Possible bias in multi-actor multi-criteria transportation evaluation: Issues and solutions

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Abstract

Multi-Actor Multi-Criteria Analysis (MAMCA) has proven to be a suitable tool for the evaluation of transport projects. It allows to incorporate explicitly the aims and views of the actors involved, which is essential in the context of transport appraisal issues where stakeholders are getting increasingly involved in the decision process. If their interests are not involved or not taken into account, action groups may emerge in order to eventually prevent the implementation of the decision that is taken. MAMCA, as an extension of a traditional multi-criteria analysis, does not require monetary values but is able to work with all types of quantitative and even qualitative inputs in a multi-actor choice context. In the context of sustainable mobility and sustainable logistics this kind of evaluation tool is more and more needed. Different alternative solutions to a problem are evaluated according to multiple criteria, so as to eventually determine which one of them is the preferred option. The method does not replace the policy maker, but allows him to come to a judgment in an informed and balanced manner.

In this paper, the authors aim to analyze whether it is possible to identify a potential bias in a MAMCA model and how to cope with it. This exploration will be structured according to three main axes: the choice of the actors (will the inclusion or exclusion of certain stakeholders change the outcome?), the choice of the criteria of each actor, and the choice of the weights of these criteria by the actors. Finally, possible solutions in order to avoid strategic bias in MAMCA will be proposed.

1. Introduction

Evaluating and deciding on transport projects forms often the scenery for much debate, controversy and disagreement. Transport project plans can range from infrastructural projects to implementation projects of road pricing or the choice between different transport technologies. Since different points of view have to be brought together - usually from the perspective of sustainable development - distinct evaluation aspects have to be taken into account simultaneously. On top of that, there are planning issues where several levels of public policy may be involved (local, provincial, regional, state or European level). Decision making in the transport sector normally comprises a number of stakeholders (such as freight forwarders, investors, citizens, industry,...) who have a vested interest in the ultimate decision. Failure to take these interests into account may lead to a neglect of the evaluation study by policymakers or even to countervailing reactions by the stakeholders (Walker, 2000). Against this background, the Multi-Actor Multi-Criteria Analysis (MAMCA) is a suitable tool for the evaluation of transport projects (Macharis, 2000 and Macharis et al., 2009). It allows to incorporate explicitly the aims and views of the actors involved, and to structure the manifold dimensions of transport projects. The inclusion of multiple stakeholders within the assessment process however leads clearly to a complex evaluation procedure. Four types of actors are involved in this procedure, namely the stakeholders, the decision maker, the experts and the analyst. According to Freeman (1984) a stakeholder is "any individual or group of individuals that can influence or are influenced by the achievement of the organization's objectives". Or, as Banville et al. (1998) put it: "stakeholders are those people who have a vested interest in a problem by affecting it or/and being affected by it". As they have a vested interest in the problem and its solution, it is conceivable that they will try to influence the outcome of the process. Strategic bias – in the context of group decision models – occurs when individuals provide specific preference information to a group decision model which most likely will improve their own results and not necessarily those of the group (Hajkowics, 2010). The decision maker, is the one who makes the final decision or choice. It can be the government for example or a private investor. At the same time a decision maker can also be a stakeholder, which implies that the analyst should try to keep this decision maker at an objective distance in the procedure as not to influence the procedure in one or another direction. The experts are the persons who will be consulted for the evaluation of the different scenarios on specific criteria and this according to their specific expertise. If the evaluation scale is well explained no bias should be expected from this group of actors. The analyst is the person who guides these different actors through the procedure and who should avoid possible biases. In the present study, the authors aim to analyze whether it is possible to take recount of bias in a MAMCA model. This exploration will be structured along three main axes: the choice of the actors (will the inclusion or exclusion of certain stakeholders change the outcome?), the choice of the criteria of each actor, and the choice of the weights of these criteria by the actors. Finally, possible solutions in order to avoid strategic bias in MAMCA will be put forward. Before doing so, a concise overview of issues related to multi-criteria group decision-making (MGDM) will be offered (Section 2), while next a literature review on bias within group decision support systems will be given (Section 3). Next, MAMCA will be explained in Section 4, while possible sources of bias will be analyzed in Section 5. Finally, strategies for coping with bias and concluding remarks will be offered.

