

Hopes are raised. Better times ahead for the community of scientists and technologists?

Every year at the Indian Science Congress the speech of the Prime Minister of India is eagerly awaited. This year, the Prime Minister Atal Bihari Vajpayee's speech at the 89th Indian Science Congress at Lucknow University, held during 3–7 January 2002 has raised hopes of the scientific community and shown the directions in which we are likely to move in the future.

Here are some excerpts from the Prime Minister's speech:

Science and Technology (S&T) is a critical input for India's all-round development. India's S&T capabilities have brought important intangible benefits to our nation. These capabilities give Indians a high degree of self-confidence. Vajpayee spoke of a greater role being played by scientists and technologists in policy making. He appealed to the S&T community for help in combating the terrorists who are 'trying to master advances in S&T to pose new threats to the civilized world'. We have resolved to fight terrorism to the finish, Vajpayee stated. He appealed to the S&T community of scientists, technologists and academics in countries of South Asia to join hands to fight terrorism and extremism. Also, he called upon them to collaborate in helping war-ravaged Afghanistan in its reconstruction efforts.

Vajpayee described the other challenges and tasks before the scientific community in two broad areas – higher education and R&D. Saying investment in R&D is an investment in India's future, he said at the Pune Science Congress, two years ago, 'I had announced that the Government would try to increase the ratio of total national R&D investments to GDP to around 1% by the end of the 9th Plan. I had also indicated we would go further and seek to increase the above ratio to 2% in the last year of the 10th Plan. I assure you that, in spite of constraints, we shall steadily move ahead to meet this target'.

He further added that the bulk of the incremental R&D investment should go to areas such as meteorology, oceanography, ecological recovery and environmental protection, disaster prevention and management, renewable energy and energy efficiency, new and more effec-

tive medicines for both the prevention and treatment of communicable diseases endemic in many parts of the country and conservation and sustainable utilization of our rich biodiversity. 'These were all important and promising sectors, which had not received enough attention so far,' he added.

On investments in the areas of agriculture, agricultural infrastructure and agricultural research, he said 'it was a matter of concern that, over much of the last decade, public investment had declined'. The Prime Minister noted that we need to step up our R&D efforts in achieving higher yields both on arid and irrigated lands, pest resistance, water and soil conservation, saving in use of fertilizers and prevention of loss and wastage. Attention would also be given to 'making our Eastern and North-Eastern States the new food baskets of India'. He said that he would ensure that plan outlays for agricultural research in the 10th Plan are large enough in order that agricultural production systems could 'return to their high growth path'.

With regard to biotechnology, Vajpayee said what we need is 'responsible biotechnology' which does not expose our ecology and society to major risks. He also said 'we need a "responsive" regulatory and enforcement mechanism' and stressed that we must also take care that 'the benefits of biotechnology reach all our people quickly'. Who will do research on using new biotechnological tools for dryland crops such as millets? It is we in India who need to take up this challenge, he reiterated.

'We must make every R&D rupee yield more.' There is a view, he said, that there is insufficient inter-agency and inter-laboratory communication, coordination and collaboration. 'This shortcoming should be removed.' He also stated that he was aware of a large number of organizational and administrative hurdles in the Government, which prevent optimal use of public R&D resources. 'Bureaucratism is an enemy of a result-oriented approach, and must be shunned, for it demotivates our scientific talent and compels our best professionals to spend their time and energy on unproductive matters.'

Vajpayee said he had called upon the Principal Scientific Adviser to the Government, R. Chidambaram and the Scientific Advisory Committee to the Cabinet (SAC-C) 'to undertake a comprehensive study of such problems and come up with changes in policies, practices, and procedures which will create a liberal, flexible, and motivating environment for R&D, not only in our Government agencies but also in our academic institutions'. 'I assure you that the Government would consider their recommendations with utmost seriousness', he added.

Speaking of the role of the private sector, he said 'the latest figures of R&D investments by industry continue to be dismal'. Quoting figures he stated that 'the R&D expenditure of a significant part of large-scale industry is currently running at no more than 0.7% of sales. The pharmaceutical industry alone has shown significant improvement in this regard over the nineties, with their R&D to sales ratio currently running at around 2%.

In order to raise the levels of S&T spending, he said that Indian industry must, in its own interest, start to contribute its due share. In countries such as the United States of America, 80% of the scientists are employed in private industry. 'Our proportion is just the reverse'. He felt a strong need to build public-private partnerships, 'by which the resources of Government R&D establishments, including where necessary, our Universities, are directly and profitably harnessed for industrial R&D'.

Vajpayee said, 'given the enormous pool of scientific talent in the country, policies need to be developed for attracting Indian private, as well as foreign direct investment in the R&D sector, so that R&D services comprise a growing proportion of India's expanding and globalizing service sector'. He called for the S&T community for working, in particular, with the Ministry of External Affairs to 'increase awareness to the rest of the world about the availability of India's scientific capacity'.

