

readership and spreading of knowledge was another cause. Rapid advances of the internet, and its easy availability have fuelled this. The term 'predatory open access publishing' has gained currency. This came into existence by the pioneering work of Jeffery Beall, a librarian at the University of Colorado, USA⁶. Some of these types of journals falsely claim indexation. He compiled a list of such journals, which is ever expanding⁷.

Most of the journals have streamlined the procedure of submission, reviewing, editing, etc. Many journals now require on-line submission of manuscripts. The author has the option of suggesting a list of reviewers. Further, the opinion of the reviewer is to be given in the stipulated format. The author can view the comments and reply to them on-line. All these are time-bound. This contributes to elimination of arbitrariness at different levels to a large extent. Nevertheless, abrasions do occur as shown earlier.

How does a reader decide what to read? This is a complex issue and depends on many factors which include the interest of the reader, relevance to his/her

needs/utility, familiarity of the author, topic, etc.

Doctors who do not write articles, a majority, have vast accumulated experience. Even if they communicate their experiences, they get rejected by journals due to poor sampling, methodology, write-up, etc. and thus much practical way of dealing with cases is lost.

Though the avowed objective of all – authors, editors, reviewers, journal publishers and readers is dissemination of knowledge and scientific advancement, the individual agenda may not be that lofty. In the game of one-upmanship the reader is the least and last priority, both literally and figuratively. In these days of opinion manipulation, consumerism and self-seeking experts, the readers are saddled with material that he may not need and appreciate.

So the author has to be careful in selecting the journal for his work, so that it does not end up in a predatory journal. The reviewer, without compromising on the quality, should take a holistic view without being unduly critical, before recommending rejection of an article. The

editor should be proactive and check the irrelevant comments of the reviewers. The reader should use discretion and select journals that are good and not go by some unknown indexing agency. The established journals should take measures, so that the authors are not driven to predatory journals. Then the avowed objective of all will be achieved.

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Science, Technology and Innovation Policy 2013 of India and informal sector innovations

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This commentary discusses the Science, Technology and Innovation Policy 2013 of India in relation to the bottom-up 'informal science'. The main intention is to see how informal innovations or informal ways of knowledge generation in the informal sector are dealt with in the new policy document. Informal economy or informal sector, which constitutes a staggering 94% of India's workforce, forms the main source of employment and livelihood. However, neither the current Science, Technology and Innovation Policy document nor any other innovation literature proposes a comprehensive policy framework that leverages the strengths of informal sector innovations.

'Innovation' has been cited as one of the key factors imperative for development and especially for competitiveness. It no doubt plays a decisive role in the survival of business firms and is rightly recognized as a major component in the economic growth¹⁻³. Despite its benefits, the term innovation is poorly conceptualized and its definitions ambiguously worded. Whatever the definition, the fact is that the activity of innovation takes place in a complex system whereby different knowledge sources and different factors contribute. To put it precisely,

innovations are context-specific and the systems of innovation are embedded in different institutional environments. The 'local' dynamics and difference in the institutional make-up shape and influence the overall innovation process⁴⁻⁶. Cultural, geographical, legislative and regulatory environment of a place can either impede or help advance the process of innovation⁷. Keeping in view the importance of 'local institutional dynamics' in the overall innovation process, we attempt to examine the current Science, Technology and Innovation Policy (STIP)

of India and in particular its claim on 'country and context-specific paradigms of innovations'. More precisely, we attempt to take a close look at how local ways of solving problems or informal innovations are dealt with in this policy document.

