

REPORT

**SAMVAD  
CONVERSATION**

**YOUNG  
SCIENTISTS  
LEARNING OPEN  
SCIENCE**

25 NOVEMBER 2021

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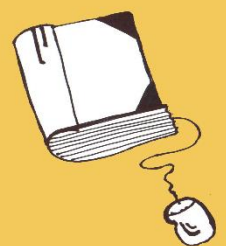
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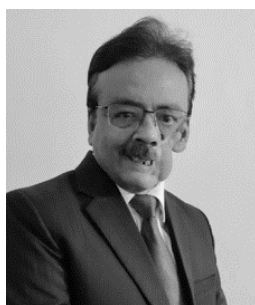


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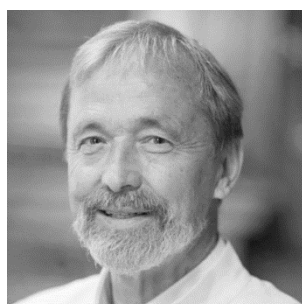
# KEY TAKE-AWAYS

- ***Need public engagement on the research agendas*** – There is a need for greater public consultations on all the elements of the research. Also, young scientists should be given the right to access data on research materials and appropriate training.
- ***Communication of science can become more open*** – We need to build the capacities of the scientists by sharing knowledge with the stakeholders, doing research on science communication, and then mainstreaming and promoting it to public and other scientists of different domains.
- ***Gender inclusion is important in open science*** – The experiences drawn from the inclusion of gender can help to understand the kind of changes are required in structures, processes, and institutional culture to put equity and inclusion at the core of Science, Technology and Innovation policy.
- ***Create a supportive culture for scientists to learn and grow*** – We need to create an enabling and supportive culture and practices to nurture young scientists. Further, these young scientists can effectively use funding and career development programs to get a fair chance to thrive in this ecosystem and contribute to the society.



**Dr. Akhilesh Gupta**, AS, Dept. of Science and Technology (DST), Govt. of India, has been the head of Climate Change Programme (CCP) of DST for last 11 years coordinating two National Missions on Climate Change under National Action Plan on Climate Change. He is the main architect of India's new Science, Technology and Innovation Policy 2021 which is under finalization and had received appreciation of Hon'ble President of India in 2003 for providing accurate weather forecast for the Mount Everest.

**Dr. Andrew Adams**, Deputy Director of the Centre for Business Information Ethics (CBIE), Meiji University, is also a part-time research fellow on the EU Horizon 2020 RRING project. He is a teacher on a contract basis at the Graduate School of Business Administration at Meiji University. Dr. Adams is a multi-disciplinary researcher looking at social, legal, and ethical aspects of computer and communications technologies. He previously engaged in research in computational logic and computer mathematics.



**Dr. Geoffrey Boulton** is Regius Professor of Geology Emeritus and former Vice Principal at the University of Edinburgh. He has chaired the Royal Society's report on *Science as an Open Enterprise*, the Science International Accord on Open Data in a Big Data World, the International Science Council's report on *Opening the Record of Science*. His research, is in the fields of environmental geology and glaciology, having worked widely in North Polar Regions and Antarctica.

**Dr. Jenice Jean Goveas** is a Department of Science and Technology (DST) Postdoctoral Policy Fellow at the Centre for Policy Research, Indian Institute of Science, Bangalore. Her research involves Emerging Technologies, Science advice, Science Diplomacy, Nanotechnology, open science and Women in STI. As part of the Science, Technology and Innovation Policy (STIP) 2020 Secretariat that is drafting India's new STI Policy, she has been the lead of the chapter on Science Communication and Public Engagement.







**Dr. H. A. J. (Henk) Mulder** has been affiliated with the Science Shop at Groningen University, The Netherlands, since 1989. The Science Shop brokers and manages research requests from civil society organisations and finds staff and students who will do research on these questions, as part of the curriculum. Dr Mulder is one of the founders of the international Science Shop network “Living Knowledge”; he is also the director of the Master programme Science Education and Communication at Groningen University’s faculty of Science and Engineering.

**Ms. Nicolette Jadhav** is the Head of Branding, Communications and Public Engagement at DBT/Wellcome Trust India Alliance. She has over 16 years of communications experience across various other industries including food & agriculture banking, environment management, chemical, etc. Nicolette is passionate about communications especially amidst the masses, as she believes that timely communications and precise mediums reflect the actual results of what your consumer perceives of any brand.



**Dr. Moumita Koley**, STI Policy Researcher, STIP Secretariat, DST-CPR, Indian Institute of Science, Bengaluru became interested in the Science Policy and developed a strong connection to the philosophy of open science, as an experimental chemist. Currently, her research interests include various dimensions of open science, such as open access, open research data, research resource sharing, research evaluation and open innovation. She was part of the teaching faculty of the UG Programme at IISc, Bangalore, for couple of years.

**Dr. Bhavani Rao R.** is the Director of AMMACHI Labs & Centre for Women’s Empowerment and Gender Equality, Amrita Vishwa Vidyapeetham, dedicated to participatory action research, mapping of vulnerabilities, education and implementation of projects for women’s empowerment and to address socio-democratic, economic and psychological violence faced by women and girls, especially vulnerable women in underserved communities and rural areas of India, reaching them through technology aided skill development and digital literacy.





