



Delft University of Technology

Dutch politicians' attitudes towards Cost-Benefit Analysis

Mouter, Niek

DOI

[10.1016/j.tranpol.2016.11.001](https://doi.org/10.1016/j.tranpol.2016.11.001)

Publication date

2017

Document Version

Accepted author manuscript

Published in

Transport Policy

Citation (APA)

Mouter, N. (2017). Dutch politicians' attitudes towards Cost-Benefit Analysis. *Transport Policy*, 54, 1-10. <https://doi.org/10.1016/j.tranpol.2016.11.001>

Important note

To cite this publication, please use the final published version (if applicable). Please check the document version above.

Copyright

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights. We will remove access to the work immediately and investigate your claim.

Dutch politicians' attitudes towards Cost-Benefit Analysis

Niek Mouter Delft University of Technology, The Netherlands

Abstract

In this study Dutch politicians were interviewed to derive their attitudes towards the use of Cost-Benefit Analysis (CBA) in the appraisal of transport projects. Dutch politicians' attitudes towards CBA are positive on the condition that CBAs are carried out in an impartial way. According to politicians CBA improves the planning process, serves as a countervailing power and produces a structured list of all the positive and negative effects of a project, amongst other things. Politicians criticize the use of CBA for killing political debates. Politicians were also asked to mention any solutions that they feel would improve their attitude towards CBA. Solutions suggested by politicians predominantly focus on: 1) ensuring that all effects that are covered in the CBA are scrutinized in an impartial way; 2) increasing the awareness and recognition of the elements of the political trade-off that are not covered by a CBA to diminish the probability that politicians will use CBA to kill a political debate.

1. Introduction

Cost-Benefit Analysis (CBA) is a commonly applied economic appraisal tool to support the decision-making process for transport projects in OECD countries (e.g. Eliasson and Lundberg, 2012). In many Western countries it is obligatory to assess a transport project using a CBA when a project needs (co)funding from the National Government (Mackie et al. 2014). As a result of this widespread application, CBA is a popular topic in academic literature. Amongst other things, the literature examines substantive improvements of the CBA (e.g. Mackie and Preston, 1998; Mouter et al., 2013a). Moreover, several researchers have studied the relation between the results of CBA studies and political decisions using quantitative analyses (e.g. Annema et al., 2016; Eliasson et al., 2015; Fridstrøm and Elvik, 1997; Nellthorp and Mackie, 2000; Odeck, 1996, 2010). The broad picture is that these studies show that there is no significant statistical relation between the monetized effect estimations in CBA studies and political decisions. Furthermore, several studies have analyzed how politicians use CBA by interviewing politicians (Mouter, 2016; Nyborg, 1998; Sager and Ravlum, 2005; Sager and Sørensen, 2011). These qualitative studies conclude that CBA is at best one of the factors that influences politicians' judgments. Politicians interviewed in the studies of Nyborg (1998) and Mouter (2016) stated that it was more likely that they would use CBA as ammunition in discussions with other politicians than as an input for their desirability judgment of transport projects. Sager and Ravlum (2005) argue that the institutionalization of CBA can have a symbolic value for politicians, since the search for and processing of information may itself send out signals that will enhance the status of the political body. Sager and Sørensen (2011) observe that the main function of CBA – and analytic planning input in general – is to legitimize the Norwegian Transport Plan and the political process related to it. Politicians must be able to show the public that the output of expert analysis was available to them when they made their decisions, so it can be credibly stated – should the need arise – that expert advice was considered as part of the policy-making (Sager and Sørensen, 2011). Sager (2016) outlines a variety of procedural characteristics and political mechanisms that might explain the lack of correlation between CBA results and politicians' investment decisions.

Academics have different attitudes towards the role of CBA in the decision-making process. Some scholars advocate that politicians should assign a considerable weight to CBA in their decisions (e.g. Boardman et al., 2010; Eliasson et al., 2015; Grahem, 2007; Sunstein, 2002), whereas other scholars perceive CBA as an instrument which should not be used because it is fundamentally flawed (e.g. Ackerman and Heinzerling, 2004; Frank, 2000; Kelman, 1981; Sagoff, 1988). Sen (2000, p. 931) illustrates this controversy within academia as follows: *“the discipline of cost-benefit analysis—if discipline it is—has fearless champions as well as resolute detractors. It is, partly, a battle of giants, for there are heavyweight intellectuals on both sides.”* In contrast to the abundant literature in which academics point out why they support or antagonize CBA, there is relatively little empirical knowledge of the attitudes of politicians – the end users of CBA – towards the merits of applying CBA in practice. A notable exception is Nyborg (1998) who analyzed the attitudes of 16 Norwegian Members of Parliament towards CBA. Nyborg concludes that politicians' attitudes towards CBA varied along the left-right political axis, with politicians to the left being the most skeptical. Since the data analyzed by Nyborg (1998) was gathered twenty years ago in one country (Norway) and politicians' attitudes may differ depending on, amongst others things, the country and the period of time being considered, a study of politicians' attitudes in a different context is a valuable addition to existing literature.

Hence, the present article analyzes the positive and negative attitudes of politicians towards CBA in another context – this being the Netherlands – by interviewing 26 politicians who served as Member of Parliament (MP), minister or undersecretary in the period 2003-2014 and 10 top-level civil servants who worked for ministers and/or undersecretaries in the

period 2003-2014. In their interviews, politicians were also asked to suggest any solutions which would make a positive change to their attitude.

Knowledge of politicians' attitudes towards CBA can be useful for both academics/practitioners who support CBA and academics/practitioners who antagonize CBA. Policy makers and academics supporting CBA can use this knowledge for a better alignment of CBA with the needs of the end users (politicians), by thinking of solutions which can iron out the negative attitudes and positively influence the positive attitudes for instance. Policy makers and academics antagonizing CBA can use knowledge about politicians' attitudes towards CBA for designing an ex ante evaluation instrument which can replace CBA. It is plausible to assume that end users will (only) consider exchanging CBA for an alternative evaluation instrument when the alternative instrument outperforms CBA in terms of the perceived positive and negative features. In general, the results of the present study can contribute to a systematic dialogue between politicians and planners/researchers with the purpose of matching the information demand of the former group with the information supply of the latter (Sager and Ravlum, 2005).

The remainder of this paper is organized as follows: section 2 briefly describes the position of CBA in the Dutch planning process for infrastructure projects. Section 3 presents the survey design of the study. Sections 4 and 5 present the results. Section 6 provides conclusions and discusses the key results.

2. The Position of Cost-Benefit Analysis in the Dutch planning process

This section provides the reader with the context of the position of CBA in the planning and decision-making process for infrastructure projects in the Netherlands. This enables readers who are not familiar with the Dutch planning process to put the results of this study into the right perspective. The first phase of the Dutch planning process for spatial-infrastructure projects in which the National Government is involved is the 'initiative phase' (Mouter, 2016). In this phase, the minister and the undersecretary of transport (from now on: 'executives') discuss which challenges should be tackled with regional politicians from (five) regions. If the minister and the regional politicians agree that a challenge is of major importance, they mutually agree that a project should proceed to the second phase, which is the 'MIRT-exploration' (also called 'the explorative phase'), through establishing a 'start-decision' (Ministry of Infrastructure and the Environment 2010, 2011). The 'MIRT-exploration' consists of three sub phases. Firstly, an action plan for the MIRT-exploration is established and the project team of civil servants starts with the problem analysis. Secondly, the problem analysis is completed and solutions are generated by the project team. The project team is expected to involve stakeholders and citizens in both the problem analysis and the design of the solutions. Next, the minister selects three potentially favorable alternatives in consultation with the regional politicians. Thirdly, it is mandatory to analyze the three potentially favorable alternatives using a CBA. However, a positive net present value is not a formal requirement for approved funding (Mouter, 2014).