New paradigm of innovation

STIP 2013 of India was unveiled at the Indian Science Congress held at Kolkata by the Prime Minister Manmohan Singh. The STIP document, which talks of new

'innovation paradigms' and highlights the significance of 'context specificities', is explicit in claiming that 'Science, Technology and Innovation for the people is the new paradigm of the Indian STI enterprise' (p. 3). Furthermore, terms like 'fresh perspectives' on innovations, 'inclusive innovation' and 'new structural mechanism' are also used though not explained in the document. STIP 2013, unlike the Science and Technology Policy (2003) and the Technology Policy Statement (1983), gives little or no attention towards the bottom-up 'people's science', informal innovations and indigenous, traditional technology. Open innovations, user innovations and community innovations, which otherwise are recognized as a major source of innovation⁸⁻¹², find no mention in the policy document. The focus of this policy document lies elsewhere. The policy document of 2013, extolling 'lab science' and STI mode of learning, claims that the 'national S&T enterprise must now embrace S&T led innovation as a driver for development' (p. 2). It further mentions that the 'policy guiding vision of the aspiring Indian STI enterprise is to accelerate the pace of discovery and delivery of science-led solutions for faster, sustainable and inclusive growth' (p. 17). This statement drawn from the first Scientific Policy Resolution of 1958, reaffirms India's stand towards 'big science' and her commitment of providing 'reasonable material and cultural amenities and services to every member of the community' using modern science and scientific approach.

Why only STI mode of learning?

The important question raised here is why so many groups with fervent arguments in favour of STI mode of learning and 'formalized' lab science, when actually informal learning is a norm and informal economy has pushed India into a cobweb that clutters it up? Why the rhetoric of 'science-led solutions' and 'inclusive growth' is reverberating in India, when the real output and performance of STI institutions have gone down compared to the neighbouring countries? (Note 1). The main reason is clearly delineated by Krishna¹³, who argues that India still follows the 'dead model' of innovation proposed in 1945 by V. Bush. And, contends that the recently released STIP document is just a further manifes-

tation of the obsessional attitude of the government towards the underlying idea of a 'linear model of innovation': linear model of innovation according to many scholars is over simplistic, mechanistic, or simply blatantly wrong¹⁴. Some important links that help develop a robust STI system are missing in the whole of the STIP report. Similarly, Abrol¹⁵ questions the overall focus of the policy, and maintains that the policy document is solely developed to support 'structural innovation' and there is no mention of how to transform the whole innovation system.

Knowledge generated in the informal sector especially tacit and localized by 94% of India's working population is completely excluded from the purview of this policy report. There is no mention of the rich innovative potential of India which is otherwise hidden in the informal sector. Once again, informal sector innovations are largely ignored and the Government of India seems oblivious to the benefits of informal knowledge. However, this is not for the first time that informal innovations or subaltern way of producing local solutions are ignored at the highest policy-making office of India. Jain and Verloop¹⁶ found that India's S&T policy has always prioritized research and development (R&D) for new innovations that may solve problems in rural areas and has ignored all innovations that already exist in the rural areas. They further reflect that 'the dimension of R&D on existing innovations in rural areas is not part of the S&T policy. The view of socio-economic spaces divided into rural and industrialized or industrializing spaces inherent in the S&T policy has been carried over into the innovation agenda'.

New policy and informal sector innovations

At a time when a new innovation paradigm is replacing the older ones, complex process of innovation is getting democratized; closed innovation models are breaking up and user-driven innovations are recognized as vital tools of the innovation process. At the same time the STIP of India is unfortunately drifting aimlessly from the 'major' and 'new' sources of innovation and invention.

The 7-month-old STIP report has not made even an indirect reference towards informal means of knowledge generation

or towards small and medium-sized enterprises (SMEs) operating below the state radar, when the fact is that more than 94% of India's workforce is engaged in the informal sector¹⁷. The unincorporated private enterprises mostly owned by individuals or partnerships (communities) and in law or in practice, not covered by formal arrangements¹⁸ are rich sources of innovation. Konte and Ndong¹⁹ thus rightly argue that the informal sector which first appeared as a 'temporary anomaly', has perfectly established itself in the society and is becoming a major source of employment.

