CURRENT SCIENCE

Volume 116 Number 8 25 April 2019

GUEST EDITORIAL

India needs more policy research

Some months ago we were discussing the need for policy research with the founder of a well-known hospital in Bengaluru. He commented that we do not even know how many doctors are practising in the various specialities in India today. It is clear that this basic information would be helpful for any systematic effort to increase the number of specialist doctors, increase their availability more uniformally across the country, decide on where more training could be organized, and so on. However, there are no data on which to build a well-thought-out plan. This is the case with many domains, and although here we focus on the biosciences, our conclusions are more generally applicable.

Like the example above, there are many questions that remain unanswered or only partially answered: How can we enable the brightest scientists to make groundbreaking discoveries? What is the prevalence of various rare diseases in the different states? What would enable industry to become a regular source of innovation that has large medical impact? What are the mechanisms by which communities protect their local biodiversity? And so on. Science and technology (S&T) are important forces for the well-being of society, but to harness their power it is insufficient to simply invest in and do science or build technologies. What, where, how, how much, when, by when, with whom? Policy research helps answer such questions.

Decisions taken by the Government have a huge impact on most spheres of life, and therefore, governmental decision-making should be informed by data and evidence. Whereas data is not, and cannot be, the only basis for adopting a particular course of action, without it, the decision is likely to be sub-optimal or erroneous. Science involves a process of systematically collecting data by a defined process, which can be replicated by others. The scientific method is thus best suited to collect data for policy making as well. The fact that this method is underutilized is often lamented, as in an editorial in *Science* last year (Maxon, M. E. and Alberts, B., *Science*, 2018, **360**, 9); and many politicians are well aware of this. A former British Member of Parliament has said that he became obsessed with this idea of evidence, constantly asking people who told him that their proposal was good or that another idea was bad, 'Where's the evidence to support your conclusions?' (Mullard, A., *Nature Med.*, 2011, **17**, 11).

Over the years there have been various efforts to address this lacuna. The above-mentioned editorial in Science discusses a S&T Policy Fellowship Program set up in the United States in 1973. Through this programme, thousands of professionals, qualified in science, engineering or medicine have worked for the Federal Government, and many of them continued to do so after the fellowship ended. More recently, a similar programme has been started in California, serving the needs of the State Government. From an initial rocky start, today these fellows are much in demand by members of the Legislature. In fact, the perceived value is so high that philanthropic organizations are supporting the programme.

Coincidentally with the increased demand for policy research, students around the world are seeking careers different from traditional academic or corporate careers (Cavusoglu, A.-H. *et al*., *Nature Biotechnol*., 2018, **36**, 387–390). A recent article on this subject laments the current crisis-type situation, wherein India produces about 6000 Ph Ds annually, but is able to provide suitable employment to less than 2000 of them (Pradeep, T., *The Hindu*, 20 September 2018). Just as many graduate students in the US are searching for careers different from mainstream academics, events organized at some of our national laboratories tell us that this phenomenon exists in India as well. Start-ups, industry, policy research, science journalism, grant organizations, academic administration, science education, intellectual property and technology transfer – these are some of the careers that S&T students are considering. Policy research therefore has a potential pipeline of interested students, should suitable training be available.

India does have a few research centres in the broad area of policy studies with relevance to the biological sciences. There are, of course, broader public policy centres too. However, their numbers are woefully small. Further, the training at most of them would be either through short courses, on-the-job training of research assistants, or through a Ph D programme. There is hardly any systematic training at the postgraduate level. On the one hand, we use the term 'bioeconomy', which captures the enormous potential of biotechnology and allied areas to impact lives and the economy. On the other, there are hardly any programmes to train young people to do policy studies in this area. We are making an effort to address

this lacuna with our novel Postgraduate Diploma in Bioscience Policy Research, offered in collaboration with Takshashila Institution (http://ibab.ac.in/biopolicypgd/). Unique to the course are angles rarely combined, i.e. both the collection, synthesis and evaluation of data, and understanding policy frameworks and economic reasoning.

