

# “How to Bridge the Gap”: Empowering Early-Career Scientists to Navigate the Science-Policy Interface—Conclusions from a Summer School

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## Executive Summary:

The “Science and Policy - How to Bridge the Gap” summer school, which took place in July 2023 in Switzerland, aimed to educate PhD students in natural science and engineering on engaging with policymakers effectively. Over the course of five days, the program covered various aspects of the Swiss and international science-policy interface, including the Science for Policy framework, concrete examples of evidence-based policy advice from scientists, and talks on the significance of Open Science (OS) and public engagement in fostering the dialogue between science and society. Additionally, multiple workshops illustrated science communication formats for different audiences, such as policymakers, stakeholders, and the general public. Organized by five PhD students with a natural science and/or engineering

background, the event brought together thirty participants and featured twenty-eight speakers, creating a highly international and stimulating learning environment.

This workshop review, written by the summer school organizers, summarizes the school's outcomes and aims to provide valuable insights for early-career scientists and engineers taking their first steps in science-informed policymaking. The roles scientists may play at the science-policy interface, the various meeting points (physical and ideological) to interact with decision-makers, tools for more effective communication with non-expert audiences, and the importance of OS and Citizen Science (CS) in integrating scientific information more widely into society are discussed. Based on the participants' feedback, suggestions are also offered for future events on science and policy, which early-career researchers can implement in their respective universities and countries. Given the strong commitment of participants and their desire to create a community, the authors believe such workshops are essential to give early-career scientists the tools and network to actively engage in the science-policy landscape.

### **I. Introduction: How to increase the impact of science?**

Particularly in times of crisis, such as the COVID-19 pandemic, efficient collaboration between scientists and politicians is of uttermost importance to society. However, scientists and politicians figuratively speak two different languages. While most scientists may think the sheer accuracy of facts is reason enough to act, politicians consider scientific evidence as just one factor in their decision-making process. This is only one of many potential cultural differences between scientists and policy practitioners that can lead to significant frustration when either group consults or proposes ideas to the other.

The impact of science outside the academic world is significantly determined by how effectively science is communicated, especially to stakeholders with political power. However, traditional science education, encompassing Bachelor's, Master's, and PhD programs, emphasizes the science itself. Even if communication is (a facultative) part of a program, it primarily focuses on communicating within the scientific community, such as soft skills courses on presentation training and scientific writing. Courses on science-informed policymaking for science and engineering doctoral students are rare. Most notably, the platform for building connections among young researchers and stakeholders, including policymakers and representatives from non-profit organizations, is typically considered outside the scope of academic training.

Therefore, a question naturally arises: how can early career researchers effectively engage with policymakers to increase the impact of their scientific findings? To answer this query, the authors planned and executed a summer school in science policy for doctoral students. The authors and organizers are five Ph.D. students from the Swiss Federal Institutes of Technology in Zurich (ETH Zurich) and Lausanne (EPFL) with a background in natural science or engineering. Our main goals of organizing a doctoral summer school on "Science and Policy - how to bridge the gap" were to equip fellow natural science and engineering PhD students with:

- An understanding of the Swiss science-policy interface, focusing on entry points for scientists through institutional frameworks, associations, and think tanks
- Insights from scientists providing evidence-based policy advice, enabling them to identify opportunities for their own engagement
- The ability to incorporate Open Access (OA) principles to make their research accessible to a wider audience
- Practical skills in science communication, including tailoring messages for different audiences such as policymakers, stakeholders, and the general public

The authors are proud to have featured key figures from the Swiss science-policy interface, including the current President of the Swiss Science Council (SSC) Prof. Sabine Süssstrunk, and the Director of the Swiss

National Science Foundation (SNSF) Prof. Angelika Kalt. Furthermore, several scientists were welcomed who are renowned in their fields who actively engage in evidence-based policy advice, e.g., through their participation in the Intergovernmental Panel on Climate Change (IPCC) or the Swiss COVID Taskforce. Moreover, representatives from organizations operating at the interface of academia and politics, such as think tank Reatch and the Swiss Young Academy (SYA), showcased networking, job, and influencing opportunities outside the University to our participants. In line with our learning goals, each day was assigned a head topic: Open Science (OS) (how to ensure high quality and accessible research), science for policy (how can science be useful for policymakers), regulatory framework (how do science and policy interact at an institutional level), science communication (how to communicate science to the general public) and public engagement (how to engage the lay audience in science). To our knowledge, this one-week “Science and Policy” program tailored explicitly to natural science and engineering PhD students was unique in Switzerland.

## II. Summer school structure

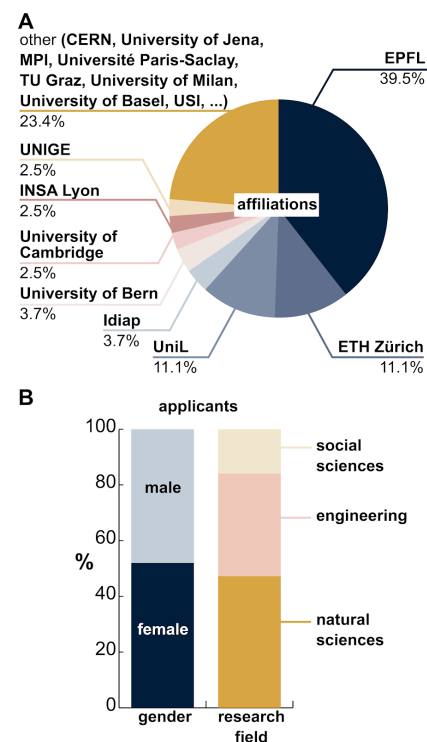
### i. Participants

In this section, the school’s advertisement strategy to attract interested Ph.D. students is briefly discussed. Moreover, the demographic data on the applicants is evaluated, and eventually, the explanation of the selection of participants is also provided.

