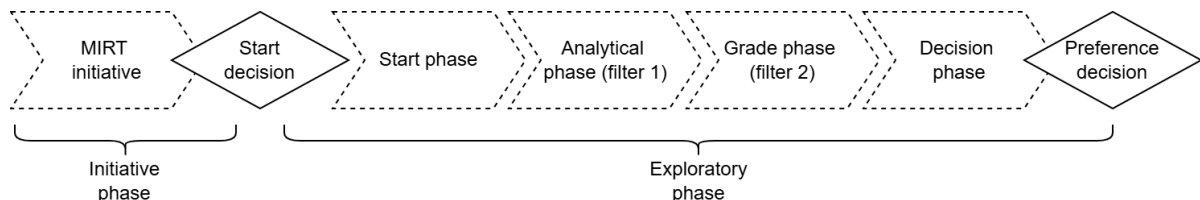
**Figure A.1:** MIRT procedure

At the beginning of the decision-making process for transport and infrastructure projects, local governments and the national government come together to discuss which projects are selected to be further examined (Ministerie van Infrastructuur en Waterstaat, 2022). In the BO MIRT (Bestuurlijk Overleg MIRT in Dutch), the national and decentralised governments come together to determine which projects need to be incorporated in the MIRT. The projects can come from several authorities. In Figure A.2, it is shown how projects from all levels can be incorporated in the MIRT.



**Figure A.2:** Governance structure mobility Netherlands

In the initiative phase, a problem analysis is done. The start decision contains a problem description, the project's scope and the action plan. If a project needs extra information for further decision-making, extra research can be done. In consultation with the involved parties, the competent authority - the Ministry of Infrastructure and Water Management, a province or municipality - decides if a project will be further researched in the exploration phase (Ministerie van Infrastructuur en Waterstaat, 2023). In the exploratory phase, irreversible decisions are made regarding project alternatives that will be implemented in later phases. This makes this a crucial stage in the MIRT process. Various alternatives are examined and developed in collaboration with stakeholders during this phase.



**Figure A.3:** Phases in the initiative and exploratory phase

In the exploratory phase, policymakers and contractors from all levels - national and local governments, civil society organisations and private parties - work together to identify suitable alternatives for the project and come to a preference decision. This phase, acquired from (Ministerie van Infrastructuur en Waterstaat, 2023) and shown in Figure A.3, exists of four steps:

1. Start phase: exploration of the situation that results in an action plan. This contains a problem analysis and definition of the goal and scope of the exploratory phase. This start decision determines whether the project aligns with MIRT requirements.
2. Analytical phase: alternatives are generated and the effects are qualitatively scored and estimated (Ministerie van Infrastructuur en Waterstaat, 2023). In this phase, all proposed solution directions are assessed based on their problem-solving capacity and goal achievement without direct comparison. This results in the funnelling of a large set of alternatives into three or four most promising alternatives.
3. Grade phase: the remaining alternatives are developed in further detail. A CBA and an

environmental impact report (MER) are conducted and adjustments proposed by stakeholders are considered. Results from these evaluations function as a second filter that influences the decision for the preferred alternative.

4. Decision phase: The preferred alternative is presented for discussion. The outcome may lead to its development, the selection of another alternative, or the decision not to proceed with the project. The political climate and the level of public support influence this decision.

The preference solution of a MIRT exploration is weighed with the preference solutions of other MIRT explorations, and a prioritisation is made within the available budget. Not every exploration will result in a project (co)financed by the national government. Each year, the MIRT is revised. If the national government does not fund the project, the project is removed from the MIRT. If a project continues to the development phase, the minister takes the preference decision in consultation with the relevant local directors. In the MIRT development phase, the chosen alternative is further refined into specific actions and measures which are feasible and financially viable. This phase concludes with the decision on whether a project will be realised. After that, the project will be realised according to the execution plans established in the development phase. The MIRT procedure is finished with the delivery decision when the project is realised and is taken into use.

# B

## Stakeholders description

This appendix provides further explanation on the stakeholders, adding to the information in Chapter 4.

**Citizens** are the main beneficiaries of equitable transport but have limited power. As mentioned in the introduction of this Section, citizens can be divided into many sub-groups. However, it is chosen to divide them in this thesis into two groups: minorities and majorities. **Citizen minorities** represent underrepresented communities who rely heavily on equitable transport access. Their primary interest lies in fair accessibility and social inclusion, ensuring that transport systems serve all segments of society. Citizen minorities rely more on private transport, although they sometimes can hardly afford it. In 2022, 64% of the citizens living in rural areas in the Netherlands relied on the car, of which 5 to 6% were forced to have a car despite the fact they could hardly afford (KiM, 2022). While minorities have a high level of interest and a strong positive attitude towards transport equity due to their dependence on accessible transport, majorities have a more neutral attitude. **Citizen majorities** consist of the general population that uses transport infrastructure. They are interested in efficient and accessible transport services that facilitate daily commuting, leisure travel and access to essential services. Their attitudes towards transport equity range from positive to neutral, reflecting a general desire for reliable and cost-effective transport solutions that meet the needs of the general public. The power of citizens primarily lies in raising their voices. Public opposition can prompt further investigations and increase social pressure on Parliament (Mouter, 2016).

**Interest groups** play a role in making these citizen groups, that have a less loud voice, heard. Interest groups such as Rover advocate for travellers and argue for good and affordable transport for everyone, including people living in more outlying areas (Rover, n.d.). Their resources include public campaigns, research capabilities, legal challenges, and policy recommendations, which can pressure policymakers to prioritize equity.