In the Netherlands, the extent to which the mandatory CBAs have followed the standardized Guidelines (Romijn and Renes, 2013) is verified by institutes that are part of, or are affiliated with, the Ministry of Infrastructure and the Environment and in some cases by the Netherlands Bureau for Economic Policy Analysis (Mouter, 2014). One requirement set by the standardized Guidelines is that the effects of infrastructure projects are always estimated for two scenarios in a CBA, these being a conservative and an optimistic scenario (in terms of economic growth, demographic growth and traffic growth) in order to communicate the uncertainty of effect estimations to the readers of the CBA report.

Informed by the CBA (and other studies), executives select one 'preferred alternative'. This decision is deliberated with the Minister of Finance. Moreover, it is obligatory to

announce this decision to Parliament and to disclose the CBA and other reports underpinning this decision to Parliament. It is also possible that the executives decide that none of the three potentially favorable solutions should be selected as the ‘preferred alternative’, for instance, because none of the alternatives has a reasonable CBA score. In this case, the executives can ask proponents of the project (mostly regional politicians) to go back to the drawing board and to resubmit an alternative with a better CBA score. When Parliament ratifies the executives’ preferred alternative decision, the project is included in the National Program for Transport Projects (MIRT) and enters the so-called ‘refinement of the plan phase’. Since Members of Parliament (MPs) can select a different solution than the executives or make a ‘no go’ decision, they are an important actor in the decision-making process for infrastructure projects. Moreover, Parliament can change priorities in the National Program for Transport Infrastructure and demand that executives should reserve money for a project. Every year there are two debates in which the executives have to defend their preferred alternative decisions in Parliament.

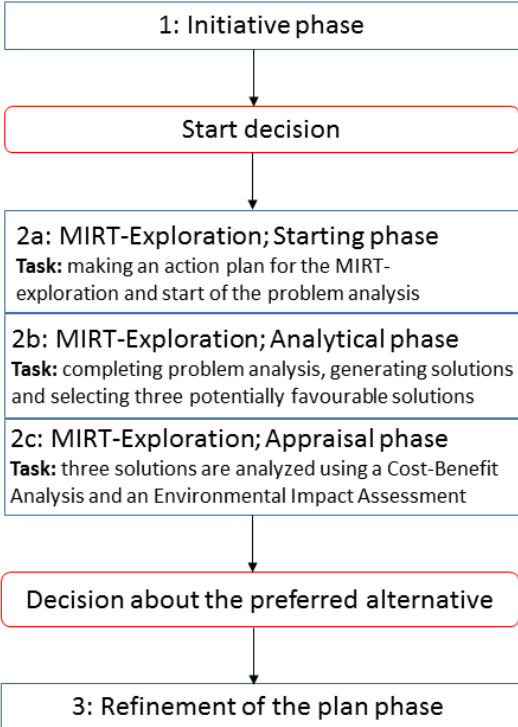


Figure 1. The phases of the planning and decision-making process for infrastructure projects in the Netherlands

Mouter et al. (2013b) conclude that civil servants sometimes use CBA at an early stage of the Dutch planning practice to assess and optimize project initiatives. These CBAs are not mandatory and are not included in the Dutch Planning Guidelines (Ministry of Infrastructure and the Environment, 2010, 2011). Finally, it can be concluded that the formal role of CBA in the Dutch planning process differs from countries such as Sweden and Norway. In these countries, CBA is formally applied to rank large numbers of investments against each other (see Eliasson et al., 2015).

3. Survey design

Since the most important end users of CBA are the executives who select a ‘preferred alternative’ informed by a CBA and MPs who ratify this decision, politicians who served in these positions in the period 2003-2014 were approached for an interview. The period 2003-2014 was selected as object of analysis, since in the period before 2003 only a few CBAs

were carried out (Annema et al., 2007). The Standing Committee for Transport consists of spokesmen who represent their party in debates and passive MPs who reflect on the viewpoints that their spokesman is planning to convey in the debate. Since the spokesmen have far more experience of CBA than the passive MPs, it was decided to only approach the MPs who had acted at least twice as spokesman in the debates on the National Program for Transport Projects in the period 2003-2014 for an interview. Moreover, two other Members of the Standing Committee who did not fulfill this criterion were approached, since they were regarded by other respondents as being important informants for research concerning Dutch politicians' attitudes towards the use of CBA in the appraisal of transport projects. Eventually, 26 politicians (22 MPs and 4 executives) were interviewed for the present study. The interviews took place in the period 2014-2015. The distribution of politicians per party was as follows: seven Christian Democrat, six Liberal, five Labor, three Social Liberal, two Socialist, one Green Party, one Christian Union and one Populist Rightwing. Relatively, more politicians from the Christian Democrats, Liberals and Labor parties were interviewed because these were the largest political parties in the period 2003-2014, which were frequently represented by two spokesmen in the debates about the National Program for Transport Projects.

Moreover, 10 (former) top-level civil servants from the Ministries of Transport and Finance who worked for ministers and/or undersecretaries in the period 2003-2014 were interviewed (1 Secretary General, 5 Director Generals, 2 Directors and 2 Political Assistants) for this research. These bureaucrats were interviewed for two reasons. Firstly, they witnessed how (several) ministers and undersecretaries felt about CBA. Secondly, since the MPs that were interviewed stated in their interviews that they regard the impact of CBA on the planning process within the Ministry of Transport as a key virtue of CBA, it was deemed useful to learn more about the impacts of CBA on this planning process by interviewing top-level civil servants. The interviews with civil servants are only used in this study for validating the politicians' statements, since this study is concerned with the attitudes of politicians towards CBA.

The option of full anonymity was offered to respondents, since some respondents were only willing to participate under this condition. To safeguard full anonymity, all respondents are denoted as being female (her or she).

Table 1 depicts for the four different parliamentary periods the number of MPs and top-level civil servants that were interviewed.¹ For the MPs, Table 1 shows - for each parliamentary period – the number of rightwing and leftwing MPs from the incumbent parties and the political opposition that were interviewed.² Table 1 shows that for each parliamentary period sufficient MPs from the incumbent parties and political opposition were interviewed.

TABLE 1: number of Members of Parliament and top-level civil servants interviewed per parliamentary period

Parliamentary period	MPs incumbent parties	MPs political opposition	Top-level civil servants
Balkenende II & III (2003-2006)	7 (6 rightwing / 1 leftwing)	7 (1 rightwing/ 6 leftwing)	6
Balkenende IV (2007-2010)	9 (5 rightwing / 4 leftwing)	4 (1 rightwing / 3 leftwing)	7
Rutte I (2010 - 2012)	5 (5 rightwing / 0 leftwing)	6 (0 rightwing / 6 leftwing)	8
Rutte II (2012 - 2017)	5 (3 rightwing / 2 leftwing)	7 (2 rightwing / 5 leftwing)	7

¹ No additional information regarding executives is provided because this might reveal their identity. For the same reason, no information about the MPs' specific political party is provided.

