Falling standards of research in India

Many readers have expressed their opinions in *Current Science* about the falling performance of researchers in India. Since it is an ongoing discussion in the journal, I would like to present here some points about research in India.

(i) India's scientific manpower is large in number. Similarly, the number of institutes is also large. But the quality of research is found to be poor in comparison with those of Europe and USA. It is reported[1] that the number of publications (in refereed journals) from India decreased during the past 15 years. This is not a situation which can be changed within a few years or by some administrative restructuring alone. Along with administrative measures, scientists themselves should change their views and ways about research, development, society and life.

(ii) In all institutes we find different types of scientists. There should be effective ways of assessing and grading them, rewarding each with what they deserve. This does not mean that the present career-development schemes in various organisations are bad. But this is an area where staff and procedures can easily get corrupted. Hence career-development schemes are to be reviewed at least once in ten years.

(iii) All types of outputs like research papers, research reports, popular articles, radio and television presentations, etc. are to be properly credited for various assessments and promotions. These items contribute at different intellectual levels to different target groups. If papers with high impact factors (IF) are only taken seriously by working scientists and managers, it would accelerate the fall of Indian research. The norm should be 'a paper is worth its contents first'. But it is desirable to encourage efforts to publish in journals with high IFs. This is like letting athletes participate in international meets. In the National Institute of Oceanography (CSIR), authors of papers in journals with high IFs are given bonus money, for institute use, at the rate of Rs 10,000 per unit IF.

(iv) Scientists can be grouped depending on their creativity into (a) pioneering (b) ordinary and (c) managing or leading. India has to increase the number in the first group. The main reason for poor performance of research institutes in India is lack of pioneers. This becomes clear if one looks into the number of awardees in the CSIR New Idea Fund. From 1995 to 2002, only 12 scientists were able to get approval for their projects in this scheme, i.e. 1.5 persons per year from a group of about 5000 scientists.

(v) India might be the only nation where one can see over half a dozen scientific mega-organizations like CSIR, ICMR, ICAR, etc. CSIR has about 40 research institutes with about 21,000 workers. This size automatically brings in no management or mis-management. CSIR can be regrouped into at least six research organizations for physics, chemistry, biology, etc.

(vi) With the present situation in CSIR, it is difficult for the director of an institute (with about 500 workers) to find enough time and energy to manage research, attend to various meetings outside the institute and to satisfy calls from the government. Hence, the top position can be partitioned into two, viz. one director for all the administrative works as the CEO and another one for research-related works only, under the CEO.

1. Arunachalam, S., *Curr. Sci.*, 2003, **85**, 1391–1392.

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Misleading comment on Vedic wisdom

Bhatia in his comment[1] on an article[2] uses the recorded famines of the Indian sub-continent from 436 BC to 1962, presented in table 1, to assert that the traditional agriculture based on Vedic wisdom 'was not able to feed even less than one-fourth of the present population of India', and 'cannot feed the present population of billion plus'. A simple analysis of the table in his note shows that (i) Out of 16 famines from 436 BC to 1962, 13 occurred in a period of 250 years from 1700 onwards. (ii) There is no recurrent periodicity of famines, rather there is a clustering around a time. (iii) Instead of listing the number of famines, it would be more reasonable to specify total number of years under the famine. It is easy to calculate that as compared to 19 famine struck years for the period between 1700 and 1962, there were only 25 such years during the whole period prior to 1700.

Obviously he interprets the data erroneously, and therefore even if one assumes that agrarian tradition before the Green Revolution was based on the Vedic wisdom, and no other factors like colonization of India played any role, his conclusions are misleading and untenable. He overstates the case of Green Revolution if we note that within few decades the shortcomings have been much more as compared to benefits. Finally let me quote from ref. 2: 'Technology should serve mankind and not vice versa', and invite the readers to ponder over the suggested long-term measures with open mind.

1. Bhatia, C. R., *Curr. Sci.*, 2003, **85**, 1252–1253.
2. Tiwari, S. C., *Curr. Sci.*, 2003, **85**, 578–581.

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