# Political reflection debate

**Irene van den Bent**[a, f], **Hidde Bijlard**[b, f], **Mels van Gameren**[c, f], **Guillermo Prieto Viertel**[d, f], **and Kerem Tunca**[e, f]

## 1. Introduction

Policies are often not only shaped by *a priori* analyses of their performance, but also by the political process around them (Cerna, 2013). This was also the case in the decision-making process around the policy to cope with flood risks of the IJssel river. Different stakeholders were involved in this process, both governmental and non-governmental, each with their own interests and mandates. In a series of two debates, they had the opportunity to make and defend policy proposals based on the analysis of a model simulating flood risks around the IJssel river. At the end of the second debate, a final policy proposal was made by Rijkswaterstaat. As a result of a voting round, this policy proposal was approved by all actors involved in the debates.

This report will consist of a concise reflection on the political component of the decision-making process around the policy design. The social relevance of reflecting on this lies in the fact that this can result in valuable insights to be used in similar future decision-making processes (Schut et al., 2010). We wrote this political reflection from the perspective of analysts hired by an environmental interest group.

In the first part of this report, we will discuss the influence of tensions and challenges on the use of the given advice. After this, we will present measures taken by the analysts for the environmental interests to deal with these tensions and challenges as well as potential alternative measures with the same aim. We conclude this report with a reflection on the effectiveness of the strategy used by us, the analysts for the environmental interest group.

## 2. Advisory role of the analysts for the environmental interest group

Our role, as analysts in the aforementioned setting, is to inform the environmental interest group on the implications of different policy options. The mandate that we received stated that we do not (really) have a political agenda. Our interest is to provide the environmental interest group with analyses that can be used in the political decision-making process. Also, the mandate states that we can be asked by our client to become more involved in the political process and that we could take action against our employer if they violate ethical codes. To fulfill our mandate, we approached this as stated by Walker et al. (2013, p.222): "a common approach to rational-style policy analysis is to create a model of the system of interest that defines the boundaries of the system and describes its structure and operations". In practice, we therefore used a simulation model developed by Ciullo et al. (2019) which allowed us to evaluate outcomes of policies in terms of damage, amount of deaths and costs.

Leading up to the first debate round, we were approached (online) by the environmental interest group. In the communication between them and us, it became clear that they preferred Room for the River (RfR) measures to prevent flooding of the IJssel river. This preference is based on their belief that it is the most environmentally friendly preventative measure. This belief was not based on model outcomes from the model we were provided with, and given that none of the outcome variables of the model were directly related to the environmental impact of possible policy measures, we were unable to verify the claim. Instead, this belief was based on only one article by Straatsma et al. (2017) that they provided us.

Shortly before the first debate, the environmental interest group requested specific information from us. They were interested on the implications of a policy that entails Room for River measures in all the possible locations along the IJssel river. Also, more specific information was requested about the outcomes of policies containing RfR projects in all possible locations, but with the lowest costs for RfR measures. This request was not very insightful as the costs for implementing all possible Room for River measures is constant and therefore the outcome with the lowest costs for this variable does not provide any new useful information. Apart from the request mentioned above, the environmental interest group also requested information on the negative impacts of dike heightening. This information request was also not very clear to us, as the environmental interest group could not clearly specify what they considered negative effects in terms of the available model outcomes. Lastly, we received an information request about the effects of a high discount rate. Due to the short amount of time between the information request and the first debate, it was not possible for us to provide fitting analyses on this in time.

Our analyses provided prior to the first debate a detailed exploration of the base case, the policy that consisted only of RfR measures, and an analysis that showed the implications of dikes being heightened at multiple locations along the IJssel river. Based on these analyses, the environmental interest group could compare the performance of these policies. The advice that was supplied together with these analyses was to emphasize the effectiveness and the low environmental impact of RfR measures. However, we also advised to not only consider policies consisting of the maximum amount of RfR options as this might not be the optimal solution given the technical limitations at certain locations and the extreme expenses of implementing RfR at all locations.

Prior to the second debate, we did not receive any particular requests from the environmental interest group. Perhaps it was unclear for the environmental interest group what to ask for, given that an environmental metric was lacking in the model, but we can only speculate about this.