The organizers were awarded a competitive grant by ETH Zurich and EPFL to fund the summer school. Based on the funding requirements, the school could offer 30 slots, of which two-thirds were reserved for PhD students from EPFL and ETH Zurich. Thus, the summer school was advertised primarily at EPFL and ETH Zurich, but also at other Swiss and European Universities. Advertisement was also done on social media. The advertisement was specifically targeted at PhD students in natural sciences or engineering, but it was communicated openly that applications from all scientific backgrounds were considered.

More than eighty applications from twenty-seven different Swiss and European universities were received, suggesting that the subject is indeed of

great interest and that opportunities to learn about the science-policy interface are rare compared to the level of interest. In line with the advertisement strategy, most applicants were affiliated with Swiss universities, particularly with EPFL and ETH Zurich. Moreover, the school attracted applicants from other European institutions, such as the University of Cambridge, Université Paris-Saclay, and several Max Planck Institutes in Germany, (**Figure 1A**). The gender of applicants was balanced, with 52% female and 48% male candidates (**Figure 1B**). The applicants’ fields of research were primarily natural sciences and engineering, with a minority of applicants coming from the social sciences (**Figure 1B**).



**Figure 1:** Statistics of applicants’ affiliation (A), research field, and gender (B).

The selection of participants was primarily based on their motivation letter. Regardless of their scientific background, applicants who could state their genuine interest in getting involved in the science-policy interface were preferred in the selection process. The demography of selected participants and applicants was comparable. The group was highly international and diverse in terms of gender and cultural background, which the organizers considered beneficial in sparking discussions with different viewpoints.

ii. Schedule

This section describes the detailed schedule of the summer school, which was held from July 10-14, 2023 in Beatenberg, Switzerland. **Figure 2** provides an overview of the timeline as well as the 28 involved speakers. Speakers were affiliated with diverse institutions, including Swiss universities (EPFL, ETH Zurich, University of St.Gallen (UniSG), Università della Svizzera italiana (USI)), a research institute (Idiap, Institut Dalle Molle d'intelligence artificielle perceptive), governmental bodies (SNSF, Scientific policy grants), a networking association (Swiss Young Academy, SYA), non-governmental organizations (United Nations Educational, Scientific and Cultural Organization (UNESCO), Reatch Think Tank, Centro Euro-Mediterraneo sui Cambiamento Climatici (CMCC), the Royal Society), and private companies (Science Studios, Massively Multiplayer Online Science (MMOS), theMetaNews, HMS Bergbau). Each speaker was assigned a 45-minute slot, including 15 minutes dedicated to questions. As from Figure 2, the activities of each day were organized around a central topic (OS, Science for Policy, Regulatory Framework, Science Communication, Public Engagement), alternating talks (blue) and interactive workshops (orange).

After each lecture, participants were always highly engaged in the discussions, and many questions arose spontaneously. Discussions regularly extended

into the breaks, occasionally even continuing into the evenings for speakers staying overnight. The workshop activities were spread across the week so that there would be one interactive session per day. In this way, participants were given the opportunity to put into practice what they had just learnt. Finally, there was an outdoor activity planned before the last day which provided a great opportunity to strengthen networking and create lasting connections within the group. More details about the schedule are provided in the Appendix B.

III. Lessons learned

Throughout the five-day program, speakers and participants engaged in discussions aimed at understanding the Swiss science-policy landscape, deciphering the roles scientists may play in policymaking, learning communication strategies for different stakeholders, and detailing the impact that OS and CS can have on the integration of science into policy. The first four parts of this section summarize the key topics discussed by the speakers and the challenges that need to be understood to make science more heard by the general public and closer to the policymakers. The final part aims to provide practical guidance for early-career researchers wishing to take their first steps towards bridging the gap between science and policy.

	Monday	Tuesday	Wednesday	Thursday	Friday
	Open Science	Science for policy	Regulatory framework	Science communication	Public engagement
9:00 - 9:45		Energy and Technology - Florian Egli (ETHZ)	Workshop "Knowledge for Policy" - Letizia Monteleone, Veronica Casartelli (CMCC)	Social Marketing in Public Health - Suzanne Suggs (USI)	Workshop "Stakeholder engagement" & the Fraxini-Project - Anna Krebs & Hannah Schoch (Reatch)
9:45 - 10:30	Arrival	AI Ethics and Policy - Johan Rochel (EPFL)		Science Journalism - Laurent Simon (theMetaNews)	
10:30 - 11:00	Coffee				
11:00 - 11:45	Opening Keynote - Sabine Susstrunk (EPFL & SSC)	Nuclear Energy - Annalisa Manera (ETHZ)	continue: Knowledge for Policy	Workshop "Science Storytelling" - Mirko Bischofberger (EPFL, Science Studios)	Gaming for Science - Attila Szantner (MMOS) <i>online</i>
11:45 - 12:30	Open Science - Katrin Beyer (EPFL) <i>online</i>	Climate Policies - Anthony Patt (ETHZ)	Presentations		Citizen Science - 2000 lakes - Daniel Gatica-Perez (EPFL)
12:30 - 14:00	Lunch				
14:00 - 14:45	UNESCO Recommendation on OS - Fereshteh Rafieian	Food Policy - Alexander Mathys (ETHZ)	Funding Regulations - Angelika Kalt (SNSF)	Outdoor activity	Steps forward & Good Bye
14:45 - 15:30	Open Access Paths - Lorenza Salvatori (EPFL library)	Society and Pandemics - Caspar Hirschi (UniSG)	Science and Policy Journal - Andrew Dunn (Royal Society) <i>online</i>		
15:30 - 16:00	Coffee				
16:00 - 16:45	Politikstipendien - Liselotte Schlegel	What is ... and what is not ... the Future of Energy? - Lars Schernikau (HMS Bergbau AG) <i>online</i>	Who gets heard? - Silvia Maier (SYA)		
16:45 - 17:30	Center for Digital Trust (C4DT), EPFL - Melanie Kolbe-Guyot	Panel discussion	Science-based Policy Advice - Benedikt Knüsel (ETHZ)		
17:30 - 18:15	Monopoly game - Lorenza Salvatori & team (EPFL library)		Swiss Young Academy - Karin Spycher (SYA)		
18:30	Dinner & social activities				