2. Multi-criteria group decision-making (MGDM)

The combination of stakeholder involvement and multi-criteria decision analysis (MCDA) has shown a dynamic evolution over the years. Starting from the convincing plea of Banville et al. (1998) for introducing the concept of stakeholders in multi-criteria analysis, various applications can be found were stakeholders are taken into account in the evaluation process, which is often nowadays referred to as group decision-making (GDM). The goal of GDM is to achieve a consensus between different stakeholders involved in the decision-making process (Leyva Lopez, 2010). In the past years, many GDM systems have been developed that include MCDA to support a group decision-making problem (for an overview, see Álvarez-Carrillo et al., 2010). They are often called multi-criteria group-decision making (MGDM). The difference between these methods is mainly based on the manner in which the information is brought together. One may talk about input level aggregation or output level aggregation, as Leyva-Lopez and Fernandez-Gonzalez (2003) do. But one can make also a difference between models with the same value tree for all stakeholders (or decision makers) or with different value trees for each stakeholder (De Brucker and Macharis, 2010). The same value tree corresponds mainly to an input level aggregation where the group is asked to agree on a common set of criteria, weights and remaining parameters. If several individual value trees can exist and are only aggregated in the end, then we talk about output level aggregation. In the evaluation of transport projects it is important to distinguish between different points of view, and hence different value trees and output level aggregation are most appropriate. Another important classification is between the methods mainly developed for tackling business/organizational decision problems on the one hand and social choice problems on the other. The evaluation of complex transport projects can normally be seen as a societal issue. Social multi-criteria analysis, as defined by Munda (2004), addresses decision problems from the perspective of society as a whole and hence, can be positioned in the domain of public choice. The multi-actor multi-criteria analysis (MAMCA) can be classified as a social multi-criteria method in which several individual value trees can be used. This is in contrast with other evaluation methods which are located in the organizational domain, and if they are within the group of social multi-criteria analysis, they use one common value tree for the whole group.

3. Bias in group decision processes

If no formal evaluation procedure is used, biases can occur due to cognitive, perceptual and motivational reasons. A cognitive bias occurs due to the restrictions of our short-term memory to store and correctly process everything (Reyna et al., 2003). Perceptual bias can take the form of a self-perception bias, if individuals fail to analyze their motivations in multi-person and multi-objective group decision making. Also in risky decisions, a loss aversion bias might occur, which may lead to inferior choices (Mercer, 2005). An example of a motivational bias is a positive confirmation bias. In this kind of bias the decision makers select a preferred option early in the decision process and seek to gather all kind of information that supports this choice and discard all the information that suggest that other options might be better (Jones and Sugden, 2001; Fisher et al., 2008). This kind of bias can be also seen in the distinction in types of decision makers. Baumeister and Newman (1994) make a difference between an intuitive scientist who is open and objective and an intuitive lawyer who

indeed is using a kind of motivational bias in order to defend his choice. Hamilton (2003) showed that participants might favourably suggest inferior alternatives and ideas in order to influence the other group members to support their idea. Even worse, they might even misrepresent facts in order to influence the group decision (Steinel and De Dreu, 2004). Also group dynamics can play a role: isolates will not be taken into account in the decision (Thomas-Hunt et al., 2003). Next, the size of the group and the status of a decision maker will play a role in a group dynamics: if the group becomes larger than 5 or if the group members are not sure about there opinion, the high status decision will get more influence on the group (Ohtsubo and Masuchi, 2004, and Baumann and Bonner, 2004). For a further overview of biases and heuristics related to human judgement and decision making we refer to Gilovich et al. (2002).

Several authors have claimed that formal methods can avoid many of these pitfalls. Regan et al. (2006) state that the formal methods such as consensus convergence modeling has the advantage of being transparent, reproducible and resistant to manipulation and the vagaries of member status and group size. Also De Sanctis and Galuppe (1987) argued already many years back that thanks to technology for group decisions more equality is possible, as it discourages dominance by an individual member.

However, also in the context of formal methods, dishonesty is possible. Ramanathan and Ganesh (1994) state that in the available literature on social choice no method exists to tackle dishonesty, and this dishonesty has first to be uncovered. In addition, within this literature, the Arrow impossibility theorem states that essentially no constitution exists for group decision making such that the group can be assured that in every possible circumstance it satisfies some basic principles of rationality, unanimity and Pareto optimality and independence of irrelevant alternatives without there being an explicit or implicit dictator (French, 2007). French (1986) extended this argument by showing that any constitution is susceptible to manipulation through strategic voting, dishonest revelation of preferences or agenda rigging.

Also when a multi-criteria approach is used in a MGDM context, evidence exists that strategic bias can occur. This is usually done through the determination of the weights attached to policy criteria. Decision makers will manipulate criterion weights in order to favour their desired outcome (Hajkowicz, 2010). Bennet (2005) calls this “rent seeking behavior”. Condon et al. (2003) showed that within an AHP (Analytic Hierarchy Process) approach (see Saaty, 1988), people can conceal true agendas or try to distort their pairwise comparisons. In the group-AHP, when using one value tree for the whole group, a geometric mean is mostly used for bringing the individual points of view together. Group members can specify extreme entries in the matrix such as 9 or 1/9 in order to manipulate the ultimate outcome. However, by displaying clusters of decision makers as well as outliers, these extreme values at some point of time will be uncovered. Jacobi and Hobbs (2007) even propose a model to de-bias the results of weight elicitation. Also Hajkowicz (2010) performed a test to uncover strategic bias in the determination of the weights. This test can be applied if one criteria set is used for the whole group. Clearly, in case the decision makers have to give weights to each other and to themselves, it is also possible that a decision maker gives high values to himself.

