

**Sam Pitroda**  
**Chairman**

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Dear Mr. Prime Minister,

It is widely recognised that a nation's transformation to a Knowledge and Skills Economy is critically dependent on the original research and development taking place within the country. If India is to make the transition to a Knowledge economy, it is therefore vital that research and development within the country be dramatically improved. There is ample evidence that India is not well-placed for this future transformation. For example, in many disciplines, there is already a severe shortage of well-trained young doctorates to fill in existing posts in research institutes and universities. This problem is likely to be even more acute in the envisaged elite new universities. The growth in the number of doctorates has only been 20% in India in the period 1991-2001 compared to 85% in China. Not more than 1% of those completing undergraduate degrees currently opt for doctoral studies in India, and a substantial number of students prefer to go abroad. To address these problems, there is a pressing need for urgent government policy interventions, including high priority initiatives to attract, nurture, and retain the country's best young minds in academia and research.

With this objective, the NKC conducted a wide-spread investigative survey across the country and abroad. Workshops and consultations were also held with other stakeholders from industry, research institutes and universities. The attached note on 'More Quality Ph.Ds', identifies the critical issues and discusses the remedial steps in detail. We recommend the following to improve the quality and quantity of Ph.D students in the country.

**1. Launch a national publicity campaign to attract the best young minds for careers in teaching at all levels, and also academic research** - One of the casualties of the expanding market economy has been the devaluation of the academic profession as a whole, and this is now seriously affecting the desirability of this profession. Specific measures for addressing this problem include:-

- Enhancing the prestige, social-standing and remuneration of people in the academic profession
- Systematic and targeted initiatives to unleash the potential of gifted students outside the urban population centres
- Utilisation of current technology to provide greater access to quality learning at all levels, and bridging the language gap
- Increased coverage in the media of different facets of teaching, research and academic achievements, both nationally and internationally

**2. Initiate major academic reforms in universities** -Throughout the world, universities are the natural home for the interface between teaching and research. But this is far from reality in the vast majority of Indian universities. In fact, the overall current situation in Indian universities is dismal largely due to the lack of quality infrastructure and the inability to recruit good young faculty and gifted students. Some concrete interventions for improving the situation include:-

- Urgent Regulatory reforms in Higher Education, reducing regulation while improving governance; the details have been articulated by NKC in its earlier recommendations on Higher Education
  - Greater autonomy for departments within universities to introduce new relevant courses, along with encouragement and rewards for innovation in teaching and research
  - Identifying and supporting university departments as Centres of Excellence
  - Greater flexibility and increased funding for university departments to recruit and retain good faculty from across the world
  - Periodic peer reviews of departments in the universities
  - Encouraging recruitment of capable and talented younger faculty
- 3. Implement administrative reforms in universities** – It is equally important that reforms in the administration of universities accompany academic reforms. This will ensure professional administration of universities, and help in attracting students and good faculty. These reforms should include the following:-
- Ensuring a capable administration headed by an able Vice Chancellor and Registrar; these appointments should be based on academic and administrative credentials
  - Increasing efficiency and transparency in university administration at all levels
  - De-politicisation of appointments and more administrative autonomy
  - Better systems for monitoring and maintaining the physical infrastructure, especially buildings
  - Sensitizing the administration towards academic freedom and the academic needs for a good research environment
- 4. Enable research environments in universities** - Academic reforms and better infrastructure should go hand in hand with nurturing and sustaining a research environment. Some key enablers for this are:-
- Mechanisms for greater academic cooperation between universities and research institutions; in particular embedding research institutes (granting sufficient autonomy) within university campuses
  - Providing access to digital media in universities, in parallel with funds for better libraries and laboratories
  - Focused engagement towards making universities a natural home for research as well as teaching
- 5. Set up more quality undergraduate teaching institutions across disciplines** – Dedicated researchers involved in direct training of the students at the undergraduate level create a greater impact. Most of the universities or elite institutions in the country are currently involved in training for the Masters or Ph.D degrees. However, it is now widely recognised that the students emerging from the undergraduate programmes are ill-prepared for a research career. The following steps are proposed to address this:-
- Introduction of well-planned four-year courses to enable direct entry into Ph.D programmes
  - Encouragement of various measures to ensure multiple sources of input of talented people into the academic profession
  - Credit portability across a network of institutions