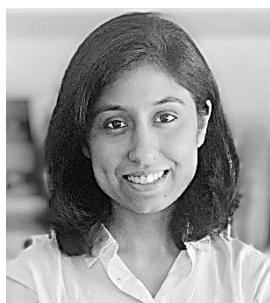
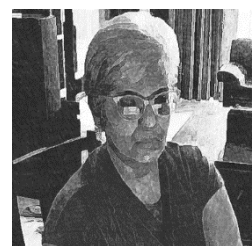
**Dr. Nimita Pandey** is a **STI Postdoctoral Fellow** at the Department of Science & Technology – Centre for Policy Research, Indian Institute of Science (IISc), Bangalore. She is hosted jointly at UNESCO New Delhi cluster office. As a part of the STI Policy Secretariat at DST, she has been actively involved in the making of India's forthcoming 5th STI Policy. Her present work revolves around Equity and Inclusion in STI.

**Dr. Sarah Iqbal**, Independent Consultant, Foundation for Advancing Science and Technology (FAST India) and Strategic Adviser for the India Science Festival is a trained researcher in natural sciences and a communications and engagement practitioner. Sarah has experience in designing and executing programmes aimed at enabling public engagement with science. She has created and led innovative initiatives such as the Superheroes Against Superbugs, The Explorer Series (India), Arting Health for Impact (International) and Planet Divoc-91 (International) among others.



**Dr. Rajesh Tandon**, Founder President, Participatory Research in Asia, India, is currently a UNESCO Co-Chair on Community Based Research and Social Responsibilities in Higher Education. He serves as chairperson of the Global Alliance on Community-Engaged Research (GACER) network, which facilitates the sharing of knowledge and information worldwide to further community-based research and has also served as an Advisor to the Commonwealth Foundation, UNDP, and numerous other international agencies.

**Ms. Sumitra Srinivasan** works with the knowledge management and communications function at PRIA, bringing visibility to the practice of participatory and community-based research to a new generation audience.



**Ms. Niharika Kaul** is a Research Associate at Participatory Research in Asia, and also supports the UNESCO Chair in Community-Based Research and Social Responsibility in Higher Education. Niharika has worked extensively on issues concerning gender-based inequalities and migration policies for informal workers. Through her work for the UNESCO Chair, she is supporting building community-university research partnerships through the Knowledge for Change Global Consortium (K4C).

As Participatory Research in Asia (PRIA) completes its 40 years, it recommits to continue institutional strengthening and capacity development support to civil society and non-profits with a special focus on new-generation civil society and non-profit groups. Between August and December 2021, PRIA will be convening [PRIA@40 Conversations](#) with communities, partners, associates, supporters, experts, investors and colleagues, drawn from civil society, government, business, media and academia, to share ideas and experiences that can help 're-imagine' PRIA, its interventions and the world in the coming period.

In this context, PRIA convened a conversation (samvad) on [Young Scientists Learning Open Science](#) on 25 November 2021 in collaboration with [UNESCO Chair in Community- Based Research and Social Responsibility in Higher Education](#), [DST- Centre for Policy Research, Indian Institute of Science, Bengaluru](#) and [DBT/Wellcome Trust India Alliance](#). The webinar was attended by 57 participants, was moderated by **Ms. Sumitra Srinivasan** (Lead, Knowledge Management and Communications, PRIA).

The conversation began with a short presentation by **Ms. Sumitra Srinivasan** on the 40 years journey of PRIA. It has been an exciting journey about sustaining an independent, forward-looking and energetic civil society organisation, in an otherwise rapidly disruptive and uncertain world. PRIA's theory of change follows something unique in the developmental sector i.e., acting as a bridge between the supply and demand sides of any issue or themes invested in by PRIA.

For the past 40 years PRIA has been using participatory research to *systematise indigenous, local, experiential knowledge, and using knowledge as a powerful tool to take action, deepen democracy and create a fairer, more gender-equal world*. The path has weaved between multiple sites (local, national, global), networked multiple institutions, organisations, and communities, and generated knowledge from below on multiple themes and issues.

PRIA's efforts to establish mutually respectful knowledge engagements between grassroots communities and institutions of post-secondary education through community-university partnerships were recognised when the UNESCO Chair in Community Based Research and Social Responsibility in Higher Education was established in 2012, with Dr. Rajesh Tandon, (Founder-President, PRIA) and Professor Budd Hall (Professor, School of Public Administration, University of Victoria) as Co-Chairs. It marked the first time that a UNESCO Chair had its home in two complementary but distinct institutions – a northern academic institution and a southern community-based research organisation. The Chair's renewal for a third term is testimony to the sustained advocacy to build a knowledge society and democratise production, use and dissemination of knowledge, through models such as the [Knowledge for Change \(K4C\) consortium](#). To know more about PRIA's work on the theme of Building Knowledge Democracy, click [here](#).

*To begin the discussion, Ms. Srinivasan invited Dr. Akhilesh Gupta (AS, Department of Science and Technology (DST), Government of India) to make the opening remarks.*

**Dr. Gupta** said that open science is recognised as an umbrella term for enabling the creation of scientific knowledge, division, quality control, cooperation, using digital technology and other collaborative tools. This expands the societal impact of science as a response to the growing complex global issues, including climate change. This is one of the biggest tools for democratisation of science. The Office of the Principal Scientific Adviser to the Government of India at the Department of Science, Technology and Innovation Advisory Council (STIAC) took up an initiative to formulate a National Science and Technology Innovation policy. Open Science framework was one of the components of this new policy draft which was submitted

to the government for finalisation. The draft that we had submitted largely echoed the recent UNESCO Open Science Recommendation which has been adopted by the nation-states. There are two essential pillars of this framework – enhanced availability of open data from publicly funded research and open access to the same.

