Political Reflection

Developing solid advice based on multi-objective robust optimization methods is difficult, but convincing other stakeholders to implement your advice might be even more complex. This reflection discusses three important challenges that influenced how the proposed advice for the province of Overijssel was used in decision-making (Section A). Then, the mitigation measures that were taken to address these challenges, considering the role of analysts for the province of Overijssel, are described (Section B). What still can be done to ensure that identified challenges remain mitigated (i.e., a political strategy) is explained next (Section C). Finally, potential risks associated with the proposed advice that may hinder the desired impact are discussed (Section D).

A. Identified challenges

The three identified challenges, which had a substantial impact on how the proposed advice was used in decision-making, relate to 1) problem formulation, 2) model outcome interpretation, and 3) model communication.

Problem formulation

As analysts for the province of Overijssel, the primary goal was to (indirectly) represent the interests of dike Ring 4 and 5 since these are located within the province of Overijssel. For these dike rings, it became apparent that taking no action was not a viable option at all. While various policies could be implemented within the province of Overijssel itself, such as dike heightening or adopting the costly Room for the River project, the preferable policy option resulting from the model would require action upstream in the province of Gelderland. As such, a collaboration between the two provinces was necessary to ensure that the province of Gelderland implements this policy. This resulted in a considerable degree of uncertainty, considering that the province of Overijssel lacks direct influence or authority to enforce this course of action within the territory of Gelderland. Therefore, it is crucial for the province of Overijssel to frame the problem in a manner that highlights the benefits of policy implementation in the province of Gelderland to achieve its own objectives.

This example illustrates many characteristics involved with multi-actor decision-making. First, it remains essential to consider that in a multi-actor arena often many different problem formulations can exist (Klijn & Teisman, 1991). Second, Rauscher (1999) pointed out that sharing decision-making power between representatives of technical, social, political, economic and legal interests creates tensions that make decision-making a ‘very wicked problem’. Also, various problem formulations may cause differences in the solution space in which each actor is willing to act. These differences may lead to uncertainty in the decision-making process (Brady, 1993). That is, it is more challenging to realize cooperation between actors since turning a win-lose situation into a win-win situation is often very difficult in practice.

Model outcome interpretation

The model itself was complicated, with many (uncertain) factors involved. As a result, this complexity resulted in multiple interpretations and conflicting outcomes, enabling various actors to support their claims in their favour. Lemons (1996) pointed out that unfounded acceptance of the model utilization can bias subsequent decision-making processes such as risk analyses and cost–benefit calculations. Therefore, establishing a consensus on how the model is used is a crucial prerequisite before model outcomes can effectively be compared and interpreted.

In the role of analysts for the province of Overijssel, a cost-benefit analysis (CBA) approach regarding the model outcomes was followed. While this choice was substantiated, it became clear that this approach may inherently have a negative impact on some actors. That is, opposition to any policy that would be very expensive for a specific actor is almost guaranteed when following a CBA approach. Also, interests from actors, such as the environmental interest group, could be ignored when the benefits of certain policies are hard to measure and, therefore, not included in the analysis. As such, expanding the scope to incorporate economic and environmental benefits associated with Room for the River projects would facilitate a more comprehensive solution space wherein actors can achieve more overall satisfaction.

While broadening the scope can be favourable for the province of Overijssel when the debate is heading toward no policy implementation, it is often not a preferred strategy due to additional complexity (Bruijn & Ten Heuvelhof, 2018). The cost-benefit result that stems from the analysis of the model favour solutions that the dike rings also favour. The Room for the River projects in the province of Overijssel are expensive and have reduced safety benefits compared to other measures in the region. Room for the River projects in Gelderland have a higher return on investment than in Overijssel, making it a more favourable solution to address flood security issues. Even if the province of Gelderland obstructs any Room for the River projects, its most financially feasible option would be to heighten the dikes. This solution would require the province of Overijssel to follow the province of Gelderland and heighten its dikes to ensure reduced flood risk. Ultimately, the cost-benefit results from the model are aligned with the interests of the Province of Overijssel. Hence, broadening the scope beyond the model by including aspects such as environmental and economic benefits could lead to worse results.

Model communication

Modelling serves as a methodological approach for identifying potential courses of action that warrant further investigation and facilitate the transparent evaluation of trade-offs for decision-makers (Kasprzyk et al., 2009; Liebman, 1976). Effectively communicating the model results within the decision-making context is vital to achieving the desired impact. Therefore, translating model outcomes from abstract formal knowledge into client-friendly language should be prioritized.

According to Cairney and Kwiatkowski (2017), a primary step in effectively communicating with policymakers is to understand the characteristics and needs of the targeted audience thoroughly. While policymakers may lack the technical expertise to comprehend the analytical intricacies, analysts bear the responsibility of articulating the reasoning and structure of the study to validate the process and enable informed decision-making (Tsoukiàs, 2008). The use of compelling visualizations combined with transparent documentation of all key inputs and problem formulations, significantly enhanced the persuasiveness of the negotiation process.

B. Challenge mitigation

To convince other stakeholders of facts and construct common knowledge, it is essential to involve different stakeholders in the decision-making process (H. de Bruijn, personal communication, April 28, 2023). That is, negotiated knowledge is possible through interaction and engagement with stakeholders. Instead of focusing solely on getting scientific knowledge accepted, an attempt was made to understand the perspectives of the other actors to mitigate the challenges. Lecture 9 (J. Kwakkel, personal communication, June 13, 2023) adds that the premature aggregation of characteristics of real-world problems to characteristics assumed by certain decision-making techniques could result in nasty problems. Rather than solely focusing on the acceptance of scientific knowledge, our approach involved understanding the perspectives of other actors.

