

## MEETING REPORT

**Taking science to the public\***

As part of its Founder's Day celebrations, the National Institute of Advanced Studies (NIAS), Bangalore, recently organized a two-day seminar titled 'When Science Meets the Public: Bridging the Gap'. Scientists, social scientists, policy makers and journalists were the predominant participants in what turned out to be a series of heated debates, with each party choosing sides, yet working towards a common goal – taking science to the public.

**Controversial science and new technologies**

K. Kasturirangan (former Member, Planning Commission, New Delhi) highlighted the importance of public opinion and participation in policy and decision-making process. Citing the example of *Bt* brinjal, whose commercial introduction in the Indian market has been highly debated, he pointed out that objections raised by the public had played a major role in the decision against it.

Deepak Pental (University of Delhi, New Delhi) stated how a lack of communication from the scientists had stalled the commercial introduction of *Bt* brinjal. With increasing human population and many more mouths to feed, India has tough challenges ahead. It needs low-input, high-output methods in agriculture; growing genetically modified crops is one such strategy. Pental also pointed out that research on transgenic crops has gained momentum in the past 20 years, but the Indian Government was yet to take a stance on whether these can be introduced commercially. If not, alternative strategies have to be developed. For the society to accept transgenic crops, better communication is required, with scientists conveying the benefits and clearing doubts or misconceptions that people might have.

Drawing on the cases of *Bt* brinjal, Vedanta mining and Jaitapur Nuclear Power Project, Jairam Ramesh (former Minister of Environment and Forests,

New Delhi) reiterated the need to engage with the public and gain their trust for policy decisions. Ramesh was delivering a public lecture titled 'Responsible to Science, Responsive to Society: A New Dialogue', when he stressed upon the importance of keeping people in the loop of ongoing scientific research. He remarked that growth is essential for the country's economy and it will not be without complexity, contradictions and conflicts. However, choices must be made weighing all the trade-offs in a transparent way. He said one of the reasons for not going ahead with the introduction of *Bt* brinjal was a lack of consensus within the scientific community.

On the Vedanta mining issue, Ramesh said that communication with the stakeholders failed because of their distrust in the plans of the Government, springing from its bad track record for compensation and allocation of an alternative livelihood. He also added that nuclear power generation can no longer be shunned in a rapidly growing economy like India. The country had access to cutting-edge technology in setting up the nuclear plant at Jaitapur, but public opposition increased after the Fukushima disaster. The public was ill-informed about the methods used in generating nuclear energy and it was not possible to be entirely transparent on the details of the project due to security and safety reasons, he explained.

Srikumar Banerjee (former Chairman, Atomic Energy Commission) also emphasized on the need to tap nuclear power to meet energy demands. Nuclear technology has advanced but has not been realized to its full potential. He said that the public is hesitant on its use for the same technology is utilized in making weapons. However, it is necessary for the public to understand that the nuclear power generation process is controlled and reactors are designed with utmost care, considering the likelihood of natural disasters like floods or earthquakes in the area, he stated.

**Risk communication – natural disasters**

R. K. Chadha (National Geophysical Research Institute, Hyderabad) highlighted

the challenges in communicating risks related to earthquakes. He referred to the 2009 L'Aquila earthquake failing to predict which six scientists were convicted for six years in jail. Earthquake science, Chadha said, is full of uncertainty and has not reached a stage where such predictions could be made. It is important that seismologists stress on uncertainty in a language people understand and shift focus to disaster preparedness. They should warn people not to buy houses built on reclaimed and other vulnerable lands.

Ajit Tyagi (former Director General, India Meteorological Department, New Delhi) spoke along similar lines. With an increase in population, he said, more people have started living in hazardous zones and become vulnerable to natural disasters like earthquakes and landslides. During unexpected events, like the tsunami in 2004 and flooding of Mumbai in 2005, lack of preparedness was obvious. In the recent Uttarakhand tragedy too, though information was available, ineffectiveness in communicating it and lack of preparedness led to the loss of lives. In the face of such events, risk communication has evolved with advances in technology, and active participation from NGOs and communities. Losses from cyclones that hit the eastern coast of India and Bangladesh were significantly reduced with the help of early warning systems, communication and preparedness.

**Working on the ground**

S. Meenakshisundaram (NIAS, Bangalore) highlighted the importance of communication in resolving land disputes. In Chitradurga, Karnataka, several acres of a grazing ground were allocated to research institutes like DRDO. Due to opposition by local people, especially cattle grazers whose livelihoods depended on the grasslands, the work was stalled and a decision is pending. In such cases, lack of communication and consultations with stakeholders led to agitations that could have been avoided.