In addition, the framework also highlighted other components, such as the significance of sharing research facilities, improvement in the quality of Indian journals, enhanced access to libraries (including digital libraries), open learning spaces, open education materials, etc. Fundamentally the framework proposed a better integration of science, society, recognition of traditional knowledge systems and more equitable participation of various stakeholders.

The significance of science communication and citizen science has also been acknowledged as part of this framework. The framework challenged the 'one nation, one subscription' model to make knowledge resources accessible to everyone in the country. Currently only a few thousands of people have access to these journals. This will further democratise science and ensure greater accessibility. The framework also debated whether or not the Article Processing Charges (APC) is good for us in terms of growth – financially and socio-economically. National STI observatory has several components that include the knowledge and data repository, virtual communication and interaction, and virtual access of equipment and laboratories.

Achieving the goals of open access and open science will need a massive change of culture. The idea is to create an ecosystem where national priorities are aligned with the global ones. India has several concerns around translated literature. We have a large number of regional languages, and the open access will not be complete if we do not share the scientific literature in the regional languages. In this context, National Translation Mission was launched, and DST created the Wikipedia page in regional languages. These initiatives are towards providing open science and open access to the scientists' working in diverse areas.

***“achieving goals of open science can lead to a massive change of culture”***

Meet our panellists...



[L to R: Ms. Niharika Kaul, Dr. Andrew Adams, Ms. Nicolette Jadhav, Ms. Sumitra Srinivasan, Dr. H.A.J (Henk) Mulder, Dr. Geoffrey Boulton, Dr. Akhilesh Gupta, Dr. Rajesh Tandon, Dr. Sarah Iqbal, Dr. Jenice Goveas, Dr. Moumita Koley, Dr. Bhawani Rao R. and Ms. Nimita Pandey]

*Next, Ms. Srinivasan invited Dr. Andrew Adams (Meiji University Educational Foundation) to talk about the specific recommendations around ethics, public/community engagement and*



*inclusion of multiple sources of knowledge. And also reflect on whether the recommendations talk about how young scientists can learn these ideas and what institutions can do to support them.*

**Dr. Adams** explained that UNESCO's Recommendation on Science and Scientific Research (RSSR) is an international human rights treaty that has been signed at the United Nations (UN) by a vast majority of nations around the world. RSSR's legal status is unfortunately not as strong as we desire. It is quite hard to enforce this treaty in authoritarian countries where the constitutional arrangements are weak.

The RSSR has strong recommendations on ethical ways to conduct science. It includes a focus on the impact of research not just on the researcher but also on society and the environment. Ethical responsibilities are not the sole concern of the individual researcher. It is the government institutions, funding agencies, research labs and commercial research organisations that have increased the ethical expectations at present. These expectations are not just about the conduct of the individual researcher but also about the research environments created by the researchers. They are about equality of access to do research; it requires the researchers and research institutions to think through the impact of their work. It is an ethical requirement to acknowledge and recognise indigenous knowledge. We need to ensure that the benefit from the indigenous knowledge goes back to the community from where this knowledge was derived.

The other ethical concern is that of public consultation. There needs to be greater public consultation on all the different elements of the research. The public should have a direct say on research and should be able to express their objections regarding the methodology, approaches, etc. Public should be the one to decide the precise goals of research themes, particularly when money is involved and is also limited. People involved in the research also need to keep the public informed about the progress of the research.

Finally, on the research outcomes, there is a strong push worldwide not only to open access to the specific written versions but the data that is generated during projects and allow access to the process, data and the papers that are published. We should not just talk to other scientists and researchers but also need to recognise those who specialise in public understanding of science, as co-equals in the development of public and open science.

***“RSSR is a useful treaty especially with regard to soft power and building in such dimensions of research ethics within the institutional frameworks”***

*Next, Ms. Srinivasan invited Dr. Geoffrey Boulton (Regius Professor of Geology Emeritus and former Vice-Principal at the University of Edinburgh) to share key messages from the UNESCO Recommendation on Open Science which was adopted at its 41<sup>st</sup> session in November 2021.*

**Dr. Boulton** said that the premise of the international science council is that *knowledge is the most powerful public good and science is a special form of knowledge*. We need science not only for our contemporary problems but also for the future, which is inherently unpredictable. Science, today, is largely driven by national priorities. The role of the universities in science, for the future, has been crucial under the aegis of academic freedom. Scientists are free to choose what and how they want to do their research and to a large extent, they are funded to do their research. In the light of the pandemic, he stated that we have benefited from non-directed research in a wide variety of domain. This research turned out to be of enormous value to the national and international responses to COVID- 19.

Over the last 80 years, there has been an implicit social contract for science. In the years immediately following the Second World War, the general presumption was that the best way of innovation for public benefit from science is to let scientists persist with it in a competitive environment. Over the years, there was an awareness that most of the major problems that we faced are inherently complex and interdisciplinary. Consequently, the science systems evolved to cope with the problems, but we still have a long way to go. In the last three decades, the idea that science must be open to society, transparent and participative has taken root in the scientific experiences. People involved with science understand that the words 'science' and 'scientific' are profoundly misused. While the popular perception is that 'science' implies certainty, the truth is that 'science' is much more about uncertainty. Unfortunately, this uncertain science has proven to be the best route that we have towards reliable knowledge.

