

**REPORT OF THE HIGH LEVEL
WORKSHOP ON ERA 2022**

**Research Ethics and
Integrity in the Context
of Public Engagement**

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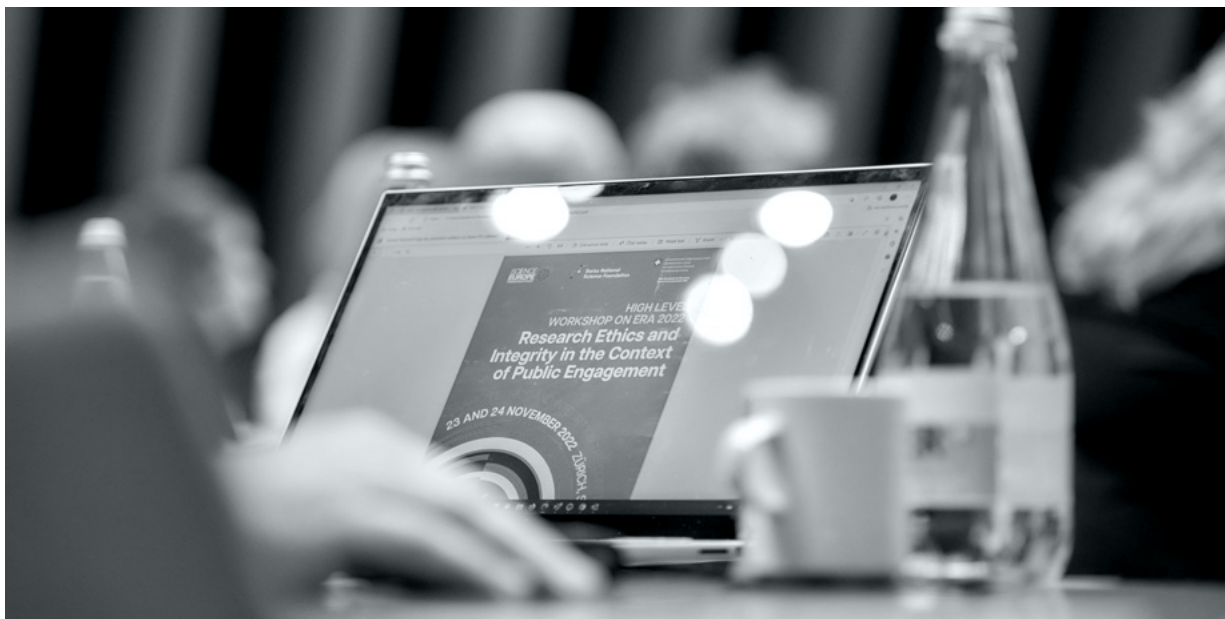
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Introduction

The High Level Workshop on the European Research Area (ERA) is an annual meeting that offers a platform for Science Europe Member Organisations, national ministries, EU institutions, and research community representatives to discuss progress, actions, and future developments of the ERA in a topical manner.



The 14th edition of the workshop, co-organised by the Swiss National Science Foundation (SNSF), the Swiss State Secretariat for Education, Research, and Innovation (SERI), and Science Europe, focussed on 'Research ethics and integrity in the context of public engagement'.

The workshop provided an opportunity for in-depth reflections on the challenging topic of the interface between public engagement and research ethics, focussing on research ethics and integrity in three specific types of interaction:

1. In interactions with decision makers: focussing on the science-policy interface and the mechanisms enabling researchers and decision- and policy makers to understand each other's needs, expectations, and limitations.
2. In communicating with a broader audience: discussing how to foster responsible, multifaceted dialogue between researchers and the broader public in the age of digital communication.
3. In public participation in research: examining how to engage citizens in research in ethically sound ways that can enhance quality and relevance to public needs.

The workshop brought together expert researchers, media representatives, engaged citizens, decision makers, and Heads of Science Europe Member Organisations to discuss and review current developments around the ethics and integrity of public engagement and debate existing challenges and barriers. The workshop aimed to create a shared understanding of the actions needed to foster more effective and efficient dialogue and collaboration between research, politics, and the public.

Executive Summary

Across four sessions, the 14th Science Europe High Level Workshop brought together experts from a variety of stakeholder groups to discuss the importance of research ethics and integrity in the context of public engagement.

The workshop highlighted the necessity to consider this topic from a global perspective and to continue discussions on public engagement as part of the broader research endeavour. To this end, there was a call for a global charter on research ethics and integrity, and suggestions to expand upon existing initiatives and guidance that focus on the research practice to include the use of research by non-academic stakeholders and public engagement.

‘Trust’ was a common theme throughout the workshop. Speakers emphasised the role of effective and contextualised communications in the provision of trustworthiness, which is an important step in the establishment and maintenance of trust. Core principles of reliability, honesty, respect, and accountability lie at the heart of ethics and integrity activities as part of research practices and should be central to all public engagement activities.

The workshop showcased the perspectives of different stakeholders, from the important role of specialised science journalists in communicating science to a broader audience, to the extensive and under-utilised expertise of public participants in research. In both cases, research organisations should work to establish more effective and efficient mechanisms for engaging citizens in research activities.

A number of challenges were raised that act as barriers to effective public engagement. The speed and precision of science communication, especially at – but not limited to – times of crisis is critical. In many cases, researchers

are not adequately supported or protected by research organisations. Training and guidance on all aspects of effective public engagement is key, and better recognition of such activities would enable new research career trajectories related to communication and engagement.

Effective interaction between researchers and decision makers benefits everyone, but requires carefully balanced approaches from both sides. Science–policy dialogues must be based on mutual trust, clear divisions of roles, and a realistic management of expectations. Transparent communication between policy makers and scientists is key to ensuring that each side understands: a) what research can contribute to policy, and b) what researchers can bring to policy making. The workshop shone a light on numerous mechanisms and frameworks that have been put in place by governments to support dialogue and collaboration between researchers and policy makers, yet continual work is needed to guarantee academic freedom, institutional autonomy, and the safeguarding of researchers.