Rajendra Singh (Tarun Bharat Sangh, Alwar) shared his experiences of working

\*A report on the two-day seminar, 'When Science Meets the Public: Bridging the Gap', held at the National Institute of Advanced Studies, Bangalore, during 20 and 21 June 2014.

with local communities in rejuvenating wells in villages of Rajasthan. He started his work in Gopalpura, where locals knew that wells were dry because aquifers did not hold water. Along with the locals, Singh designed and built earthen dams for storing water and recharging the aquifers. This public participatory model started in one village and has now successfully spread to nearly 1200 villages in Rajasthan, where it has improved the lives of many people.

Arvind Gupta (Inter-University Centre for Astronomy and Astrophysics, Pune), in his talk on making science fun, demonstrated some frugal innovative toys that help teach science to rural children. He showed the workings and science of toys made from low-cost material that can be assembled by young children with ease.

Gauhar Raza (National Institute of Science Communication and Information Resources, New Delhi) pointed out that studies on scientific temperament of the general public were important. Regular and repetitive efforts need to be made to develop scientific temper in the public. Communication is effective when all the channels, including print, television and radio are used simultaneously.

Shiv Visvanathan (Jindal Global University, Sonapat) strongly opined that those who resist development projects must not be seen as an opposition and their opinions be sought in policy decisions. To help them understand science and technology, news should be delivered in regional languages.

A. S. K. V. S. Sharma (Central Food Technological Research Institute, Mysore) also stressed that regional media is more effective in communicating with the target audience and it is necessary for scientists to communicate with the public in their language. He recommended scientists explore popular media like radio to reach out to the younger generation. Mobile apps and online games are popular and can be developed around science themes.

### Journalists' take on things

Pallava Bagla (NDTV and *Science*, New Delhi) shared his experiences of reporting on science. He also spoke on how scientists can reach out to the public directly or through communicators. Scientists should make use of the time between acceptance and publication of research papers to interact with the media, and include photographs, illustrations and animations in the description of their work. Drawing on his experiences, Bagla said that scientists in India remain inaccessible and needed to build skills to interact with the press. A lack of effort by scientists to communicate often leads to misinterpretations and rumours. He urged the research institutions to launch or revamp their websites. He recommended scientists to make use of social media and blogs to communicate directly with the public.

T. V. Jayan (*The Telegraph*, New Delhi) drew attention to challenges science journalists face in India. He presented statistics contradicting the general perception that science does not get enough space in the mainstream media. His analysis of coverage in key English dailies over 180 days showed that articles on science are regularly included, except most are sourced from international news agencies. This is the reason behind Indian newspapers not reporting enough about Indian scientists and their work, he said. Hostile bureaucracy, classified documents and a non-cooperative scientific community add to the difficulties of journalists according to Jayan.

T. V. Padma (formerly at *SciDevNet* South Asia, New Delhi) spoke about the role of internet and websites in science communication, using *SciDevNet* as an example. When *SciDevNet* was founded there was no international platform covering development-related science issues, she said. Internet was emerging as a major medium of communication in many countries abroad and 'we had to catch up sooner or later'. Internet has changed the way science journalists work

and opened up opportunities to attend events happening elsewhere through webinars and live-streaming, she added.

Prabir Purkayastha (*NewsClick*, New Delhi) spoke about how science learning in the country is a dry pipeline today. Measures need to be taken to renew people's interest in science. For one, the scientific community has to be more transparent, as not giving out sufficient details causes distrust among the public. The press should too take some responsibility, that of bringing science to the public with the same zest with which it brings them political news.

Sandhya Sekar (Gubbi Labs, Gubbi) persuaded science communicators to use social media, a 'cheap way' to reach out to audiences regardless of location, age and gender. There are several social media tools that one could use depending on individual needs, such as Twitter, Facebook, Google+ or Youtube. There are others like Mendeley, Academia and ResearchGate for scientific collaborations. However, Sekar cautioned that one must maintain distinct professional and personal spaces on social networks.

K. VijayRaghavan (Department of Biotechnology, New Delhi) in his closing note said that the problem with science and its communication is that science is not embedded in our culture like music or theatre. While chairing the closing session, he welcomed suggestions to chalk out a roadmap for science communication. The participants called for a press office at every institution. The need for a central online science news service for India was also mooted. It was said that science communication courses, which currently do not lay emphasis on the journalism aspect, should be revamped. Scientists should be briefed on how media works and journalists introduced to hands-on laboratory science for a peaceful co-existence.

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