² Note that some respondents were Members of Parliament in all four parliamentary periods.

Four questions were asked in the interview: 1) What has been your experience with CBA? 2) What is your attitude towards CBA? 3) What advantages and caveats does CBA bring? 4) What are the solutions that would improve your attitude towards CBA? The interviews were taped, transcribed and coded. To enhance the reliability and the verifiability of the observations and conclusions of this study, respondents were asked whether they would agree to a summary of their interview being published on an open-access website.³ A draft of this summary was sent to the interviewees for comments and approval of quotations. Another academic verified the reliability of the coding of the 10 interviews which were not published on the website (2 politicians and 8 civil servants) and 5 randomly selected interviews with politicians that were published on the website. The reliability of the coding was verified as it may be tempting for an author to systematically interpret statements in favor of one's own a priori hypothesis (e.g. Nyborg, 1998). This academic did not detect any differences in coding from the author's.

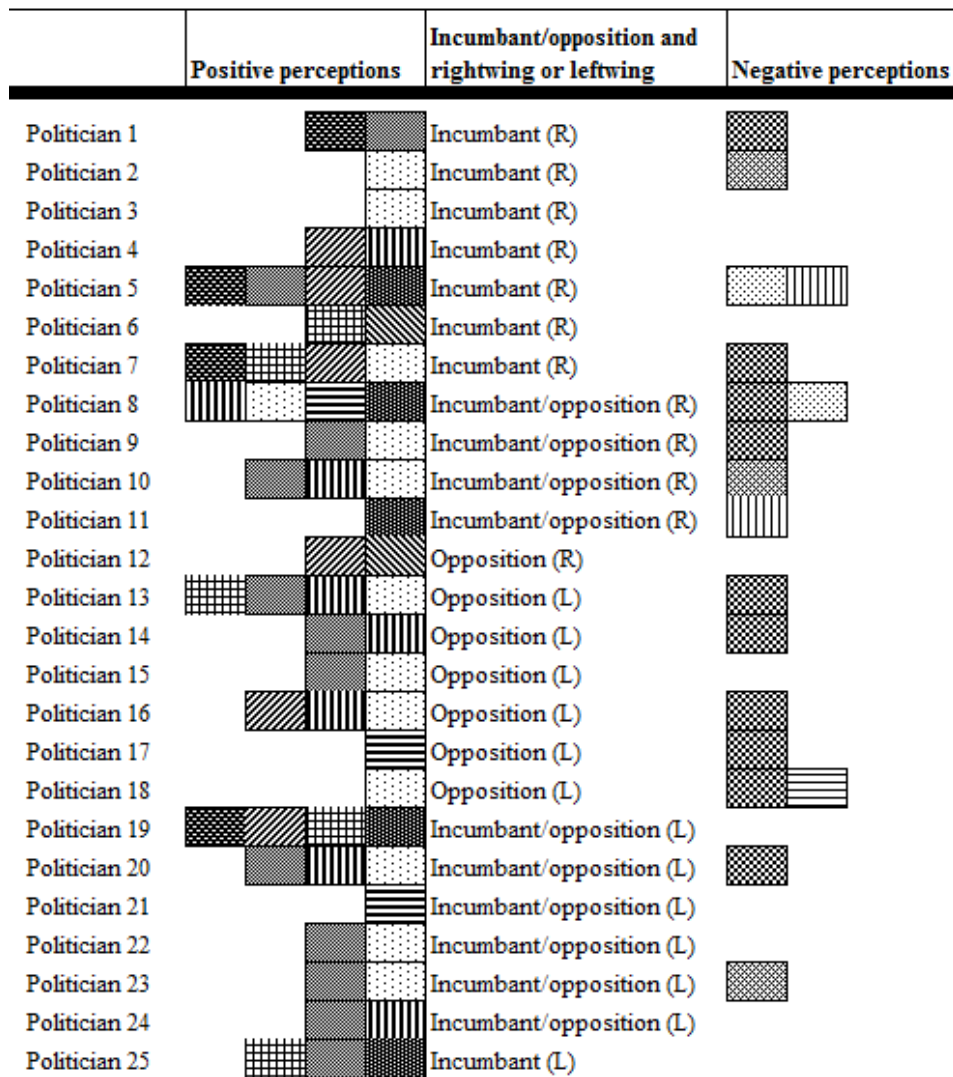
Although this study gives a good insight into Dutch politicians' attitudes towards CBA in the period of 2003–2014, 26 politicians is not a large enough sample to draw firm quantitative conclusions about larger populations (e.g. all Dutch politicians or politicians in general). Also, it is tricky to draw conclusions from this study such as: 'Solution A will have a more positive effect on politicians' attitudes towards CBA than Solution B', since the duration of the interviews varied between 20 and 120 min. In a broad sense, it was possible to discuss solutions at length with the retired politicians, whereas the interviews with politicians that were political leaders at the time of their interview were short and sometimes interrupted by important phone calls. Hence, this study should be regarded as an inventory of: (1) Dutch politicians' positive and negative perceptions towards CBA; (2) Solutions proposed by Dutch politicians to improve their attitude towards CBA. Further research should reveal whether the results hold in a more general context.

4. The Attitudes of politicians towards CBA










A first general result is that the Dutch politicians who were interviewed – without exception – support the economic appraisal of transport infrastructure projects by using CBA on the condition that CBAs are carried out in an impartial way. Despite this broad support for CBA, several politicians argue that they would prefer to abandon the CBA rather than have a state of affairs in which CBAs are produced in line with the political preferences of a Minister to rationalize her decisions. Another general notion is that several politicians, as well as articulating (positive and negative) general attitudes towards CBA, also emphasized that their attitude towards CBA can be opportunistic in specific cases. For instance, even though a politician has a positive attitude towards the institutionalization of CBA, she can perceive the CBA as a barrier against achieving her political goals in a specific case when the CBA result does not support her political viewpoint.

This section focuses on the general positive and negative attitudes towards CBA provided that the CBA is carried out in an impartial way (from now on: positive and negative attitudes towards CBA). Hence, this section does not discuss politicians' 'opportunistic attitudes in a specific case'. Figure 2 depicts, for each politician, which positive and negative perceptions towards CBA she mentioned in the interview. Also, for each politician, it is clarified whether she was a member of an incumbent party, of an opposition party or both in the period 2003-2014 and whether the politician was a member of a rightwing (R) or leftwing (L) party.

³ Summaries of 24 interviews with politicians and 2 interviews with top-level civil servants are published on the website: www.mkba-informatie.nl.