Open science is not a new concept arguably, it began in the 18th century with the publication of the first scientific journal, which also required that authors must publish the evidence for the truth claims that they made in their findings. Certainly, that has been the bedrock on which scientific advances have been built in the last 300 years. Post-1900s, the digital revolution became a great enabler for science and changed the face of open science.

The [Budapest Open Access Initiative \(2001\)](#) argued that the internet will remove the access barriers to scientific literature, scientific understanding and scientific record. It will provide open access to all who wish or need to use scientific literature, record, etc. Over the last two decades, the scientific community has spent an enormous amount of time and effort in developing ways in which this can be achieved. Finally, in 2021, UNESCO adopted the recommendations on open science. These recommendations say nothing that hasn't already been discussed, worked upon and implemented within the scientific community. But UNESCO has succeeded in bringing together the 193 nation-states on the agreement that open science is a new era of science, and it should be driven forward.

One possibility is that these 193 nation-states or a proportion of them decide to prescribe a new regime of open science within their territory. If that happens, it will produce a dystopia which would inhibit the rigour and the creativity of science. The scientific community must engage with governments in creative ways to develop crucial elements in this enterprise that get represented by science and society. Having science engage effectively with society is a non-trivial task.

International science council has created a series of principles for the record, of the record and by the record of science. This scientific knowledge has accumulated since the beginning of the scientific enterprise i.e., around 3000 years ago, which is represented in books, papers, videos, but increasingly in digital forms. However, the sad reality is that we do not have affordable universal open access, much of it is contained between high paywalls maintained by private companies. We have not exploited the digital revolution, as well as many other sectors. All we do is the transfer from ways of doing things in print to doing things digitally. This way of doing science is accountable to the scientific community.

We have to develop open science and also understand that without its rigour and creativity, science has little value. The danger is that we concentrate on the broader social dimension of exclusion of these core ethics. We need to carry them both forward together. If we can do that, then we will create something which, in a sense, is a shift for science, beyond the walls and the doors of the laboratories and libraries. It will make science a public rather than a private enterprise.

*“knowledge is the most powerful public good and science is a special form of knowledge”*

To take the discussion forward, Dr. Jenice Goveas (DST-STI Postdoctoral Policy Fellow, DST-Centre for Policy Research, IISc, Bangalore) was invited to reflect upon how communication of science can become more open, in the context of Science, Technology, and Innovation (STI) policy. What does it mean, and what practical individual actions can scientists and scientific researchers take to show their commitment to open science?

**Dr. Goveas** said that to understand the STI policy, it is important to note that this is the first time in the history of the Indian science ecosystem that we have a policy document that has two chapters – one exclusively for *open science* and the other for *science communication and public engagement*. The focus of her presentation was on the latter. This chapter starts with Article 51 A(h) of the Indian Constitution which states that it is the fundamental duty of every citizen to develop a scientific temper, humanism and the spirit of enquiry and reform. It is important to note that it says ‘fundamental duty of every citizen because when we look at science communication, largely we talk only about the duty of scientists, whereas it is the duty of every citizen.

The STI policy aims at opening science communication from four angles:

1. Building capacity – how do we build capacity? By dialogue or by knowledge transfer? This knowledge transfer has to happen as a two-way process between the stakeholders. These stakeholders could be anybody who is part of the scientific ecosystem. The platforms for capacity-building must be creative, cross-disciplinary and accessible to all. Capacity building in science communication or in the communication of science is required at all levels. She said, ‘*I believe it should start right from school level – developing skill sets in students, training them to impart their knowledge/ skills in innovative ways. This will be a solution to the larger problem of misinformation and disinformation.*
2. We look at intertwining science engagement and science pedagogy at different stages of academic training in the policy and starting right from the primary school level. Capacity building programmes aim also at providing accessible infrastructure and databases because without access to the database, capacity building and science communication is a challenge. So, the problem of access needs to be solved to also look at science communication in the true sense. For a country as diverse as India, being mindful of the local and hyper-local context is very significant. It is necessary to look at the communication of science in regional languages. Several community-centered programmes are encouraged in this policy document and regional science centres are largely being promoted. We need to promote the culture of citizen science projects citizen science is one example where we can see the reciprocal relationship between science and society. It is a space where not only the scientists communicate to the public, but the public also contributes back to the STI ecosystem.
3. Mainstreaming science communication and promoting it as a full-time career is essential. The common perception is that it is a very lucrative career, and one needs to have a solid financial backing (or maybe a rich spouse) to be able to do science communication effectively in India at present. This is also one of the concerns that the policy acknowledges. The policy looks at using mainstream media and entertainment platforms, digital technologies, and several innovative methods of promoting science communication. Entertainment platforms such as radio, community radio, folk arts, etc. are very strong medium when we talk about access. This is something that reaches the last mile, as a tool for opening up science communication.
4. The policy emphasises outreach as part of each one’s scientific social responsibility.

There are four dimensions to a holistic approach to science communication:

1. Interaction and communication between scientists and the public.
2. There need to be several dialogues and knowledge transfer among the scientists from different domains.
3. There needs to be an interaction between scientists and policymakers as part of the science advice mechanism. This is called participatory science advice.
4. The interaction between scientists and politicians i.e., science advocacy must be promoted as it is currently missing in the Indian context.