The mammoth population of 420 million people, who are engaged in the unorganized sector in India, out of which 140 million are women, is thus ignored in all policy-making processes. This sector has tremendous innovative potential and rich experience of turning trash into treasure¹⁹⁻²¹. Although informal innovations are much less glamorous, their cumulative value and other benefits both social and economic are high²². Interesting examples can be found in the database created at the National Innovation Foundation (NIF), Ahmedabad, where more than 170,000 innovations, herbal and traditional knowledge practices are documented. But, how does one incubate, develop and generate value from such innovations? The current STIP has no satisfying solutions to such vital questions. Gupta²³ rightly argues that India has no robust system of empowering innovators and innovations emanating from the bottom of the economic pyramid and reflects that 'despite 400 million cell phones sold in India in the last decade, India does not have even 40 applications for empowering knowledge rich, but economically poor people'.

National Innovation System and STIP 2013

Knowledge generated by more than 600 SMEs and 3500 artisan clusters in various Indian villages and suburban areas requires different and separate policy treatment and government support; documents like STIP 2013 hardly capture its nuances. Precisely, the knowledge generation mechanism, appropriation, motivation and the system of innovation in these clusters are far different from that of the formal STI institutions²⁴. The National Innovation System (NIS) concept developed by Lundvall²⁵ and its whole-

sale implementation in a narrower sense in a country like India, without actually understanding the local dynamics of knowledge and the direction of knowledge, will prove counterproductive. NIS mainly deals with the institutional arrangements which favour the requirements of big, formalized firms where innovations are more or less well-planned and budgeted. Lundvall himself would argue that ‘narrow definitions of the national innovation system are of limited relevance when it comes to understanding the problems of less-developed countries’. Similarly, Altenburg²⁶ argues that innovation systems in the developing world are quite different from those of the developed countries, and maintains that the institutional frameworks which support innovations are less formalized and rules are less enforceable in the developing countries. NIS therefore has little or nothing to offer for the informal sector and informal sector innovations. Hence, one can argue that the main aspiration of the new policy document for creating a ‘robust National Innovation System’ without even defining ‘innovation’ and the ‘local context’ is misleading.

Conclusion

The current policy document of India on STI which has set high ambitions and lays greater thrust on innovation, establishing research institutions and creating a robust NIS, has little value for the informal knowledge mechanisms. The policy document which aims to position India among the top-five scientific powers in the world by 2020, blurs the distinction between reality and fantasy. It is therefore right to argue that the slogans ‘Science, technology and innovation for the people’ and the so-called ‘new innovation paradigm’ reflected in the policy document can be contested and are equally romanticized – simply because the political environment and other important paraphernalia considered important for a vigorous innovation ecosystem support informal ways of knowledge production in India. The steadfast attitude of the government on STI mode of learning needs to change. A new strategy/policy is needed – one that leverages, recognizes and harnesses the innovative potential of the informal sec-

tor economy. But, policy makers of India need to proceed with extreme caution because ‘formalization’ of the informal sector without understating its ‘specifics’ might prove to be counterproductive.

Note

1. Recently published ranking of the world’s most innovative countries by *Economist* (2009) and the Global Innovation Index (2013) highlights the innovative potential of India’s formal sector institutions and places the country at no. 66 much below than China (35), Malaysia (32), South Africa (58) and Uruguay (52).

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ACKNOWLEDGEMENTS. I thank the Centre for Studies in Science Policy (CSSP), Jawaharlal Nehru University (JNU), New Delhi for providing the necessary research facilities. I also thank my supervisor Dr Sarindhu Bhaduri (JNU) for valuable comments and suggestions; Ms Bibi Ishrat Hassan, Jamia Milia Islamia for editing the manuscript. I also thank Mr Danilo (Mexico), Prof. Mammo (South Africa), Prof. Fred Gault (The Netherlands), Dr Hemant, Mr Sohan, Mr Muzaffar for their useful comments.

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