Positive perceptions

-  CBA improves the planning process
-  CBA enhances the attention given to citizens' interests in the political process
-  CBA informs politicians about all effects of a project resulting in better informed debates/decisions
-  CBA enhances sharpness/transparency political debates and underpinning political decisions
-  Negative CBA can lead to the optimization of projects
-  CBA makes (alternatives of) projects comparable in order of magnitude
-  CBA is a useful building block for forming an opinion regarding a transport project
-  CBA serves as a countervailing power
-  CBA as a bullshit detector

Negative perceptions






-  CBA is used to kill political debates
-  Use of CBA as an excuse me machine
-  The use of CBA as a delaying machine
-  The use of CBA to mystify the political trade-off
-  Negative impact on the process with citizens and stakeholders

Figure 2. Dutch politicians' positive and negative attitudes towards CBA

Figure 2 underscores the fact that the attitudes of Dutch politicians towards CBA are very positive on the condition that CBAs are carried out in an impartial way. Many politicians did not articulate any negative perceptions about a state of affairs in which CBAs are carried out in an impartial way. Moreover, Figure 2 does not provide any evidence that Dutch politicians' attitudes vary across the left-right political axis. Hence, Nyborg's conclusion (1998) that left-wing Norwegian politicians were more skeptical regarding CBA than right-wing Norwegian politicians, does not seem to hold for Dutch politicians who were active in the decision-making process for national transport projects in the period 2003-2014. Finally, Figure 2 does not indicate that politicians that were members of incumbent parties and the political opposition have substantially different attitudes towards CBA. The remainder of this section discusses the positive perceptions (section 4.1) and negative perceptions (section 4.2) towards CBA in more depth.

4.1. Positive perceptions towards CBA

Politicians state that they can see the advantages of the institutionalization of CBA in various phases of the planning and decision-making process, provided that CBAs are carried out in an impartial way. Note again, that it seems that politicians do not believe that these advantages materialize when CBAs are produced in line with the executives' preferences. This section discusses nine categories of positive perceptions.

CBA improves the planning process

Five politicians state that it is a good thing that civil servants and other stakeholders use CBA in the planning process of large transport infrastructure projects. One politician states that the institutionalization of CBA ensures that planners stay focused on the main issues instead of focusing on the side issues. Another politician states that CBA has helped to professionalize the planning process around infrastructure projects. According to this politician the key virtue of CBA is that it improves the thinking of the thousands of people who are involved in the planning of infrastructure projects, which leads to better projects and a more structured planning process. One former executive who was interviewed argues that a CBA was used as a sifting tool by her civil servants to select the projects that were potentially interesting for her to look at, which implies that only projects with an acceptable CBA score were discussed with her. The executive evaluated this as a positive role of CBA. Two top-level civil servants endorse that the CBA is used for this purpose. When projects submitted by regional civil servants score poorly in a CBA, the civil servants from the ministry then discuss this with the regional civil servants, clarifying that it would be better not to have any high expectations about receiving a national contribution for the project because of the poor CBA score. Hence, in this process, many projects are terminated before they even reach national executives.

CBA enhances the attention given to citizens' interests in the political process

Three politicians argue that the concerns of people who are harmed by an infrastructure project are taken into account in a more careful way when a CBA is used. According to one of these politicians, people who are harmed by a project deserve a careful planning process and a CBA can potentially provide insights, showing that their stakes are unreasonably impaired through the project. The second politician argues that CBA – and also the Environmental Impact Assessment (EIA) – gives people the feeling that their voices are heard. According to this respondent, in the 1960s the Government just built a road whenever they desired, despite the mass protests of citizens. After the introduction of instruments like the EIA and the CBA, the Government was no longer permitted to build a road that had negative impacts on

livability or the environment before they had assessed the positive and negative effects of a project in an EIA and a CBA.

CBA informs politicians about all the effects of a project, which results in better informed debates and decisions

Thirteen politicians regard CBA as a praiseworthy attempt to list all the effects of a project in a structured way. Politicians think that this is advantageous because it can prevent politicians from forgetting to consider an important consequence for citizens in the decision-making process. Politicians think it is very important to make decisions when they have been informed of all the relevant arguments for and against the project and, according to them, a CBA is an important means of fulfilling this need. Politicians argue that a related advantage of the fact that a CBA produces a structured list of all the positive and negative effects of a project is that their awareness of a project's effects is enhanced which, in turn, results in better informed debates about a project's desirability.

CBA enhances the sharpness of political debates and the underpinning of political decisions

Another virtue of CBA, mentioned by eight politicians, is that CBA outcomes enhance the sharpness of political debates and the underpinning of political decisions. Politicians have found a need to argue in a more precise way about why they want a (specific alignment of a) transport project despite a negative CBA, or why they don't want a project despite a positive CBA. Politicians argue that without a CBA, quite frequently, the necessity of an infrastructure project is underpinned in a very general way: "*we need this road because it is good for the country*" or "*this railroad is important for the regional economy.*" The result of a very negative CBA is that these general arguments will be contested in political debates by politicians opposing the project. Subsequently, politicians supporting the infrastructure project need to come up with other – and, in the view of the respondents – probably more honest arguments to underpin the necessity of the infrastructure project. Politicians who were interviewed gave some examples of these 'different types of arguments': "*although we are aware of the negative CBA, we still think that a new road in this region is important, since we want to distribute welfare all over the country*" or "*I am aware of the fact that the CBA is negative, but I am prepared to pay this price for the effects which are not included in the benefit-cost ratio (BCR) which is, in this case, preserving a nature reserve*". Moreover, a politician who regularly supports projects with a negative CBA states that a CBA enhances the accountability of her decisions: "*even with a negative CBA you can still say to the people: we know that the CBA is negative, but we still think it is important to invest in this peripheral region and not only in the urbanized areas.*"

Several top-level civil servants endorse the observation of politicians that the CBA improves the sharpness of the underpinning of political debates about infrastructure projects and political decisions. One civil servant observes an improvement of the clarity, honesty and transparency of debates around infrastructure projects as a result of the application of CBA. According to her, it is difficult for politicians to get away with general arguments for underpinning a transport project. A negative CBA forces politicians to be transparent about their genuine arguments to support the project. Another civil servant observes that a virtue of CBA is that it makes the political trade-off, which should be discussed in the political debate, more explicit. A CBA consists of a final indicator (such as the benefit-cost ratio and/or the net present value) and non-monetized effects. According to the civil servant, it is up to politicians to discuss the extent to which more value should be assigned to the non-monetized effects or to the monetized effects aggregated in the final indicator(s).

Negative CBA can lead to the optimization of projects

As well as provoking a sharper debate around the desirability of a project, a negative CBA can also lead to the conclusion in a debate that civil servants need to go back to the drawing board to come up with a more cost-efficient design (see section 2). Two politicians observe that the institutionalization of CBA can enhance creativity. When the CBA result is very negative, civil servants are forced to think more creatively about solutions and come up with solutions that they had never thought about before. One politician's experience was that new ideas emerged which then lead to savings of a few hundred million euros when the CBA turned out to be negative.

CBA makes (alternatives of) projects comparable in order of magnitude

None of the politicians participating in this study believes that the observation that “the benefit-cost ratio of project (alternative) A is higher than the benefit-cost ratio of project (alternative) B” should dictate that politicians should choose for project (alternative) A. However, six politicians think that an advantage of CBA is that it provides them with an indication of the merits of the viability of different projects (alternatives), which they can then use as one of the arguments for making a decision.