**Figure 2:** The summer school schedule. Talks are marked in blue, workshops are highlighted in orange, and social activities in red.

### *i. The intersection of science and policy*

While science and policy are often treated as distinct disciplines, they are intrinsically connected. “Policy for science” encompasses the regulations governing how research is funded, regulated, or conducted, and “science for policy” refers to the use of scientific knowledge in policymaking.

Several speakers advocated a departure from the linear model of innovation (Macnaghten 2022), where basic research leads to applied research and eventually, societal impact. Instead, they proposed a stakeholder-based vision of science, emphasizing the importance of dialogue, networking, and co-creation between stakeholders. The stakeholder-based vision of science could be reinforced by a reorganization in some university departments and journals, organizing research around societal problems and grand challenges that span several disciplines. Within this vision of science, post-normal science (Ravetz 1999) is a framework for addressing issues with uncertain facts, disputed values, high stakes, and urgent decisions. These issues, also known colloquially as “wicked problems”, require interdisciplinary perspectives, including the scientific perspectives, for effective, qualitative problem-solving and informed decision-making. A recommended initial step in problem-solving is creating a “stakeholder map”, reflecting evolving situations in an objective and unbiased way. When scientists have a comprehensive view of a given issue, they can more effectively assume responsibilities at the science-policy interface.

Two major players at the science-policy interface in Switzerland are the SSC and the SNSF. The SSC has a central role in providing recommendations, evaluating research institutions, and advising the Federal Council. For example, the SSC recently shared its recommendations for scientific policy advice in times of crisis (SSC 2022). In addition, several Swiss higher education institutions and scientific organizations have also stepped up their public communication efforts in recent years. For example, in 2020, both the University of Zurich and EPFL had a professional communications team with more than fifteen employees (Schäfer et al. 2021). Furthermore, ETH Zurich established the Science-Policy Interface fostering networks and facilitating dialogue with policymakers,

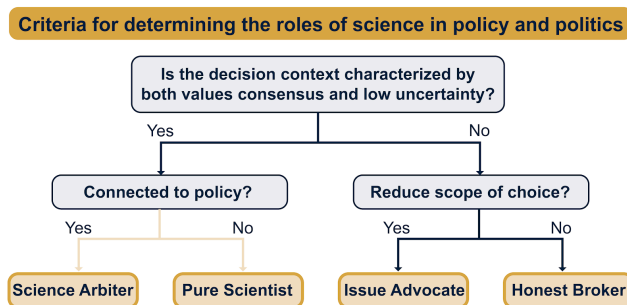
capacity-building, and setting incentives for researchers to engage with policymakers. As Dr. Benedikt Knüsel clarified, science-based policy advice in Switzerland exists in various forms, such as scientists being invited to parliamentary or extra-parliamentary commissions, government-mandated research, ad-hoc task forces in times of crisis, and, importantly, informal policy advice based on personal networks. For the interested reader, a more detailed explanation of scientific policy advice in Switzerland was published in 2019 regarding climate change (Pfister 2019).

In conclusion, ongoing endeavors seek to formalize the integration of science into policy frameworks in Switzerland, with an increasing focus on stakeholders. Scientists, who are among these stakeholders, may assume different roles at the science-policy intersection.

### *ii. The role of scientists in policymaking*

“Science for policy” includes a spectrum of activities, depending on the societal role a scientist assumes. Scientists seeking involvement in policymaking must consciously and actively select the role aligning with their objectives.

Several speakers referenced Roger A. Pielke Jr.’s book, “The Honest Broker”, proposing four idealized roles for scientists in society (**Figure 3**).



**Figure 3:** Roles for scientists in policymaking, using values, uncertainties, relevance for policy, and scope of choice as criteria for determining the roles (Pielke 2007).

When an issue is characterized by value consensus and low uncertainty, such as tornado politics, scientists find it easier to adopt roles. The “Pure Scientist” abstains from policymaking, while the “Science Arbiter” willingly imparts scientific knowledge when necessary. Conversely, in scenarios

characterized by unshared values and significant uncertainty, such as pandemic politics, scientists engaging in the debate assume roles as “Issue Advocates” or “Honest Brokers of Policy Alternatives”. The former narrows choices by presenting science for targeted purposes, advocating specific policy options, while the latter presents options impartially, employing scientific knowledge as a background to support claims.

Pielke emphasizes that all four roles should be fulfilled within the scientific community, cautioning against simultaneous role-playing. “Pure Scientists” and “Science Arbiters” should not debate policy options via scientific arguments, “Issue Advocates” should refrain from participating in scientific advisory groups, and “Honest Brokers” should transparently disclose their personal values and priorities, avoiding inadvertent “Stealth Issue Advocacy”. Multiple speakers recommended that scientists adopt the “Honest Broker” role during situations involving scientific uncertainties, conflicting social values, and unclear policy objectives.