***“science need not only come from scientists; evaluations of academics need to change”***

*In the next segment – Understanding Principles, Dr. H.A.J. (Henk) Mulder (Programme Director, Master Science Education and Communication) shared his experience of the Science Shops in Europe which has built the linkage between science and society in the context of networking in building a culture of responsible research in science.*

*‘Responsible research and innovation is a term used by the European Commission to indicate that we should develop innovations that reflect societal views and their needs, said Dr. Mulder. It is also an important element in the context of open science. Reiterating the concept of citizen science, Dr. Mulder said that there are many things that people can do to contribute to the development of scientific knowledge, using their indigenous knowledge. This is the traditional way of doing citizen science where citizens contribute to data collection and analysis. But this circle is not complete if people have no way of contributing to the setting up of the agenda. People should have a say in the subject of their research and the agendas. A science shop is one way of co-creating knowledge.*

*Science shop is a unit that provides independent and participatory research support in response to the concerns expressed by civil society – it is demand-driven. The science shops, usually research the non-profit sector, civil society organisations, citizen groups, etc. Most of the research is done by the students who get course credits, and they are supervised by staff in the process. This is the only way that one can manage to do interactive science communication for free because this is already accounted for in the higher education funding system.*

***“science shops is an effective way to bring different stakeholders to be part of designing and participating in science research policies concerning them”***

*Ms. Niharika Kaul (Research Associate, UNESCO Chair in Community Based Research and Social Responsibility in Higher Education) spoke about how scientists can navigate the challenges and find resonance and consonance between their human rights as expressed in various recommendations and the work that they want to do as young scientists and develop professionally.*

**Ms. Kaul** said that one of the foundational principles of Recommendation on Science and Scientific Researchers (RSSR) is the idea that any scientific conduct is subject to universal human rights standards. That being foundational, there are several rights and dimensions that the RSSR touches upon including social security, dignity, and so on.

Freedom of thought and expression in science and innovation was curtailed at the global level across countries and governments during Covid-19. The freedom of expression is integral to scientific research and progress. The right to question, comment, and critically analyse is equally part of scientific progress. These values of honesty, integrity and the ability to stop



working on something if one's conscience doesn't permit, is very integral to scientific research. The RSSR categorically states that scientists and scientific researchers have the right to freely express themselves and the right to withdraw from such scientific projects and practices where their "conscience so dictates".

However, during the pandemic, the scientists and scientific community faced a lot of challenges in terms of freedom of expression. For instance, according to a Human Rights Watch report, since January 2020, governments in some 24 countries enacted vague laws and took harsh measures criminalising alleged misinformation about Covid-19 or other public health issues, under the garb of protecting the public welfare. These are harsher ways of curbing the freedom of expression. However, limitations on freedom of opinion can take more subtle forms as well such as restrictions on funding. Scientists and scientific researchers who need research funding for conducting studies are often left without resources due to a shortage of funds.

Given that some of these challenges have been exacerbated during the pandemic, it is crucial to promote independent and public-funded models of research. Higher education institutions (HEIs) may tie-up with publishing houses and journals to collaboratively engage in hosting science quizzes and science festivals to encourage an environment of discussion amongst scientists and scientific researchers. Ethics Committees in institutions at the local, state and national levels can ensure that scientists have full freedom to voice their concerns against any research project (without threats to their career progression) and withdraw from it anytime if they find it to be unethical or lacking authenticity.

The right to equitable access to education and employment opportunities is an indispensable right for scientists and scientific researchers. The RSSR explicitly highlights the need for encouraging women and underrepresented groups to consider careers in the field of science and to eliminate inherent system biases in workplaces and appraisal. In India, creative and inclusive scientific pedagogies lack attention and investment starting from the high school level. More than a decade back, the India Science Report 2005 highlighted the lowering levels of satisfaction amongst students with the quality of science teaching from two-thirds in junior classes falling to just 40% in 11th and 12<sup>th</sup> standard classes. Building these bridges between skills and employability- building the more inclusive ecosystem within education and the workspace to stop discrimination based on several factors and using technology to bridge these gaps is the need of the hour.

***"it is imperative that we promote independent and public-funded research models"***

*Moving on to the next segment – Practice and Action-Learning, Ms. Nicolette Jadhav (Manager – Branding, Communications and Public Engagement at India Alliance) was invited to deliberate on the current climate for public engagement in science in India and what are funders like DBT Alliance doing to support it? She was also requested to share some of the preliminary results from the recent survey done by the India Alliance.*

**Ms. Jadhav** said that India Alliance not only funds research, but it also provides a lot of science communication workshops and outreach programmes for young scientists and others who are interested in taking their work to the public in general. At India Alliance, they believe that knowledge is power and are willing to help people take their knowledge to society.

Next, she spoke about the last survey they had conducted with their fellows. From November 2020- April 2021, they reached out to around 243 Indian researchers who were asked about their experience of public engagement. The findings were interesting because they felt like public engagement was not a key factor in their research and dissemination of information to the public. They felt it was not an in-built culture and not in the mindset of our system.

So, India Alliance tried to reach out to the students in time to make the science research easy for everybody to understand. India Alliance attempts to explore different ways of enhancing their fellows' work. It is not only their fellows that they target but other people who are interested in bringing their research to the public in general.