CBA is a useful building block for forming an opinion regarding a transport project

Twelve politicians consider CBA to be a useful building block for forming an opinion regarding a transport project because CBA provides insight into the order of magnitude of the effects accruing from a project by transferring the effects into money, which provides guidance when making decisions. According to politicians, it is easier to make a decision with insight into the order of magnitude of a project's effects than without this information. These politicians speak about CBA as a ‘useful framework for thought’. Politicians state that they can take the results of a CBA into consideration when they have to make a trade-off between a set of effects accruing from a project that they consider to be important. One politician states that the information regarding a project's monetized travel time benefits and monetized environmental costs helped her when making a decision on the extent to which travelers' time savings can legitimate the project's negative impacts on the environment.

Dutch politicians clearly believe that political decision-making should be based on both results from empirical studies and softer elements such as emotions, gut feeling and political conviction. None of the politicians thinks that the results of a CBA, an EIA or another study should dictate the outcome of a political process. On the other hand, none of the politicians seems to prefer fact-free politics. Various politicians articulate in their interview that they support the institutionalization of CBA, since they think it is important that politicians are enabled to make decisions based on both factual information regarding the effects of a project, as well as their convictions/gut feeling. It is noteworthy that politicians have different views on the optimal balancing point at the continuum between ‘evidence-based policy-making’ and ‘decision-making based on convictions/gut feeling’. Some politicians argue that, at present, the decision-making process for infrastructure projects is too technocratic and that there is too little space for, as they coin it, ‘political trade-offs’. However, even the politicians who advocate ‘more space for political trade-offs’ believe that politics will turn into a ‘blurred soup’ should CBA be abandoned.

CBA serves as a countervailing power

In the view of five politicians, CBA provides an excellent countervailing power against projects which are purely pursued to foster the prestige of a politician, to do justice to the emotions of a certain part of society or to other soft elements. Several politicians label CBA as a ‘useful reality check’. According to them, CBA assists the verification of the truism of the political beliefs and narratives. Another politician observes that the discourse around a

project can change when the outcomes of a CBA do not match the political convictions. This politician found that a CBA helped her to realize that political convictions were contestable when more and more people in the ‘corridors of power’ advised her to look at the results of a critical CBA study that analyzed a project which was already deemed to be ‘politically unstoppable’.

CBA as a bullshit detector

A virtue of CBA for the political process that four politicians mentioned is that the firm institutionalization of the instrument in the year 2000 prevented the development of some projects that would have had a negative impact on the welfare of the Netherlands and it will prevent the development of such projects in the future. These politicians argue that CBA assists in preventing positive decisions on ‘the most idiotic of projects.’

4.2 Negative perceptions towards CBA

Albeit Dutch politicians support the economic appraisal of transport infrastructure projects by using CBA on the condition that CBAs are carried out in an impartial way, they also observe several disadvantages of the use of CBA in the political process. The thread of politicians’ negative perceptions is that they consider CBA to be a useful instrument which is frequently used for the wrong purposes. This section discusses five categories of negative attitudes.

CBA is used to kill political debates

Ten politicians perceive that a negative characteristic of the way that CBA is currently used in political debates is that the instrument is regularly used to ‘kill the political debate’ (interviewees also called this: ‘blocking the political debate’ or ‘throttling the political debate’). Politicians state that the CBA is frequently used in the debate to terminate a political discussion. The politician who uses a CBA ‘to kill the political debate’ portrays CBA as a method that produces a ‘holy verdict’, which makes further political discussion obsolete. Politicians qualify the use of CBA as an instrument which covers the total political trade-off in an unambiguous scientific way as pretentious, misleading and dangerous, since they believe that CBA produces information about only a part of the political trade-off. Spatial equity, public support and welfare effects that are not considered in CBAs – such as unexpected positive effects of infrastructure projects on economic development – are mentioned as elements in the political trade-off that are not captured in the CBA. According to one respondent, politicians who keep flagging a CBA report and argue that other politicians cannot want a project due to a negative CBA, are poisoning the democratic debate. It is noteworthy that the politicians who have a negative attitude towards the use of CBA to kill a political debate still support the institutionalization of CBA – provided that CBAs are carried out in an impartial way. These politicians coin the use of CBA to kill the political debate, for instance, as ‘misusing a useful and sympathetic tool’.

Two politicians mention a further disadvantage of the use of CBA to kill political debates: non-monetized effects have a relatively weak position in the CBA. Non-monetized effects are not included in the final indicator of the CBA. However, the political debate is killed, based on this final indicator. One of these two politicians refers to a project’s effects on biodiversity as an example of a non-monetized effect with a weak position. The politician thinks that it is undesirable that her colleagues underpin decisions solely based on the final indicator of the CBA and pretend that the goodness of a project is proved in an objective way, since the final indicator of the CBA is positive. The issue with the relatively weak position of non-monetized effects when the political debate is killed using solely the final indicator of a CBA study is endorsed by top-level civil servants. One top-level civil servant explains that ideally politicians are aware of both the monetized final indicator, the quantitative effects and

the qualitative effects and that the political debate should be concerned with the question of how these three factors are weighted by politicians. However, in practice the focus is on the aggregated monetized indicator. Another top-level civil servant describes the fact that non-monetized effects easily disappear out of sight as a ‘macabre characteristic of CBA’.

Use of CBA as an ‘excuse me machine’

Three politicians also reveal a negative attitude towards the use of CBA as an ‘excuse me machine’ (interviewees also call this use of CBA: a ‘deus ex machina’ or ‘window dressing’). Respondents argue that politicians think it is difficult to say ‘no’ to people who experience a problem and demand that the Government comes up with a project to solve their problem. For politicians it is more comfortable to say to these people that no project will go ahead because the CBA is negative than to say to these people that their problem has no priority. An alternative way of using the CBA as ‘an excuse me machine’ that the politicians identified is the use of a CBA to legitimize a change of opinion with respect to an infrastructure project. It is difficult for politicians to change their opinion, since they run the risk of being accused by journalists and rival politicians of being unreliable. A possible way out in such a situation is the publication of a study which supports the new opinion of the politician. Subsequently, the politician can argue that, based on the results of this report, it was inescapable to modify her viewpoint.

The use of CBA as a ‘delaying machine’

Two politicians have a negative attitude towards using CBA as a ‘delaying machine’. They argue that other politicians ask for a CBA or an update of a CBA to delay the decision-making process, hoping that the outcome of the new CBA better coincides with their views or that something changes in the political climate to their advantage during the completion of a further CBA.

Negative impact on the process with citizens and stakeholders

Two politicians had experience of a CBA frustrating the process with stakeholders. The politicians found that when it was announced that the effects of a project would be analyzed by using a CBA, it gave hope to the stakeholders and citizens who disagreed with the intended political decision. Stakeholders who contest a political decision anticipate that the political decision might be adjusted if the CBA result supports their viewpoint. These politicians feel that stakeholders get frustrated when, despite a negative CBA outcome, in the end the politicians decide not to go along with the CBA results, as the study does not support their viewpoint (instead it supports the viewpoint of the opposing stakeholders). Both politicians think that it would be better not to carry out a CBA when the political decision is already set in stone, since this will only lead to false expectations for the people opposing the project.

