SPEECH BY THE PRESIDENT OF INDIA ON THE OCCASION OF PRESENTATION OF INFOSYS PRIZE 2015

New Delhi, February 13, 2016

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1. It is a pleasure to be here in the midst of such a talented set of people. I would like to begin by congratulating the winners of the Infosys Prizes. Their research is laying the groundwork for an evolved, enabling, and sustainable world.

2. I want to thank Mr. Narayana Murthy and the Infosys Science Foundation for starting this important initiative. The Infosys Prize today is considered by distinguished members of the academia as a major honour and recognition. Awards like the Infosys Prize are an important step towards recognizing path-breaking research being pursued by scientists and academicians across the world.

3. This year's prize winners are a diverse group. Their work ranges from unravelling the intricacies of analytical Indian philosophy to enhancing our understanding of the universe and its components and to the biology of the malaria parasite. Complex subjects such as the physics behind high intensity laser matter interactions, geometric group theory, and material physics have seen insightful contributions from the laureates. The inspiring journey of these winners will go a long way in motivating the next generation of scientists, researchers, and thought leaders. Science, technology, and innovation are the major drivers of national development. As we aspire for swift, sustainable, and inclusive growth, it is therefore important that we inculcate the spirit of research amongst youth.

4. The first industrial revolution was a period during which predominantly agrarian, rural societies adopted industrialization. The second industrial revolution saw striking improvements in manufacturing and production technology that in turn led to a widespread adoption of systems such as railroad networks and the telegraph. The enormous expansion of rail and telegraph lines in time allowed unprecedented movement of people and ideas, which culminated in a new wave of globalization. Innovations in the communications and digital technologies in the last decade have brought the world much closer together. The Internet has impacted every facet of our lives and we are able to access new ideas, information and a whole new world of communities. The World Wide Web continues to influence how we interact, conduct business, learn, and perceive the world around us. Suffice to say, advancements in science have transformed the way we live and relate with each other.

5. Closer home, technology has also become an important enabler for critical services such as financial inclusion and healthcare. The proliferation of digital technologies, coupled with advancements in energy and genomics, is substantially raising the productivity of business as well as agriculture. Digital technology is also redefining how services such as healthcare and education are delivered, contributing to higher living standards for millions of Indians.

6. Digital banking is promoting inclusive growth led by technological advancements. India has over 210 million households with more than 140 million households in the rural areas. People residing in rural hinterlands do not have easy access to the banking services and related facilities. Mobile banking is increasingly seen as a tool that holds the power to bridge the gap between banked and unbanked individuals.

7. India has traversed a long and arduous journey towards attaining excellence in scientific innovation. India, under the guidance of our first Prime Minister, Jawaharlal Nehru, adopted science and technology as a priority from the early days of our independence itself. The creation of new educational and research institutions began from 1950 itself. As early as 1951, the country decided to set up an Atomic Energy Commission which has enabled India build her own reactors. The space programme was also soon started enabling us launch rockets and satellites into space. The Parliament of India adopted in 1958 a science policy resolution which promised to "foster, promote and sustain" science in all its aspects. In 2013, a Science, Technology and Innovation Policy was initiated by the Government aiming to shape the future of an aspiring India. Today, we are determined and committed to continued investment in basic science even as we use science to transform our society.

8. At the time of Independence, our agriculture sector was under-developed and we were a net importer of food grains. It is the synergy between science and public policy which resulted in technologically upgrading our agriculture system. The excellence of our scientists and toil of our farmers, together led to the Green Revolution of the sixties. We are now self-reliant in food and have also become a major exporter Such a transition has few parallels in human history. In the years that followed, India based research led to the emergence of a strong pharmaceutical industry. More recently, we have made major strides in the Biotechnology and Information Technology industries.

9. In the field of space exploration, our nation is now amongst top five in the world. Recently we made history, when the Indian Mars Orbiter Mission successfully entered the Martian orbit.