Another important source of bias and errors is the so called splitting bias, in which the structure of the value tree affects the weights (Hamalainen and Alaja, 2008). In a splitting bias, decomposing an

objective into multiple attributes leads to a higher overall weight for that objective when compared to a direct assessment of the objective's relative importance (Jacoba and Hobbs, 2007). Also other experiments have shown the evidence of biases occurring with the use of value trees. Borcherding and Winterfeldt (1988), for example, demonstrated that weights for an objective tend to be higher when the objective is presented at a higher level in a value tree, while Stilwell et al. (1987) claim that hierarchically assessed weights tend to have a larger variance than weights assessed in a non-hierarchical way.

The great advantage of formal methods is that, when transparent, decision makers will have to defend, reveal and discuss their criteria weights to the entire group and maybe even to the public (Hajkowicz, 2010). So, the idea is that, although it is not possible to avoid dishonesty in the short run, it will discovered in the long run and at that moment it can be corrected (Ramathan and Ganesh, 1994). Consequently, it is very important to make the process as transparent as possible. Decision support and choice methods ultimately rest upon people's values, and the aim of the analyst is to combine them with factual data in order to inform and support people's decisions (Hajkowicz, 2010). In the next section we will show how this is done in the MAMCA methodology.

4. The MAMCA approach

Multi-Actor Multi-Criteria Analysis (MAMCA) allows to evaluate different alternatives (policy measures, scenario's, technologies,…) for the objectives of various stakeholders that are involved. Unlike a conventional multi-criteria analysis where alternatives are evaluated on several criteria, the MAMCA methodology explicitly includes the points of view of the different stakeholders.

The methodology consists of 7 steps (see Figure 1). The first step is the definition of the problem and the identification of the alternatives. These alternatives can take different forms according to the problem situation; they can compromise different technological solutions, different policy measures, long term strategic options, etc. Next, the relevant stakeholders are identified (step 2). Stakeholders are people who have an interest, financial or otherwise, in the consequences of any decisions taken. Thirdly, the key objectives of the stakeholders are identified and given a relative importance or priority by the stakeholders themselves (weights) (step 3). These first three steps are done interactively and in a circular way. Fourthly, for each criterion, one or more indicators are constructed (e.g. direct quantitative indicators such as money spent, number of lives saved, reductions in CO2 emissions achieved, etc. or scores on an ordinal indicator such as high/medium/low for criteria with values that are difficult to express in quantitative terms etc.) (step 4). The measurement method for each indicator is also made explicit (for instance, willingness to pay, quantitative scores based on macroscopic computer simulation etc.). This permits measuring each alternative's performance in terms of its contribution to the objectives of specific stakeholder groups. Steps 1 to 4 can be considered as mainly analytical, and they precede the "overall analysis", which takes into account the objectives of all stakeholder groups simultaneously and is more "synthetic" in nature. The fifth step is the construction of the evaluation matrix. The alternatives are further described and translated into scenarios which also describe the contexts in which the policy options will be implemented. For example, when evaluating different advanced driver assistance systems such as intelligent speed adaptation, advanced cruise control, etc., the scenarios have information on the type of road these systems will be used on (rural/urban roads), the amounts of cars that are equipped with these systems (penetration rate), etc. The different scenarios are then

scored on the objectives of each stakeholder group by experts. For each stakeholder a MCDA is performed. Already a comparison of the values and results of each individual MCDA can be performed in order to identify systematic differences in value judgments. The different points of view are then brought together in a multi-actor context. This multi-actor, multi-criteria analysis yields a ranking of the various alternatives and reveals their strengths and weaknesses (step 6). The last stage of the methodology (step 7) includes the actual implementation. Based on the insights of the analysis, an implementation path can be developed, taking the wishes of the different actors into account.