At the core of the discussions across the two days was the question ‘how do we better understand one another?’ Engagement, communication, and involvement in science are vital aspects of the establishment of trust in science. Shared values and collective action have been shown to provide an environment in which effective public engagement can flourish – existing good practices should guide future action. Research organisations have a central role to play in this.

Welcome Addresses



As President and Vice-President of Science Europe, Marc Schiltz (CEO of the Luxembourg National Research Fund) and Angelika Kalt (Director of the Swiss National Science Foundation) welcomed the participants to the 14th edition of the High Level Workshop in Zürich. They highlighted the event as the annual opportunity to bring together expert voices for targeted discussions with decision makers on a specific topic, and considered the subject of this year's discussions as being simultaneously engaging, challenging, and very timely.

Marc Schiltz touched on the fact that the chosen topic for this year had a strong relation with the recent COVID-19 crisis. For a period of two years, scientists found themselves in the limelight as rarely seen before. Society and politics relied strongly on their advice, bringing the role of science communication and public engagement to the forefront.

This led, at times, to conflicts and challenges, such as the difficulty to convey and explain the scientific process. Uncertainty, building consensus, and shifting directions when the consensus changes, are all part of this process, but are difficult to communicate to an audience looking for clear answers. In this regard, the pandemic taught us to not only focus on what scientific knowledge could tell us, but also on what it cannot (yet). It also demonstrated the important role of research organisations and

the scientific system to protect researchers as they perform their work.

It is necessary to clearly separate scientific uncertainty from pseudo-science and 'fake news', and researchers and communicators can play a strong role in that. Research organisations, such as those who make up the Science Europe membership, have a mandate for public engagement, and the discussions in this event should provide guidance on how such activities can be supported more effectively.

Angelika Kalt drew attention to the fact that many frameworks and reference documents are available to guide researchers and research organisations through the process and conduct of research, but that this is not the case for when they undertake public engagement activities. By providing a platform to a variety of expert voices from a range of stakeholder groups, this workshop aims to take some first steps towards addressing this gap and to help bring science closer to society.

This draws links between the three strategic priorities laid out in the Science Europe Strategy plan for 2021–2026, and is in line with the ERA Policy Agenda for 2022–2024, specifically ERA Action 14 on 'Bringing science closer to citizens', but also to actions on Academic Freedom (Action 6) and Research Careers (Action 4).

The Importance of Research Ethics and Integrity in the Context of Public Engagement

The first session of the 2022 High Level Workshop was introduced and moderated by **Edwin Constable** (Professor of Chemistry at University of Basel), who led the recent rewrite of the Swiss Code of Conduct for Research Integrity. He emphasised the importance of the topic not only for research, but for society as well.

Keynote speeches

The first keynote speaker, **Rasigan Maharajh** (Chief Director of the Institute for Economic Research on Innovation of the Tshwane University of Technology, South Africa), echoed the sentiment expressed by Constable. He too, expressed the hope that participants understood the necessity to bring science closer to citizens and to society at large.

He quoted the 14th Dalai Lama, who in 1993 already said that the world is becoming increasingly connected and “almost one community”, drawn together by the challenges collectively faced, such as climate change, limited resources, and an increasing population size. These challenges require everyone to work together for the benefit of humankind: “universal responsibility is the real key to human survival.”

Where these messages were timely in 1993, they are more urgent now. In the face of COVID-19, we have seen that while science can deliver rapid solutions, global inequalities remain and

hinder shared access. Unless addressed, these inequalities will only become larger as the global population tips over 8 billion. And inequality is not the only issue – the accompanying environmental issues may challenge human survival.

Maharajh also referred to the four principles set out by the European Code of Conduct for Research Integrity: Reliability, Honesty, Respect, and Accountability. He found it hard to imagine that such principles are not globally relevant, and that they should be expected from science around the world.

With regard to public engagement, he asked whether science should widen its scope or deepen its engagement. The 2021 Global

Research Council statement of principles for public engagement proposed a framework in which these activities can occur. Given the numerous challenges facing humanity, we now already live in a period of intense engagement.

Maharajh concluded by stating that opinions on science cannot be limited to those from people involved in science. The scientific community must recognise the opinions of others on science as well. With the scientific system gathering knowledge faster than our society gathers wisdom, it is a key task for public engagement in science to bridge this chasm. Reflecting on the success of the European Code of Conduct, he called for a global ethics and integrity charter for science.



Through a video address, the second keynote speaker, **Samia Hurst** (Director of the Institute for Ethics, History, Humanities (IEH2) at the Faculty of Medicine at the University of Geneva, Switzerland), shared her experience with the interface between science and society, having witnessed it from many angles. She noted the importance to view research as a collective endeavour, aimed to promote the public good. Trust in science is essential to do this.

She highlighted that humans have the special ability to co-operate in large groups without knowing all the individuals in them. This is based on trust that is instilled by institutions. It is therefore also institutions, rather than individuals, that hold the key to enabling trust in science. Within our research systems, it is research funding and research performing organisations who can foster that trust, and public engagement plays a crucial role in doing so.

Hurst argued that trust is not reciprocal, nor related to the popularity of a message or sender: it is based on content. To establish trust, a certain amount of trustworthiness needs to be obtained first. To do so, researchers, research organisations, and the research system need to communicate clearly and effectively. Questions they should ask themselves are ‘What are we trusted for?’, ‘Can we make good on the expectations placed upon our work?’, and, ultimately, ‘Are we trustworthy?’

Key questions that should be asked in relation to the subject of this workshop, are ‘What should science be trusted for?’, ‘What can’t science be trusted for?’, and ‘When should we (society, politics, and so on) rely on science?’