Governmental bodies such as the Ministry of Infrastructure and Water Management, provinces, municipalities and public transport authorities have considerable decision-making power and financial influence. **The Ministry of Infrastructure and Water Management** plays a pivotal role in making regulations regarding transport and infrastructure. They have significant decision-making power and act as financiers, shaping national transport policies and funding large-scale infrastructure projects. Their interest is in developing an efficient, sustainable, and cost-effective transport system that meets the country's economic and environmental goals. Their attitudes towards transport equity can vary, often balancing between broader policy objectives and specific equity considerations.

**Provinces** act as regional governments responsible for provincial infrastructure and public transport. They also have decision-making powers and act as financiers for regional transport initiatives. Their interests include regional connectivity and economic development; improving accessibility for residents can improve local economies and quality of life. Their influence is medium to high and their attitudes to transport equity vary, often influenced by regional priorities and the specific needs of their communities.

**Municipalities** are local governments. One of their tasks is to plan urban mobility. They have decision-making powers and act as financiers of local transport projects. Their main interest is to improve accessibility and quality of life for residents. Their influence ranges from low to medium, and their attitudes towards transport equity vary, reflecting the different needs and priorities of urban populations.

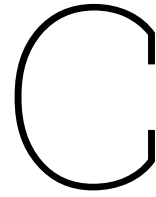
The interests of the various levels of government in transport equity varies: municipalities and provinces are often more invested in equity due to their proximity to the local population, whereas the national government looks at the bigger picture and balance equity considerations with economic and infrastructural efficiency.

**Public transport operators** provide public transport services, including bus, tram, metro and rail services. Their interests focus on service efficiency, profitability and passenger numbers, with the aim of providing high-quality transport services while maintaining financial viability. They get permission to regulate public transport for a defined area or route and can influence the fair distribution of mobility. They have medium influence and are generally neutral on transport equity, prioritising operational efficiency and customer satisfaction.

**Political parties** influence policy and decision-making and seek to align transport policy with their political ideologies. Political parties have a substantial influence because they shape policy, allocate funding and set priorities. Their stance on equity in transport is largely shaped by their ideological views, resulting in different attitudes to the issue.

The **media** play a role in reporting and shaping public opinion on all kinds of issues, including transport. They are interested in public awareness and engagement, as well as informing citizens about transport policies, projects, and challenges. Their key resources include public reach and investigative journalism, which can bring transport issues to the forefront. Their influence is medium, with attitudes towards transport equity ranging from neutral to mixed, reflecting the diverse perspectives within the media landscape.

**Knowledge institutes**, such as universities and research institutes, contribute to research and innovation, and although they have little direct power, they have influence through policy recommendations and data-driven insights. Their support of transport equity can vary and is based on research and evidence. Their primary resources include research expertise, analytical tools, and policy impact studies, which provide valuable insights for decision-makers.



# Interview script

In this appendix, the interview script can be found. This script formed the basis for the semi-scripted interviews.

**Table C.1:** Script semi-structured interviews

## Introduction

Thanking for participation and brief introduction of purpose of interview	Transport projects, such as new public transport routes, can improve accessibility for remote communities, but current decision-making processes often do not prioritise justice. In the Netherlands, a social cost-benefit analysis is mandatory for major projects, but it does not adequately consider equity because of its focus on economic efficiency. My research investigates how transport equity, with a focus on geographical exclusion, can be better included in decision-making, especially for transport projects in sparsely populated areas (the in-between and outlying areas) where people are heavily dependent on the car and public transport options are limited. By developing and testing a practical roadmap, I aim to provide policymakers and planners with guidelines for the inclusion of transport equity in the decision-making process.
Explaining data processing and asking permission to record conversation	
Background interviewee	Can you briefly explain your role and experience in relation to transport projects and decision-making processes?

## Current decision-making process

Understanding the process	Can you explain the current decision-making processes for transport projects?
	What steps are typically completed and what decisions are made in the process?
Stakeholders	What stakeholders are involved in this process?
	How important are these stakeholders during different phases of a project?

Evaluation tools	What tools, such as the CBA, are used in the evaluation of projects?
	What influence have these tools on the decision making?
	How to balance measurable data with qualitative insights into injustice?

### **Stakeholders and power**

Power and distribution	How much power do different stakeholders have in the decision-making process?
	How is this power distributed during the project procedure?
Interests of users	How are the interests of potential users included in the process?
	How are citizens involved in decision-making?
Political play	Who do you think has the power to make decisions in transport projects?

### **Role of the CBA**

Use and limitations	To what extent does the CBA consider broad effects, such as transport equity?
	Is it possible to include geographical or social injustice in the CBA? How is this dealt with?
Suitability	Is the CBA seen as an appropriate tool for including broad effects? Why or why not?

### **Transport equity**

Including in decision making	What is your understanding of the term transport equity?
	How is transport equity currently measured in projects (you are working on)?
	Are there any indicators or guidelines you use for transport equity?
	At what stages of the decision-making process can transport equity be incorporated?
	In your opinion, who is responsible for monitoring transport equity in policy and decision-making? How can responsibilities be better divided to ensure transport equity?
Obstacles and barriers	What obstacles and barriers do you experience when integrating transport equity into projects?
Solutions and opportunities	What possible solutions do you see to overcome these obstacles and barriers?
	What opportunities do you see to better include broad impacts such as transport equity into the process?
	What new tools, techniques or policies could contribute to this?