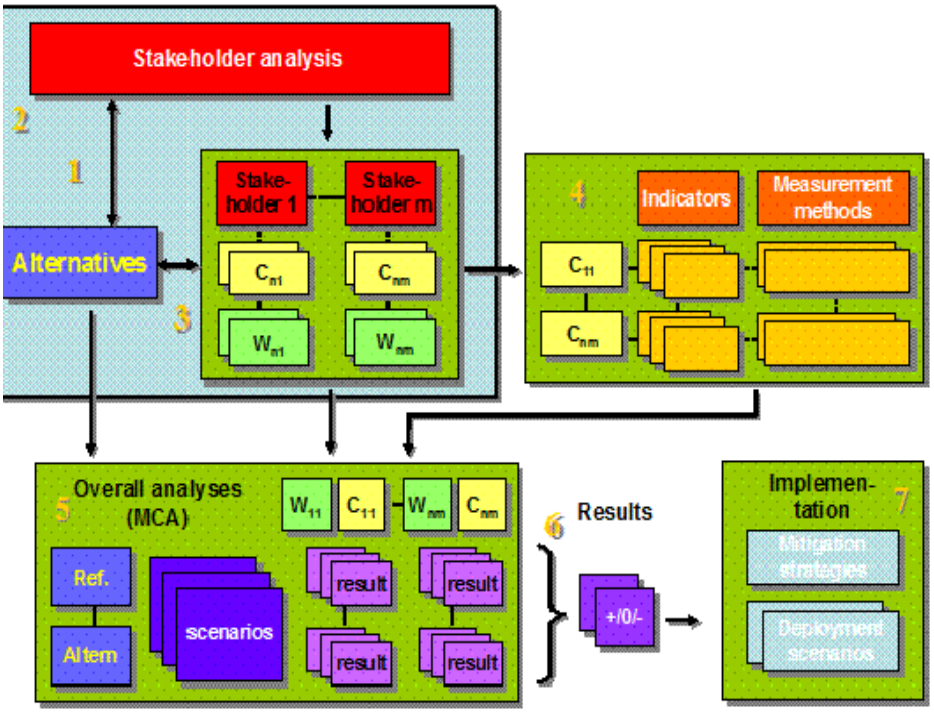

Figure 1: The MAMCA methodology (Macharis, 2005)

More important than the ranking, this multi-criteria analysis reveals the critical stakeholders and their criteria. The multi-actor, multi-criteria analysis provides a comparison of different strategic alternatives, and supports the decision-maker in making his final decision by pointing out for each stakeholder which elements have a clearly positive or a clearly negative impact on his or her objectives. We will offer now a few illustrations.

In Figure 2, an example is given of a multi-actor approach in AHP. The graph (which can be found in the expert choice software as a sensitivity graph called “performance”), shows directly who finds which alternative the most preferred one. If the weights of the decision makers are important, it will also be easy to see which stakeholders have which weight (the rectangles) at the bottom. At the right, the axis “OVERALL” shows the final scores of the scenarios by computing the weighted averages of the scores on the different actors multiplied with their weights (usually set equal for all stakeholders). It provides a final ranking of the scenarios. Howevr, the aim of MAMCA is to provide

insight into what is important for each stakeholder and not to just sum up these different points of view and come to a final decision. So this last axis, with the overall result, should always be interpreted with care.

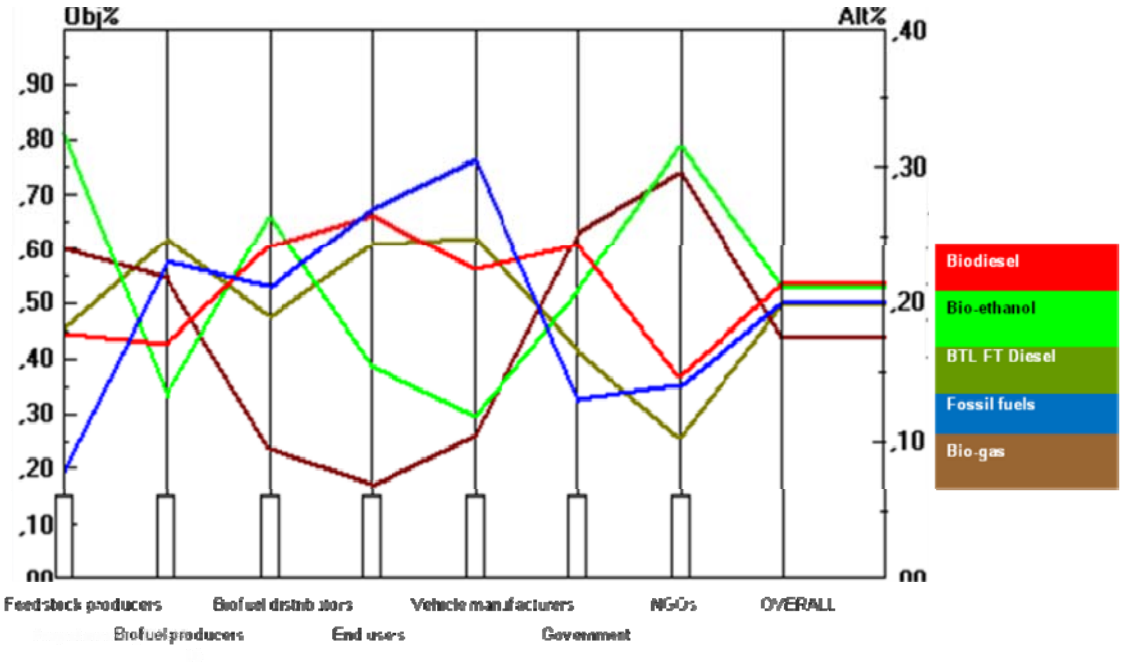

Figure 2: Multi-actor approach in AHP

Source: Biofuel example in Turcksin et al. (2010)

The MAMCA can also be performed with other MCDA methods such as the PROMETHEE method (Macharis et aL. 1998 and illustrated in Macharis, 2000). In this paper however we concentrate on the possible biases that can occur when using it with the AHP method.