Any good postgraduate training must go hand in hand with research, and this is true in the policy domain too. For policy researchers to flourish they must be brought together in a rich academic environment where there are more of their kind. They must have access to data, and there needs to be manpower dedicated to collecting or analysing these data. Also, data relevant to policy research come in many forms. There is a telling cartoon (pers. commun., past Head of R&D, Novozymes India) of information as an iceberg. The tip of the iceberg holds 'IP/patents, products, company news, publications', which is information that you can Google and obtain. The submerged portion holds 'opinions/ideas, know-how/knowledge, referrals, networks, unpublished data, world-wide trends, possibilities in unexplored emerging regions', which is knowledge accessed through people. One needs a systematic way to access both parts of the iceberg. Given the nature of the work, collaboration with practising educationists, basic researchers, medical doctors, industry professionals, government officials and others will be essential to the fruitful conduct of such research.

A sample of government initiative in a similar area is again provided by the US. 'In 1970, the US government chartered the ... (institute), ..., to serve as an independent counsel on issues concerning health policy. Today, the (institute) has become a leading adviser on an array of topics from vaccine safety to the organizational structure of the... . The institute has nearly 1,600 members who carry out studies, conduct workshops, hold public forums and publish influential reports' (Nair, P., *Nature Med.*, 2009, **15**, 474–475). There is a lot of work to do, and therefore a lot of people must do it.

Although this may sound relatively simple, there are several challenges to being a scientist-turned policy researcher in India, and we summarized them a few years ago (Saberwal, G.., *Nature Biotechnol*., 2014, **32**, 106–107). We wish to particularly emphasize the issue of funding, since much can be done with sustained support. Over the years we have asked several Indian policy academics where they obtain research funding from, and a common refrain is 'the funding environment is poor'. Several of them point us to foreign funding agencies, some of which would require international collaborations. It is startling that a country of our size – which faces myriad challenges and can anticipate facing many more – does not value policy research enough to provide adequate funding for it.

The strongest policy research enables true insights into behaviour, processes and systems. Even setting aside the issue of personal data, such research might bring to light data that people are uncomfortable with being disclosed, and this could lead to pressure to alter or suppress these data. The mere possibility that such data may be obtained could also lead to pressure to alter the questions that researchers pose. This is a common concern amongst policy researchers, as illustrated by a couple of examples. '... political interference with scientific inquiry is dangerous if it serves to suppress the examination of particular questions, to prevent the publication of data that may be controversial or to stop investigators from interpreting data in ways they feel are scientifically appropriate'. (Editorial, *Nature Med*., 2013, **19**, 507). One could substitute 'political' with 'corporate' or 'international' or any of various other words. Another example concerns a multilateral organization. 'Specific countries will be unhappy with figures that the (organization) or another agency are suggesting and put marked pressure to have them changed or to modify them. This happens all the time' (Schubert, C., *Nature Med.*, 2009, **15**, 1104–1105). If this is happening at such a high level, one can only imagine how much it must be happening at lower levels.

Policy research centres must be able to resist such pressure, be it from Government, industry, philanthropic funders or any other body, in the questions they ask, the conclusions that they draw and in the dissemination of their findings. They must ask questions free from any external pressure, and then generate comprehensive and accurate data that will help answer those questions. They must be fearless in coming to the correct conclusions dictated by the data, even if such conclusions displease some. They must desist from accepting funds from any source that is likely to exert any pressure to alter the outcomes. An assured stream of funding, for at least the core of their activities, would also help the policy research centres to resist such pressure and therefore fulfil their mandate. Apropos this issue, a prominent business school in the US supports its faculty and their research from internal funds, and essentially does not let them accept money from anywhere.

We are abysmally ignorant of facts required for rational policy making in many areas. It will take significant effort, by large numbers of people, over many years, to have a system where decision making – at various levels – is adequately informed by data. However, if these efforts lead to a better utilization of our resources, and to the larger well-being of the nation, their purpose will have been served. Let us support more policy research.

H. S. Subramanya*
Gayatri Saberwal*

Institute of Bioinformatics and Applied Biotechnology,
Biotech Park, Electronics City,
Bengaluru 560 100, India
*e-mail: hosahalli_s@ibab.ac.in
*e-mail: gayatri@ibab.ac.in