She also provided some practical suggestions on how to improve trust in science. Firstly, there should be a stronger focus on scientific culture in general education, engaging non-scientists in the scientific process and principles. All aspects of our lives highly depend on science and it should be considered a human right to know and understand these dependencies: “we need to teach *how* we know, not *what* we know.”

Secondly, we should work towards increasing participation in science. This necessitates a broadening of the questions posed by science, but would enable a widening of our knowledge base and foster better co-operation between science and society.

Hurst challenged workshop participants to think about further ways to implement these suggestions; how to further embed scientific culture in society and increase participation in science. These two elements are vital in the development and maintenance of trustworthiness, which will lead, supported by effective communication, to trust.

The third keynote speaker, **Milica Momčilović** (President of the World Federation of Science



Journalists, Balkan Region, journalist, editor, and TV writer and anchor, Serbia), provided the perspective from a non-academic community, which is vital to include in discussions on public engagement. Science journalists play an important role in scientific engagement with the public, and it is essential that they can work together and build partnerships with scientists to improve both the communication of science and the engagement of the public in it.

In early 2023, the World Federation of Science Journalists will publish the results of a survey it held among science journalists from 82 countries across the globe. Half of the respondents had a degree in journalism or communication, and the next largest group had a background in research. This highlights an important distinction between journalists who report on science, and specialist science journalists – a distinction that became blurred during the COVID-19 pandemic, when the biggest news stories were also science stories.

Half of the respondents to the survey highlighted the importance to clearly describe the scientific certainty attached to the science being reported on. This should include clear contextualisation of the findings according to scientific methods and procedures followed.

This coincides with the point made earlier by Samia Hurst on the need to explain ‘how we know’, in addition to ‘what we know’.

Based on her experience working in a global environment at the World Federation of Science Journalists, Momčilović also emphasised the role of the geographical context in how science is treated by non-scientists. Communication and public engagement activities must be sen-

sitive to local geographical considerations to be effective.

In conclusion, Momčilović highlighted how the role of a science journalist differs from that of a non-science journalist. They can be instrumental in supporting the ethics and integrity of research through good science communication, which is of particular value when a science story becomes a main news story.

Discussion with the Panel and Audience

Edwin Constable summarised the keynote presentations, noting their complementarity and how each addressed the roles and responsibilities of scientists in communication, the importance of all forms of engagement, and the challenges that remain in communicating science.

The principles of the European Code of Conduct for Research Integrity (Reliability, Honesty, Respect, and Accountability) are worth considering from the point of view of science communication and public engagement. Everyone engaging in such activities should keep these in mind.

To start the discussion, Constable asked whether focus should be placed on the public understanding of science, or rather on the scientists' understanding of the public. Researchers are often not specially trained in communication; should they act as gatekeepers of what is published and communicated?

The keynote speakers discussed the often-misplaced idea that scientists are uniquely positioned to communicate their own work. Milica Momčilović emphasised the importance of using the right language and the best ways to communicate scientific knowledge to different audiences. Communication can be a major



limiter to the broad and effective provision of scientific knowledge, if not conducted properly. Furthermore, in recent years pseudo-science has made an increasing impact. This has coincided with changes in how the public engages with science, and vice versa: the influence of social media has been enormous in both directions. This requires additional knowledge to communicate effectively.

Constable noted that beyond how we communicate to the public, what we communicate is also key: scientists rarely communicate about 'how we know' or 'what we don't know'. Here, Maharajh recommended considering how information is received – we can look at the same facts, yet derive different conclusions from them. Describing how we know such information and what the limits are to that knowledge can help unify perspectives.

From the audience, **Matthias Egger** (President of the Swiss National Science Foundation) likened the experience of COVID-19 on science to an X-ray: the inner workings being exposed to all. He asked what we might expect if the same were applied to the media that reports on science. Maharajh noted that it is important to understand that knowledge is generated and distributed in uneven ways, and journalists need to make sense of the information they receive, alongside the public they communicate to. Momčilović highlighted the importance of using communication and media tools to push for a better understanding of the challenges faced: we need to understand the links between marketing and pseudo-science to better support real science. In the battle against pseudo-science, time is key – whereas real science can often take years to formulate knowledge, pseudo-science can generate false information in minutes. There is also some tension, as science journalists are interested in science, but also need to find and develop eye-catching stories. It is an area where science journalists

need to be differentiated from non-science journalists – the pandemic highlighted the differences in the way science stories are treated by both groups.

Angelika Kalt (Director of the Swiss National Science Foundation) recalled the challenge posed to workshop participants by Samia Hurst: how can we build trust in science? Scientists need to better understand what the public requires, wants, and can readily digest in terms of communication. There is a need for new professional competencies, in the form of, for example, public engagement scientific officer profiles. Maharajh expressed concern about adding more roles onto the shoulders of researchers and reflected on the issue of research career precarity. Perhaps there is an opportunity to consider new career pathways and trajectories for roles related to public engagement for interested researchers. Research organisations would need to provide more funding and support for these science communication activities.

Philip Nolan (Director General of the Science Foundation Ireland) used the example of COVID-19 to highlight some of the challenges that remain for science communication activities. During the pandemic, when the public and politics turned to science for answers and advice, competency, reliability, and integrity should have been at the core of our communications. Instead, in many cases, there was a rush to the microphone to express opinions. Attention and prestige overran competency, reliability, and integrity. Research organisations have a responsibility to incentivise honest communication – this may be a helpful point for future reflection for Science Europe Member Organisations.

Circling back to the discussion on trust, Constable suggested that engagement and trust are not linked in a one-to-one ratio: more public

engagement does not necessarily lead to more trust. The means by which the public are engaged is key, and the session highlighted that the content and framing of such engagement are crucial as well. Establishing and maintaining trustworthiness by supporting public engagement of high ethical and integrity standards needs to be a focus activity, and research organisations can play an important in supporting this, with the overarching goal of building trust.



