PM's Address at the Inauguration of the 104th Session of the Indian Science Congress, Tirupati

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Governor of Andhra Pradesh, Shri E. S. L. Narasimhan

Chief Minister of Andhra Pradesh, Shri N. Chandrababu Naidu

Union Minister for Science & Technology, and Earth Sciences, Dr. Harsh Vardhan

Union Minister of State for Science & Technology, and Earth Sciences, Shri Y. S. Chowdary

General President of the Indian Science Congress Association, Professor D. Narayana Rao

Vice Chancellor of Sri Venkateswara University, Professor A. Damodaram

Distinguished Delegates

Ladies and Gentlemen.

I am delighted to begin the New Year with distinguished scientists from home and abroad in the holy city of Tirupati.

I am happy to inaugurate this 104^{th} session of The Indian Science Congress in the panoramic campus of Sri Venkateswara University.

And I appreciate the Indian Science Congress Association for choosing an appropriate theme “Science & Technology for National Development” for this year’s session.

Distinguished Delegates,

The nation will always be grateful to the scientists who have worked tirelessly to empower our society by their vision, labour, and leadership.

In November 2016, the country lost one such eminent scientist and institution builder, Dr. M.G.K. Menon. I join you in paying tribute to him.

Distinguished Delegates,

The speed and scale of changes we encounter today are unprecedented.

How are we going to respond to these challenges that we do not even know could arise? It is a deep-rooted curiosity-driven scientific tradition which allows quick adaptation to new realities.

Tomorrow's experts will come from investments we make today in our people and infrastructure. My government is committed to supporting different streams of scientific knowledge; ranging from fundamental science to applied science with emphasis on innovations.

Distinguished Delegates.

In the last two sessions of the science congress, I presented before you several key challenges and opportunities for the nation.

Some of these important challenges are in the key sectors of clean water & energy, food, environment, climate, security, and healthcare.

We equally need to keep an eye on the rise of disruptive technologies and be prepared to leverage them for growth. We need to clearly assess the challenges and opportunities for our technology readiness and competitiveness.

I have been told that the Technology Vision 2035 document released in last year's Science Congress, is now developing into a detailed roadmap for twelve key technology sectors. Further, NITI Aayog is evolving a holistic science and technology vision for the country.

One important area that needs to be addressed is the rapid global rise of Cyber-Physical Systems. This has the potential to pose unprecedented challenges and stresses to our demographic dividend. But we can turn it into a huge opportunity by research, training and skilling in robotics, artificial intelligence, digital manufacturing, big data analysis, deep learning, quantum communication and Internet-of-Things.

There is a need to develop and exploit these technologies in services and manufacturing sectors; in agriculture, water, energy & traffic management; health, environment, infrastructure and Geo Information Systems; security; financial systems and in combating crime.

We need to develop an Inter-Ministerial National Mission in the Cyber-Physical Systems to secure our future by creation of basic R&D infrastructure, manpower and skills.

Distinguished Delegates.

The oceans that surround the Indian peninsula have over thirteen hundred of our islands. They also give us a seven and a half thousand kilometre coastline and 2.4 million square kilometres of Exclusive Economic Zone.

They contain enormous opportunities in energy, food, medicine and a host of other natural resources. The ocean economy should be a significant dimension of our sustainable future.

I am told, that the Ministry of Earth Sciences is working to launch a Deep Ocean Mission to explore, understand and harness this resource in a responsible way. This could be a transformative step for the prosperity and security of the nation.

Distinguished Delegates,

Our best science and technology institutions should further strengthen their basic research in line with leading global standards. Translating this basic knowledge into innovations, start-ups and industry will help us achieve inclusive and sustainable growth.

SCOPUS database indicates that India now ranks sixth in the world with respect to scientific publications, growing at a rate of about fourteen percent as against the world average growth rate of about four percent. I am sure that our scientists will further meet the challenges of enhanced quality of basic research, its technology translation and its societal connect.

By 2030 India will be among the top three countries in science and technology and will be among the most attractive destinations for the best talent in the world. The wheels we set in motion today will achieve this goal.

Distinguished Delegates,

Science must meet the rising aspirations of our people. India fully appreciates the strong role science and technology plays in meeting the societal needs. We must address the problems of urban-rural divide and work for inclusive development, economic growth and employment generation. To enable this, there is a need for a new overarching structure that will coordinate with all the relevant stakeholders.

Our ability to mount and execute large, transformational national missions requires effective partnerships that integrate with a large stakeholder base. The effectiveness of these missions can be ensured only by getting out of our deep rooted silos, and adopting a collaborative approach, which is essential to address our multifarious development challenges rapidly and effectively. Our ministries, our scientists, R&D institutions, industries, start-ups, universities and IITs, all should work together seamlessly. In particular, our infrastructure and socio-economic ministries must make appropriate use of science and technology.

Our Institutions could consider inviting outstanding scientists from abroad including NRIs for long term research associations. We should involve foreign and NRI PhD students in post-doctoral research in our projects.