### **Closure**

Thanking for participating	Is there anything else you would like to add that we have not discussed but is relevant to this topic?
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# D

## Coding process interviews

The interviews were coded to properly process the qualitative data and extract as much information as possible from the interviews. The software tool Atlas.ti is used to do this. First, the interviews were transcribed using Microsoft Teams. Then, the data is reviewed to understand the main themes of each interview. The next step is thoroughly examining the data to find meaningful parts, categories and codes. This approach is based on the data itself, so it makes no assumptions. The codes are then grouped together to see if there are any recurring themes. As the interviews were conducted in Dutch, the codes are also presented in Dutch so that no information is lost in the translation. The coding can be found in Tables D.1, D.2 and D.3.



**Table D.1:** Coding categories

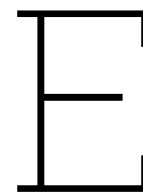
Category	Code	Subcode	Grounded
Context	Aanleiding voor inclusie	Interesse rechtvaardigheid groeit	7
		OV niet rendabel, wel gewild	2
		Rechtvaardigheid is een overheidstaak	2
		Vervoersarmoede	6
	Status-quo brede welvaart	Groeiende interesse	7
		Grotere rol in nieuwe MKBA richtlijnen	2
	Definitie rechtvaardigheid	Ethische stromingen	7
		Iedereen toegang tot vervoer	3
		Mobiliteit basisrecht zoals waterveiligheid	2
		Morele eerlijkheid	1
		Procedurele rechtvaardigheid	2
		Verdeling van mobiliteit	6
		Vervoersarmoede	1
Besluitvorming proces	Stakeholders	Bestuurders gevoelig voor brede welvaart	2
		Draagvlak belanghebbenden	2
		Minister besluitvaardig in MIRT	2
		Regiegroep met professionele stakeholders	1
		Stem burgers ondervertegenwoordigd	2
	Effect evaluatie instrumenten	Invloed evaluatie instrumenten substantieel	5
		Invloed MKBA wisselend	7
		Onderbouwing erg belangrijk	1
	Politieke dynamiek	Doelstellingen verschuiven	2
		Politiek draagvlak nodig voor beleidsactie	3
	Plek rechtvaardigheid in proces	Gedurende hele project	2
		In begin project	5
		Inspanning meeschalen met project	2
		Na voorkeursbeslissing	3
		Rechtvaardigheid als doelstelling van project	3

**Table D.2:** Coding categories

Category	Code	Subcode	Grounded
Beleids- en evaluatie methoden	Evaluatie-instrumenten kansen	MCA kwalitatieve factoren	2
		MKBA dekt deels brede welvaart	4
		PWE voor inclusieve mobiliteitseffecten	2
		PWE veel belangen in beeld	2
	Evaluatie-instrumenten beperkingen	MCA onderbouwing gewichten	1
		MCA betekenis uitkomst	2
		MKBA door verplichting minder serieus genomen	1
		MKBA echt brede effecten ontbreken	9
		MKBA monetair uitdrukken	4
		MKBA private invalshoek	1
		MKBA toekomst meenemen	3
	Beleids ondersteunende tools en indicatoren	Beleidskompas biedt ruimte voor brede welvaart	2
		Bereikbaarheidsindicatoren voor rechtvaardigheid	2
		Brede welvaart indicatoren om problemen bloot te leggen	1
		Brede welvaart moeilijk te kwantificeren	
		IMA integrale benadering	3
		STOMP-principe als basis van rechtvaardigheid	3
		TRSE geeft waarde aan trips	1
Complexiteit	Perceptie	Afweging brede impact of inclusie	4
		Brede welvaart multifunctioneel begrip	1
		Kloof beleidsmaker en burger	2
		Perceptie van bereikbaarheid	1
		Willingness to pay for fairness	1

**Table D.3:** Coding categories

Category	Code	Subcode	Grounded
Complexiteit	Hindernissen	Complex onderwerp simpel houden	4
		Definitie rechtvaardigheid onduidelijk	6
		Draagvlak van stakeholders	7
		Geen integrale samenwerking	3
		Geen toegang tot kennis	1
		Kennisgebrek	2
		Kloof tussen onderzoek en praktijk	2
		Moeilijk te kwantificeren	8
		Verschillende perspectieven op definitie	6
Oplossingsrichtingen	Oplossingsrichtingen	Algemene landelijke werkwijze	5
		Maatwerk per project	7
		Veelgebruikte instrumenten gebruiken	6
		Verdelingseffecten in MKBA opnemen	6
		Samenwerking	5
		STOMP principe uitbreiden	1



## Conducted interviews

In this Appendix, the summaries of the conducted interviews can be found.

From TU Delft, Bert van Wee, Matthew Bruno and Niek Mouter were interviewed. Bert van Wee is a professor of transport policy and has retired early 2025. Matthew Bruno is a post-doctoral researcher focusing on inclusive mobility. Niek Mouter is Associate Professor and Scientific Director at the Delft University of Technology and Populytics. Diana Vonk Noordegraaf is a senior consultant in strategy and policy at TNO, another knowledge institute. Pauline Wortelboer is Knowledge Line Manager for Policy Evaluations and the Role of Government at KiM, a knowledge institute specialising in mobility policy.

Several people from Witteveen+Bos were interviewed. Hilke van Strijp-Harms works as a stakeholder manager and project manager. Abel Knipping is an expert in environmental and social impact assessment and Eric Holtrop is a project manager for public transport and mobility.