This role can be fulfilled by participating in scientific assessments (Kowarsch et al. 2016), such as those produced by intergovernmental panels, crisis task forces and advisory groups. These assessments are based on high-quality data and impartial analysis, and facilitate the evaluation of competing policies against standardized criteria for decision-makers. In these contexts, “Honest Brokers” should align their voices with the panel, refraining from simultaneously appearing in the media as “independent” experts giving political advice and resigning if conflicts with personal opinions arise. More specifically, when talking to parliamentarians, nuanced communication is essential, as Dr. Silvia Maier notes, with statements being “policy-relevant but not policy-prescriptive”. Scientists should recognize policymakers’ consideration of priorities beyond scientific evidence, such as the complex interplay of geopolitical, socio-economic, and national factors.

In essence, scientists can adopt multifaceted roles at the science-policy interface, but it is crucial to be able to assume the appropriate role at the right time for effectively advancing evidence-based policy.

### *iii. Communication strategies for different stakeholders*

In any societal role or position, effective communication stands as a fundamental component for impactful engagement. Nevertheless, conveying scientific findings for policymaking and public engagement poses a significant challenge for many scientists (National Academies of Sciences, Education, and Agenda 2017; Hajdu and Simoneau 2020, 15). Recently published “Five rules for evidence communication” (Blastland et al. 2020) propose five strategies: “1. Inform, not persuade; 2. Offer balance, not false balance; 3. Disclose uncertainties; 4. State evidence quality; and 5. Inoculate against misinformation”. Yet, scientists must adapt their communication strategy to their audience.

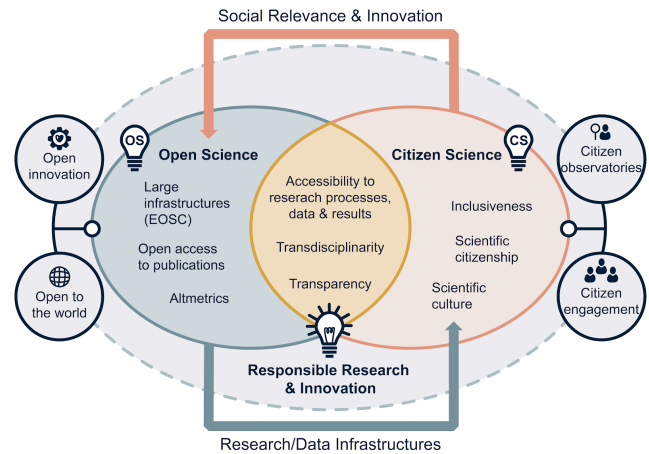
For engagement with policymakers, recent SYA’s “Who gets heard?” study explored how scientific insights reach the Swiss parliament (Amman et al. 2023). They found that scientists are heard in parliamentary committees only when an expert need arises, and that “being heard” required scientific credibility, the ability to deliver unbiased statements, and, in Switzerland, bilingual competence in German and French. Furthermore, scientists acting as facilitators rather than teachers can foster dialogue on an equal footing that policymakers desire. In addition, researchers need to understand how scientific insights are incorporated into the legislative process, thus SYA and think tank Reatch collaboratively offer young researchers training on the Swiss political system through the Franxini Project and the Swiss Young Network for Science Policy and Diplomacy Project (SYNESPOD) (‘Swiss Young Network for Science Policy and Diplomacy | Swiss Young Academy’ n.d.). Such training is pivotal for enhancing the capacity, visibility, and impact of early-career researchers in science policy and science diplomacy

Concerning media communication, speakers stressed the importance of prompt responses to journalists’ requests, thus being more accessible and building relationships with journalists. Finally, when reaching out to the general public, diverse strategies are available: from university open days, where laboratories showcase ongoing research projects to the public, to using social media for scientific

communication. However, for all of those approaches, learning the skill of scientific storytelling and ways to simplify key findings can enable presenting any scientific discovery as a captivating story and enhance its transmission and comprehension. Thus, such training also needs to be an essential part of university curricula.

*iv. The roles of Open Science and Citizen Science for public engagement and science integration into policy*  
Due to the common pitfalls of effective communication, some being a general lack of scientific literacy and fluctuating public trust, media-driven filtering, scientists' misunderstanding of their audience and oversimplification of conflicting messages, involving the public and policymakers in scientific research as well as making all scientific research open access (OA) is of utmost importance (Bonney et al. 2015). Open Science primarily focuses on improving the transparency of research and the publication processes, while Citizen Science (CS) directs attention to the involvement of the public in scientific research (Vohland and Göbel 2017). The interdependence of these two concepts is illustrated in **Figure 4**.

In CS, the public engages in scientific research through diverse activities, ranging from collecting and classifying data and developing machine learning algorithms to initiating scientific projects, particularly on a local level. However, the method and degree to which CS is integrated into the local, national, or international level varies geographically and topic-wise. Moreover, it requires appropriate methodological and technological support, such as establishing digital CS platforms, utilizing mobile devices and sensors, creating games, and conceptualizing "citizen observatories" (Bonney et al. 2015). For example, integrating scientific mini-games into mainstream video games can address complex scientific tasks involving large datasets (Waldispühl et al. 2020), such as annotating cell populations to help researchers understand the SARS-CoV-2 coronavirus. Through this collaboration between researchers, game developers, and players, not only scientists' time can be significantly saved, but citizens are empowered to actively contribute to the scientific process and be involved in currently relevant topics (such as public health), thereby creating additional incentives to integrate these results into the decision-making process.



