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# Cost-benefit analysis (CBA), or multi-criteria decision-making (MCDM) or both: politicians' perspective in transport policy appraisal

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## Abstract

The scientific literature frequently discusses questions if cost-benefit analysis (CBA) or multi-criteria decision-making (MCDM) is the appropriate appraisal tool in transport policy-making, or a combination of both. Hardly any literature exists on the opinions of real transport policy decision-makers about appraisal tools such as CBA or MCDM (or both) which are actually supposed to help them. The aim of this paper is to discuss from a politicians' perspective how a useful transport policy appraisal tool might look like. Twenty-one Dutch transport politicians were interviewed on their views on CBA. The results show that they use CBA but in a non-decisive manner and they find the aggregate outcome (the composite result) of CBAs pretentious. They seem especially interested in appraisal tools which show clearly to them the political important trade-offs of a transport policy. This paper proposes a possible approach for such a trade-off information sheet using both CBA and MCDM.

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## 1. Introduction

In the year 2000 the Dutch government decided to make cost-benefit analysis (CBA) mandatory for supporting large transportation infrastructure project decisions. A Multi-criteria decision-making<sup>†</sup> (MCDM) was also considered as becoming the mandatory supporting tool but was declined for two main reasons: First, the basis for the assigned

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<sup>†</sup> MCDM is also referred to as MCDA (multi-criteria decision-making analysis) or MCA (Multi-criteria analysis). In this paper we use only the term MCDM for the sake of clarity.

weights was considered to be not always clear in MCDM. Second, double-counting of project effects would be more difficult to avoid in MCDM compared to CBA because strict criteria for the inclusion of effects are lacking. However, after 15 years of CBA practice in transport policy-making, this tool is not undisputed. Mouter *et al.* (2013) interviewed 86 key players in the Dutch CBA practice (consultants, civil servants, lobbyists, academics). One of their outcomes was that *‘in the Dutch CBA practice there is agreement that CBA must have ‘a’ role in the appraisal process of spatial-infrastructure projects. However, despite this wide support for CBA, there is a lot of controversy among economists and spatial planners concerning the value that is and should be assigned to CBA in the decision-making process (p1).* Dimitriou *et al.* (2013, p.23) came to a harsher judgment related to CBA: *‘Of the 44 international infrastructure specialists interviewed in this study, 84% considered CBA to be inadequate as a tool to appraise Mega Transport Projects’.*

This brings us to some questions. Is CBA actually the appropriate tool in the appraisal process of transport policies? Would MCDM be better? Or a combination of both? The scientific literature discusses these questions frequently (see further Section 2). This paper builds on this literature but attempts to bring the debate further by adding the views of politicians. We deem it important to take the politician’s view into account in this scientific debate because, surely, these tools are aimed to support their decision-making.

Therefore, in this study twenty-one Dutch politicians actively involved in transport policy decision making were interviewed in person and asked what their view was on CBA. As far as we know this is the second time that the real decision-makers in transport projects are asked for their view on an instrument that actually is supposed to support their decision-making. The first study is a relatively old study by Nyborg (1996; 1998) who interviewed in person sixteen Norwegian politicians on how they use CBA in their decision-making (we discuss the results of her study briefly in Section 2). The previously mentioned studies by Mouter *et al.* (2013) and Dimitriou *et al.* (2013) interviewed only to a very limited extent ‘real’ politicians (Mouter *et al.* only 2 out of 86 and Dimitriou *et al.* 2 out of 44).

The aim of this paper is to discuss from a politicians perspective how a useful transport policy appraisal tool might look like. Twenty-one politicians is a small sample, and only Dutch politicians are interviewed. Thus, only some preliminary ideas can be discussed in this paper (albeit the politician’s views on some issues are surprisingly consistent). Therefore, this paper should be considered a discussion paper.

We first discuss the literature which give arguments pro or against CBA and MCDM for transport policy-making (Section 2). In Section 3 we present the results of the interviews of 21 Dutch politicians how useful they consider CBA. Section 4 defines some criteria for useful supportive tools for politicians based on Section 3. In Section 5 we answer our questions by confronting the criteria as defined in Section 4 with the characteristics of CBA, MCDM or combined methods. We also propose a new possibility for a supportive tool in Section 5. Finally, in Section 6 we provide conclusions.

## 2. Literature on CBA and MCDM in transport policy assessment

CBA is a technique which is used by decision-makers (mostly governmental bodies) to appraise the efficiency of a policy. Multi-criteria decision-making refers to a class of decision-making methods based on which a number of alternatives are evaluated with respect to a number of criteria. The criteria can be quantitative or qualitative. Here we name just a few: analytic hierarchy process (AHP) (Saaty, 1977); TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) (Hwang and Yoon, 1981); ELECTRE (ELimination Et Choix Traduisant la REalité) (ELimination and Choice Expressing REality); multi-attribute evaluation using imprecise weight estimates (IMP) (Jessop, 2014); Best Worst Method (BWM) (Rezaei, 2015).

CBA is used in many countries for ex ante transport appraisal (e.g. Eliasson and Lundberg, 2012; Grant Muller *et al.*, 2001, Hayashi and Morisugo, 2000; Odgaard *et al.*, 2005). To which extent MCDM methods are used in real-world transport policy decision-making is less clear. Macharis and Bernardini (2015) mention that MCDM methods have gained importance as evaluation method for transport projects. They reviewed mostly academic publications (N = 276) concerning the application or the applicability of MCDM methods for transport projects, and it is not always entirely clear if these publications describe real-world applications or academic proposals on how MCDM methods might be used in transport policy-making.

Striking is that in the scientific literature hardly opinions can be found from the real decision-makers (the politicians) about the tools which are supposed to help them. The only exception, as mentioned already, is the study by Nyborg (1996; 1998). She interviewed 16 Norwegian member of parliament about their use of CBA in transport policy-making. She concluded that most of them found CBA useful, but not decisive in ranking projects. She found also that attitudes towards CBA varied along the left-right political axis, with politicians to the left being the most skeptical. For MCDM methods used in transport appraisal we could not find any study which evaluates politician’s

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