Within the government sector, interviews were conducted with representatives at various levels. Dirk-Jan de Vries and Annelieke Melters work for the Ministry of Infrastructure and Water Management as policy coordinator and policy officer for Innovation and Strategy in Mobility respectively. This ministry operates at the national level and deals with broader policy issues. At the provincial level, Wim Kant and Martijn Ernest work for the Province of Zeeland. Wim Kant is senior advisor for accessibility, while Martijn Ernest is team coordinator and senior advisor for accessibility. Their work focuses on regional and local mobility issues and the implementation of policies in line with the national strategies of the Ministry of Infrastructure and Water Management. An overview of the interviewees is shown in Table E.1.

**Table E.1:** Participants with their function, company and appendix with their interview

Interviewee	Function	Company	Category	Appx.
Bert van Wee	Professor Transport Policy	Delft University of Technology	Knowledge institute	E.1
Diana Vonk Noordegraaf	Senior Consultant Strategy and Policy	TNO	Knowledge institute	E.2
Matthew Bruno	Postdoctoral Researcher on Inclusive Mobility	Delft University of Technology	Knowledge Institute	E.3
Pauline Wortelboer	Knowledge Line Manager Policy Evaluations and the Role of Government	Kennisinstituut voor Mobiliteitsbeleid (KiM)	Knowledge institute	E.4
Hilke van Strijp-Harms	Stakeholder manager and Project Manager	Witteveen+Bos	Consultancy	E.5
Dirk-Jan de Vries	Policy Coordinator Innovation and Strategy for Mobility	Ministry of Infrastructure and Watermanagement	Government	E.6
Annelieke Melters	Policy Officer Innovation and Strategy for Mobility	Ministry of Infrastructure and Watermanagement	Government	E.6
Abel Knipping	Environmental and Social Impact Assessment expert and	Witteveen+Bos	Consultancy	E.7
Eric Holtrop	Project Manager Public Transport and Mobility	Witteveen+Bos	Consultancy	E.8
Niek Mouter	Associate Professor and Scientific Director	Delft University of Technology, Populytics	Knowledge institute	E.9
Wim Kant	Senior Advisor Accessibility	Provincie Zeeland	Government	E.10
Martijn Ernest	Team Coordinator and Senior Advisor Accessibility	Provincie Zeeland	Government	E.10

## E.1. Interview Bert van Wee

Date	25 November 2024, 10:00
Interviewee	Bert van Wee
Interviewer	Josephine Scholte
Location	TU Delft, Faculty of Technology, Policy and Management

Bert van Wee has decades of experience in research focused on issues of importance to long-term strategic policy, ranging from pricing policy to major infrastructure projects, and is involved in current societal discussions such as the Lelylijn and the A27 Amelisweerd. He worked at TU Delft, engaging in both education and research in this field. Bert van Wee considers transport equity an important and current topic, but acknowledges that much research is still needed.

According to Bert van Wee, the decision-making process for transport projects that are partially funded by the national government proceeds in phases within the MIRT framework, where finances are arranged. The stakeholders involved vary depending on the project. Local projects can be financed by municipalities themselves (not via MIRT), but the national government and often the province are involved for more expensive projects. Key parties include Rijkswaterstaat, Prorail, NS, and various interest groups such as Rover and Transport and Logistics Netherlands. The EU plays a role in international projects. In the early strategic phases, interest groups are important, while later phases shift focus to specific route choices, designs, and local interests. Different stakeholders hold power at different stages in the decision-making process. Initially, there is a wide group of stakeholders, but ultimately, the minister and the House of Representatives make the decisions. The A27 Amelisweerd is cited as an example where the minister rejected an alternative design.

In addition to the CBA, the Environmental Impact Assessment (EIA) is mentioned. There is discussion about broadening the CBA to encompass broader welfare aspects, which include factors like accessibility, equity, livability, and giving more weight to long-term effects. Although there are reports with indicators for broader welfare, accessibility and equity are currently the most robust and frequently used indicators in addition to what is already included in a CBA.

Regarding the interests of potential users, these are accounted for in the CBA by examining travel time savings for existing and new travellers. Broad welfare additionally approaches this with accessibility measures, such as the number of jobs or hospitals reachable within a certain travel time. Bert van Wee indicates that equity can be incorporated in the CBA through distributional effects, although this is rarely done in practice. He describes three dominant ethical standards: utilitarianism, egalitarianism, and sufficientarianism. The latter focuses on the least advantaged, while the first two strive for the greatest utility and equality of outcomes, respectively. The capabilities approach concentrates on what people can actually do but is not a judgment principle in itself.

Bert van Wee envisions a future where equity is explicitly mentioned in the procedure of transport projects, possibly with a guideline in 10 to 15 years. He emphasised the importance of balancing completeness, communicability, and manageability.

A significant barrier to incorporating equity in projects is the lack of consensus on definitions, principles, and indicators. A potential solution is seen in evaluating the equity of policy options based on utilitarianism, egalitarianism, and sufficientarianism, and it is expected that accessibility will play a central role.

Finally, Bert van Wee highlights the importance of perceptions of equity and accessibility, which may differ from calculated metrics. He points out the necessity of researching both the perceptions of citizens and policymakers to obtain a complete picture of equity.