Interacting with Decision Makers



Lidia Borrell-Damián (Secretary General of Science Europe), explained the objective of the session to better understand the perspectives and needs of both scientists and policy makers engaged in science-informed policy development.

In her opening address, **Martina Hirayama** (Swiss State Secretary for Education, Research and Innovation) reminded the audience of the difficulty of holding public debates on scientific issues and the challenges to the credibility of scientists that arise in times of crisis. It is essential to maintain high standards of ethics and integrity and support meaningful dialogue between science, media, and the public. It is the responsibility of the public sector to provide researchers with a system in which they can work, which, in turn, contributes to the reliability and accountability of research.

She detailed her country's experience with consulting scientific experts in public decision

making. In particular, the Swiss COVID-19 Task Force was successful in promoting dialogue between science and policy and contributed to evidence-based policy making and raising the profile of research. Hirayama concluded by mentioning that global challenges transcend borders and require international collaboration. She reiterated Switzerland's commitment to provide full support to the European Research Area (ERA) and readiness to negotiate association to Horizon Europe, Digital Europe, and EURATOM.

Keynote Speech

Dame Anne Glover (Professor and academic biologist. Former Chief Scientific Advisor, European Commission, UK) introduced the discussion by contextualising the need for scientists to interact with decision makers. Research is mainly funded through public funds, and, as such, it is part of a scientist's work to inform policy makers of the results of science.

However, it can be a very difficult interaction, both for scientists and politicians. She explained that scientists bring a lot to policy making: expertise, international networks, foresight, ability to translate specialist evidence, appreciation for uncertainty, and the ability to provide options. She cautioned researchers against the temptation to tell policy makers what to do. Dame Anne Glover also highlighted the consequences of policy makers not acting according to scientific evidence, which had, for example, warned about the 2008 financial crash, climate change, and the consequences of Brexit. She explained that researchers can help by 1) demonstrating the value of scientific evidence, 2) communicating evidence effectively, 3) driving smart procurement of services, 4) being transparent, 5) understanding biases, and 6) helping frame political questions whilst providing options to address them.



Input from the Experts

Scientific knowledge is of paramount importance to address major societal challenges, such as climate change, cybersecurity, and pollution. However, it cannot solve problems on its own, said **Janusz Bujnicki** (Professor of Biology, International Institute of Molecular and Cell Biology, Poland). While policy makers must address these challenges by incorporating scientific knowledge, it is essential to separate what science and politics can each tackle. Research is best placed to deal with

issues of a technical nature, such as analysis of global challenges, risk assessments, or to understand what is happening in the natural world. In addition, science–policy interactions should never occur in a vacuum: scientists, policy makers, and the public are diverse and have different needs, expectations, and perspectives. According to Bujnicki, the cornerstones of scientific advice are high-quality science, appetite for advice from policy makers, a clear mandate, and trustworthiness.

Ministerial Contributions

Marie-Carmen Bex (Deputy Director General, Innoviris, Brussels-Capital Region) explained that getting the right knowledge in the right format is essential for decision makers. Research programmes should be designed to address the challenges the world is facing and research results need to be findable and comprehensible. In this regard, physical dialogue between researchers and policy makers is vital. Policy

makers can help to legitimise science at two main levels: set up cultures of integrity and foster ethics in all steps of the research processes. On that basis, Marie-Carmen Bex explained that researchers can play a key role in explaining what the scientific process is and that participatory practices involving citizens can help build trust in science.

Martina Hirayama continued the ministerial discussion by explaining that there are different ways to promote science–policy dialogue, but that challenges to an effective research–policy interface still exist. She explained that scientists and politicians need to understand each other’s perspectives. Switzerland sought to promote this by offering scholarships to researchers to understand how the Swiss political system functions and how political decisions are made. She emphasised that maintaining an open dialogue is important to build trust and understanding. Research is essential to frame the questions that politicians need to resolve, provide expert understanding of the challenges to be tackled, and offer decision makers options to address them.

A declining trust in science and belief in conspiracy theories are important issues for Slovakia, said **Ján Kyselovič** (Director General of the Slovak Centre of Scientific and Technical Information, Ministry of Education of Slovakia). In response, the Slovak government has adopted a new strategy which revolves around three main points: promoting citizen science, fighting plagiarism and promoting ethical behaviour, and combat corruption. He explained that investigative journalists had found malversations in the assessment of large research projects, which led to EU funds being frozen. A process has been started to have research institutes evaluated by panels of international experts. Kyselovič explained that this country-wide evaluation is nearing its end and will be basis for the ongoing allocation of public funds to research.

Romain Martin (First Government Councillor, representing the Ministry of Higher Education and Research of Luxembourg) presented the efforts of Luxembourg to address the issues of mutual understanding and expectation management between scientists and policy makers. A pairing scheme has been implemented that allows researchers to meet politicians in their environment and vice versa. A sig-



nificant number of Luxembourgish deputies have been engaged in this way. In addition, a strategic steering group was created in 2019, composed of research funders, research performing organisations, and the Ministry. It has been successful in maintaining a continuous dialogue between research and policy, and played an influential role during the COVID-19 pandemic in opening a channel with a task force composed of research organisations to co-ordinate the scientific contribution to the management of the crisis. Romain concluded that the national experience indicated that expectation management is crucial and that research funders have an essential role to play.

The relations between scientists and politicians need to be substantially improved to address the complex challenges the world is facing, according to **Jaroslav Miller** (First Deputy Minister for Higher Education, Science and Research at the Ministry of Education, Czech Republic). During the COVID-19 pandemic, the Czech population was exposed to unreliable messages, which led to a higher number of victims. Scientific knowledge is key to addressing challenges and citizens can expect accurate data and information, as well as evidenced-based policies

from their representatives and administration. Miller said that for this to happen, scientists need to be trusted by policy makers, which relies on guaranteeing and promoting research integrity and ethics in all stages of research.