Another empowering factor for scientific delivery is the Ease of Doing Science. If we want science to deliver, we must not constrain it.

Building a strong Science and Technology infrastructure that is accessible to academia, start-ups, industry and R&D labs is a priority of the government. We need to address the problems of ease of access, maintenance, redundancy and duplication of expensive equipments in our Scientific Institutions. The desirability of establishing professionally managed, large regional centers in PPP mode housing high value scientific equipment should be examined.

On the lines of Corporate Social Responsibility, the concept of Scientific Social Responsibility needs to be inculcated to connect our leading institutions to all stakeholders, including schools and colleges. We must create an environment for sharing of ideas and resources.

The brightest and best in every corner of India should have the opportunity to excel in science. This will ensure that our youth get high-end training exposure to the best of science and technology to make them job-ready in a competitive world.

To this end, I would exhort the National Laboratories to connect with schools and colleges to develop appropriate training programs. This will also help with the effective use and maintenance of our vast scientific and technological infrastructure.

Laboratories, Research Institutions and Universities in each major city region, should be interlinked to function on a hub and spoke model. The hubs will share major infrastructure, drive our national science missions and be the engines that link discovery to application.

College teachers with background in research can be connected to the neighbouring universities and R&D institutions. Outreach activities from the institutions of eminence to schools, colleges and polytechnics will activate the latent Science and Technology manpower from the educational institutions in your neighbourhoods.

Distinguished delegates,

Seeding the power of ideas and innovation in schoolchildren will broaden the base of our innovation pyramid and secure the future of our nation. As a step in this direction, Ministry of Science & Technology is initiating a programme focused on students of classes 6 to 10.

The programme will scout, mentor, reward and showcase ten lakh top innovative ideas focused on local needs from 5 lakh schools.

We must provide equal opportunities to the girl child to enroll and excel in the under-represented disciplines of science and engineering and ensure continued participation of trained women scientists in nation building.

Distinguished Delegates,

For a large and diverse country like India, technology needs to span a wide range; from advanced space, nuclear and defence technologies to rural development needs in providing clean water, sanitation, renewable energy, community health, etc.

While we excel globally, we also need to develop local solutions that fit our unique context.

There is a need to develop appropriate Micro-Industry models for the rural areas that use local resources and skills to meet the local needs and generate local enterprise and employment.

For example, we should develop a host of technologies based on efficient co-generation for clusters of villages and semi-urban areas. These technologies should aim to convert agri and bio-waste to satisfy multiple needs of electricity, clean water, crop-processing and cold storage.

Distinguished Delegates,

The role of science in planning, decision making, and governance has never been more important.

We need to develop and deploy Geo-information Systems to meet the development goals of our citizens, Gram Panchayats, Districts and States. A coordinated effort by the Survey of India, ISRO and the Ministry of Electronics and Information Technology can be transformative.

For sustainable development, we must take strong measures to focus on Waste to Wealth Management in the critical areas of electronic waste, biomedical and plastic wastes, and solid waste and waste water solutions.

We are scaling up R&D on clean carbon technologies, technologies for enhancement of energy efficiency and increased and efficient use of renewable energy.

Focus on environment and climate remains our priority to ensure sustainable development. Our strong scientific community can also effectively address our unique challenges. For example, can we find farmer-centric solutions to the problem of crop burning? Can we redesign our brick kilns for reduced emissions and greater energy efficiency?

Science and technology is a key factor in the Startup India Programme launched in January 2016. Two other strong initiatives are Atal Innovation Mission and NIDHI - the National Initiative for Development and Harnessing Innovations. These programmes focus on building an innovation driven enterprise ecosystem. Further, Public-Private partnerships with CII, FICCI and high technology private companies are being pursued to strengthen the innovation ecosystem.

Distinguished Delegates,

Our Scientists have contributed strongly to the strategic vision of the nation.

The Indian space programme has put India among the top space faring nations. We have achieved a high degree of self-sufficiency in space technology, including launch vehicle development, payload and satellite building, applications for development and the building of core competence and capacity.

The Defence Research & Development Organisation has played the role of a force multiplier for the Armed Forces with its systems and technologies.

We are leveraging strategic international partnerships and collaborations based on the principles of mutuality, parity and reciprocity, to make Indian Science globally competitive. We are also placing special emphasis on building strong relationships with our neighbouring countries and multilateral fora such as BRICS. The best of global science is helping us unravel creation’s mysteries and develop cutting-edge technologies. Last year, we activated the 3.6 meter optical telescope in Devasthal in Uttarakhand made with Indo-Belgian collaboration. Recently, we approved the LIGO project with USA to construct a state-of-the-art detector system in India.

Distinguished Delegates,

In conclusion, I wish to reiterate that the Government remains committed to provide the best support to our Scientists and Scientific Institutions.

I am sure that our scientists will scale up their efforts ranging from the quality of basic sciences to technology development to innovation.

Let Science and Technology become a strong tool of inclusive development and betterment of the weakest and poorest segments of our society.

Together, we will prevail to make a just, equitable and prosperous nation.

Jai Hind.

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