## E.2. Interview Diana Vonk Noordegraaf

Date	29 November 2024, 14:00
Interviewee	Diana Vonk Noordegraaf
Interviewer	Josephine Scholte
Location	Online

Diana works at TNO Vector, the centre for social innovation and strategy, and has more than five years of experience in the topic of broad welfare. At TNO Vector, she focuses on multi-transition issues in the spatial urban living environment, such as mobility, space and energy systems. Here, the emphasis is on managerial aspects such as decision-making and governance. Broad welfare, according to Diana, encompasses everything of value, focusing on time, Locations, groups and distributional effects, with equity issues at its core. This is the definition also used by CBS. She stresses the importance of what information is available, who is at the table and from which perspective decisions are made. She finds that integral working, participation and fieldwork, as well as reflection and transformation, are still underexposed in the discussion around broad welfare. The government, consisting of different layers and stakeholders, is an important party in mobility issues. Knowledge parties such as CBS and PBL also play a role, as does citizen participation, which is currently still a challenge. Business travellers are often overrepresented in the data, which does not represent all citizens and their interests. Methods such as participatory value assessment are increasingly used, but there are still many trajectories where this does not happen. Diana sees broad welfare as an enrichment of the regular policy-making process, and stresses that monitoring and evaluation should be standard, but are still too infrequent in practice. To better apply scientific knowledge in practice, researchers need to be closer to practice and actively think and advise. Tools such as the KCBR's policy compass and CBS's monitor can help in this regard. Broad welfare and equity are already being taken into account by pioneering governments in projects, such as Zuid-Holland with a broad welfare monitor and Noord-Brabant with a study on perceived broad welfare among citizens. However, there are hurdles, such as confusion over definitions, the political climate and the level of knowledge of small municipalities, for example. Diana argues that the effort for broad prosperity should scale with the size of the task, and that customisation is needed for each project. For the future, Diana expects that broad welfare will become complementary to existing policy instruments, but this still needs time to fully crystallise. She sees different evaluation methods as complementary to existing tools such as the CBA, with quantitative and qualitative methods needing to complement each other. TNO has prepared a knowledge report that offers action perspectives based on the complexity of the task, focusing on participation and involving different expertises and disciplines.

### E.3. Interview Matthew Bruno

Date	4 December 2024, 10:00
Interviewee	Matthew Bruno
Interviewer	Josephine Scholte
Location	TU Delft, Faculty of Civil Engineering and Geosciences

Bruno Matthew is a postdoctoral researcher at TU Delft and has spent the last three years working with the Amsterdam transport region to better integrate inclusive mobility into its policies. His research has used the Transport Related Social Exclusion model to investigate the reasons why people may be excluded from the transport system. Previously, he completed his PhD at Eindhoven University of Technology on cycling policy, which included research related to making the cycling system more inclusive. On the definition of transport equity, he said that it is important not only to consider economic aspects, but also to ensure that everyone's transport needs are considered. He emphasised that transport has different forms of value and that each should be recognised. In the Netherlands, the MIRT is used for transport projects at national level. He noted that he is not directly involved in decision-making processes, but from his PhD research on cost-benefit analyses for cycling infrastructure, he has observed that these analyses often focus on the benefits for new users. Benefits that result from retaining existing users, such as preventing a change to less sustainable forms of transportation, are not always considered. He stressed that the CBA is getting better at including wider issues, but there is still room for improvement. He felt that the CBA should recognise the value of all types of travel, including social and health benefits, which are often not expressed in economic terms. His research focused more on the forms of social exclusion within the transport system than on the evaluation methods themselves. He identified 10 forms of transport-related social exclusion, some of which, like racial discrimination and spatial exclusion, are often overlooked in the Netherlands. He liked the idea of considering all ten forms of exclusion in transport projects. While not all forms are always relevant to each project, it is important not to ignore them. All possible barriers should be considered when making decisions in order to create the most inclusive system possible. On the balance between quantitative and qualitative data, he said that the qualitative side is often overlooked. He gave the example of wheelchair accessibility on buses: a system may be technically compliant, but not practical or worthy of users. It is important to include people's experiences when developing standards. He identified barriers to integrating equity into the decision-making process, such as the many competing objectives in transport policy. Although as an equity researcher he sees this as a priority, he acknowledged that other goals are also important and a balance must always be struck. Finally, he stressed the importance of listening to users to ensure that their voices are not lost in the decision-making process. He argued that there will always be trade-offs, but that it is important to make decisions that take into account the needs of all stakeholders as much as possible. He concluded by stressing the importance of including current users in the cost-benefit analysis and not just focusing on attracting new users. He stressed that everyone will experience mobility challenges at some point and that an accessible transport system is needed for everyone.



## E.4. Interview Pauline Wortelboer

Date	5 December 2024, 14:00
Interviewee	Pauline Wortelboer
Interviewer	Josephine Scholte
Location	Den Haag, KiM

Pauline Wortelboer has been working at the Netherlands Institute for Transport Policy Analysis (KiM) since 2007 and is the knowledge line manager for 'Policy Evaluations and the Role of Government'. She is also part of the interdepartmental CBA core team, which focuses on applying CBA guidelines with the aim of sharing knowledge across various ministries.

Pauline defines transport equity as a concept that can be viewed from multiple perspectives. She considers the utilitarian principle of the CBA as a form of equity, which optimizes for the total benefit of all individuals without distinguishing between specific groups. She notes that equity often touches on political preferences, and KiM aims to describe different forms of equity without prioritizing one over another.

Although the CBA is the most well-known evaluation method, it is not always seen as suitable for capturing broad effects such as impacts on happiness or experiences. Pauline distinguishes between effectiveness and efficiency and suggests that ambitions related to equity can be measured as objectives, but this does not always align with the utilitarian approach of the CBA. Project choice also plays a role: if a project aims at congestion reduction, the CBA will logically measure travel time savings. If other goals are pursued, such as promoting mobility for specific groups, these effects can also be measured alongside the CBA.