5. Possible bias within MAMCA

As shown in the above literature overview on biases, methodologies that are transparent allow to sooner or later uncover strategic bias. The MAMCA methodology is especially strong in this transparency and allows a clear overview of every single step of the methodology. Another strong point is that the evaluation itself is done by experts and not by stakeholders themselves (although for some more intangible criteria such as prestige, for example, the stakeholder might be consulted by the experts). However, in MAMCA, we should take care that in critical steps of the methodology, such as the choice of the stakeholders, the choice of the criteria or the choice of the weights of the stakeholders, bias is avoided. We will now take a look a look at these steps in more detail and indicate how bias could take place and be coped with.

5.1. The choice of the stakeholders

The choice of stakeholders and how to cluster them in to groups is a delicate process. A stakeholder can be defined as an actor in the range of people who are likely to use a system or be influenced

either directly or indirectly by its use (Macharis and Stevens, 2003). In other words, stakeholders are people who have an interest, financial or otherwise, in the consequences of any decisions taken. An in-depth understanding of each stakeholder group's objectives is critical in order to appropriately assess different choice alternatives. Stakeholder analysis should be viewed as an aid to properly identify the range of stakeholders which need to be consulted and whose views should be taken into account in the evaluation process. In the scientific literature, there are various methods described in order to come to an appropriate list of stakeholders. Munda (2004) claims that by an analysis of historical, legislative and administrative documents, complemented with in-depth interviews with locals and other interested parties, a map can be made of the most important social actors. In Banville *et al*. (1998) one can find some formal methods to identify stakeholders: the 7 procedures of Mason and Mitroff (1981), the identification of potential reasons for people to mobilize around any aspect of the problem by Weiner and Brown (1986), the distinction between external stakeholders, corporate and organizational stakeholders by Savage *et al*. (1981), and the classification of Martin (1985) in 7 fractions: family, friends, fellow-travellers, fence sitters, foes, fools and fanatics. Only the second method is not explicitly developed for organizational decision contexts. When using the MAMCA the approach of Munda (2004) and/or Weiner and Brown (1986) seems to offer a good start. Next, in the context of transportation planning, one should clearly define the (physical) border of the transport problem. How far does the project impact reach out? At that moment, one knows which policy level (commune, province, region, country, European, worldwide) should be included as governmental actor. In some cases, it is possible that several levels have to be explicitly taken into account (such as in the case of the Oosterweel decision where the Flemish government had other objectives than the city of Antwerp (Macharis and Januarius, 2010))[1]. Clearly, it is also important to find out whether there is a demand and supply side in the problem at stake. For example, when evaluating driver assistance systems, we need to incorporate the manufacturers on the one hand and the users on the other hand (Macharis et al., 2004). One can also take a supply chain perspective, like in a study on biofuel, where all actors from the supply side were included (the agricultural sector, biofuel convertors, fuel distributors, end users, car manufacturers, government and NGOs, and North-South organizations) (Turcksin and Macharis, 2009). Once certain stakeholders are identified, they can be asked, who according to them, should also be involved. So, although there are no strict rules on who to include (Banville te al., 1998), it is important to see that all actors who could be affected or can affect are in the list of stakeholder groups. Even if they cannot organize themselves, or if one cannot elicit weights from the criteria, they will be included and be taken into account, since it would be problematic to leave the unorganized groups out of the analysis. Munda (2004) gives the example of people living in a rain forest. Should they be forgotten because they might have no official representatives? Or because it is not possible to organize a survey among them? Thus, he claims that they should be incorporated as important stakeholders.

Usually, stakeholders groups will be involved and not single stakeholders. The supply side of driver assistance systems will, for example, encompass different car manufacturers and manufacturers of the systems themselves. In the case of biofuels, feedstock producers are not represented by the agricultural sector or biomass based industry alone, but also by the wood sector, waste processors

[1] While the Flemish government has more general objectives on congestion and emissions for the region as a whole, for the citizens of Antwerp the emissions (certainly the PM emissions) have a direct impact on their welfare.

and traders. A good criterion to see if a stakeholder belongs to a certain stakeholder group is whether the same objectives appear in their criteria tree. Within a certain stakeholder group, we expect the group to be homogeneous in the sense that they largely agree on the same judgement criteria. Possibly, the priorities and weights might differ a bit, but the same criteria tree is used within the stakeholder group. The homogeneity of the group is important, as the weights given by the different members of a stakeholder group will be aggregated by the geometric mean (in case AHP is used) or an average. If the weights given by the stakeholders within a stakeholders group differ a lot, a sensitivity analysis should be performed in step 6.

In this choice of stakeholder groups the analyst plays an important role. Outlier analysis can be used to check the homogeneity of the stakeholder groups that were formed. A bias that can occur is group fragmentation. If a group would be split into two, it means they would get a double weight, at least if the corresponding criteria are mutually correlated and if every stakeholder group receives equal weights. This means that their opinion would weigh more on the ultimate outcome. The example below shows this very clearly. The example is quite simple: there are three alternatives, three stakeholder groups involved (e.g., government, users and industry) and every stakeholder has two criteria.

