Supplementary Material: Methodological Appendix

This document is the supplementary material for the article: Alejandro et al. "Role-play Simulations for Decision Making in Contexts of Uncertainty: Challenges and Strategies when Engaging Elites as Participants", *PS: Political Science and Politics*, 2024.

Here, we provide additional information regarding the background and methodology behind the pilot simulations we conducted as a starting point for our methodological reflection.

Science and policy in Switzerland

In Switzerland, direct contact between science and decision making happens mostly within the administration, partly through a network of think tanks and consultancy agencies. "[I]n Switzerland, scientific advice mostly takes the form of short-term mandates given to external advisors, who file written reports containing evidence" (Hadorn et al. 2022). However, as Reinecke et al. (2013) point out, interest groups also play a substantial role in expertise and scientific advice. A network of federal research institutions and universities, the National Academy of Sciences, and the documentation office of the federal parliament also provide cutting-edge information to politicians who want reliable information on diverse issues (Pfister 2019). Direct exchanges between scientists and lawmakers or members of governments themselves remain occasional, hence the need to improve connections and mutual understanding between these two worlds.

In our case, we designed the RPS for scientific and political actors to experience the routine activity of the other groups rather than an extreme scenario of political decision making or scientific controversy. More broadly, Switzerland is a case where executive bodies are composed of members of (radically) opposed parties, thus our RPS also aimed for scientific actors to experience the challenges of consensus-building in this political environment (Ladner 2013).

How did the project's idea emerge?

The idea of organizing a RPS first emerged one year before the event within a cluster for sustainability research, during a series of discussions that were conducted in the wake of the COVID-19 crisis. These discussions aimed to reflect on ways to improve the governance of and responses to complex collective problems such as a pandemic or climate change and were attended by faculty from across the University interested in questions of governance, expertise, and sustainability.

Joined by a member of the cantonal administration acting as a university's partner, this group of researchers rapidly focused its attention on the science-policy interface and chose to develop an experience-based project. Indeed, early meetings revealed that members of the

group shared the perception that political and scientific actors poorly understood each other, in particular regarding their respective logics, the rationale for their actions, and their everyday constraints; and that this was a major hindrance to govern complex problems, especially in times of uncertainty. It was thus decided to design a RPS in which professional researchers and politicians would exchange their roles and put themselves in each other's shoes for a short amount of time.

Preparatory workshop

To check the relevance of the chosen topics and co-construct the first outline of a realistic scenario with participants belonging to the target communities, we organized a half-day preparatory workshop eight months before the simulations. The event was attended by employees of the cantonal administration, science journalists, and researchers from different fields (e.g., environmental sciences, public health, political science). Participants were selected according to a) their expertise on two specific topics identified by the cluster of researchers as the most promising to develop a scenario: namely climate change and health, and b) their knowledge of the challenges and functioning of the science-policy interface. Coming from academia, public administration, and the media, they were contacted mostly through personal networks. The goal here was to get a diversity of views and comments on our project and scenarios.

The workshop itself was conducted online and lasted for three hours. After an introduction explaining the principles and goals of the RPS, the participants were divided into two groups according to their respective fields of expertise, one aiming to identify a topic for a RPS focusing on health, and the other one doing the same with a climate change focus. Each group designed the outline of a scenario around its allocated topic and introduced it to the other group at the end of the workshop.

While health and climate change had been identified as broad areas of interest prior to the workshop, the groups had to narrow down these questions to identify a relevant issue within these two broad themes. They came up respectively with Negative Emissions Technologies (NETs) for climate change and 5G antennas for health. These issues were chosen for their timeliness, the existence of scientific uncertainty, and their potential for difficult and politically contested trade-offs.

After the workshop, the organizing team decided to focus on only one of the scenarios and run it twice due to the time-intensiveness of having to create material for two different issues. Both scenarios were considered satisfactory by the team. However, the expertise of its members dealt more with climate change than health which would facilitate the production of the material. Moreover, there is also a widely shared consensus among climatologists that NET solutions will be necessary to limit global warming to 1.5°C or even 2°C (Haszeldine et al. 2018; Maesano et al. 2022) which we thought could also resonate with the targeted participants.

Description of the participants

We define political actors as individuals engaged in political decision making (executive position), norm creation (legislative branch), and implementation of legal measures (high-level administrative role) at any relevant level (local, subnational, national, international) depending on the chosen scenario. We define scientific actors as individuals engaged in the production of knowledge at any stage of that process, including junior and senior scholars with academic titles, lab technicians, and engineers involved in applied science. These broad categories build on inclusive views of the political and scientific worlds and their numerous potential sites of interaction.