There are other evaluation methods, such as broad welfare indicators, that can assess wider effects. Pauline indicates that distributional effects can be better mapped within the CBA, although this has been done infrequently due to a lack of policy demand. A study is nearly completed (now published on [www.kimnet.nl](http://www.kimnet.nl)) that demonstrates which distributional effects can be derived from traffic models and spatial equilibrium models and how these can be incorporated into the CBA.

There is a movement towards integrating broader welfare effects more into policy visions, such as the mobility vision. Pauline emphasizes that the CBA covers part of the broad welfare spectrum but does not encompass everything. She advocates for combining the CBA with other relevant indicators focused on measuring effectiveness. Pauline asserts that the absence of concrete goals in transport equity is a significant barrier to making measurements more concrete for decision-making processes. It is crucial first to have a clear understanding of what is to be achieved with equity.

The decision-making phase is also important when choosing evaluation methods. In the initial phase, the CBA methodology can help define the baseline alternatives and project goals effectively. She notes that integrating broad welfare can be challenging without increasing project complexity. Pauline points out that the combination of CBA and broad welfare indicators does not have to be contradictory but can provide supplementary decision-making information.

A new CBA approach for the MIRT has recently been published, which pays more attention to broad welfare. Although equity is not explicitly mentioned, it is related. Pauline stresses that clear objectives and the political interpretation of equity are important, yet it is conceptually difficult to define this well. Nevertheless, it is possible to evaluate equity within given frameworks, which is relevant for making well-informed decisions in transport projects.

## E.5. Interview Hilke Strijp-Harms

Date	10 January 2025, 11:00
Interviewee	Hilke Strijp-Harms
Interviewer	Josephine Scholte
Location	Den Haag, Witteveen+Bos office

Hilke Strijp-Harms has been working at Witteveen+Bos since 2007 and has a background in Technology, Policy and Management and a Master's in Transport & Planning. She is currently the group leader of the Area-Oriented Environmental Management team and focuses on integrating various interests and impacts in infrastructure projects, such as the N279 between Veghel and Asten. Witteveen+Bos is involved in various phases of projects, from the initial decision to contract preparation, but usually not in the initiation or implementation stages. The clients are often provinces, municipalities, or Rijkswaterstaat. Other stakeholders include water boards, nature organisations such as Staatsbosbeheer, interest groups, and residents experiencing disturbances. Hilke's role also involves engaging these stakeholders through sounding boards, interest tables, and individual discussions.

In the decision-making process, various evaluation instruments are used, such as the Cost-Benefit Analysis (CBA), Multi-Criteria Analysis (MCA), Environmental Impact Assessment (EIA), and other specific assessments like the Heritage Impact Assessment (HIA) and nitrogen assessments. These instruments significantly influence decision-making and can be decisive. For instance, a negative CBA result can lead to a project's cancellation, as illustrated by a sample project where a more cost-effective solution was sought following a negative CBA. Although the CBA is sometimes viewed as an obligation, its results are often valued more when explicitly requested by the client. Comprehensive impact assessments and the EIA can also encompass broad welfare effects and social aspects that are difficult to measure quantitatively. Hilke emphasises that these aspects are often described qualitatively and that decision-makers are sensitive to them in their decision-making.

Transport equity is defined by Hilke as the right to have the ability to move freely, wherever and whenever desired. Although this right is not explicitly mentioned in projects, measures are sometimes taken to improve accessibility for various modes of transport. The STOMP principle (Walking, Cycling, Public Transport, Mobility as a Service, Private Car) and the Ladder of Verdaas are frequently used to determine suitable mobility solutions. However, there are obstacles to integrating transport equity into projects, such as the vague and soft nature of the concept, making it difficult to quantify. For example, conducting a cost-benefit analysis for rural areas can be challenging due to high costs and the limited number of beneficiaries.

In summary, Hilke stresses the importance of considering broad welfare effects and transport equity in evaluations, even though these are often difficult to quantify. They are nonetheless insightful for decision-makers who ultimately make the final decisions. Integrating these aspects can contribute to a more equitable and inclusive mobility system.

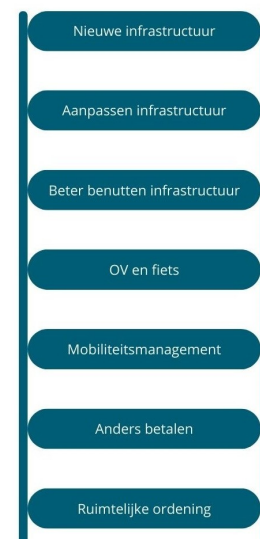


Figure E.1: Ladder van Verdaas

## E.6. Interview Dirk-Jan de Vries and Annelieke Melters

Date	14 January 2025, 10:00
Interviewee	Dirk-Jan de Vries and Annelieke Melters
Interviewer	Josephine Scholte
Location	Online