**Figure 4:** Schematic representation of the interconnection between OS and CS, adapted from (Schade et al. 2021).

However, engaging the public requires broad accessibility of scientific findings, a challenge posed by traditional academic publishing models. Despite public funding, scientific results are most commonly found "behind the paywall". Thus, several OA pathways, including Green, Gold, Hybrid, and Diamond ('Open Access Paths | EPFL Library' n.d.), have been introduced and are since recently strongly encouraged and even demanded by funding institutions (e.g., the EU and SNSF funding only cover publishing in OA journals). OS extends beyond OA to encompass open data, open-source software and hardware, open peer review, open educational resources, and science infrastructure, all aimed at enhancing transparency and reproducibility in science. For example, UNESCO advocates for the importance of OA in achieving Sustainable Development Goals (SDGs) and has created OS toolkits to support researchers ('Open Science Toolkit | UNESCO' n.d.). It also introduced initiatives such as "cOAlition S" to promote the development of non-commercial or community-driven forms of OA publishing (Ancion et al. 2022). However, the "publish or perish" dynamic controlling the individual researchers' publishing habits is strongly influenced by funders and assessment bodies, thus policy for science is essential for empowering science for policy.

In conclusion, the essence of OS and CS lies in empowering everyone to participate in science and facilitating knowledge and evidence transfer from academia to industry, society, and policy by breaking down the boundaries between them.

*v. Key takeaways on how to get involved in evidence-based policymaking as an early-career researcher*

This section provides practical advices that crystallized during the summer school, aimed at researchers wanting to get more involved at the science-policy interface:

- Doing high-quality research and being affiliated with reputable research institutions helps to establish credibility and increases visibility and the likelihood of “being heard”.
- Understanding diplomatic manners, parliamentary routines, and policy jargon is indispensable for successful interaction with policymakers.
- Training in scientific communication and adapting the message to the audience is essential for conveying policy-relevant scientific information.
- Maintaining consistency in the public role played and being transparent about personal values are key factors in presenting unbiased evidence.
- Establishing a network and cultivating trust relationships with policymakers, journalists and citizens enables scientists to leverage the influence present in the network.
- Being patient and persistent is crucial, as political impact may only become visible after years of dedicated involvement in policymaking.

#### IV. Feedback and future initiatives

At the end of the summer school, participants were surveyed for feedback. Generally, the participants’ feedback was highly positive. They awarded an average score of 4.4/5 to the question, “To what extent have your overall expectations been met?”. Some written statements are listed below:

- “I had an exceptional experience learning the ins and outs of how scientists can be active in policy.”
- “Inspiring and thought-provoking experience that allowed me to explore the impact and future trajectory of my career as a scientist.”
- “Science and Policy: Bridging the Gap was a collaborative experience in which experts and novices built support lines across the gap to strengthen our future bridge.”

- “The Summer School provided an exceptional setting for exploring potential career development pathways and to better mind the challenges for producing impactful and societally meaningful research.”
- “An amazing, inspiring, and rich opportunity to learn what exists beyond academia in the realm of science policy and communication as well as meet incredible students from many different research fields.”
- “Engaging and door opening!”

The organizers were also interested in participants’ future projections of their role in the science-policy interface. Interestingly, 69% of participants replied that they had been encouraged to focus on the science-policy interface in the future, 20.7% had been discouraged, and 10.3% said it had not changed. Attendees were grateful for discovering opportunities for scientists to engage in policymaking and the challenges that come with it. The most important challenges they mentioned were the need for high credibility, often conferred by decades of experience and/or a professorship, and in Switzerland, fluency in German and French. More concretely, when discussing the four paths scientists can take in science-based policy advice (Pielke 2007), the most popular path was the “Honest broker” followed by the “Issue advocate”. Most participants could see themselves working for governmental institutions (75.9%) or policy-related organizations (72.4%) in the future. However, many would also like to work as independent consultants (58.6%) or science communicators (58.6%) (multiple answers were possible).

Finally, attendees were asked how they viewed the next steps in their science and policy learning experience. As shown in **Figure 5**, they stressed the importance of networking. Participants were highly motivated to stay in touch, aiming to continue building a community of early-career researchers in Switzerland and Europe and keen to impact society and policymaking. Conclusively, a digital working place was set up, participants’ contact information was shared, and regular (online) meetings will be held.



## What could be next?



**Figure 5:** Feedback from participants on the next steps after the summer school. In this word cloud, the size of each word indicates its frequency and, thus, its importance among participants.

The attendees suggested that a future event, e.g. a second edition of the summer school, could invite policymakers to discuss their experience with scientists. To allow further discussion with the speakers after their talk, several attendees suggested integrating “speaker-participant speed networking”, allowing the attendees to book some meeting slots with their speakers of choice after their presentation. As summer schools usually only take place once a year and are limited in number of attendees, other formats were also suggested to reach a broader range of students throughout the academic year. Prospective organizers whose universities do not offer fundings for organizing such events could reach out to local and national organizations dedicated to addressing the intersection of science, policy, and society, which now exists in numerous countries.