In our simulation, the political characters designed for the scenario were limited to cantonal executive positions and high-level administrative functions (e.g., head of administrative services). We deliberately excluded the legislative branch from our scenario since it was oriented towards executive decision making at the Canton level. The scientific characters designed for the scenario represented a wide range of disciplines with varied expertise in natural and social sciences, namely engineering, geology, biology, economics, sociology, and ethics.

In real life, the political actors who took part in the simulation (and role-played the scientific actors) were either cantonal MPs, city or cantonal executives, or high-level administrative staff. Most of them had a prior interest in climate change or the science-policy interface, and all the major political parties were represented. The researchers who participated in the simulation (and role-played the political actors) were mostly professors and lecturers in real life, with a mix of natural and social sciences, but none of them was a NETs expert to avoid running the risk of spoiling the experience of role-playing a decision-maker without any prior knowledge of the topic. The political actors were recruited mostly through personal contact thanks to our collaboration with the local authorities. The scientific actors were colleagues from the university. Other types of actors (e.g., in-house experts, NGOs, etc.) were excluded from the process for the sake of simplicity and because our main goal was to foster collaboration between academics and political decision-makers, which is the type of science-policy interface the University hosting the project aimed to foster in priority.

All participants took part on a voluntary and unpaid basis, belonged to relatively privileged social groups (policy makers and academics), and agreed to the terms and conditions of the action-research setting prior to the simulations (for more information about recruitment strategies, see Alejandro et al. 2024a)

References

Alejandro, Audrey, Lucile Maertens, Zoé Cheli, Augustin Fragnière, and Oriane Sarrasin. 2024a. "Designing Role-Play Simulations for Climate Change Decision-Making: A Step-by-Step Approach to Facilitate Cooperation between Science and Policy." *Environmental Science & Policy* 152: 103650. https://doi.org/10.1016/j.envsci.2023.103650.

Alejandro, Audrey, Lucile Maertens, Augustin Fragnière and Zoé Cheli. 2024b. "Role-play Simulations for Decision Making in Contexts of Uncertainty: Challenges and Strategies when Engaging Elites as Participants." PS: Political Science & Politics. DOI: XXXXXXXXX.

Hadorn, Susanne, Fritz Sager, Céline Mavrot, Anna Malandrino, and Jörn Ege. 2022. "Evidence-Based Policymaking in Times of Acute Crisis: Comparing the Use of Scientific Knowledge in Germany, Switzerland, and Italy." *Politische Vierteljahresschrift* 63 (2): 359–82. https://doi.org/10.1007/s11615-022-00382-x.

Haszeldine, R. Stuart, Stephanie Flude, Gareth Johnson, and Vivian Scott. 2018. "Negative Emissions Technologies and Carbon Capture and Storage to Achieve the Paris Agreement Commitments." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 376: 20160447. https://doi.org/10.1098/rsta.2016.0447.

Ladner, Andreas. 2013. "État, système politique et accomplissement des tâches." In *Manuel d'administration publique suisse*, edited by Andreas Ladner, Jean-Loup Chappelet, Yves Emery, Peter Knoepfel, Luzius Mader, Nils Soguel, and Frédéric Varone. Contributions à l'action publique. Lausanne: Presses polytechniques et universitaires romandes.

Maesano, Cara N., James S. Campbell, Spyros Foteinis, Veronica Furey, Olivia Hawrot, Daniel Pike, Silvan Aeschlimann, et al. 2022. "Geochemical Negative Emissions Technologies: Part II. Roadmap." *Frontiers in Climate* 4: 945332. https://doi.org/10.3389/fclim.2022.945332.

Pfister, Roger. 2019. "Scientific Policy Advice in Switzerland: A Case Study on Climate Change and General Insights." *European Review* 27 (1): 33–40. https://doi.org/10.1017/S1062798718000492.

Reinecke, Sabine, Andrea Tony Hermann, Anja Bauer, Michael Pregernig, Karl Hogl, and Till Pistorius. 2013. "Innovative Climate Policy Advice: Case Studies from Germany, the Netherlands, Switzerland and the UK." Vienna: Institute of Forest, Environmental, and Natural Resource Policy. https://boku.ac.at/fileadmin/data/H03000/H73000/H73200/_TEMP_/InFER_RR_13_ 1_Case_study_report.pdf.