Roland Philippi (Head of the Policy Department at the Federal Ministry of Research and Education of Germany) listed three key elements of a successful science–policy dialogue. The first is mutual trust, which is based on co-operation and transparency. The second is the definition of clear roles for politicians and scientists, as the protection of scientific independence relies on the separation between research, which provides recommendations and outlines scenarios based on evidence, and politics, which takes decisions based on socio-economic factors. The third is the use of appropriate formats for science–policy dialogues to be effective.

The development of these formats should be informed by evidence from research on science–policy interaction and science communication. Philippi explained that the German Ministry has set up [the platform #FactoryWisskomm](#) to bring together stakeholders to foster effective and responsible public engagement. International co-operation and mutual learning are essential to improve the science–policy in-

terface and Germany will contribute to future exchange on this matter.

Serhiy Shkarlet (Minister of Education and Science of Ukraine) highlighted the steps that Ukraine has made towards European integration, such as preparing its candidacy to the European Union. The Russian aggression and war have had dramatic consequences for the Ukrainian research system, with around 15% of research infrastructure destroyed, and many researchers fleeing the country or being internally displaced. Through the support from international partners, 1,300 researchers have received the opportunity to continue their research outside Ukraine.

Minister Shkarlet also pointed out similarities between Ukraine and European countries in terms of the challenges they face in ethics of communication and co-operation. He presented a series of ethical paradoxes, including the importance to consider the use of research. Achievements in the sphere of high technologies can be used to develop a COVID-19 vaccine to save lives, but just as well in developing deadly weapons to ruin these lives, destroy dwellings and infrastructure, and cause a humanitarian crisis like the one experienced in Ukraine under the ongoing Russian aggression.



Both policy makers and scientists need to be conscious of their responsibilities and limits to their roles, argued **Barbara Weitgruber** (Director General for Scientific Research and International Relations of Austria). According to a study in the context of the COVID-19 pandemic carried out by the Austrian Academy of Sciences, which was based on interviews with policy makers and researchers, mutual expectations are not always correctly managed. This leads to frustration and misunderstandings. She also pointed out the need to focus on building trust in science. In Austria, despite many activities and programmes for citizen science, mistrust in science became very evident during the COVID-19 pandemic. To gather solid data on the phenomenon, Barbara noted that the Austrian government has commissioned a study that will investigate the underlying reasons of lack of trust in research. As a next step, a framework of actions will be elaborated.

Finally, **Raquel Yotti** (Secretary General for Research, Ministry of Science and Innovation of Spain) reiterated the importance of trust, clear division of roles, and expectation management for an effective science–policy dialogue. She highlighted that Spain is committed to reforming research assessment, adding that publishing more than competitors cannot be the sole incentive for researchers to further their careers. She pointed out that a well-functioning public policy is based on ethics and evidence. Therefore, policy makers must trust and build on the work of scientists. Raquel explained that the constitution of the Spanish Ethics Committee will contribute to providing the country with adequate tools for the responsible conduct of research, thereby fostering science–policy dialogue.



Sasho Penov (Minister of Education and Science, Bulgaria) was unable to attend the meeting, but shared via letter the perspective from Bulgaria on what he considers an important and timely topic. National and European debates on how to better connect research communities with policy-making communities are an important step towards strengthening the practice of evidence-based policy making. Effective and efficient collaboration between scientists and governments is essential, and must include the active participation of citizens.

Bulgaria has taken consistent steps to improve communication between researchers, policy makers, and the public by 1) optimising its policy on scientific advice for management decisions, 2) establishing a ‘science advisor’ role in the national legislation for senior science managers, and 3) initiating an innovation board that will report to the Ministers for Science and Innovation. These changes will positively impact the implementation of the National Strategy for the Development of Scientific Research in Bulgaria and will improve the conditions for effective and efficient science-to-policy advice mechanisms.

Communicating with a Broader Audience



The third session of the High Level Workshop focused on the ethics and integrity of communicating to a broader audience and featured several panellists with experience in the field. It was moderated by **Sabine Gysi** (Lead Science Communication and Outreach at the Laboratory of Developmental Neuroscience, University of Zurich). Scientists faced high expectations during the COVID-19 pandemic: they needed to provide fast, honest, and transparent information and even provide solutions. However, they also faced a lot of skepticism. What does a balanced and effective dialogue between scientists and the public look like?

Lara Pivodic (Assistant Professor End-of-Life Care Research Group, Vrije Universiteit Brussel & Ghent University, and Member of the Young Academy of Sciences, Belgium) emphasised the importance of more communication be-

tween researchers and the public on equal terms, although this does not mean that the roles should be the same. Her own research focuses on understanding the needs of people at the end of life and how health care systems can accommodate these. It is a topic that most people can relate to and will have an opinion on; this can make it challenging to differentiate between scientific experts and 'experts by experience'.

A key factor for researchers is to include the institutions concerned or policy makers from the start of the project and define joint goals. For example, an online conference organised by Pivodic's team presenting new strategies for improving palliative care in nursing homes, drew the interest from over 800 nursing home staff, despite taking place at a time when staff were overwhelmed with the impact of COVID-19 in

their facilities. This was successful because the researchers made efforts to involve the sector throughout the research process and gain their trust that this work could bring benefits for both patients and staff.

Pivodic explained that current funding and evaluation systems do not adequately encourage researchers to interact with the public. As long as publishing articles remains the main research outcome, researchers will not invest enough of their time in science communication. She also showcased the importance of finding the right approach to reach a certain audience. The game 'Expedition Mundus', for example, is aimed at 10- to 14-year old children and encourages learning how the scientific process works and what uncertainty means in science. This is an example of an alternative format of public engagement and an example of the innovative and long-term thinking required to advance such activities.