Annelieke Melters and Dirk-Jan work at the Ministry of Infrastructure and Water Management (IenW) in the strategy department of the Innovation and Mobility Strategy Directorate. Annelieke has been with IenW for almost three years and focuses on accessibility targets and CBAs. Dirk-Jan has been with IenW for almost 13 years and has experience in various directorates, including roads, public transport and rail. He is currently involved in developing weighing frameworks for investment choices and long-term strategies. In the Netherlands, similar decisions are made at national level through the MIRT and at provincial level. Various evaluation tools are used in these processes to make informed decisions. An important tool in these decision-making processes is the CBA. Dirk-Jan explains that the CBA plays a major role in the preference decision in the MIRT process, but that it is not the only factor. CBAs have broadened in recent years to include broader effects, such as broad welfare. This is partly due to recommendations by the Netherlands Bureau for Economic Policy Analysis (CPB) and the Netherlands Environmental Assessment Agency (PBL). The ministry is currently working on a new working method for CBAs within MIRT explorations, in which wider welfare is given a more central role. This will also use TNO's 42 indicators to identify relevant effects. Although not all effects can be expressed in monetary terms, it is recommended to quantify them as much as possible. If quantification is not possible, the effects should be described qualitatively and presented properly in the results. Dirk-Jan emphasises that the CBA is not always decisive for projects. Political and administrative considerations also play a major role in decision-making. This is especially the case for public transport projects, which often do not have a positive CBA but are still considered important. He cites the example of the High-Frequency Rail Transport programme, which did not have a convincing CBA but was nevertheless implemented because of the importance of public transport. Transport equity Annelieke and Dirk-Jan define transport equity as ensuring equal access to transport for different groups of people. Annelieke explains that it is important to avoid implicit choices about what is considered fair and to put as much information as possible on the table about the effects for different groups of people. Dirk-Jan refers to the concept of transport poverty, as defined by KiM. Transport poverty occurs when someone is less able to participate in society due to accessibility problems. Obstacles to including transport equity in projects include that it is often included later in the process and that it is difficult to make it quantitative. Dirk-Jan and Annelieke stress that it is important to make distributive effects well understood in the process, so that this information can be taken into account politically. An example project where broad welfare plays a role is the A2 passage in Maastricht. This project combined traffic with housing and parks, and took into account both the need for traffic and the improvement of the living environment. Annelieke and Dirk-Jan stress that accessibility to facilities is an important aspect in the mobility vision. This encourages a different approach to projects than just improving traffic flow. By focusing on accessibility, target groups and their needs come better into focus, which contributes to transport equity.

## E.7. Interview Abel Knipping

Date	15 January 2025, 9:00
Interviewee	Abel Knipping
Interviewer	Josephine Scholte
Location	Online

Abel has a background in social geography and planning, and a master's degree in Environmental Infrastructure Planning. He works at Witteveen+Bos, where he focuses on impact assessments in infrastructure projects, with a special focus on social equity and gender differences. Several assessment tools are used in the decision-making process for water projects, such as the environment guide and sustainable GWW. These tools help determine the level of ambition of a project and present decision information to decision-makers. However, Abel notes that power and interests often play a major role in practice, which can lead to a shift in project dynamics and decision-making. For water projects in the Netherlands, conducting an CBA is not mandatory, as the social value of dike rings is set nationally. This determines the height and strength of dikes based on the value they represent, such as the number of lives protected and economic value. Abel suggests that a similar national standard could be useful for transport projects to promote transport equity. Abel defines transport equity as justifying the rights everyone has to transport, rather than seeking equal rights for all. He stresses the importance of defining what is considered equitable and who determines it. Abel argues that a national standard for transport equity would help ensure consistency and equality in transport rights. A challenge in integrating transport equity into decision-making is the vagueness of the term. Abel argues for a clearer national framework to define what transport equity means and how it can be implemented. He acknowledges that transport inequality in the Netherlands is relatively small compared to other parts of the world, but that it is still important to think pragmatically about measures to reduce it. Abel notes that it is important to identify top measures that can reduce transport inequality. He suggests that an CBA can help determine which alternatives have the greatest impact. However, he stresses that transport equity involves a complex network of agencies and companies, which complicates the implementation of solutions.

## E.8. Interview Eric Holtrop

Date	21 January 2025, 9:00
Interviewee	Eric Holtrop
Interviewer	Josephine Scholte
Location	Online

Eric Holtrop has been working in the mobility sector at Witteveen+Bos for quite some time. He studied Civil Engineering at TU Delft. Eric mainly acts as a generic project manager, being involved in the design approach and execution of projects. In mobility and infrastructure projects in the Ministry of Infrastructure and Water Management's MIRT approach, the decision-making process generally takes place in three phases: the initial decision, the preferred decision and the project decision. Witteveen+Bos is often involved in the exploration phase, where various alternative solution options are devised and evaluated. Eric explains that they are involved in the variant evaluation and the ranking of possible solutions to promising ones. Various evaluation tools are used during these phases, looking at goal attainment, (environmental) impacts and costs, among other things. Eric notes that transport poverty is sometimes an issue on paper, but in practice is often not included in decision-making. He gives the example of the station in Den Bosch, where money was available for the train station but not for the bus station, which is mainly used by the less well-off. Eric emphasises that there is a difference between the Randstad and other parts of the Netherlands. In the Randstad, money goes to infrastructure, while in less densely populated areas money is needed for operation. He mentions the social dilemma whereby bus routes in sparsely populated areas are squeezed out, leading to a downward vicious circle of declining usage and further shrinking timetables. One practical solution Eric mentions is the "racking and stretching" of bus routes, where bus lines are laid out right with fewer stops to make them faster and more cost-effective. However, this could deny access to select groups of people. He suggests introducing intercity and stop buses, similar to sprinter and intercity trains, to address this problem. Eric also discusses the possibility of adding equity to the STOMP principle as a kind of filter or precondition. However, he sees that the current MIRT system focuses mainly on investments and not operations, which is a potential barrier to including equity in decision-making. He stresses the importance of integral consideration of investments and operations, where equity plays a role. Eric argues for more differentiation in public transport to make it work better and promote equity.