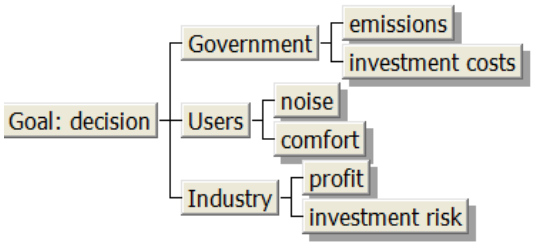

Figure 4: Example of group fragmentation

If a new stakeholder group (e.g., a different type of industry, e.g. Industry 2) enters the model (see Figure 4 and 5), the preferred alternative is the one of the aggregate industry group (see Figure 6 and 7).

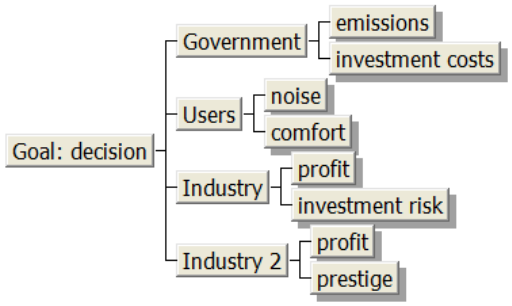

Figure 5: Example of entry of new stakeholder

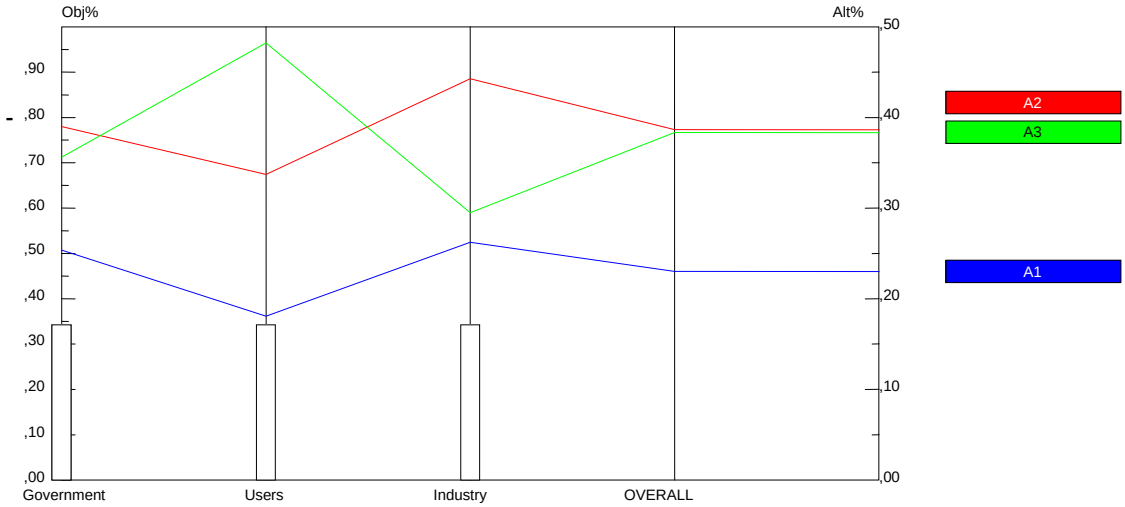

Figure 6: Multi-actor view of example 1

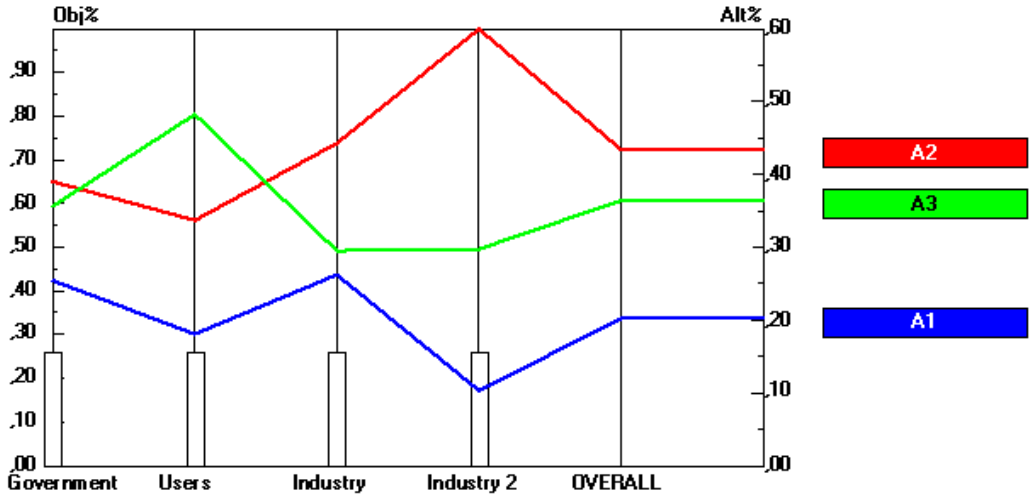

Figure 7: Multi-actor view of Example 2

5.2. The choice of the criteria

If a stakeholder has only one or a few criteria, their point of view might be more extreme and again weigh more heavily in the final decision. In our example, for the government, 4 criteria are now hypothetically used, whereas the industry has only one left, namely profit.