The use of CBA to mystify the political trade-off

Finally, one politician – who was a member of the opposition during her term of office – has a negative attitude towards CBA when it is being used to mystify a political trade-off. This politician illustrates her claim with an example: “*Suppose that the expansion of Schiphol airport results in 3,500 additional jobs and at the same time causes sleeping disorders for 85,000 people. If the minister chooses to go on with this project, she implicitly assigns more weight to the 3,500 jobs than to the 85,000 people with sleeping disorders.*” The politician states that as a member of the political opposition one wants to emphasize this trade-off, and subsequently contest this trade-off in a political debate. However, the CBA hampers this possibility, since the implicit political trade-off is hidden away in a CBA report because all effects are monetized and accumulated in a final indicator. In this politician’s experience, she

found that one has to dig deep into a CBA report to unravel the implicit political trade-off. She argues that the reason why executives prefer to obscure the political trade-off is that they want to minimize the attention given to the fact that the stakes of some people were given preference over the stakes of other people. The politician thinks that if it is made explicit that a minister weighted the stakes of one group of people relatively lowly, then these people will cry out for more attention and demand that their voices are heard. If these people attract enough media attention, it is inevitable that the executives will have to do something for these people. Next, you get a debate around the solution that the minister invented for these people. According to the respondent, executives prefer a state of affairs in which these debates never take place. Also according to this respondent, a perfect means to avoid such debates is by concealing the political trade-off in a research report and subsequently say: “*the CBA concludes that this project is positive for our society, hence we should do it.*” Furthermore, the executive only has to engage in a relatively safe debate, focusing on ‘the correctness of the figures’ and thus avoiding a more emotional-political debate around the implicit political trade-off in which the stakes of a certain group in society were weighted lower than the stakes of another group in society.

5. Solutions

In the interviews, politicians were asked to think about solutions that would improve their attitude towards CBA. These solutions will be discussed in this section.

1. Give MPs enough time to verify whether CBAs are carried out in an impartial way

Particularly interviewed MPs argue that the perceived impartiality of the calculations in CBAs can be enhanced when CBAs are published one or two months before the debate on the National Program for Infrastructure Projects. MPs want to minimize the probability that they determine their viewpoint based on incorrect or colored information. Hence, they ask a confidante in their network (usually a member of their own political party with economic expertise) to verify whether the CBA has been carried out in an impartial way before they decide to reconsider their viewpoint regarding a transport project based on the results of a CBA. Therefore, confidantes need sufficient time for this verification. However, MPs argue that, currently, it often happens that CBAs are published a week or a few days before this debate.⁴ According to politicians, another advantage of publishing CBAs early can be that a public debate commences after the publication of the CBA report in which all the pros and cons of the CBA are brought to the fore. According to the politicians, this can result in a more nuanced use of CBA, which reduces the probability that politicians will use CBA to kill the political debate. Note that safeguarding the early publication of CBAs also enhances the extent to which politicians can use the CBA in forming their viewpoint regarding a transport project (Mouter, 2016).

2 Improve the trust that CBAs are carried out in an impartial way by giving independent institutions a role in the process

Various politicians state that giving independent institutions a role in the process will improve their trust that CBAs are carried out in an impartial way and thus their attitude towards CBA. Several politicians argue that the Research Bureau for Government Spending (a small research agency that is part of Parliament) should verify the extent to which CBAs are carried

⁴ It is worth remarking that the Dutch Cabinet recently stated that, based on a report in Dutch concerning the results presented in this paper, they attach importance to sending a CBA for an infrastructure project to Parliament at least one month, but preferably two months, before the debate regarding the National Budget for Transport Infrastructure (Ministry of Infrastructure and the Environment, 2016ab).

out in an impartial way. Other politicians think that the commissioner of a CBA study should be an institution with no interest in the results of the CBA. Moreover, one politician proposes a system in which CBA analysts are certified.

3. Make it explicitly clear which elements of the political trade-off are (not) covered by a CBA
Politicians who have found that CBA is used for killing the political debate by portraying it as an instrument which encompasses the total political trade-off believe that making it explicitly clear exactly which part of the political trade-off is covered and which part of the trade-off is not covered would minimize the use of CBA to kill the political debate.

4. Make the calculations of the CBA verifiable
Several MPs argue that improving the verifiability of the underlying calculations of CBAs not only enhances the trust that CBAs are carried out in an impartial way, but also diminishes the extent to which the studies could be used by executives to kill the political debate. These MPs argue that executives regularly underpin their decisions with a ‘solid CBA’. According to the respondents, it is difficult to argue against this claim made by the executives when there is not enough background information available to verify and possibly contest the calculations. Respondents argue that the consequence of an enhanced verifiability of CBAs creates a level playing field in which executives and MPs have equal opportunities to use the results of CBAs in the debate.

5. Position CBA as a modest instrument (by changing the name of the instrument)
One politician thinks it is misleading to call a rough – and in her view, incomplete – analysis of future costs and benefits based on an array of assumptions a ‘Cost-Benefit Analysis’. Although this politician classifies the CBA as a useful method, she thinks that the name of the instrument is pretentious. This name gives the instrument a shield which it doesn’t deserve. According to the politician, changing the name of the instrument into ‘Benefit-Cost Indication’ would diminish the throttling impact of a CBA on political debates. Moreover, the politician thinks that this qualification would better justify the rough character of the method. Other politicians agree that a more modest positioning of the instrument – for instance by making it explicit that the outcome is highly sensitive to assumptions through sensitivity analyses – could diminish the probability that the instrument will be used to kill the political debate.

6. Politicians should have more self-discipline
Several respondents argue that politicians should have more self-discipline, using the CBA as a building block for political discussion rather than as a means to block the political debate. At the same time, several politicians are negative about the feasibility of this solution. One politician outlines the fact that debates concerning infrastructure projects are ‘digital’. As a politician you are expected to either support or oppose an infrastructure project. When the CBA supports your view, you use this in your argumentation and when the outcome is not in line with your view, you do not use it or you contest the reliability and the validity of the CBA. According to this politician, it is tempting to simplify the debate and argue that the CBA proves you are right when the CBA supports your view. Another politician argues that politicians and their spin-doctors are inclined to immediately frame the conclusions of research reports in favor of their own political preferences.

7. Describe the project’s effects on disaggregated levels
The politician who argued that the CBA is used for mystifying political trade-offs thinks that the effects of a transport project should be presented in a disaggregated way to facilitate the

political discussion. For instance, when a transport project results in travel time savings but harms a recreational area, politicians should be provided with information about: 1) the costs of the project; 2) how many people save time and how much time do they save as a result of the transport project on an average day; 3) how many people use the area for recreation each year and to what extent is their recreational experience harmed by the transport project. The politician argues that – besides the construction and maintenance costs – she is not really interested in the monetized effects of a project, since it is difficult to grasp what the implications of these figures are for the lives of citizens who are affected by the transport project. The disaggregated information provides the politician with better information about the effects of the transport project for citizens, which she can use to form an opinion about the desirability of the transport project.