The attendees also pointed out the fact that there is a lack of international student think tanks in Switzerland. Also, most Swiss organizations involved in science and policy are nationally focused, leaving a blind spot on the European/global landscape. Given the need to communicate in several Swiss national languages (German, French, Italian, and Romansh), Swiss political organizations pose a severe language barrier for international PhD students in Swiss institutions. On the European level, there are international think tanks that target international early-career researchers, such as the European Student Think Tank, the EUTOPIA Student Think Tank, the King’s Think Tank in the UK, and

Efficiencies in France. These initiatives could be examples of platforms to be created in or extended to Switzerland. Therefore, some attendees developed a new early-career researchers association - the “Science Policy Action Network”, with five main goals:

- **Raise Awareness:** Raising awareness on the role of scientists in policymaking by enticing young researchers to look for the societal impact of their work.
- **Communication and Transferable Skills Training:** Organizing regular, accessible training sessions, both online and in-person, to help researchers effectively communicate with the public and policymakers.
- **Career Path Promotion:** Showcasing career opportunities at the intersection of science and policy to inspire future researchers to pursue these paths.
- **University Engagement:** Promoting university-level events and collaborations with policy-focused organizations to bridge the gap between academia and policymaking.
- **Being heard:** Facilitate networking opportunities with science journalists and policy organizations, and publish yearly policy recommendations by early-career researchers to amplify their voices.

## V. Conclusion

The “Science and Policy - How to Bridge the Gap” summer school achieved its objective of providing an overview of the science-policy interface, specifically focusing on Switzerland. Furthermore, it enabled participants to identify and train key skills and qualities that will enable them to make an impact in their communities. The school was well received by participants and was considered a success by organizers and speakers alike. Opportunities, challenges, and suggestions for future events of this kind have been identified and collected. Most tangibly, following the summer school, some of the participants created the “Science Policy Action Network” targeting early-career researchers in and beyond Switzerland. The resulting and continuing efforts of the summer school’s community to engage in the science-policy interface make us believe that such events are essential to pave the way for a strengthened relationship between science, policy, and, eventually, society.

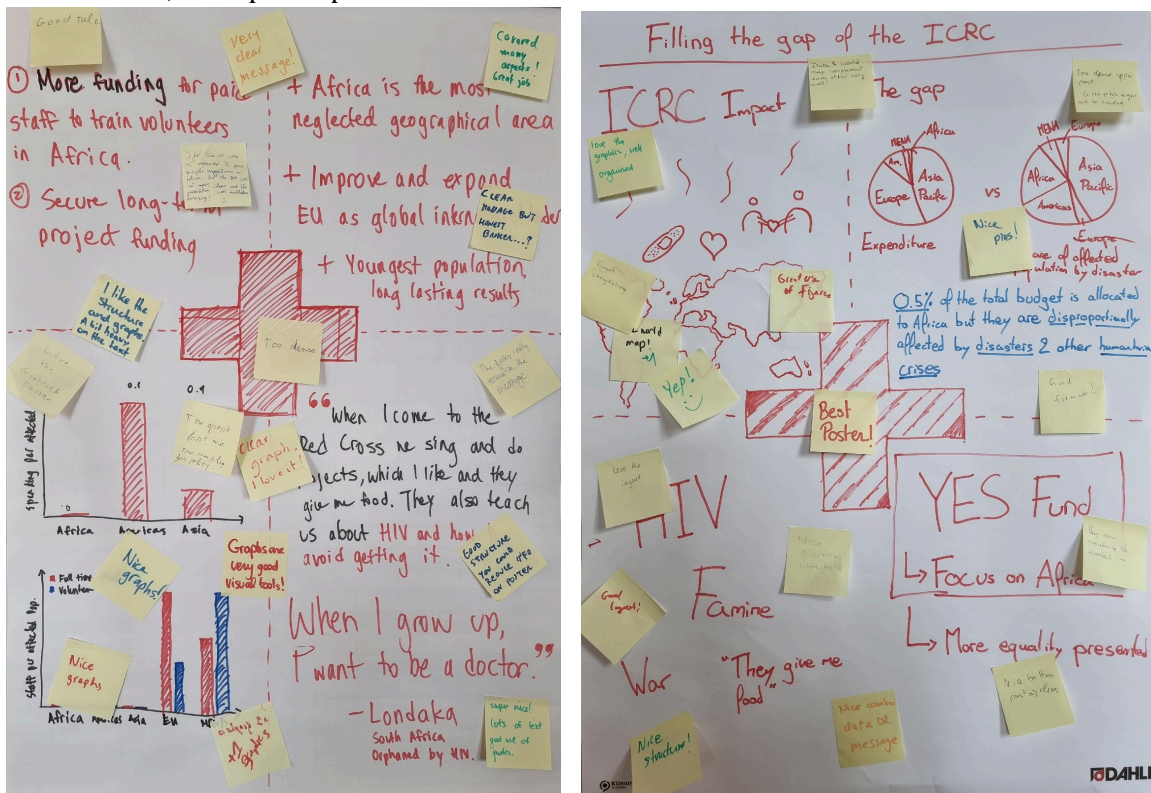
**Appendix A: Deliverables of the summer school**

Participants produced two main deliverables as a result of the workshop activities led by Letizia Monteleone and Dr. Veronica Casertelli, and Dr. Mirko Bischofberger. The first deliverable consisted of a short presentation and a poster, aimed at presenting the recommendation for future funding of the International Red Cross to the European Commission as an ‘Honest Broker’. Two examples of posters created by participants during the workshop are shown in **Figure A1**. Participants were divided into groups, and each was given a data sheet with key statistics and quantitative information on the International Red Cross activities. They had to analyze the data in minimal time to derive useful information and then