Public engagement is one of the most important mediums to be effective. We always look at collaborating with the right partners. India Alliance collaborated with University College London, Institute of Applied Building Informatics (IABI) as well as India Covid SOS where they reached out to a lot of community-based audiences. They looked at sectors of mental, maternal and child health. She spoke of the Indian Science Media Fellowship (ISMF) at India Alliance where they aim at nurturing journalists from India to appreciate the scientific processes and reach out to a larger audience. There is a need for conversation between the scientists, the experts and the citizens, at large this makes way for a knowledgeable decision in health and wellness for people and their environment.

***“public engagement makes scientific research more effective and relevant”***

*Dr. Moumita Koley (STI Policy Researcher, STIP Secretariat, DST-CPR, Indian Institute of Science, Bengaluru) spoke about building a digital platform for open science publishing in India.*

**Dr. Koley** reiterated the need for openness in knowledge sharing. She said that in this context, we often talk about *access to research articles for all and not just premier institutions*. This would help not just the researchers from smaller institutions and colleges to build their research but to even build a much larger scientific temperament among the citizens of the country. However, in India, the issue of knowledge creation or dissemination is not just about access. There is a broader challenge of equity that has not been included in this process.

What is the problem of equity? The biggest challenge that the young researchers face is the gatekeeper tendency of the editors of Global North-based journals, certain barriers always exist. Then, of course, the local context-specific research never gets attention or approval. It is not just a problem for India; it is a problem for the Global South, as a whole.

The other challenge is the Article Publishing Charge (APC) base gold and open access. It is good for those countries that can afford it but for Indian researchers, APC is unaffordable. Against this backdrop, what can we do? India should build its own open-access digital publishing platform. The Indian funding agencies need to support it so that the researchers of India can publish their research into an open access publishing platform without any APC but with strict quality control. Once this platform is established this will be open access not only for India but anyone from the world, without any subscription costs.

The next challenge is the existence of the predatory journals publishing industry, which is harming our country's scientific ecosystem. Creating our open-access digital publishing will counter this challenge of predatory publishing and save our scientific ecosystem. How do we envision this workflow? The main goal for us is to utilise the technology so that most of the publishing processes become automated and less of human interventions is needed. We can even utilise technology like blockchain here so that there is smooth submission to the internet and ensuring an end-to-end support in publishing. Editors and the editorial team would also get a lot of technical support thereby improving their efficiency. An open peer review tool will enhance the quality and transparency of the whole system. We need new evaluation criteria and matrices.

How can we build this platform? Of course, none of this is a new idea; it has been there for quite a while. But we must start from the already known open-source technology like Open Journal Systems (OJS). We can build add-on's around it, which would be necessary. The

necessary advantages of digital technology have not been translated and we want that to be included in the platform. The Indian journal system is a strong one funded by the Academy of Science academics. The other thing that we are unaware about is that most of the backend work of, say Elsevier, Wiley, or Springer, is outsourced to India. That hints at the strong local publishing industry.

***“we can use technology as blockchain to smoothen the open-access digital publishing platforms”***

*Dr. Bhawani Rao R. (Director, AMMACHI Labs, Amrita Vishwa Vidyapeetham) was requested to address the question – can ‘ethics’ be learnt? What kinds of ethical issues do young scientists and scientific researchers need to bear in mind while engaging with the communities?*

‘India has a wealth of indigenous knowledge’, said **Dr. Rao**. This indigenous knowledge is a way of thinking about ethics in our pursuit of community engagement. The word ‘ethics’ is intrinsically rooted in values, and it can be learnt. When we talk of community engagement, the words *participatory* and *for the benefit of all* are used innumerable times. In her presentation, she attempted to synthesise these concepts in the following ways:

First, what is the intention and motivation for us to research the pursuit of science and the pursuit of truth? Knowledge is a way to look at the essence of truth. It should be motivated by compassion for the benefit of all, not just humanity but the environment too. For community engagement, compassion can be dangerous if it is not accompanied by knowledge – we have to have the knowledge. This knowledge must be based on research and hard factual sciences, indigenous/ local knowledge and an empathetic understanding of the needs of the people of the community.

Second, how do you implement that? Of course, the method must be participatory. An individual’s intention needs to become the community’s intention. There needs to be an alignment of intention.

Third, what action do we take? Action must be mandated by ethics. One cannot engage with the community without giving something back to the community. Often it is in terms of knowledge sharing. The actions must be altruistic. Unethical practices often involve data manipulation because one approaches with a preconceived notion of what one wants to see. When the intention is the quest for truth, actions automatically become altruistic. We need to build the capacity of the community for them to understand and use the knowledge that we create. We need to share the knowledge not only with the research community but also with the local community we engage. Our approach in this pursuit should be ethical.

***“altruism must be at the heart of action which is at the core of ethics underlying scientific research”***

*Next, Ms. Nimita Pandey (STI Policy Fellow, Office of the Principal Scientific Adviser (PSA), Government of India and UNESCO New Delhi cluster office) was invited to talk about gender inclusivity in STI Policy in India and also the changes that institutions need to make for young scientists to be able to practice these policy recommendations.*

**Ms. Pandey** said, ‘Equity and inclusion in STI policy need to be seen as a foundational element’.

However, we cannot limit it to gender. We need to see the socio-cultural, geographical and economical diversity that exists in the country. Gender inclusion is important because the

experiences drawn from the inclusion of gender can help us understand the changes that are required, particularly in structures, processes and institutional culture to put equity and inclusion at the core of STI policy. STI and gender inclusion have been interlinked with scientific productivity, innovation and economic development. Historically, the idea of gender equity has not been given much attention in the Indian context. But now efforts are being made at the institutional level in the government and non-government sector to take the idea of gender inclusion forward.