To address the identified challenges, several analytical decisions were implemented. The initial decision was to frame that no action or zero policy would be disastrous. Hence, we steered the problem formulation towards the direction that the absence of any policy implementation was considered the most unfavourable situation for the province of Overijssel. This was substantiated by both political and analytical considerations. By presenting the absence of policy implementation as detrimental, a strong message was conveyed to all stakeholders, emphasizing the importance of developing policies that accommodate all actors. Additionally, adopting the zero policy as a baseline facilitates the comparison of alternative policies. This approach enhanced support for the problem formulation by ensuring a consistent starting point for all actors. Moreover, providing transparency about this resulted in more open model communication.

Next to this, a monetary value was assigned to human life to facilitate a cost-benefit analysis within the model. A value of 6.3 million euros per human life was chosen (Schoeters et al., 2021). The assignment of a monetary value to human life presents ethical and political challenges (Broome, 1978; Card, 1977). Being open about this assumption helped interpret and communicate the model's results while triggering discussion.

While flood security is a nationwide concern, the focus of the analysis was primarily on assessing the effects within the province of Overijssel. Consequently, all policy levers were considered (e.g., also levers that are in control of other actors than the province of Overijssel). By doing this, the range of options available to other actors was broad, which contributes to more informed discussions and negotiations regarding policy implementation. Policy options with significant consequences for the province of Gelderland are not viable either. A ratio of 75-25 was used for weighting the model's outcomes for Overijssel and Gelderland respectively, thereby highlighting the importance of the province of Overijssel over other actors while not disregarding the province of Gelderland.

C. Political strategy

Political strategies should be designed to achieve the goals of the province of Overijssel regarding the complex issue of flood risk management of the Ijssel River in the long term (Mintzberg, 1998). The first strategy revolves around leveraging the asymmetric impact of the Ijssel River floods on the upstream and downstream provinces. Policy debates indicate a greater sense of urgency for the upstream province of Gelderland for new flood solutions compared to the downstream province of Overijssel. Exploiting this asymmetry, the province of Overijssel can frame the argument that Room for the River projects would yield more significant benefits upstream in the province of Gelderland than within its own borders. Therefore, the province of Overijssel should actively support any policy measures in the province of Gelderland that positively impact its flood risk security, even going so far as to finance a part of the project to realize its goals. Considering different time urgencies, it is a viable strategy to take time to convince and force the province of Gelderland to implement the necessary policies.

The second strategy would be to go all-in on heightening the dikes. Compared to Room for the River projects, dike heightening proves to be a significantly less expensive option for the province of Overijssel. Moreover, heightening the dikes yields the highest reduction in flood risk for the dike rings located in the province of Overijssel and can be implemented independently. While one dike ring would require financial compensation due to the closure of a crucial road alongside the dike, this compensation is a more cost-effective alternative than implementing Room for the River projects.

While broadening the scope of the discussion introduces additional complexity by expanding the solution space, such a strategy may not benefit the province of Overijssel (Bruijn & Ten Heuvelhof, 2018). The primary concern of Overijssel lies in ensuring the safety of its citizens and business around

its dike rings and managing the total costs, which have already been factored into the initial model. Therefore, unless it becomes evident that reaching a policy decision is unattainable without broadening the scope, the province of Overijssel should refrain from actively pursuing such an expansion of the solution space in the future.

D. Potential risks of strategy

The utilization of various political strategies inherently entails certain risks. In the case of the province of Overijssel, the optimal approach would involve implementing policy measures upstream in the province of Gelderland to safeguard its safety. To achieve this objective, adopting a tactful approach is essential. The province of Overijssel possesses the ability to influence and redirect the discourse by capitalizing on the disparity in urgency regarding measures between the two provinces. However, there is a certain risk that the conversation is unintentionally pushed into a deadlock, while cooperation among actors remains essential for realizing the preferred solution. The political strategy is divisive and may lead to delays for the decision, with a possible loss of policy opportunities (Pfeffer, 1992).

Heightening the dikes emerges as an appealing policy measure, ensuring safety and offering a cost-effective implementation. Nevertheless, this solution has its drawbacks. A rural dike ring in the province of Gelderland perceives Room for the River project as a more favourable solution because dike heightening would entail the temporary closure of one of its main roads until the completion of dike construction. While heightening the dikes may hold greater financial attractiveness, it is also the least appealing option from an environmental perspective. Dean and Sharfman (1996) argued that political behaviour could lead to an incomplete understanding of environmental constraints, which undermines the effectiveness of strategic decision-making. Although the initial attractiveness may appear insignificant, it could influence the potential compensation that the province can secure from the national government. As this financial compensation has yet to be determined, this poses a risk to the plan's success.

The Delta Commission possesses veto power, which implies that it can override any decision if it determines that the interests of certain stakeholders have not been adequately represented in the policy process. To ensure the implementation of measures to enhance flood security, the province of Overijssel will likely need to make certain concessions to prevent the Delta Commission from invoking this power. Nutt (1998) points out that bargaining reduces uncertainty and increases acceptance. Whether concessions are possible must be decided on a case-by-case basis. The risk that certain concessions are unacceptable is not negligible and may threaten the feasibility of various political strategies (Dean & Sharfman, 1996).

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