6. Conclusions, discussion and further research

6.1 Conclusions and discussion

The first conclusion of this study is that Dutch politicians' attitudes towards CBA are positive on the condition that CBAs are carried out in an impartial way. None of the politicians who were interviewed advocates abandoning CBA when the impartiality of calculations carried out in the CBA can be ensured. This positive attitude echoes the results of Mouter et al. (2013b) who – based on interviews with 86 key individuals (e.g. civil servants, consultants and academics) in the Dutch appraisal process of infrastructure projects – concluded that there is consensus that CBA should have a role in the appraisal process.

Provided that CBAs are carried out in an impartial way, politicians have a shared positive attitude towards several features of the institutionalization of CBA. Politicians participating in this study reveal solely positive attitudes towards, amongst other things: 1) the role of CBA in the planning process around infrastructure projects; 2) the attempt of CBA to list all the effects of a project in a structured way; 3) CBA being a building block for forming an opinion regarding a transport project.

As well as the wide political support for CBA, politicians also think that the instrument is regularly used for the wrong purposes in the political process. They criticize the use of CBA for killing political debate, delaying political decision-making or mystifying the political trade-off. Politicians seem to regard using CBA for these purposes as 'foul play', yet they seem to believe that the benefits that come along with CBA outweigh the downside that CBA results are regularly misused in the political process.

An interesting observation is that politicians generally applaud the use of CBA to enhance the sharpness of political debate, but on the other hand, politicians dislike the use of CBA as a 'holy verdict' which encompasses the whole political trade-off and thus makes further political debate obsolete. It is worth noting that the borderline between 'the use of CBA to sharpen a political debate' and 'the use of CBA as a holy verdict to kill the political debate' seems to be thin and that, at the same time, the attitude of several politicians becomes substantially more negative when this borderline is crossed.

Several solutions put forward by politicians to improve their attitude towards CBA focus on ensuring the fact that they can trust that CBAs are carried out in an impartial way (e.g. "Give MPs enough time to verify whether CBAs are carried out in an impartial way"; "Improve the trust that CBAs are carried out in an impartial way by giving independent institutions a role in the process"; "Make the calculations of the CBA verifiable"). Several other solutions suggested by politicians focus on diminishing the probability that CBA is used to kill the political debate. The thread of these solutions is that it is more difficult to use a CBA for killing a political debate when politicians recognize that CBA does not encompass the whole political trade-off (e.g. CBA does not include political concern for equity, see van

Wee, 2011; Fridstrøm and Elvik, 1997). Politicians state that this can be achieved when CBA reports make it explicitly clear exactly which part of the political trade-off is covered and which part of the trade-off is not covered. Also, politicians think that making it explicitly clear that the outcome of a CBA is highly sensitive to assumptions through sensitivity analyses, could diminish the probability that the instrument will be used to kill the political debate. At the same time, politicians seem to agree that the use of CBA – and information in general – to kill a political debate is a fact of life in the political arena. Politicians are expected to either support or oppose an infrastructure project in a political debate and under these circumstances it is tempting to simplify the debate and argue that the CBA proves you are right when the CBA supports your view.

An interesting observation that can be derived from the solutions suggested by politicians is that they, on the one hand, would like all effects that are covered in the CBA to be scrutinized in an impartial way but, on the other hand, they want the inherent partiality of the method to be recognized by making it explicitly clear which elements of the political trade-off are not considered in the CBA. Hence, the ideal situation according to the politicians interviewed in this study seems to be that politicians participating in a debate know: 1) precisely which elements are covered in a CBA and which elements are not covered in a CBA; 2) that non-monetized effects are studied in the CBA, but not included in the final indicator of the CBA; 3) that they can trust the fact that all effects that are covered in the CBA are scrutinized in an impartial way.

Another noteworthy observation is that some features of the CBA are evaluated ambiguously by politicians. These features predominantly relate to the use of CBA in the political debate and in discussions with stakeholders. Firstly, some politicians perceive that a virtue of CBA is that it makes the political trade-off more explicit (and therefore more transparent and accountable), since a CBA consists of a final indicator and non-monetized effects and the CBA puts politicians into a good position to debate over the question as to whether more value should be assigned to the non-monetized effects or to the monetized effects aggregated in the final indicator. Contrastingly, one politician feels that the application of CBA obscures the political trade-off, since all the effects are aggregated into a final indicator. Hence, there is controversy around the question as to whether or not the CBA improves the explicitness of political trade-offs. Secondly, some politicians have found that CBA can have a negative impact on the process with stakeholders and citizens, since these actors derive false hope that politicians might change their view when they are confronted with the results of a CBA. On the other hand, there are also politicians who have found that the process with stakeholders and citizens is enhanced as a result of the institutionalization of CBA. These politicians perceive that the concerns of people who are harmed by an infrastructure project are taken into account in a more careful way than in a situation without a CBA. Hence, politicians disagree on the extent to which CBA has a positive role in the process with citizens and stakeholders.

6.2 Further research

A first interesting topic for further research that can be derived from this research is to examine the extent to which politicians' attitudes towards CBA – and the solutions they propose to improve their attitudes – can be generalized and applied to other countries. Do politicians in other countries have an equally positive attitude towards CBA as they do in the Netherlands? Perhaps, politicians' attitudes are different in countries in which politicians only have a limited possibility – or no possibility at all – to decide positively upon a project with a negative CBA result? For instance, Gomez-Lobo (2012) showed that a positive benefit–cost ratio is virtually a prerequisite for funding public projects in Chile. Moreover, in the United

Kingdom, in principle, no schemes with a benefit-cost ratio lower than 1.0 are approved (DfT, 2014, 2015).⁵

An interesting observation that can be derived from the solutions raised by politicians to improve their attitude towards CBA is that the solutions focus on process-related issues and not on ameliorating substantive problems. A practical recommendation for practitioners and researchers who believe that it is important to improve politicians' attitudes towards CBA that follows from this observation is to consider allocating more resources to research which focuses on improving politicians' trust that CBAs are carried out in an impartial way and to diminish opportunities for the perceived misuse of CBA in a political debate instead of allocating resources to topics that are widely studied at present (e.g. wider economic benefits, measuring and monetizing reliability). This recommendation is in line with Sager (2013) who also observes that there are no clear indications that higher comprehensiveness has made the application of CBA results any more attractive to politicians. According to Sager politicians might ask for methodological improvements of CBA for opportunistic and symbolic reasons. For instance, Sager observes that Norwegian politicians ask for methodological improvements because these improvements might make a number of projects appear more beneficial for society (Sager, 2016) and politicians can point out the inadequacy of the CBA as a reason for not deciding in line with CBA results (Sager and Ravlum, 2005).

Moreover, it would be interesting to further explore the solutions proposed by Dutch politicians. In the Netherlands, several studies concluded that although non-monetized effects are studied in the CBA, reports do not communicate in a very prominent way the fact that non-monetized effects are not included in the final indicator of the CBA (Annema and Koopmans, 2015; Mouter et al., 2015). Moreover, Dutch CBA reports do not explicitly describe which elements of the political trade-off are considered in a CBA and which are not. At best, Dutch CBA reports articulate that CBA does not encompass all the elements that are relevant in political decision-making. Hence, it can be established that there is room for improvement in the Netherlands.