The forthcoming STI policy of India envisages bringing the paradigm shift by bringing gender inclusion to the core of the policy. The STI policy addresses gender inclusion in the following ways: First, mainstreaming the idea of inclusion. The idea was to add gender equity and inclusion as a subtext to all STI policies and processes, whether existing or forthcoming. Second, institutionalising equity and inclusion. We must develop an India centric equity and inclusion charter where gender stands as an important element because to understand the existing gender exclusions and inequities in STI, whether in policy or in practice.

Third, assess gender equity and inclusion. We need evidence-based and evidence-informed policy, we cannot act on assumptions or intuitions. Hence, we must develop frameworks, databases, instruments and indicators. We need to understand equity and inclusion-specific issues, frameworks should be replicated to develop and provide evidence for STI policies and practices. This must be done in a bi-directional way, where the idea of multi-stakeholder participation also emerges.

At an institutional level, we need to have inclusive processes – be it the process of recruitment, retention, promotion and so on. In this context, the idea of role model, mentorship and networking is crucial. It is important to build such platforms for the engagement of stakeholders, particularly civil societies, because we cannot realise the last mile connectivity without having civil societies on board. We must give greater voice and more choices to young scientists, particularly women, to ensure that they can pursue and practice science.

***“the right and the access to pursue science is interwoven with the idea of gender equity and inclusion”***

*Dr. Sarah Iqbal (Independent Consultant, Foundation for Advancing Science and Technology (FAST India) and Strategic Adviser for the India Science Festival) was invited to talk about strengthening the STI ecosystem in India through policy reforms, government engagement and support, capacity building for institutions, engagement with the corporate sector and science communication.*

*‘Young people are small but a very significant part of the STI ecosystem and generally they don't tend to get a platform where they can be heard’, said Dr. Iqbal. We have not managed to build systems and, more importantly, a culture that can inspire and nurture young scientific talent in our country. India has multiple impressive funding and career development programmes. There are institutions and research infrastructure that is being built but we must ask ourselves if we have an enabling and supportive culture that can make effective use of such resources and funding.*

Using the analogy of building a car, she says that the structure of the car i.e., the institutions and resources are in place, but we need to provide fuel to the young people who are the engines of the car to help them drive. In this context, she says, we have been doing lip service to this aspect of building the STI ecosystem. We have witnessed how young research scholars in India have to wait for months on end and sometimes even years to get their research fellowship or stipends. When they opt out of science, it is not about them not wanting to do science, but it is a matter of basic survival.



There is rampant scientific and ethical misconduct prevalent in institutions of every shape, size, and stature in the country today that bears a huge impact on young scholars' decision to pursue science. The fortunate ones prefer to go to foreign universities to pursue scientific research because there they get a supportive environment. In her opinion; the 'brain drain' is not a developed country versus a developing country issue. One of the reasons for this phenomenon is that our academic and research culture is pushing young talented people out of sight. We need platforms like the science shops where young scientists can come forward and talk about the obstacles and challenges that they face in building their careers in science.

We also have to examine if the scientific ecosystem is giving a fair chance to everyone to pursue science, irrespective of their social, cultural and economic realities. To realise this, we need diversity at the decision-making table. We need to focus on creating an ecosystem system that would let anyone pursue a career in science and not just an ecosystem for conducting scientific research. We need to set world-class mechanisms and state-of-the-art infrastructure for scientific research and innovation. We need to relook and reimagine how we can build capacities and ensure that the STI policy is not isolated or disconnected from the realities of our country and the larger world.

***“we need to create an environment where everywhere has equal access to equitable education and employment”***

*Ms. Srinivasan requested Dr. Rajesh Tandon (Founder- President, PRIA) to share his closing remarks and some key takeaways.*

**Dr. Tandon** reiterated that scientific temper is in our constitution. Somewhere along the line, when we started adopting science in its more institutionalised, formal and modern form, we forgot about the old norms and premises. He re-emphasised that the purpose of science is to contribute to further democratisation of society. Democratising knowledge requires one to respect various forms of knowledge that are produced not just inside the scientific laboratories or in academia, but generally within the society. The modern system of science in its arrival and its expansion devalued, displaced and almost demonised local, indigenous and experiential knowledge. Participatory research starts with this recognition that people have knowledge arising out of the experience. It does not mean that their knowledge is complete or adequate. But experts can add to that knowledge to produce workable solutions. Given the diversity of India, every context produces its logic. Therefore, universal solutions do not work. We need to have universal principles which can be contextually applied.

We need to ponder on the ways to encourage the new generation of scientists to develop a broader perspective about knowledge production and utilisation. We need to link science to the very heart of society. Our young scientists need to be exposed to these conversations not just from the point of view of rejecting the knowledge economy or application of knowledge for economic development, but to acknowledge that there are other ways in which public use of knowledge can be expanded. In this light, the Science Shops model, as described by **Dr. Mulder**, provides a mechanism for universities or research institutions to have an interface with society.

We are at a particular junction where we need to find a way to make knowledge work for all because if knowledge systems don't work for all, then democracy won't work for all. Controlling people's minds through a parochial use of knowledge is neither good for democracy nor science. Science does not flourish in those situations. It is crucial that for scientific institutions and young scientists to be open to the idea of public accountability, not only accountability of the research that they do but also accountability towards the larger

ecosystem, ecology and environment. No change happens without pressure and change does not happen from the top alone. The change also does not happen from the bottom alone. It needs pressures from all sides. Culture does not change till some members of the institution begin to behave differently.