## E.9. Interview Niek Mouter

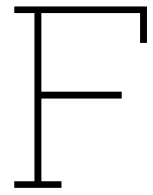
Date	31 January 2025, 13:30
Interviewee	Niek Mouter
Interviewer	Josephine Scholte
Location	TU Delft, TU Delft, Faculty of Technology, Policy and Management

Niek Mouter works as an associate professor at TU Delft and is scientific director at Populytics. There, he works on the development of the Participatory Value Evaluation (PVE) method. Niek defines transport equity in two ways: distributive equity and procedural equity. Distributive equity concerns the distribution of resources and opportunities, while procedural equity revolves around the fairness of the decision-making process. Which form of equity is relevant depends on the specific decision and context. In decision-making for infrastructure projects, such as MIRT, different evaluation tools are used. Besides the CBA, the PVE is also used. For example, the PVE was applied in the Oude Lijn and Lelylijn projects, where input from residents was collected to establish priorities and valuations of alternatives. The PVE complements residents' evenings by collecting input from a broader and more diverse group of people. This helps to get a more complete picture of people's opinions and preferences. Niek stresses the importance of using both the PVE and residents' evenings, as both provide valuable input. The PVE has influenced decision-making on these projects. At the Lelielijn, it influenced the preferred alternatives, and at the Oude Lijn, certain options fell off based on participants' preferences. Although the PVE is only input and not decisive, it helps policymakers make better-informed choices. Niek notes that the CBA is often incomplete because certain effects, such as equity aspects, are not monetised. He advocates valuing these effects more fully, for example by measuring public willingness to pay. This would make the CBA more complete and more useful for policymakers. The MCA was also discussed. Niek indicates that the MCA is rarely used, and that there is often a reason for this. First, it is difficult to interpret the results because - unlike the CBA, which is based on welfare theory - there is no clear theoretical basis. Second, the weights within an MCA are difficult to substantiate. Although experts can play a role in this, it is unclear which experts you should consult and how you can convincingly justify the chosen weighting, for instance towards the government. According to Niek, equity can be better included in decision-making by examining which forms of equity are relevant in the initial phase of a project. This can be done using a PVE, for example. In addition, equity should be explicitly valued in the evaluation, just as travel time gains are. A major obstacle is the lack of knowledge on how to properly include equity in infrastructure projects. Traffic engineers are often trained in flow calculations, but lack knowledge about equity. Niek advocates multidisciplinary collaboration between philosophers and quantitative researchers to address this problem. Niek stresses that equity is an urgent issue because infrastructure policy decisions often do not match residents' preferences. He points out that people consider a basic level of accessibility to key amenities more important than travel time savings. This should be given more attention in decision-making. Finally, Niek stresses that current evaluation methods such as the CBA and broad welfare indicators are not yet sufficient to properly include equity. He sees opportunities to further develop these methods and ensure that they become really useful for assessing concrete policy options. This is an area where there are still many steps to be made.

## E.10. Interview Wim Kant and Martijn Ernest

Date	4 March 2025, 16:00
Interviewees	Wim Kant and Martijn Ernest
Interviewer	Josephine Scholte
Location	Online

Wim Vonk and Martijn Ernest work at the province of Zeeland. Martijn is team coordinator of the accessibility team and senior advisor on accessibility, with a focus on larger projects and policy projects. Wim has extensive experience within the mobility programme and has dealt with freight logistics, infrastructure and Zeeland's mobility vision. They see equity in transport as putting opportunities for people first and ensuring that everyone has access to facilities on equal terms, regardless of cost. They note that economic thinking and individualisation have increasingly gained the upper hand in decision-making, resulting in less consideration of higher costs for some citizens. Martijn notes that the national government's Mobility Vision 2050 does now begin to apply broad welfare principles to accessibility. Although these are still mainly words and actual policies have yet to be developed, he is positive about the growing interest. Provinces and local governments are already working more integrally, but there is an ongoing battle against cost-saving measures that reduce accessibility. In Zeeland, unique challenges are experienced due to its island structure and sparsely populated nature. The elimination of bus routes due to cost savings has led to reduced accessibility for those without cars. There is a difference between the perceived accessibility of people with and without cars, where people without cars can experience significant problems due to poor accessibility by public transport. The province of Zeeland is actively working on broad welfare and trying to make it an integral part of their vision. They are trying to find solutions for accessibility to facilities, such as hospitals and jobs, by looking at travel distances and proximity to facilities. Martijn mentions the Region Deal North Sea Port District as an initiative to promote broad welfare, including mobility projects such as a bus link between Terneuzen and Ghent. In project decision-making, Wim sees room to look at equity even before the start decision is made. It is about recognising bottlenecks, which are different in peripheral regions than in the Randstad. Martijn stresses the need to look more regionally at accessibility levels that fit the specific needs of a region such as Zeeland. There are several stakeholders that need to be involved in looking at equity, including central government, provinces and municipalities. Citizen participation can provide valuable insights, but also involves subjectivity. Key providers of services, such as educational and healthcare institutions, should also be involved. A major obstacle to including equity in decision-making is the business case, which is often impossible to make ends meet in sparsely populated areas. The financial strength of regions like Zeeland is limited, making it difficult to finance large projects. Martijn and Wim argue for daring to invest in accessibility, even if it does not seem immediately profitable. In addition, cooperation between provinces and the government is sometimes a challenge, with peripheral regions not always being heard. More attention is needed for long-term investments and structural support. The province of Zeeland tries to bring people from the state to the region to show them the situation with their own eyes, which helps to create understanding.



## Statement on AI assistance

Some assistance from AI was used during the process of this thesis. ChatGPT and ChatWBT were utilised for assistance in idea development and clarifying concepts. Canva AI was used to generate the front page illustration. All final interpretations, critical analysis, and conclusions are my own.