10. Indian scientists were proud partners in the discovery of the Higgs Boson particle in 2012. We were part of global collaborations in life sciences which resulted in a low-cost vaccine against Rotavirus, which will soon be introduced in our national immunization programme. We hope to soon also launch international collaborative programmes in disease biology, marine biology, low cost disgnostics, Internet-of-Things, and bioinformatics.

11. An umbrella programme, called the 'Nano Mission' has been launched to promote research and development in this emerging area. The 'Nano Mission' is a good case study as to how capacity and capability in a specific field of Science can be strengthened through focused Government initiative. Today, we stand amongst the world's top 7 nations in the number of scientific publications.

12. Many new initiatives are also on the anvil in the fields of solar energy, electric mobility, high performance supercomputing, big data, high-energy physics, astronomy, vaccines, waste processing and drug discovery, marine biology etc., to name only a few. We hope to focus in the future on three types of scientific efforts:

i. Blue sky research dealing with the important developments in fundamental sciences, including advanced materials, high performance computing and medical biology.

ii. Research and development related to man's pressing problems specific to India such as water, clean energy, waste processing, rural micro-industrialization and diseases.

iii. Areas where India can emerge as one of the leaders in the world. We hope to identify such areas and support them adequately.

13. The Government has undertaken various measures for promoting growth of scientific research, such as a sustained increase in budget allocations for scientific departments, setting up of new institutions for science education and research, creation of Centres of Excellence for research and facilities in emerging and frontline science and technology areas in academic and national institutes, to name a few.

14. The central government plans to soon institute a nation-wide consultation process with a view to develop the first publicly accessible Science and Technology policy. The policy 'Vision S&T 2020' would articulate the country's future towards technological independence and self-reliance in the 21st century.

15. India and Germany will soon begin joint research in priority areas in health research and biomedical sciences. Under the new UK-India Skills pledge, 11 UK-based companies have committed to support skills development in India. Together, the UK government and the country's leading businesses will establish new *Centres of Excellence* in key sectors, starting with a Centre for Automotive and Advanced Engineering in Pune. India's leading research centres are seeking scientific partnerships for the country's remote areas, particularly the states in North East India through the Indo-French Centre for the Promotion of Advanced Research (CEFIPRA).

16. To ensure that we continue to lead the world in terms of technology breakthroughs, we need to ensure that our youth has access to a supporting ecosystem, an education system that helps them hone their research acumen and a wide network of industry mentors. I am happy to point out that there has been a consistent emphasis on stimulating the scientific temperament of the Indian youth by providing the best facilities to gain knowledge and test their skills. Presently, the country has a total of 16 Indian Institutes of Technology (IITs), 30 National Institutes of Technology (NITs), 162 universities awarding about 4,000 doctorate and 35,000 post-graduate degrees, some 20 research institutes supported by the Department of Science and Technology and more

than 40 research laboratories run by the Council of Scientific and Industrial Research (CSIR).

17. We are a young nation. By 2020, India is set to become the world's youngest country with 64 percent of its population in the working age group. This demographic potential offers India and its growing economy an extraordinary advantage that could significantly contribute to the country's GDP. The youth of our country need our consistent encouragement to pursue innovation in their chosen fields. I am certain that the exceptional journey of the Infosys Prize Laureates will inspire youth to take up research and participate in national progress.

18. Let me add, scientific excellence must be also driven by a concern for humanity. Gandhiji believed that if science becomes all technique and technology, it quickly deteriorates into man against humanity. Technologies emerge from the paradigms of science. And if there is an insufficient understanding of the greater human purposes that the technology is striving to serve, we will become victims of our own technocracy.

19. I am convinced that India's future is inextricably linked to the progress we can make in establishing strong foundations for scientific research within our country.

20. By rewarding excellence in cutting-edge research, the Infosys Science Foundation is spearheading the quest for breakthrough innovation amongst young scientists. Innovation is integral to economic development of a nation, and society at large. I am confident that initiatives like the Infosys Prizes will go a long way towards nurturing the innovation ecosystem in our country and inspire young minds to solve real-world problems.

    Thank you.

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