As a science journalist, **Adriano Cerqueira** (Member of the Science Journalists Group at the Portuguese Network of Science and Technology Communication) works in close proximity to both scientists and the wider audience. He perceives an obligation on scientists and science journalists to inform the public about scientific topics and results, in particular when funded with public money. The main challenge during the pandemic was to be clear and honest about the uncertainty of the current and ongoing research, and to cater to a wide audience at the same time. For example, the World Health Organization (WHO) said early in the pandemic that it did not recommend wearing masks. This was based on the low availability of masks and the desire to avoid shortages where masks were needed most: in hospitals and other health-related institutions. The WHO did not sufficiently explain its reasoning at the time, however; when it started to recommend the wearing of masks later on, it lost credibility.



In hindsight, it would have been a better strategy to have been transparent to the public from the beginning.

This example illustrates that the goal of science communication should be to explain to the public what we know and how we know it, but not to provide wrong advice. Many people are driven by emotions and researchers should try to reach their audience on a more personal level; the spread of knowledge among friends and family is usually the most effective dissemination pathway. At the same time, science communication should also be better supported on an institutional level. Research performing organisations can provide courses, raise awareness of the topic, encourage diversity, and protect their researchers from bad experiences with the media.

David Budtz Pedersen (Professor of Science Communication and Director of Humanomics Research Centre, Aalborg University Copenhagen, Denmark) argued that a Code of Conduct from both research funding and research performing organisations would be a good starting point to initiate discussions on improving com-

munication between researchers and the public. Additionally, a cultural change is needed that includes changes to research assessment processes and criteria, and a better integration of science communication in the research system. Pedersen explained his area of research as the science of science communication, and the science of science policy. He develops and tests models of science communication to determine which types of communication work well and which do not, the results of which are often context-specific.

The findings of a COST Action project, in which Pedersen co-ordinates 42 members of a science communication community, suggest that training on and experience in science communication must start at the beginning of a research career. The mental model of communicating is crucial: a researcher needs to have an intrinsic motivation to engage with the public, learn about the challenges they face, and be ready



to share knowledge. He considered the main ingredient for effective communication not to be trust, but rather common values. The audience needs to understand that science contributes to improving their lives. Researchers need to develop joint goals with their audience and build a community based on shared values. This paves the way for shared knowledge and better understanding.

Communicating scientific uncertainty does not diminish trust; in fact, the contrary is often true. Providing information transparently builds trust as the recipient does not feel that any information is being hidden from them. While the public does not like uncertainty, transparency is the more important factor. It is therefore important to clearly communicate that perfect knowledge does not exist, and that science is conducted and communicated with a certain degree of uncertainty.

Uncertainty, and the communication thereof, has been a major challenge for researchers during the pandemic, said **Dariusz Aksamit** (Researcher at Warsaw University of Technology, self-employed Science Communicator, Head of Council of the Polish Chapter of the March for Science Foundation, Physics Teacher at Akademia High School, Poland). He developed a project that provides legal support to researchers who have been accused of misconduct or misinformation during the pandemic or that have been attacked/persecuted for various reasons. He is also a science communicator himself, and provides training to scientists and organises activities that bring scientists and journalists together to foster mutual understanding and shared learning about the different perspectives on science communication.

Aksamit emphasised that the field of science communication deserves much more attention than it currently receives. It is not surprising that

the wider public does not understand the scientific process or methods, as only few of them ever encounter or use them. Even at Bachelor and Master degree level, in-depth training and exposure to scientific methods can be limited. It is often only from the Doctoral level upwards that scientific methods are applied and understood. In addition, such methods can often go against human intuition (cognitive bias). People tend to trust people they know and like (family and friends) much more than people and institutions with knowledge who may be unfamiliar (scientists and universities). This was evident during the pandemic, and posed problems for the efficient delivery of reliable information to society. He recommended that scientists should build communities and become part of public groups to further embed trust and improve response times, both of which are essential at times of crisis. This can be done via both physical and virtual engagement, such as through social media.

Sabine Gysi closed the session by emphasising a number of the key messages raised by the speakers: communication activities must be transparent, honest, and clear. Messages should be crafted and delivered in specific ways, according to target audiences, as a means of building trust. Yet, science communication must also be fast. Research organisations must play a role in supporting researchers in these activities.

Public Participation in Research



Moderating the session remotely, **Mari Sundli Tveit** (Chief Executive of the Research Council of Norway and Member of the Science Europe Governing Board) welcomed the panel members. She said that researchers play an important role in finding solutions to global challenges, such as the current energy crisis, armed conflicts, and climate change. Crises require extraordinary research, and where they impact the public, the public must be included appropriately. Trust in researchers and policy makers from the public is essential, as it facilitates the implementation of measures to overcome crises. Close interactions between researchers and the public can build such trust, and they already occur in projects that include members of the public as part of the research process: clinical research is a prime example.

The first panellist, **Judith Safford** (President of the RheumaCura Foundation, Switzerland), explained her focus on public participation in clinical research. An economist by background, she became interested in patient and public involvement in research through personal experience. Having been through long-term illness since her early twenties with many clinical appointments, examinations, and suggested treatments, it was only in her mid-50s that she was correctly diagnosed and her health improved. She questioned why it took so long for researchers to find out the cause of her illness, and the answer illuminated a systemic problem: clinicians often ask too few questions that make use of the patient's acquired knowledge and lived experience. She felt that she had much knowledge, such as the history of her com-

plaints, previous diagnoses, and treatments, which were not heard and thus not known. Diagnosis can be improved if there is engagement with the patient at an experiential level.