---

## 3. Tensions and challenges

In this section, the tensions and challenges regarding our role as analysts of the environmental interest group will be discussed. Although we did not really have a political agenda, we experienced five tensions/challenges during the preparation of our policy advice and during the debate, which will be elaborated on below.

***Politicians vs. scientists in understanding models.*** During typical politicians-modelers interactions, one is often dealing with a client that lacks knowledge of what a simulation model is capable of (Pestel, 1982). This can make requests from the client quite unfit for the capabilities of a modeler, similar as to how we experienced the requests from the environmental analyst group as explained in the previous section. Wanting to still satisfy the requests from the client, we put time into analysis that in our eyes would not be useful. Drawing the line between satisfying a client and telling them that their request is inadequate is a difficult trade-off. In the policy advice that was provided to the client this showed in the fact that not all their information requests could be completely satisfied. However the provided analysis and advice could be used to gain insights related to the requested information, it was less specific than the analysis and advice that was originally requested.

***Available output variables of the model.*** In line with the above, the metrics that can be evaluated in the model do not specifically relate to the environmental impact of different policies, making their quantification by us impossible. This posed a challenge in using the analysis during the debate, as the interests of the environmental interest group were closely related to environmental impact and no model-based claims could be made about them. In general, the usefulness of the model depends on its context and model scope (Ören and Yilmaz, 2006). Not being able to gain quantifiable insights on environmental impact puts us as environmental analysts in a disadvantage, negatively affecting the quality of our policy advice. Perhaps the environment is not seen as a priority for Rijkswaterstaat, given that they provided us with a model without environmental performance indicators. On top of that, during the debate there was not much effort shown to accommodate the disadvantage that was posed to the environmental interest group, making it difficult to define how environmental impact is seen by other actors such as the Transport company or Rijkswaterstaat.

***Different understandings of Room for River measures.*** The lack of common definition for RfR resulted in tension during the political debates. Having different perceptions of the RfR projects affected the expected consequences that are present when implementing a RfR project. During the process, most actors (including ourselves) understood that RfR projects entailed the relocation of Dikes to widen the river bed (Zevenbergen, 2013), literally creating more room for the river. This would be beneficial for the ecology surrounding the IJssel river, as the river flow would be slower, creating a more eco-friendly environment where plants and animals can grow alongside the river. However, the transport company was not in favour of dike relocation, since they have interest in high river water levels (which would not be the case when dikes are relocated). Instead, the transport company preferred riverbed excavation (Zevenbergen, 2013), increasing the water levels to allow larger vessels to navigate through the IJssel river. The general tension between the environmental interest group and the transport company, whom per definition do not want RfR, affects the room for negotiation. Clearly, a different understanding of the same RfR term was challenging. When advising our policy, the challenge is to convey the correct understanding of the RfR project via the environmental interest group. After all, if there is no consensus about what RfR entails, it is unclear what we have evaluated in the provided policy advice. We have a role of "only" analysts, and thus have no formal power to influence the decision-making or speak up if the six main actors start making claims that are not supported by our analysis.

***Creation of extra output variable by transport company.*** Another challenge that was posed during the debates was caused by the tailored use of the provided model by certain actors. Prior to the debate, the transport company modified the provided model so that an internal variable could be used as an output variable. This resulted in a variable representing the water level of certain locations in the IJssel river. This posed a challenge for the other actors, including analysts, as we couldn't assess the implications of their suggested policies. This was problematic as this was an important KPI for the transport company as it heavily influences the type of ships that can navigate through the IJssel river. The specific challenge that was consequently faced by us as the analysts for the environmental interest group was we lost analytical power over the transport company as we could not analyze if the claims that they made on water levels were valid or not.

***Client-employee relation.*** Finally, in a real-life set up, a client-employee relation would be in place. We, as employees, would be willing to provide our client (environmental interest group) with all possible, if interesting, analyses that were performed by us. We would be highly motivated to sufficiently provide our client's needs, which might benefit any possible future collaborations. However, in the current setting (students-students), providing the environmentalist group with our complete code and analysis would enable them to use it in their report, thereby lowering the probability of us delivering unique insights and standing out. All the time invested in performing an analysis that could be copied, or at least used for inspiration, by the environmentalist group was at stake. This made it unattractive for us as analysts to provide full disclosure of our code that led to our findings. Rather, we attained to strategic behavior where we as analysts were careful with the amount of information that we disclosed (Majid and Lim, 2007). In short, preventing other groups from copying your

work leads to a challenging environment with uncertainty about what should be disclosed. This possibly explains the lack of cooperation leading up to the second debate.