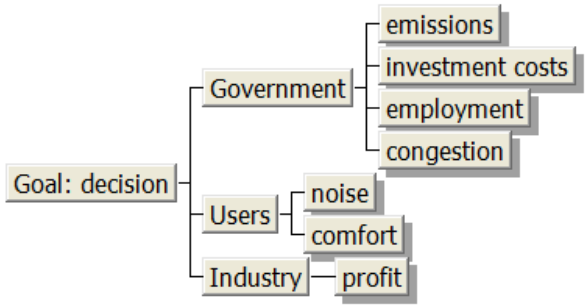

Figure 8: Example of composition of criteria

Indeed, what can be seen is that the latter point of view counts more in the final decision. Within social decision contexts, this is something to be aware of, as often the pressure or lobby groups have only a few objectives, whereas governments tend to have several objectives, as they represent democratic interests.

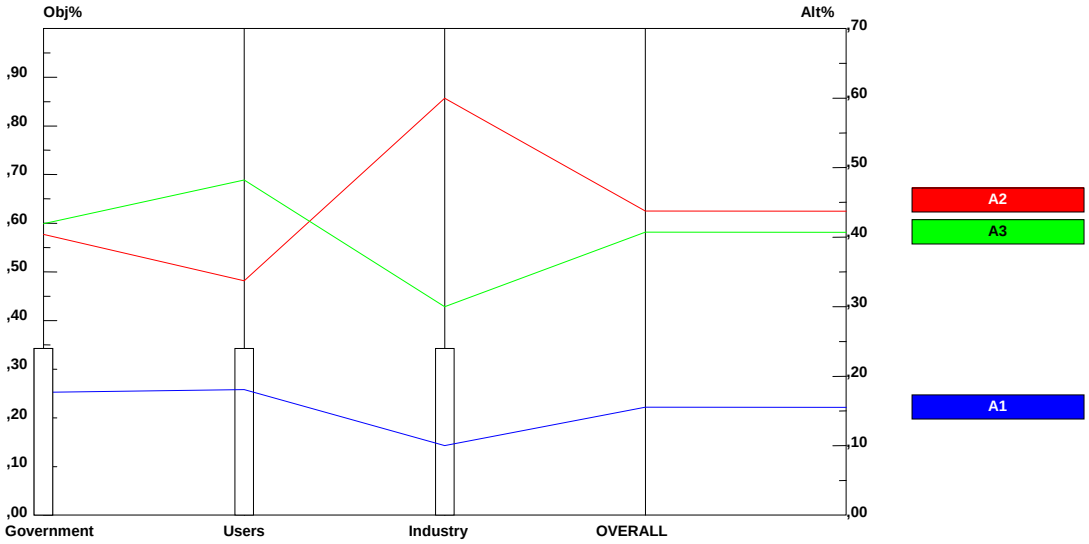

Figure 9: Multi-actor view of composition of criteria

5.3. The choice of criteria weights by the actors

The choice of the weights of these criteria is mainly the same as the problem stated above. If all weights are given to a single criterion, this will lead to more extreme results. If the weights are evenly distributed more moderated choices will be the result. So also here, The analyst can check the weights of the criteria, and see if these correspond to the real priorities of the stakeholders.

6. How to cope with possible bias?

In order to avoid bias, the process should stay transparent. As described above, some pitfalls can be avoided by checking some critical elements:

- Are the stakeholder groups chosen in a correct way and is there no double counting due to a split up of stakeholder groups that essentially belong together?
- Is there an asymmetry in the amount of criteria over the different stakeholders?
- And are the weights chosen by the stakeholders for their criteria corresponding to their real priorities?

Checking these elements is a delicate process to be undertaken with caution. Essentially, the MAMCA methodology aims to elicit the objectives and priorities of the stakeholder groups. The evaluation and checking should not result in accusing stakeholders of being dishonest or reacting in a strategically biased way. The objectives and corresponding weights should be discussed openly with the whole group and also extreme preference values may be discussed. Clearly, if these extreme values correspond to the real preferences of the stakeholders, these should be kept. The decision maker might get the role to give weights to the different stakeholder groups, and in that sense check which solution on average is most preferred.

A careful checking may however, also lead to the conclusion that in a particular case symmetry is not guaranteed and that it is not clear whether the presence of a distinct stakeholder group will not result in double counting. In that case, the weighted average as used in the AHP method is not a good way to aggregate the individual scores into a global one.

The most prudent way in that situation is to not aggregate the points of view of the actors at all. For each stakeholder, an individual MCDA would have to be performed and analysed, while next the results can then be shown to the decision makers. Figure 10 offers an example of the results on which further discussions can be based.

A first pre-selection of alternatives can be made according to the rankings made by the different stakeholders. If an alternative is not within the top 2 of alternatives of one of the stakeholders, this alternative can normally be disregarded. In the example above (Example 2), alternative A1 is not in the top of what the different stakeholders would like. This alternative can thus be disregarded. The remaining alternatives can then be further analyzed.

