PM addresses Indian Science Congress

India Blooms News Service

Jammu, Feb 3 (IBNS) Following is the text of Prime Minister Manmohan Singh's address at the 101st Indian Science Congress in Jammu on Monday:

"I am delighted to be part of the very first Indian Science Congress session to be held in the State of Jammu & Kashmir. I thank the General President of the Indian Science Congress Association, Professor Sobti, for his initiative to bring this premier congregation of scientists for the first time to the state of Jammu & Kashmir. Their presence here is a vindication of our commitment to achieving inclusive and balanced development of our nation.

Friends, although not a scientist myself, I have always been deeply aware of the importance of science and its role in the development of our nation. I belong to a generation which drew its inspiration from the life and work of Jawaharlal Nehru, our first Prime Minister, who asked at the dawn of independence: "Who indeed could afford to ignore science today? At every turn, we have to seek its aid ... The future belongs to science."

This is the tenth time that I have had the privilege to address the inaugural address at the Indian Science Congress. I do believe that, over these ten years, science has grown in strength in our country. Together with the scientific community represented here today, our government has worked hard to promote the use of science and technology as a key driver of development. As Panditji might have put it, "we have redeemed our pledge, not in full, but very substantially".

The 2013 Science, Technology and Innovation Policy reflects our ambitions and outlines our broad approach. We have strengthened the research and academic base of the country as a critical foundation to achieve these goals. We have also taken a number of measures to make a career in science more attractive. We have worked to create a synergy of academia with research, research with industry, industry with economy and economy with the well-being of our people. All this has made our progress in science in the last ten years very substantial.

Our ability to contribute to the world of science depends crucially on the quality and the strength of our educational system. Science education in our country requires much more attention. In the next few years, we will have the largest young population entering higher

education. We must find, therefore, ways and means of encouraging them to take up the right path that will provide them not only productive employment but also excitement in their profession. We need to ensure that the best among our young people take up science as a career and to do this we must ensure that it is attractive enough for them to do so.

This would require greater support for education both at school and university level. We are succeeding in expanding quantitatively at both the school level and in the higher education. The Gross Enrolment Ratio in higher education has more than doubled in ten years and now stands at 19 percent. However, we must recognise that the quality of education being imparted needs much more attention.

The five Indian Institutes of Science Education and Research we have created have added a new dimension to excellence in the cause of science education. We have also established eight new Indian Institutes of Technology and converted an existing institution into an IIT. Access to education in these high-calibre institutions has more than tripled in ten short years. This is a significant development.

I am also happy to say that there is evidence of rejuvenation of research in Indian universities. Global surveys this year have put Punjab University at the top of Indian institutions of higher learning. Government departments like Space, Atomic Energy and the Council of Scientific and Industrial Research have taken important steps forward to establish academies and build backward linkages with our universities in the last ten years, thus enabling cross-fertilization of ideas.

To do science, someone must pay for it. We must increase our annual expenditure on science and technology to at least 2% of our GDP. This has to come from both government and industry. In countries such as South Korea, where a high percentage of the GDP goes to science, the contribution of Korean industry is indeed very significant. I am happy to say that our Department of Biotechnology has activated private public partnerships in R&D in biotechnology. I appeal to the corporate sector to join hands with the government in realizing the goals that we have set for more our nation.

A few years ago, at the Science Congress in Visakhapatnam, I announced a new scheme to attract talent into science studies and research. This scheme, known as INSPIRE, has today emerged as one of our Government's most highly acclaimed and recognized programmes. It has rewarded more than one million children and generated over 400 patent-grade innovations from our young Indians.

A major research funding organization, the National Science and Engineering Research Board, has just started functioning. This Board is managed by scientists and it has simplified funding procedures. We expect much more from it in supporting individual scientists as well as groups of scientists in creating small units devoted to crucial sectors at the very frontiers of science.

Some of our mission-oriented agencies have truly done us proud. This was evident most recently when our Geo-Stationary Launch Vehicle, powered by an indigenous cryogenic engine, soared majestically into space a month ago. I congratulate our scientists in ISRO for having mastered the technology of liquid hydrogen rocket engines. The launches of our Moon and Mars Missions are testimony to the giant strides we are now making in Space for which our Space Scientists deserve genuine credit.

India currently occupies an enviable position in the field of atomic energy and high-energy physics. Indian nuclear scientists are attracting global interest in their effort to develop a Fast Breeder Reactor. I expect the prototype under construction in Kalpakkam to be completed this year. It will be a great day for Indian science and technology because we will be one of the few countries in the world with leadership in a completely new area of nuclear technology that can contribute non-polluting electrical power.