- 6. Increase funding for education at all levels and for R&D** – Even in the developed countries, it is fully accepted that long-term investment in education and increased spending on R&D is necessary to maintain the lead in cutting-edge research. This is even more relevant in India today. We propose the following measures:-
- Strengthening of education at the school level, with particular focus on teacher training
  - Creation of effective monitoring and assessment mechanisms, nimble enough to measure outcomes and adopt new strategies
  - Consulting stakeholders in making policy decisions
- 7. Rejuvenate doctoral programmes across disciplines** - While the above recommendations are aimed at attracting potential doctoral students and enabling a research environment, it is vital that prospective doctoral students are chosen with sufficient care. The following measures are proposed with this objective in mind:-
- A review of the whole selection procedure and monitoring process for graduate students
  - Multiple pathways for entry to a Ph.D programme while maintaining entry standards
  - Support for quality research in Arts, Humanities and other areas
  - Support and promotion of cross-disciplinary teaching and research programmes
  - Greater exposure of undergraduate and postgraduate students to cutting edge research
- 8. Ensure quality of doctoral work and academic research in institutions** - At the same time as striving for greater influx of people towards research careers, institutions must ensure that the research undertaken matches global quality in the relevant field. In addition, the graduate programmes should be continually reviewed so as to make them vibrant, challenging and internationally relevant. Here are some steps to be taken in this regard:-
- A preliminary vetting of the synopses of the theses followed by rigorous external examination of doctoral theses
  - Broad funding for the organisation of and participation in workshops, seminars and symposia, in India and overseas
  - Encouraging doctoral students to teach, with remuneration provided via Teaching Assistantships
  - Wider dissemination of research work, especially through current digital media in universities and research institutions
- 9. Enable vigorous Industry-Academia interaction** - In the modern context, there is a crying need for a healthy and enlightened cooperation between private industry and academia, which replaces the existing feelings of doubt and mistrust. While industry should recognise that support for education is beneficial, universities should take cognizance of the changing needs of private enterprise in planning new courses. This could be achieved by the following measures:-
- A policy framework for meaningful Public Private Partnership in universities, and concerted efforts to nurture Industry-Academia interactions
  - Encouraging private investment in education, research and innovation, backed by appropriate taxation measures

- Promoting collaboration between research and development units within industry and universities

**10. Foster a global outlook in research** - Research is increasingly becoming a collective global endeavour. It is thus necessary to harness global talent and expertise to develop capacity within the country. This is also essential if the nation is to remain a participant in global cutting edge research. With this in view, the NKC recommends the following:-

- Encouraging NRI/PIO Scientists to establish meaningful links with Indian institutions, and participate in the academic development of the nation
- Creating joint Ph.D programs between universities both within and outside of the country
- Financial and administrative support for international research collaborations
- Identifying important areas of research where national expertise needs to be developed and initiating steps for funding and capacity building by way of collaborations, guest faculty, pro-active hiring, etc.

In conclusion, it must be recognised that investment in education and research produces a broad range of dividends, both tangible and intangible. Our existing base in research needs to be urgently strengthened to arrest any further erosion. While the NKC welcomes the augmented allocation for education in the Eleventh-Five Year Plan, it is important that these funds are effectively utilized to make a visible difference in our academic landscape. As a first step, we urge the government to set itself a target of tripling the existing research base within the next dozen years, and meaningfully work towards it. We strongly feel that a mission oriented approach is necessary for creating the required research ecosystem in the country. Hence, we recommend a National Research Mission which can be spearheaded by National Science and Engineering Research Board, proposed in the current Five Year Plan. We reiterate that implementing these recommendations can invigorate the nation's intellectual and academic environment, and the NKC hopes that the Government will immediately begin work on these vital national issues.

Thank you and Warm Personal Regards,  
Yours sincerely,

Sam Pitroda

Dr. Manmohan Singh,  
Hon'ble Prime Minister of India

CC: Dr. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission  
Sh. Arjun Singh, Minister, Human Resource Development  
Sh. Kapil Sibal, Minister, Science and Technology