## 4. Measures to cope with tensions and challenges

This section will follow up on the discussed tensions and challenges, by elaborating on the taken as well as possible measures that were or could be performed. First, we discuss our adopted combination of multiple strategies to aid the client interaction. Second, we discuss other possible measures that could have enabled a strong as possible position during the political debate, thereby limiting the impact of our identified tensions.

***Taken measures to cope with tensions and challenges.***

***Strategy 1: Understanding the problem perception of the client.*** As analysts, we were hired by a client. One of the first steps in conducting a fruitful analysis for them is to understand their problem perception. This perception, however, is shaped by an actors personal characteristics and therefore often not a completely accurate reflection of the policy problem at hand (Tversky and Kahneman, 1981). In additional, stakeholders are known to exaggerate their perceived problem and to suggest radical and poorly designed solutions (Coffield, 1999). We therefore had multiple meetings with the client to listen to their goals, interests, and objectives and ask for clarifications. Doing so allowed us to design a policy advice that fits the clients' problem perception. Additionally, an actor scan was also conducted to gain a more objective understanding of the policy problem. Here, we also applied the strategy and tried to identify possible interests of the other actors that may align or clash with the ones from the client. This also provided insights into which actors are the most powerful. Given the absence of formal power by the client, all this information can be used by them to form strategic collaborations in an attempt to overtake stakeholders that oppose their interests. This strategy specifically addressed the challenge of working with clients that lacked knowledge on the capabilities of simulation models by trying to get us and the client more aligned. Also, this strategy was deployed to cope with the challenge that there was no model output variable that specifically evaluated the environmental impact of policies. By understanding the exact problem perception of the client, other ways to perform analyses that can benefit the client the best to our abilities became clearer.

***Strategy 2: Managing model-based argumentation.*** During decision-making processes, the interaction between science and politics is often a contested one (Van Enst et al., 2014). This can lead to politicians interpreting modelling results wrongly or only accepting part of the scientific evidence that supports their interests (Pestel, 1982). In response to this ongoing trend, Saltelli et al. (2020) call upon modelers in a manifestation to present their models including shortcomings in such a way that politicians can easily interpret the model outcomes correctly. As analysts, it was also our interests to ensure that the results of any model-based analysis were interpreted correctly by decision-makers. So for instance, to cope with the challenge that the transport company used an output variable that was not originally available in the model, we advised the environmental interest group to inform whether this output variable was validated. If not, that model output could be inaccurate and therefore the actor relying on this output be deceitful in the decision-making process (Landry et al., 1983). This could have been beneficial for the environmental interest group as then the transport company would lose credibility because they used an invalidated output variable. Taking a step back, managing model-based argumentation starts with managing the complexity of the system that is modeled and presenting the insights gained from analysis in an understandable and compact, yet accurate manner. Given the deep uncertainty of the water management system, people are naturally inclined to simplify the system in a mental model which narrows their focus (Forrester, 1961). As this may lead to overlooking important (uncertain) factors that could significantly impact the system, we as analysts had to prevent this. We therefore approached the system from a pessimistic perspective and in so doing strived to minimize the unwanted outcomes under the worst-case scenarios. Using only a few scenarios prevents a computational and informational overload while also ensuring that policies will not underperform. With that, we aimed to provide understandable information to the client, aiding their own model-based argumentation and their understanding of the model.

***Strategy 3: Maintaining objectivity in presenting policy advice.*** While getting conclusions and policy recommendations from the analysis that we conducted, it was important to not let any personal biases influence the advice. This includes any political prejudices we may hold that can influence the advice that best suits the problem perception of the client. Furthermore, we were challenged with a student-student interaction rather than a real client-employee relation. Having personal relationships with the other actors could have possibly threatened the independence of the analysis. In addition to preventing personal political bias, it was also relevant to provide a factual advice. We had to make sure not to manipulate the results to fit the client desires or to force our policy proposal above other actor's proposals. We had this in especial consideration, as working in a student environment it is tempting to disguise results to 'win' against other students.