Our advances in meteorology were evident during the recent cyclone in Odisha, when we received accurate forecasts of the landfall point that were more accurate than the forecasts of well known international bodies. Our decision to set up a new Ministry of Earth Sciences following the Indian Ocean Tsunami in 2004 and to invest in world-class tsunami forewarning systems in 2007 has been amply rewarded. We now have the ability to issue alerts within 13 minutes of a tsunami-genic event. This has established India's scientific leadership in the Indian Ocean region.

I would also like to see continuous improvement in our monsoon prediction capability through the recently launched Monsoon Mission so that we avert the kind of calamities that we saw in Uttarakhand last year.

Recognizing the role of scientific inputs for accessible and affordable healthcare programmes, our Government has established a new department for Health Education and Research. Efforts to discover drugs for neglected diseases are beginning to bear fruit. A Rota Virus vaccine, a new drug for malaria and many other leads emanating from collaborative research are all reassuring developments.

In the last ten years, several national missions have been launched in the emerging priority areas of electronics, electric mobility and solar energy. The Council of Scientific and Industrial Research has leveraged Open Source Innovation for discovery of drugs and found a lead for TB. CSIR has also ventured into the new world of data-intensive discovery and large data systems.

The Sixth Pay Commission has improved substantially the conditions of our academic and scientific personnel. International surveys have shown that India now scores well in terms of salary structures for scientific personnel. Our gross expenditure per full time R&D personnel is increasingly comparable in purchasing power parity terms to some of the most developed R&D systems of the world.

We have also devised several ways of supporting young scientists as well as senior scientists in the last ten years. The J.C. Bose and Ramanujan Fellowships, and other similar initiatives, are intended to ensure that science is attractive as a profession, and capable individuals get adequate support for their research work.

A new initiative is the institution of 25 Jawaharlal Nehru Fellowships, under which eminent scientists anywhere abroad are invited to work in India for 12 months over a three year-period. The Government has already selected the first five Fellows. They are Prof. M. Vidyasagar, a distinguished computational biologist at the University of Texas, Prof Srinivas Kulkarni, a distinguished astronomer at Caltech, Prof. Trevor Charles Platt, a distinguished geo-scientist at the Bedford Institute of Oceanography, Canada, Prof. Srinivasa Varadhan, a distinguished mathematical scientist at New York University and Prof. Azim Surani, a distinguished life scientist at the University of Cambridge. All of them are Fellows of the Royal Society and one is an Abel medallist.

I recognise and we all recognise that the Government must also focus on creating new opportunities for our bright and socially conscious scientists. To ensure food security and to improve land and water productivity, we have to launch a national drive for an ever-green revolution. This will test the ingenuity of our agricultural scientists. Climate-resilient agriculture and modern bio-technological tools hold great promise. Use of bio-technology has great potential to improve yields. While safety must be ensured, we should not succumb to unscientific prejudices against Bt. crops. Our government remains committed to promoting the use of these new technologies for agricultural development. I urge our scientific community to increase communication and engagement with society at large in explaining socially productive applications of technology alternatives and for improving the productivity of small and medium enterprises.

I also expect our quest for affordable healthcare to be bolstered by indigenous research on biomedical engineering and other medical devices.

Our Government has invested in many areas to ensure that India remains at the cutting edge of science. I am happy to announce another National Mission on High Performance Computing with an outlay of Rs. 4500 crores. We are also considering establishment of a National Geographical Information System with an outlay of about Rs. 3000 crores. A National Mission on Teaching to enhance the esteem of our teachers is also being launched.

I am also happy to announce that India will partner the international scientific community in the establishment of some of the world's major R&D projects. In the Gravitational Wave experiment, India intends to host the third detector. A Neutrino-based Observatory is proposed to be established in Tamil Nadu at a cost of about Rs 1450 crores. India is also joining the famous CERN institute as an associate member.

India needs to leverage the ability of modern science to deliver value to society. We must also seek global leadership in at least some research and development areas. Affordable innovations for human healthcare, sustainable agriculture, clean energy and total solutions for water-related challenges are some areas where Indian science can seek global leadership.

Indian scientists have to learn from the past, they have to connect with the present, and they have to focus on the future. Our basic research must be directed to make new discoveries with innovative efforts to develop affordable solutions suited to Indian condition. Above all, our science should be a driving force propelling India as a resurgent civilization which holds out both hope and opportunity for our young citizens.

Before I close, I would like to stress on something that has troubled me for some time. I worry some time that science has not yet got its proper due in our value system. I would like science to be high in our value system so that our entire society provides both moral and material support for its development. This is not only necessary because our future depends on it, but also because instilling a scientific attitude and temper in our population is essential for developing a progressive, rational and humane society. I do hope that our scientists and educators will ponder seriously on how we can achieve this transformation in the mindset of our society.

This year, our Government selected Professor CNR Rao for the highest civilian award of Bharat Ratna. Let this be only the first step in creating an environment that gives birth to

many more Bharat Ratnas in the field of Indian science. That is my wish that is my prayer.

Thank you. Jai Hind!"

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