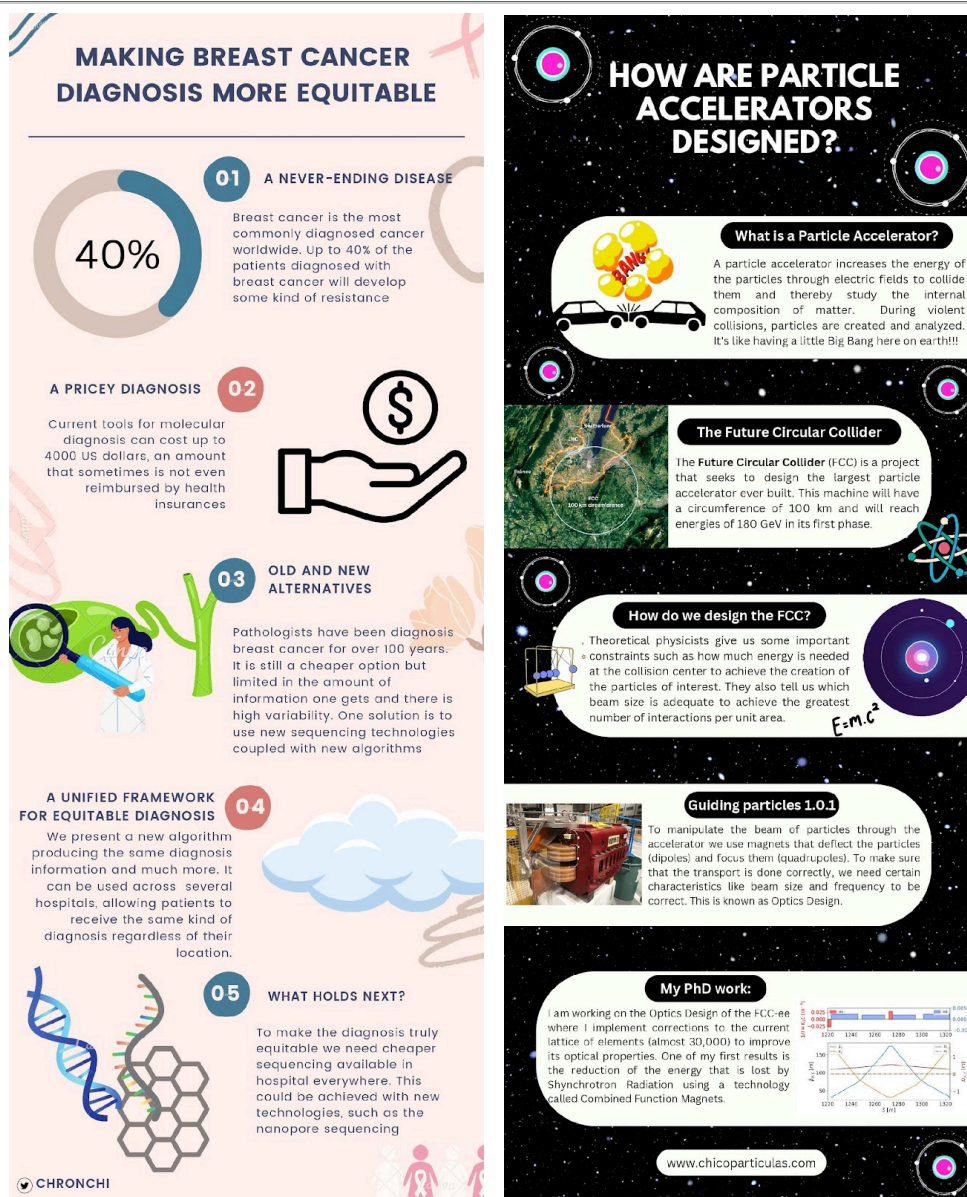
present their ideas as an ‘Honest Broker’ to the audience. Afterwards, each participant could stick

a post-it note on the posters of other groups providing constructive feedback on the poster and presentations. The workshop activity was well-received and perceived as highly constructive.

The second deliverable was a communication piece about the author’s research aimed at the general public, which each participant had to write within two weeks. The communication piece could be a long Twitter thread, LinkedIn post, or infographic, and had to present a coherent, self-contained story. In this case, many participants opted for graphical scientific renderings and infographics, which proved highly effective in communicating scientific messages in a straightforward manner. Two examples are shown in **Figure A2**.



**Figure A1:** Examples of posters for the workshop “Knowledge for policy.”



**Figure A2:** Examples of deliverables from the workshop “science storytelling” by Carlos Ronchi (left) and Cristobal Garcia (right).

## Appendix B: Detailed schedule

### *i. Day 1, 10<sup>th</sup> July 2023. Topic: Introduction and OS*

- 11:00 – 11:45, the school started with a keynote talk by Prof. Sabine Süsstrunk (EPFL), currently President of the SSC, presenting the Swiss education, research, and innovation system (ERI) and the interfaces of science and policy in Switzerland.
- 11:45 – 12:30, Prof. Katrin Beyer (EPFL) introduced OS and the reproducibility crisis, commenting on how they affect the perception of science. She shared insightful recommendations on how to make scientific research more transparent and reproducible.
- 14:00 – 14:45, Dr. Fereshteh Rafieian Najafabadi (UNESCO) presented the recommendations of UNESCO on the role of OS in achieving Sustainable Development Goals (SDG). UNESCO also offers an OS toolkit for researchers and other actors of OS.
- 14:45 – 15:30, Lorenza Salvatori (EPFL library) presented different OA publishing routes, highlighting their benefits and

drawbacks. Further, she pointed out the challenges of making research fully accessible.