***Possible other measures to cope with tensions and challenges.***

***Unanimous understanding RfR definition.*** A measure that would prevent confusion regarding the meaning of the RfR project would be desirable. For example, we could specifically ask (possibly via our client) the debate moderator (Rijkswaterstaat), to give a clarification in advance of what each policy lever entails. Having a clear, explicit and understandable definition of each policy lever would benefit the debate process, as there is coherence about the topic which is being discussed (Schumann, 2016). Once there is coherence on the effect of each policy lever, the debate participants that will form a policy design can communicate effectively, potentially increasing the probability of having a unanimously approved policy proposal.

***Having a quantifiable, validated environmental metric.*** One measure that would benefit the challenge regarding not being able to quantify environmental performance would be to plea for the inclusion of a validated environmental metric. The pollution variable of the LakeModel as encounted earlier presents a viable option (Quinn et al., 2017). Although this would mean redefining the model, having an environmental metric would make the model more and fit for purpose (Wright and Esward, 2013), severely reducing the impact of the challenge of lacking quantifiable environmental impacts. Being analysts for the environmental interest group, deriving policy advice based on an environmental metric would be the most suitable. However, to prevent inequalities between the models used by all the stakeholders such as the previous mentioned water levels used by transport company only, it is of key importance that the extended model would be available to all actors. Alternatively, in order to compensate, the model developer could also include the variable that delineates the water height, so that the tension of having an invalidated water height variable is solved. Our role to achieve this would be to plea for this, either directly by attacking RWS that the provided model is insufficient for analysis or via our client.

***More frequent interaction between client-employee.*** Although we expected to receive requests from our client on a more frequent occasion, a possible measure to cope with the client-employee tension could have been to interact more. If we as analysts were asked to present analyses more frequently, perhaps a fruitful connection between the two of us would have emerged. Arranging meetings to discuss and clarify our needs, both as analysts as well as representatives, would have resulted in a more effective collaboration. In that way, we could facilitate and improve their position in the debate by delivering analyses of higher quality. Having an in-depth understanding of the client's needs proved to be of great importance.

## 5. Reflection on strategy

***Reflection on strategy 1: Understanding the problem perception of the client.*** The strategy used to gain a better understanding in the problem perception of our client resulted in more knowledge on their view on the problem at hand. This knowledge was useful as it could be utilized to tailor the performed analyses better to the needs of the environmental interest group. For example, insights in what is the most environmentally friendly policy measure helped us see that a focus on the RfR measures could benefit our client. Although useful knowledge was gained, this strategy could have been used more extensively. As mentioned before, it was not fully clear what was our client's view on the performance of other measures than RfR in terms of the model output. This information could have been very beneficial when identifying flaws in policies provided by other actors participating in the political decision-making process, especially as the low environmental impacts did not become clear through the output of the model.

***Reflection on strategy 2: Managing model-based argumentation.*** Unfortunately, the strategy with the aim to introduce model-based argumentation in the political debates and thereby help achieve the goals of our client did not work out as hoped. Although we have advised our client multiple times to question how valid the use of the water level output variable was, this did not happen. Multiple reasons can be given for the fact that this did not happen. The first one being that the importance of this strategy was not emphasized enough to our client how valuable it is to question the validity of the output variable added to the model by the transport company. In other words, this strategy could have been improved by ensuring that our client understood the urgency and logic behind the given advice, which emphasizes the importance of clarity when interacting with the client (Fenton and Griffith, 2020). This might have convinced and motivated them to actually follow the advice and consequently benefit themselves.

***Reflection on strategy 3: Maintaining objectivity in presenting policy advice.*** The strategy to maintain objectivity during the presentation of our policy advice has worked out successfully from our point of view. By maintaining an objective approach, we achieved staying away from tunnel vision on environmentally beneficial outcomes. Knowing that objectivity is of enormous importance (Armstrong, 1983), being objective during the comparison of outcomes of RfR projects to those of dike heightening was, according to our perception, essential when working as an analyst. We namely based our policy advice on facts and figures, which we presented to our client as well, without attaching any normative judgements on how the outcomes should be interpreted. We also were objective in addressing the policy problem from a realistic multi-actor perspective. For instance, we assumed that policies that were too expensive according to RWS would not be viable even if they contained a lot of RfR projects. While the latter was preferred by the client, these types of policies were not advised to them given their inviability. Moreover, we kept away from twisting numbers to the interest of the environmental interest group, which could only lead to impairments afterwards. By remaining objective, we successfully aspired to present a quality policy advice, which was designed objectively for the environmental interest group.