By keeping the stakeholders separated and by using sensitivity analyses to analyse the individual MCDA's, strategic bias behaviour from the stakeholders can easily be uncovered. It will anyway not influence the ranking in the end result, but only their own individual ranking of alternatives. If this result is based on the priorities they have, this is important

information for the decision makers. A split up of stakeholders would be of no help in that case and the number of criteria that each individual stakeholder considers will not have an influence on the end result.

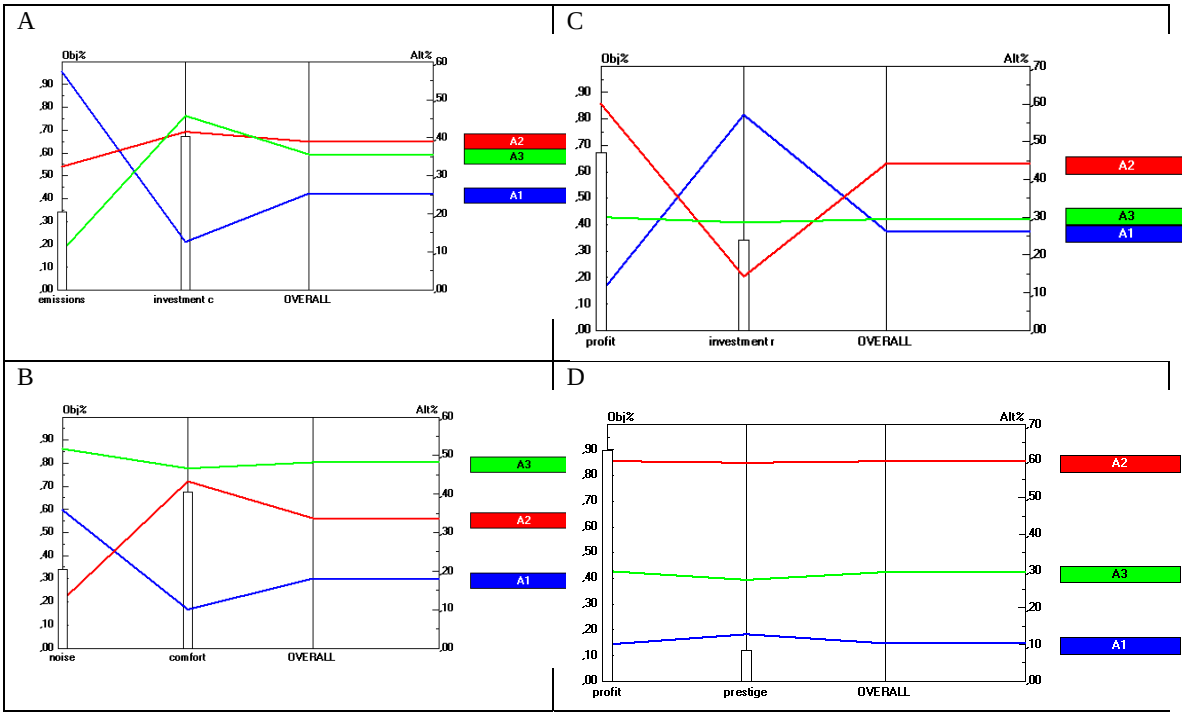

Figure 10: Individual points of view of Example 2 (A: Government, B: Users, C: industry 1, D: Industry 2)

A step further might be to use the distinct rankings for each stakeholder to come to a common ranking, by using for example the Borda count method (like in Hajkowicz, 2008), which takes the sum of the ranks to come to an aggregate rank. In the above example this would give (after elimination of the dominated alternative A1):

	Rank Gov.	**Rank users**	**Rank industry**	**Rank industry 2**	**Aggregate rank**
A2	1	2	1	1	5
A3	2	1	2	2	7

Alternative A2 might then be regarded as the alternative that would most likely lead to a consensus. This way of working allows to resolve the difficulty of asymmetry in the criteria. However, it does not completely resolve the problem of the choice of the stakeholders. Double countings might still be possible, e.g. by increasing the number of intercorrelated criteria. Clearly, although the method proposed here is already more transparent, it can only be a partial element in the consensus discussion.

7. Conclusions

The MAMCA methodology helps to take into account the viewpoints of different stakeholders. In the field of transport and mobility, this is an essential condition for a balanced socio-economic evaluation method, as it is a crucial factor in implementing decisions in this field. Including the essential stakeholders into the analysis enables to find a broad consensus and support for the option to be chosen. It also allows to find compensating measures for the stakeholders that are “losing” by the decision.

A more participatory process however, also creates the risk of bias. In this paper we showed the possible pitfalls within the MAMCA methodology. Transparancy is key to avoid (strategic) bias. The multi-actor ranking might hide some elements such as an unequal amount of criteria by the stakeholders or a split up by the stakeholders. In order to avoid this and to enhance transparency, it seems good practice not to stress the achievement of an overall global end result, but to keep the results of the individual stakeholders separated and to start the discussion from there.

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