Achievements of Science and Technology

†*166. SHRI MANGANI LAL MANDAL: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether it is a fact that achievement and progress in the field of science and technology of India is not encouraging;

(b) whether it is also a fact that the standard and quality of research-work is constantly on the decline due to lack of essential and favourable coordination between education and research in the country;

(c) whether it is also a fact that India is even lagging far behind compared to South Korea, China and other developing countries due to decline in the standard and quality of research-work; and

(d) if so, the reasons therefor and the details thereof?

THE MINISTER OF SCIENCE AND TECHNOLOGY (SHRI KAPIL SIBAL): (a) to (d) India's progress and achievements in the field of science and technology vary in different sectors. In areas such as Space Science, Information Technology and Bio Technology, India is seen by the global community as an emerging R&D hub. The standard and quality of basic research as reflected by research papers published in SCI journals has been increasing in absolute terms over the past 25 years from 14983 in 1980 to 19448 in 2005. However the share of India as percentage of world publications declined from 2.9% in 1980 to 1.5% in 1995 and then gradually increased to 1.9% in 2005. One of the parameters measured in global science and technology for assessing the quality of publications is the average impact factor per publication. This has registered an increase from 0.748 in 1985-86 to 1.229 in 2001-02. Its share of top 1% highly cited publications also increased from 0.32 in 1993-97 to 0.54 in 1997-2001. Even the number of US patents granted to Indian inventors has been increasing—from 88 in 2000-01 to 229 in 2004-05. Other countries like China and South Korea, however, have progressed much faster. South Korea and China received private sector contribution to the tune of 60-65% of the total outlay for R&D. Public-Private-Partnership in R&D support in S.Korea and China is significant. In India, private sector contribution to overall R&D outlay is only to the tune of 25% of the total outlay. The number of scientists per thousand population in China is about 6 times

†Original notice of the question was received in Hindi.

that of India. Therefore, China may have higher quantum of papers but India does not suffer from quality shortfalls.

While centrally funded research institutions and some central universities are doing internationally competitive research, state of research in most other universities is highly unsatisfactory. Universities are the mainstay of scientific research all over the world, but, in our country, universities have been suffering because of a variety of financial and governance problems leading to, among other things, depletion of faculty, impoverishment of research infrastructure and lack of opportunities for the faculty for updating their knowledge. Most universities fall in the domain of State Governments and they need to address the problems urgently. Among other things, there is a need to increase the funding for research and teaching in educational institutions.

The Government of India, on its part, has taken a number of steps to rejuvenate and promote scientific research in universities and other scientific institutes of excellence. The Plan Allocation of scientific departments has been doubled from about Rs. 12000 crore in the Ninth Plan to about Rs. 25000 crore in the Tenth Plan. Eleventh Plan programme for science & technology seeks significant increase in the budget outlay. The Research Infrastructure programme of DST is a targeted programme to upgrade the laboratory infrastructure in universities and other higher educational institutions. Several institutions, centres of excellence and facilities in emerging and frontline areas have also been established; for example, in the areas of Brain Research, Marine Biotechnology, Stem Cell and Tissue Engineering, Soft Computing, Water Resources Development, Nanophosphors, Display Technology, Fuel Cell Technology, Ultrafast Proceses, Protein Research, etc. More recently, two new Indian Institutes of Science Education and Research (IISERs) have been set up at Kolkata and Pune which, apart from carrying out frontline and internationally competitive research, would offer M.Sc. programmes in a multi-disciplinary and academically flexible and research-oriented environment. Various agencies of Government of India have now attractive scholarship, fellowship and research support schemes for scienfitic manpower of all ages starting right from the school level.