Today, Safford is president of the RheumaCura Foundation in Switzerland, which advocates better integration of the knowledge and experience of people affected by rheumatic and musculoskeletal diseases. She suggests a number of improvements to be made in case of patient participation in research. Patients need to receive guidance on how to communicate their involvement safely. They need media training to explain the process and progress of their work correctly, without putting themselves at risk, or risking the credibility of the study. They need the same legal coverage as the participating research team members, who are employed by an institution. Patients should be compensated for their work, and be reimbursed for their expenses, especially in the case of disability. Their role needs to be sensitive to their health condition: they may be committed to their tasks, but can be affected by their condition during the work. Their engagement in the study could be divided into work packages with a contingency plan if they have to drop out or reduce engagement. Moreover, patients must understand conflicts of interest and should declare these, as is expected from every member of a research team. Making provisions for these aspects will uphold research ethics and integrity aspects for both patients and researchers involved in studies.

Rajesh Tandon (Founder & President of PRIA & UNESCO Co-Chair in Community Based Research and Social Responsibility in Higher Education, India) explained his role in fostering the involvement of non-academic actors in the research process. His focus is on education and development co-operation, becoming interested in this topic when running literacy programmes for rural women in India. While teaching, he observed that women who signed



up for his programmes were less interested in learning how to read and write than in enhancing the acceptance and recognition of their knowledge, and how to share it with others. In recognising the situation, Tandon listened to the needs of these women and developed a different process: instead of teaching them new knowledge, which would have had limited effect, he devised an approach that improved their capacity to communicate their existing knowledge. This experience demonstrates that people participating in research and development programmes need to be involved from the beginning of projects, as they know best what is of interest and relevance to them.

Tandon currently works on a project on 'Bridging Knowledge Cultures', which focusses on analysing different ways in which knowledge is understood, constructed, validated, and used

in academic and non-academic settings, as well as the practical barriers that exist when working across knowledge cultures. The goal of this project is to develop a new framework for a systemic and contextually-situated approach to the co-production of knowledge. Eleven countries are involved, and first results show that trust and listening are crucial in building such bridges.

It takes time to listen to the needs of a group of people, and to build trust. In the current system of research funding, these activities are not adequately supported. Research funding organisations focus excessively on research results. In the past, the lack of inclusion of study participants in the setup and process of research projects, as well as in sharing results, has led to frustration and disengagement, particularly in rural and indigenous communities. As a result, these communities started to develop their own guidelines on how to interact with researchers. Questions around who owns the knowledge generated from research projects with rural or indigenous groups deserve more attention and remain key challenges in this form of public engagement.

Last but not least, **Ioana Spanache** (Policy Specialist at the Executive Agency for Higher Education, Research, Development and Innovation Funding of Romania) provided her perspective on public participation in research, based on work done on research assessment, as well as on consultation processes with non-academic stakeholders. She has implemented activities in the field and has experience with the many implications of including non-academic stakeholders in research or evaluation processes.

Research projects involving a diverse group of people with different backgrounds and knowledge are inherently challenging. Researchers need to adjust their language and communication in ways that can be understood by all participants. Researchers also need to address issues around knowledge gaps and ensure a good representation of different civil society groups in their studies and discussions. Diversity in study groups is more challenging for researchers from a communication perspective, but this aspect is important in relation to both high ethical and integrity standards and the overall quality of the research undertaken.



Currently, research funding organisations do not adequately recognise and value the work of researchers in the realm of public engagement.

Current research assessment processes do not normally reflect the changes in the ways in which research is conducted. This includes the fact that research nowadays involves a larger diversity of activities and generates a broader range of outputs. Public engagement is one such activity, which has increased in many research areas, and must be better recognised. The development of specific ethical guidelines and criteria for public participation in research is needed and research funding organisations are in a good position to support this process. Reform of research assessment processes, as is currently being discussed across the research sector at national, European, and international levels, can offer opportunities to better embed, recognise, and value public engagement activities within research assessment processes. Where relevant, for both funding allocation and career progression, research organisations should consider participation of the public as part of such reforms as it links closely to the quality of research conducted.

In her closing remarks, Mari Sundli Tveit called upon research organisations and Science Europe to consider how to support and enable public participation in research as a key element of the quality and value of research for all.

Closing Remarks



Thanking all speakers and participants, **Rasi-gan Maharajh** noted the intense and fruitful discussions held across the three themes. The speakers and the discussions highlighted that effective science communication is vital for humanity at large: it enables the necessary interfaces between the different communities represented at the workshop: science, politics, and citizens. They need to be better interlinked by building more bridges between them to unlock value for all.

Maharajh also underlined the importance of protecting science against predation: this means not only private appropriation of knowledge and its potential applications, but also the escalation of pseudo-science and ‘alternative facts.’ Knowledge and evidence generation need to be expanded to confront these. Credible science would not exist without the public organisations and structures like the members of Science Europe, and research organisations must play a central role in reducing the gap between politics and science. As highlighted during the workshop, they can do so by adopting common policies and practices that seek to enhance the interconnection between science, politics, and society.

The national ministerial representatives recognised innovation in the dialogue between science and politics, however Maharajh noted that much of the innovation we see today is generated in periods of crisis, where the need for rapid responses creates an environment where politics and science are naturally obliged to co-produce solutions. It will be important to retain the positive elements of such co-production and apply them to more normal circumstances in the future – this can be one clear point of evolution for our research systems in the coming years.

The workshop raised the question whether we understand one another. The sessions showed that there is an increasing understanding, but that more work is to be done. Shared values and common goals can be a good starting point for the efforts needed to further reduce the understanding gap between the groups represented and discussed at the workshop. Underpinned by these shared values, collective actions and co-operative collaborations can further enable public engagement and communication of high ethical and integrity standards.

As a final message, Maharajh noted that co-creation also necessitates co-responsibility. This means that science for the people must also involve the people. We have a shared global responsibility to consolidate our learning and knowledge and share it effectively with one another. Ethics and integrity in science will play a key role in this.

Closing the workshop, **Lidia Borrell-Damián** and **Angelika Kalt** thanked the speakers and participants for the productive meeting and insightful discussions. They noted that there are many lessons to take away from the High Level Workshop, and that these will inform future actions by Science Europe to support its members in improving ethics and integrity in the context of public engagement.