It would be interesting to investigate the extent to which other countries have a more sophisticated practice than the Netherlands in terms of increasing the awareness and recognition of the fact that CBA does not encompass the whole political trade-off, communication concerning non-monetized effects and ensuring impartiality of calculations in the CBA. Also, it is interesting to survey how these solutions are evaluated by politicians in these countries.

Acknowledgements: The author wishes to thank two anonymous reviewers for their useful comments, Jan Anne Annema for verifying the reliability of 15 interviews and for commenting on the manuscript and Bert van Wee for commenting on the manuscript.

7. References

- Ackerman, F., Heinzerling, L., 2004. *Priceless: On Knowing the Price of Everything and the Value of Nothing*. New York: The New Press.
- Annema, J.A., Koopmans, C.C., Van Wee, B., 2007. Evaluating transport infrastructure investments: the Dutch experience with a standardised approach. *Transport Reviews* 27(2), 125–150.

⁵ An exception is the Sheffield Tram-Train pilot which was granted on the basis that it is a pilot designed to test the range of issues, costs and opportunities involved in introducing the tram train concept to the UK (DfT, 2015).

- Annema, J.A., Koopmans., C.C., 2015. The practice of valuing the environment in cost-benefit analysis in transport and spatial projects. *Environment planning and management* 58 (9), 1635-1648.
- Annema, J.A., Frenken, K., Koopmans, C.C., Kroesen, M., 2016. Relating cost-benefit analysis results with transport project decisions in the Netherlands. *Letters in Spatial and Resource Sciences*. Published online: 10.1007/s12076-016-0175-5
- Boardman, A.E., Greenberg, D.H., Vining, A.R., Weimer, D.L., 2010. *Cost-Benefit Analysis: Concept and Practice* (Fourth Edition). Upper Saddle River: Prentice Hall.
- DfT (Department for Transport)., 2014. Percentage of DfT's appraised project spending that is assessed as high or very high value for money.
- DfT (Department for Transport)., 2015. Percentage of DfT's appraised project spending that is assessed as high or very high value for money.
- Eliasson, J., Lundberg, M., 2012. Do cost-benefit analyses influence transport investment decisions? Experiences from the Swedish transport investment plan 2010–2021. *Transport Reviews* 32 (1), 29–48.
- Eliasson, J., Börjesson, M., Odeck, J., Welde, M., 2015. Does benefit-cost efficiency influence transport investment decisions? *Journal of Transport Economics and Policy* 49, 377–396.
- Frank, R.H., 2000. Why Is Cost-Benefit Analysis So Controversial? *Journal of Legal Studies* 29(2), 913-930.
- Fridstrøm, L., Elvik, R., 1997. The barely revealed preference behind road investment priorities. *Public Choice*, 92, 145–168.
- Gomez-Lobo, A., 2012. Institutional safeguards for cost benefit analysis: lessons from the Chilean national investment system, *Journal of Cost–Benefit Analysis*, 3.
- Graham, J.D., 2007. The Evolving Regulatory Role Of The U.S. Office Of Management And Budget. *Review of Environmental Economics and Policy* 1(2), 171–191.
- Kelman, S., 1981. Cost-benefit analysis: an ethical critique. In: Donaldson, T., Werhane, P.H., Cording, M. (eds.) *Ethical Issues in Business: A Philosophical Approach*, Prentice Hall, Upper Saddle River, 559–564.
- Mackie, P.J., Preston, J., 1998. Twenty-one sources of error and bias in transport appraisal. *Transport Policy* 5 (1), 1-7.
- Mackie, P.J., Worsley, T., Eliasson, J., 2014. Transport Appraisal Revisited. *Research in Transportation Economics* 47, pp. 3-18.
- Ministry of Infrastructure and the Environment., 2010. Manual for exploration phase spatial-infrastructure projects (In Dutch: Handreiking MIRT-Verkenning). The Hague.
- Ministry of Infrastructure and the Environment., 2011. Guidelines for the National Program for Infrastructure, Spatial Planning and Transport (In Dutch: Spelregels van het MIRT). The Hague.
- Ministry of Infrastructure and the Environment., 2016b. Aanbiedingsbrief met kabinetsreactie IBO Flexibiliteit in Infrastructurele Planning, The Hague.
- Ministry of Infrastructure and the Environment., 2016a. Interdepartementaal Onderzoek Flexibiliteit in de infrastructurele planning (Interdepartmental research: flexibility in infrastructural planning). Boereboom, M., 2016. The Hague.
- Mouter, N., 2014. *Cost-Benefit Analysis in Practice*. Thesis. Delft University of Technology.
- Mouter, N., 2016. Dutch Politicians' Use of Cost-Benefit Analysis. *Transportation*. Published online. DOI 10.1007/s11116-016-9697-3

- Mouter, N., Annema, J.A., Van Wee, B., 2013a. Ranking the substantive problems in the Dutch Cost-Benefit Analysis practice. *Transportation Research Part A* 49, 241-255.
- Mouter, N., Annema, J.A., Van Wee, B., 2013b. Attitudes towards the role of cost-benefit analysis in the decision-making process for spatial-infrastructure projects: a Dutch case study. *Transportation Research Part A* 58, 1-18.
- Mouter, N., Annema, J.A., Van Wee, B., 2015. Managing the insolvable limitations of cost-benefit analysis: results of an interview based study. *Transportation* 42 (2), 277-302.
- Nellthorp, J., Mackie, P.J., 2000. The UK roads review – A hedonic model of decision making. *Transport Policy* 7, 127-138.
- Nyborg, K., 1998. Some Norwegian politicians' use of cost-benefit analysis. *Public Choice*. 95, 381-401.
- Odeck, J., 1996. Ranking of regional road investment in Norway. *Transportation* 23, 123-140.
- Odeck, J., 2010. What determines decision-makers' preferences for road investments? Evidence from the Norwegian road sector. *Transport Reviews*, 30(4), 473-94.
- Romijn, G., Renes, G., 2013. Dutch General CBA Guideline. In Dutch: Algemene Leidraad voor maatschappelijke kosten-batenanalyse. Centraal Planbureau en Planbureau voor de Leefomgeving, The Hague.
- Sager, T., 2013. The comprehensiveness dilemma of cost-benefit analysis. *European Journal of Transport and Infrastructure Research* 13, 169-183.
- Sager, T., 2016. Why don't cost-benefit results count for more? The case of Norwegian road investment priorities. *Urban, Planning and Transport Research* 4 (1), 101-121, DOI: 10.1080/21650020.2016.1192957
- Sager, T., Ravlum, I.A., 2005. The political relevance of planners' analysis: the case of a parliamentary standing committee. *Planning Theory* 4 (1), 33-65.
- Sager, T., Sørensen, C.H., 2011. Planning and political steering with new public management, *European Planning Studies*. 19(2), 217-41.
- Sagoff, M., 1998. *The economy of the earth*. Cambridge University press. Cambridge.
- Sen, A.K., 2000. The discipline of cost-benefit analysis. *The journal of Legal Studies* 29 (2), 931-952.
- Sunstein, C.R., 2002. *The Cost-Benefit State: The Future of Regulatory Protection*. Chicago: American Bar Foundation.
- Van Wee, G.P., 2011. *Transport And Ethics. Ethics and the Evaluation of Transport Policies and Projects*. Edward Elgar Publishing.