Culture is not something that was written in policies. We need to bring about a change in the culture of science and scientific institutions that can help society at large. In this context, he emphasised that gender mainstreaming is for society at large. There are feminist movements in the country that may not have infiltrated the scientific enterprise as yet but that is what multidisciplinary is all about.

***“knowledge systems must work for all; if they don’t work for all, democracy won’t work for all”***

The conversation (samvad) ended with a vote of thanks by **Dr. Rajesh Tandon** (Founder-President, PRIA)

*Here is the list of some insightful questions from the discussion:*

**Q:** Is anyone concerned with the transition of major publishers into technology platforms, giving them greater, monopolistic control over the scientific process?

**Q:** Is indigenous knowledge part of scientific knowledge, or different from it, and if so how? Are there different knowledges, and can we relate them in a taxonomy?

**Q:** Women have tended to remain outside the fold of science for various reasons and in various ways. Special efforts would therefore have to be made to ensure women enter the world of science. Have any special efforts been made to demystify science for women, particularly the poor and non-literate women?

**Q:** Some parts of science claim to produce knowledge that is universally true - at all places and all times. Do you agree? Other science fields produce knowledge that is bounded in time and place. Discuss.

*3.30 pm to 3.40 pm*

Welcome and Introduction to PRIA@40 Programmes and Conversation

Moderator: Ms. Sumitra Srinivasan, Participatory Research in Asia (PRIA), India

*3.40 pm to 3.47 pm*

Opening Remarks

Dr. Akhilesh Gupta, AS, Dept. of Science and Technology (DST), Govt. of India

*3.47 pm to 3:54 pm*

UNESCO Recommendation on Science and Scientific Researchers

Dr. Andrew Adams, Meiji University

*3.54 pm to 4.01 pm*

UNESCO Recommendation on Open Science

Dr. Geoffrey Boulton, International Science Council

*4.01 pm to 4.08 pm*

Audience Q/A

*4.08 pm to 4.13 pm*

Open Communication of Science

Dr. Jenice Goveas, DST-STI Postdoctoral Policy Fellow, DST-Centre for Policy Research, IISc, Bangalore

*4.13 pm to 4.18 pm*

Responsible Research and Innovation (RRI) and Open Science

Dr. H.A.J. (Henk) Mulder, University of Groningen, The Netherlands

*4.18 pm to 4.23 pm*

Do scientists have human rights?

Ms. Niharika Kaul, Research Associate, PRIA

*4.23 pm to 4.28 pm*

Public engagement in science in India

Ms. Nicolette Jadhav, Manager – Branding, Communications and Public Engagement at India Alliance

*4.28 pm to 4.33 pm*

Building a digital platform for open science publishing in India

Dr. Moumita Koley, STI Policy Researcher, STIP Secretariat, DST-CPR, Indian Institute of Science, Bengaluru

*4.33 pm to 4.38 pm*

Ethical issues and community protocols for open science

Dr. Bhavani Rao R., Director, AMMACHI Labs, Amrita Vishwa Vidyapeetham

*4.38 pm to 4.43 pm*

Gender inclusivity in STI Policy in India

Dr. Nimita Pandey, STI Postdoctoral Fellow at the Department of Science & Technology – Centre for Policy Research, Indian Institute of Science (IISc), and UNESCO New Delhi cluster office

*4.43 pm to 4.48 pm*

Building the STI ecosystem

Dr. Sarah Iqbal, Independent Consultant, Foundation for Advancing Science and Technology (FAST India) and Strategic Adviser for the India Science Festival

*4.48 pm to 5.05 pm*

Audience Q/A

*5.05 pm to 5.30 pm*

Closing remarks

Key takeaways

Dr Rajesh Tandon, Founder-President, PRIA



# PRIA@40 EVENTS

DATE	TITLE	THEME
12 August 2021	Youth Participation and Active Citizenship	Citizen Participation
20 August 2021	Planning for Urban Informalities	Sustainable Urban Future
31 August 2021	Accelerating Capacities in Civil Society and Non-Profits	Empowering Civil Society
2 September 2021	Nurturing Civil Society Partnerships in Uncertain Times	Empowering Civil Society
15 September 2021	Redesigning Civil Society Ecosystem: From Local to Global	Empowering Civil Society
28 September 2021	Unlearning Patriarchy: Expanding Impacts of Gender Training	Making the Gender Leap
30 September 2021	Investing in Civil Society Innovations	Empowering Civil Society
01 October 2021	Community-led Adaptations: Water is Life	Decentralised Community Governance
06 October 2021	Inspiring Leadership of Mayors and Councillors for Inclusive Urbanisation	Sustainable Urban Future
12 October 2021	Trajectories of Participation: From Development to Governance	Citizen Participation
20 October 2021	Scaling up Citizen Engagement for Inclusive Urban Governance	Sustainable Urban Future
01 November 2021	Gender Transformational Organisational Renewal: Towards Gender Equality	Making the Gender Leap
17 November 2021	Participation, Representation & Accountability: Strengthening the Movement	Decentralised Community Governance
23 November 2021	Making a difference: Adapting Impact Measurement	Empowering Civil Society
25 November 2021	Young Scientists Learning Open Science	Knowledge Democracy