He admitted that R&D in our University system is not receiving as much attention as in specialized agencies and laboratories. 'Creative universities are

the bedrock of every developed nation's S&T strategy', he said, adding that, 'it is a matter of concern that science departments in India's vast university system have suffered greatly due to lack of investments, both in materials and in terms of faculty'. For reversing this, he suggested encouraging collaboration between the universities and local private industries. If necessary, this can be supported by seed money from the Government. About the alarming decline in the number of talented young students opting for science as a career, he emphasized that 'we should lose no time in addressing the

many complex issues of higher education in India'.

Vajpayee stated that one of the most neglected areas of our S&T strategy is 'increasing and enriching the inputs of S&T knowledge in the vast informal and unorganized sector of our economy'. He said that there was a 'big need and an equally big scope to appropriately take the fruits of the formal S&T establishment to our carpenters and vegetable vendors, to our electricians and construction workers. When this happens, India will see a dramatic surge in quality, productivity, and efficiency in every area

of our economy'. 'We must take science to the people.' Quoting Pandit Jawaharlal Nehru: 'Scientists are a minority in league with the future,' he reiterated that 'a bright future can be realized only when science is in league with the majority of our society'.

Vajpayee hoped that the thoughts and concerns he had expressed would be 'spelt out in sharper detail in the new National S&T Policy document' that is in the final stages of preparation.

Nirupa Sen

Keeping Indians healthy: Some issues

'Health Care' was one of three themes at the recently concluded Indian National Science Congress in Lucknow. The other two themes were Education and Information Technology. The desire for good health has been a goal since time immemorial, with society constantly striving towards it.

In an evening lecture, 'Health: The Goal Forever' M. S. Valiathan (Manipal Academy of Health Education (MAHE), Manipal) spoke of the importance of 'well-being'. This he put ahead of 'freedom from illness'. All ancient civilizations had laid emphasis on the necessity for preventive care. An ancient Indian greeting when translated from Sanskrit reads 'May all be well with you'. This shows the importance attached to health, said Valiathan. A great deal had been achieved in the last fifty years; however, everybody is dissatisfied with the health care system and there were several complaints.

Valiathan categorized the ills of the system as having 'three diseases'. The first, was the problem of access. Due to the paucity of infrastructure at the primary and secondary health centres, people had no option but to flock to tertiary facilities, such as large hospitals. The solution for this was not by raising allocations for health care or by transferring health care to Panchayati Institutions. More than this was needed. India had to attack the problem 'head-on' with a new approach. He suggested that patients must pay for items like gauze, dressing, etc. and a good insurance system should

be put in place. Primary health centres that presently lay emphasis on family planning should also focus on alleviating common illnesses which constitute 90% of the needs in health care, he added.

The second problem was that of quality. Valiathan said there was a lack of quality in medical education and hospital care. He stressed that quality must improve. For this, accreditation and internationally accepted standards must be laid down for health care in the country. The third disease was lack of 'innovation'. Health care depended on instrumentation, technology and biotechnology products. India is presently importing 90% of these requirements. He cautioned that in the future 'medical procedures' could be patented and he wondered where it would leave us. There was a need for tremendous innovation in view of WTO and IPR regimes. He said innovation had been accomplished in the past, citing examples such as the Green Revolution, White Revolution and Missile Technology development. Danger was staring in our face in the area of health care. There was a perceived necessity for the innovative spirit to be activated in health care-related areas, he added. Above all, having self-confidence was of the essence. Citing a story of how a tiger cub was raised amidst the sheep and therefore lost its identity, he said, 'many of us are bleating tigers, we need to recognize ourselves now'.

In the plenary session, 'Health Care: Reaching the Unreached' N. K. Ganguly (ICMR) pointed out there was a great

divide between advances in science and technology and health care. He emphasized that advances made in areas such as molecular biology etc. had not reached the health care system in the country. He said there was need for health sector reform on a massive scale. He hoped that the proposed new S&T policy document would link S&T to the social sector, or else, he cautioned 'we will not reach the target'.

B. M. Hegde (MAHE, Manipal) in his talk 'Health Care vs Medical Care' said that emergency medicine constituted only 10% of the sick population. Only this needs modern hi-tech medical and surgical care. 'Rest of them could make do with conventional traditional systems of medicine coupled with "changes in the life style"'. He drew attention to basic problems such as lack of toilets in rural areas and of sanitation in cities. There was a necessity to empower people, especially the women and explain the need for nutrition, toilets and clean drinking water through a comprehensive village development plan.

In his talk, 'Primary Health Care in India: Will Information Technology (IT) really make a difference', R. D. Lele (Jaslok Hospital, Mumbai) explained the role of a hospital as a 'Health Maintenance Organization'. In this concept the hospital would provide health check-ups and health-related advice to subscribers ranging from antenatal care to various health conditions. The family as a whole would be treated and their medical records of allergies and past illnesses main-