- 16:00 – 16:45, Liselotte Schlegel (Foundation for Scientific Policy Fellowships), presented the Swiss Scientific Policy grants aimed to offer the opportunity for graduates from Swiss universities to get familiar with Swiss political processes by working for the Parliamentary Services at the interface between politics, administration, and academia.
- 16:45 – 17:30, Dr. Melanie Kolbe-Guyot (C4DT, EPFL) presented the Center for Digital Trust (C4DT) Fellowship for researchers working at the intersection of trust-building technologies and public policy to identify, analyze, and respond to critical issues challenging digital trust.
- 17:30 – 18:15, Lorenza Salvatori, together with Vincenzo Palatella and Lorenzo Di Sopra, presented a game called “monOApoly”. The game was designed by EPFL’s library team to playfully learn about the different OA publication routes. The activity also highlighted the importance of compliance with institutional and funders’ policies and explored the landscape of financial support options.
- 19:30 – 21:00, the movie “Coded Bias” on the topic of ethics and artificial intelligence was projected, leading to discussion among the participants.

*ii. Day 2, 11<sup>th</sup> July 2023: Topic: Science for policy*

- 9:00 – 9:45, Dr. Florian Egli (ETH Zurich) presented technologies for power generation both from the economic and political perspective and also explained the impact scientific research has on the power generation technologies and policies related to it.
- 9:45 – 10:30, Dr. Johan Rochel (EPFL) explained how to use expertise to effectively communicate in the media and to executive and legislative institutions, as well as how to get actively involved in their decision-making processes.
- 11:00 – 11:45, Prof. Annalisa Manera (ETH Zurich) discussed the problem of sustainable energy production, highlighting the role that nuclear power may play in future energy

generation, both from the scientific and the current policy framework perspectives.

- 11:45 – 12:30, Prof. Anthony Patt (ETH Zurich) explained the problem-driven framework in which scientific research can be formulated to contribute to policymaking. He emphasized the relevance of scientific assessments for policymaking and highlighted the need to consider multiple rationalities inherent to political processes.
- 14:00 – 14:45, Prof. Alexander Mathys (ETH Zurich) presented novel food production and processing methods for more sustainable food systems. His discussion highlighted the relevance of behavioral and technological changes in enabling policy strategies for sustainable development.
- 14:45 – 15:30, Prof. Caspar Hirschi (UniSG) deconstructed and analyzed the COVID pandemic as an example of the critical relationship between science and politics, deriving recommendations for scientists on how to act as effective scientific advisors.
- 16:00 – 16:45, Dr. Lars Schernikau (HMS Bergbau AG) contributed an online talk and shared the perspective of a representative of the coal industry on the future of energy generation.
- 16:45 – 18:15, a panel discussion with Prof. Anthony Patt, Prof. Annalisa Manera, and Prof. Caspar Hirschi, moderated by Dr. Melanie Kolbe-Guyot, explored their personal experiences at the intersection of science and policy, discussing challenges, feedback, and their hopes for future trends.

*iii. Day 3, 12<sup>th</sup> July 2023: Topic: Regulatory framework*

- 9:00 – 12:30, Letizia Monteleone and Dr. Veronica Casertelli (CMCC) led the workshop “Knowledge for Policy”. The workshop was inspired by the “Evidence for Policy” training developed by the European Commission’s Joint Research Center (a center aiming to provide independent scientific advice and support to EU policy). They offered recommendations to enhance participants’ communication skills. Participants competed as “Honest Brokers” in a

role-play activity presenting cases to the European Commission.

- 14:00 – 14:45, Prof. Angelika Kalt (SNSF) presented the Swiss National Science Foundation. In particular, she provided details on its mission, strategic goals, and funding practices in fostering OS.
- 14:45 – 15:30, Andrew Dunn (Royal Society) introduced the “Science, Society and Policy” section of the Royal Society Open Science Journal. Launched in 2021, it provides space for cross-disciplinary studies on policy-related science and aims at a diverse lay and expert readership.
- 16:00 – 16:45, Dr. Silvia Maier (SYA) illustrated the results of the “Who gets heard?” project from the SYA. The project explored how scientific experts are chosen to be heard in the Swiss parliament. She also outlined practical insights on the Swiss legislative process and gave tips on how to get involved.
- 16:45 – 17:30, Dr. Benedikt Knüsel (ETH Zurich) presented the ETH Zurich efforts at the science-policy interface and best practices for science-based policy advice, particularly in the Swiss context.
- 17:30 – 18:15, Karin Spycher (SYA) introduced the SYA, a national organization promoting scientific networking among young academics. Also, SYA fosters representation and inclusion of early- and mid-career researchers in the Swiss political system.

*iv. Day 4, 13<sup>th</sup> July 2023: Topic: Science communication*

- 9:00 – 9:45, Prof. Suzanne Suggs (USI) presented the efficacy of social marketing in public health. Also, she highlighted the

importance of targeted science communication for public advice.

- 9:45 – 10:30, Laurent Simon (TheMetaNews & AJSPI) presented the viewpoints of a scientific journalist on the role of media in bridging science and society. He also addressed the associated challenges of fostering communication at the interface of research and the general public.
- 11:00 – 12:30, Dr. Mirko Bischofberger (Science Studios) led a workshop on scientific storytelling and its importance in science communication. He guided the participants to build an engaging story from their research.

*v. Day 5, 14<sup>th</sup> July 2023: Topic: Public engagement*

- 9:00 – 10:30, Anna Krebs and Hannah Schoch (Reatch) led a workshop on stakeholder mapping and engagement and outside academia. They also presented the Franxini Project.
- 11:00 – 11:45, Prof. Attila Szantner (MMOS) delivered an online talk on gaming for CS. He presented a series of mini-games that enabled a wide audience of gamers to carry out small scientific tasks efficiently and significantly speed up scientific research.
- 11:45 – 12:30, Prof Daniel Gatica-Perez (Idiap & EPFL) provided an example of CS in the Swiss alps by presenting the “2000 Lakes” project aimed at understanding the ecological impacts of climate change on alpine lakes

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