All in all, from our position as analysts without a political agenda, the focus lied in objectively presenting a valuable, understandable and model-based policy advice to aid our client in the political decision-making process. As analysts, it was of tremendous importance that their problem perception was understood correctly, which could have got more attention. During the process, several tensions and challenges were identified, of which we tried to minimize the impact by remaining objective and solely base our policy advice on the model that was provided to us. In short, we are critical on our work and are aware that not all strategies worked out how we planned, but still managed to successfully counter some of the tensions and challenges, benefitting the decision-making process of our client.

# 6. References

Armstrong, J. S. (1983). The importance of objectivity and falsification in management science. *Journal of Management*, 9(2):213–216.

Cerna, L. (2013). The nature of policy change and implementation: A review of different theoretical approaches. *Organisation for Economic Cooperation and Development (OECD) report*, pages 492–502.

Ciullo, A., de Bruijn, K. M., Kwakkel, J. H., and Klijn, F. (2019). Accounting for the uncertain effects of hydraulic interactions in optimising embankments heights: Proof of principle for the ijssel river. *Journal of Flood Risk Management*, 12(S2):e12532.

Coffield, F. (1999). *Speaking Truth to Power: Research and policy on lifelong learning*, volume 3. Policy Press.

Fenton, M. and Griffith, E. (2020). Risk: Getting the message across: Clients, clarity and communication. *LSJ: Law Society of NSW Journal*, (65):86.

Forrester, J. W. (1961). *Industrial Dynamics*. M.I.T. Press.

Landry, M., Malouin, J.-L., and Oral, M. (1983). Model validation in operations research. *European Journal of operational research*, 14(3):207–220.

Majid, S. and Lim, A. (2007). Information and knowledge sharing among it professionals in singapore.

Ören, T. I. and Yilmaz, L. (2006). Synergy of systems engineering and modeling and simulation. In *Proceedings of the 2006 International Conference on Modeling and Simulation-Methodology, Tools, Software Applications (M&S MTSA)*, pages 10–17.

Pestel, E. (1982). Modellers and politicians. *Futures*, 14(2):122–128.

Quinn, J. D., Reed, P. M., and Keller, K. (2017). Direct policy search for robust multi-objective management of deeply uncertain socio-ecological tipping points. *Environmental modelling & software*, 92:125–141.

Saltelli, A., Bammer, G., Bruno, I., Charters, E., Di Fiore, M., Didier, E., Espeland, W. N., Kay, J., Piano, S. L., Mayo, D., et al. (2020). Five ways to ensure that models serve society: a manifesto.

Schumann, A. (2016). Using outcome indicators to improve policies: Methods, design strategies and implementation.

Schut, M., Leeuwis, C., and van Paassen, A. (2010). Room for the river: room for research? the case of depoldering de noordwaard, the netherlands. *Science and Public Policy*, 37(8):611–627.

Straatsma, M. W., Bloecker, A. M., Lenders, H. J. R., Leuven, R. S. E. W., and Kleinhans, M. G. (2017). Biodiversity recovery following delta-wide measures for flood risk reduction. *Sci. Adv.*, 3(11):e1602762.

Tversky, A. and Kahneman, D. (1981). The framing of decisions and the psychology of choice. *science*, 211(4481):453–458.

Van Enst, W. I., Driessen, P. P., and Runhaar, H. A. (2014). Towards productive science-policy interfaces: a research agenda. *Journal of Environmental Assessment Policy and Management*, 16(01):1450007.

Walker, W. E., Marchau, V. A., and Kwakkel, J. H. (2013). Uncertainty in the framework of policy analysis. pages 215–261.

Wright, L. and Esward, T. (2013). Fit for purpose models for metrology: a model selection methodology. In *Journal of Physics: Conference Series*, volume 459, page 012039. IOP Publishing.

Zevenbergen, C. (2013). *Tailor Made Collaboration: A Clever Combination of Process and Content*. Rijkswaterstaat Room for the River.