Annex 1

Programme

WEDNESDAY 23 NOVEMBER 2022

Hyatt Place Zürich Airport The Circle, The Circle 1, 8058 Zurich-Airport, Switzerland

16.30–16.45

Welcome



Marc Schiltz
President of Science Europe



Angelika Kalt
Director of the Swiss National
Science Foundation

16.45–18.30

Introduction to the High Level Workshop



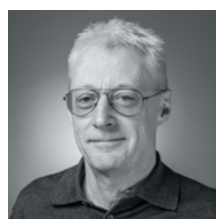
Keynote Speaker
Rasigan Maharajh
Chief Director of the Institute
for Economic Research
on Innovation of Tshwane
University of Technology



Keynote Speaker
Samia Hurst
Director of the Institute for
Ethics, History, and Humanities
at the Faculty of Humanities,
University of Geneva



Keynote Speaker
Milica Momčilović
Science Journalist and President
of the World Federation of
Science Journalists, Serbia



Moderator
Edwin Constable
Professor of Chemistry at the
University of Basel

20.00–22.00

Reception and dinner



Matthias Egger
President of the National
Research Council of the Swiss
National Science Foundation

THURSDAY 24 NOVEMBER 2022

Hyatt Place Zürich Airport The Circle, The Circle 1, 8058 Zurich-Airport, Switzerland

08.45–08.50 **Welcome and introduction to the day**



Martina Hirayama
State Secretary for Education,
Research and Innovation

08.50–10.30 **Interacting with decision makers**



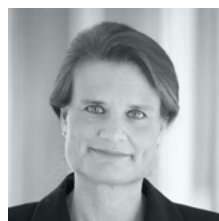
Keynote Speaker
Dame Anne Glover
Professor and Academic
Biologist, former Chief Scientific
Advisor at the European
Commission



Expert
Janusz Bujnicki
Professor of Biology,
International Institute of
Molecular and Cell Biology



Ministerial Representative
Marie-Carmen Bex
Deputy Director-General of
Innoviris, Belgium



Ministerial Representative
Martina Hirayama
State Secretary for Education,
Research and Innovation



Ministerial Representative
Ján Kyselovič
Director General of the Slovak
Centre of Scientific and
Technical Information, Ministry
of Education of Slovakia



Ministerial Representative
Romain Martin
First Government Councillor,
Ministry of Higher Education
and Research of Luxembourg



Ministerial Representative
Jaroslav Miller
 First Deputy Minister for
 Higher Education, Science and
 Research, Czech Republic



Ministerial Representative
Roland Philippi
 Head of Policy Department,
 Federal Ministry of Research
 and Education of Germany



Ministerial Representative
Serhiy Shkarlet
 Minister of Education and
 Science of Ukraine



Ministerial Representative
Barbara Weitgruber
 Director General of the Austrian
 Federal Ministry of Education,
 Science and Research



Ministerial Representative
Raquel Yotti
 Secretary General for Research,
 Ministry of Science and
 Innovation of Spain



Moderator
Lidia Borrell-Damián
 Secretary General of
 Science Europe

10.30–11.00

Coffee break

11.00–12.00

Communicating to a broader audience *(Round table)*



Adriano Cerqueira
 Science Journalist, Member of
 the Science Journalists Group
 at the Portuguese Network
 of Science and Technology
 Communication



Lara Pivodic
 Researcher on End-of-life Care
 at Vrije Universiteit Brussel &
 Ghent University



David Budtz Pedersen
 Professor of Science
 Communication and Director of
 Humanomics Research Centre,
 Aalborg University Copenhagen



Dariusz Aksamit
 Medical Physicist, Warsaw
 University of Technology, Head
 of Council and Founder, Polish
 Chapter of March for Science
 Foundation



Moderator
Sabine Gysi
 Science Communication and
 Dialogue Facilitator

12.00–13.00

Public participation in research *(Round table)*



Judith Safford
President and Co-Founder of
the RheumaCura Foundation,
Switzerland



Rajesh Tandon
Founder & President of
PRIA & UNESCO Co-Chair in
Community Based Research
and Social Responsibility in
Higher Education



Ioana Spanache
Policy Specialist at the
Executive Agency for
Higher Education, Research,
Development and Innovation
Funding of Romania



Moderator
Mari Sundli Tveit
Chief Executive of the Research
Council of Norway, Member of
the SE Governing Board

13.00–13.15

Closing Remarks



Rasigan Maharajh
Chief Director of the Institute
for Economic Research
on Innovation of Tshwane
University of Technology



Lidia Borrell-Damián
Secretary General of
Science Europe



Angelika Kalt
Director of the Swiss National
Science Foundation

Communications Campaign



On the occasion of the High Level Workshop, Science Europe and its Working Group on Communication organised the campaign 'Talking science with high integrity and ethics standards'. This campaign showcased Member Organisations' initiatives in the area of public engagement, with a focus on research ethics and integrity.

The campaign aimed to address Science Europe Members to raise awareness, share good practices and encourage learning from each other. Ultimately, the campaign should help

Talking Science with High Integrity and Ethics Standards

Member Organisations better communicate science to different audiences in an ethically responsible manner. It also addressed research stakeholders and larger interested public. The campaign put into value what Science Europe members do and showed the breadth of the initiatives to external audiences.

To collect these initiatives, Science Europe asked all its Member Organisations to fill in a short survey. The initiatives were promoted via scieur.org/talking-science-ethics and on social media in the run-up to the High Level Workshop.

High



WORKING

The ERA refers to a unified European Research Area in which researchers are free to move around, perform their research, and work together with researchers from other countries.

Creating the ERA requires the harmonisation of various rules, requirements, and regulations, and closer international collaboration within the EU.

The High Level Workshop on ERA offers an annual platform for Science Europe Member Organisations, national ministries, and EU institutions to discuss progress, specific aspects, and future development of the ERA.



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