

## Speeches

### PM's address at the 93rd Session of Indian Science Congress

**January 3, 2006**
**Hyderabad**

I am delighted to be here in Hyderabad to inaugurate the 93rd Session of the Indian Science Congress. I would, at the very outset, like to pay homage to the memory of Professor M C Puri who was gunned down in the greatest temple of Indian science by the most reprehensible and cowardly enemies of our people. Dr Puri was a soldier of knowledge. He lived a life of peace, dedicated to science and education. No civilized people can condone such an uncivilized act.

It is a symbol of the success of Indian science and technology, of our emergence as a knowledge power, that the symbols and temples of our knowledge society are today being targeted by terrorists. I am confident that all our knowledge workers will close ranks and join the struggle to make India a great nation, a humane and modern nation, a knowledge power. No force on the earth can weaken this resolve of the Indian people.

Ladies and Gentlemen,

I am happy that you have chosen an agricultural university campus as the venue for this session since this year we mark the centenary of the setting up of modern agricultural colleges in the sub-continent. Our agricultural universities have played an important role in the agrarian transformation of India.

I am also happy that the focal theme for this session is the role of science and technology in the promotion of integrated rural development. I believe you are returning to this theme after almost three decades. It was in Andhra Pradesh, the rice bowl of India, that Indiraji addressed the Science Congress on this very subject, in 1976. It was a decade after our country had passed through the worst agricultural years since Independence. It was said in the mid-sixties that India was living a “ship-to-mouth” existence! By 1976, the Green Revolution had transformed many parts of the country.

Our scientists, our farmers, our community development staff and our extension workers, worked together to liberate the country from external dependence in food. The Indian Science Congress paid tribute to the work of scientists like Dr Y Nayudamma, a great son of Andhra, Dr M S Swaminathan, who is here with us today, and many others who played a key role in taking the benefits of science to the farm. Dr Nayudamma was among the first to urge scientists to step in and help in integrated rural development. He initiated the Karimnagar Project, here in Andhra Pradesh, that sought to bring together scientists, technologists, extension workers and community development staff. It will be interesting to see what lessons were learnt by that experiment, and how we can take forward that initiative.

Thirty years later, we can say that the Indian farmer has indeed benefited from the contribution of science and technology. However, in spite of the advances made, there still remains the challenge of bridging the development gap between urban and rural India; of increasing rural incomes; of increasing agricultural productivity; of increasing investment in agriculture and rural non-farm economy; of improving rural infrastructure and in the final analysis, forever ending the so-called divide between Bharat and India. The technologies and the strategies unleashed by the first Green Revolution have run their course. This requires, as I have said before, a Second Green Revolution. In

non-food crops, in horticulture, in new plant varieties.

As I see our agricultural growth plateau, I realize that there is a need for a renewed thrust on research that can enhance farm productivity. We need greater emphasis on research that can increase the efficiency of utilization of inputs; that can improve farm management practices; that can reduce post harvest losses through better post-harvest management technologies in storage, transportation and processing; that can, in the final analysis, increase both yields and value addition at the farmer level leading to better incomes. This is extremely important if we have to ensure that our countrymen who depend on agriculture for sustenance are not left behind in this age of technology and knowledge.

India also needs increased application of science and modern technology to forest conservation and management, environmental protection, water conservation and utilization of herbs and plants. We need a harmonious blend of advanced science and technology, appropriate technology and local knowledge to ensure an equitable distribution of the benefits of new knowledge.

In 1976, Indiraji had said to the Science Congress, and I quote:

“The overwhelming majority of our people live in villages and will continue to do so for years to come. I would go further and say that we don’t even want to uproot them. All over the world, urbanization has brought comfort and stimulation; but who could claim that it has not given rise to complicated problems? Rural life should be so enriched as to prevent the migration of people and resources from villages to towns. Expedients worked out in countries where the agricultural population form but a small part of the work force cannot serve our country.”

Indiraji’s wise words ring true even today. Our strategy for rural India has to be one of improving the quality of life in village India, based on easily accessible and appropriate technologies, so that people can continue to live where their forefathers have for generations and yet live comfortable and decent lives. Science must serve the needs of our farmers if scientists wish to contribute to the building of a more prosperous India.

Mahatma Gandhi once said: “If the village perishes, India perishes too.” He was echoing the thoughts of Oliver Goldsmith who once wrote: “A bold peasantry, their country's pride, / When once destroyed, can never be supplied.”

Ladies and Gentlemen,

My vision of rural India is of a modern agrarian, industrial and services economy co-existing side by side, where people can live in well-equipped villages and commute easily to work, be it on the farm or in the non-farm economy. There is much that modern science and technology can do to realize this vision. Rural incomes have to be increased. Rural infrastructure has to be improved. Rural health and education needs have to be met. Employment opportunities have to be created in rural areas.

Our Government has taken several initiatives in each area. We have launched Bharat Nirman, a time-bound programme to improve rural infrastructure, including rural roads, power, housing, telecom, and irrigation. We have launched a National Rural Health Mission, enhanced funding for rural education and for the mid-day meal programme for school children. We have enacted the National Rural Employment Guarantee Act and increased availability of credit to farmers. All these initiatives are aimed at offering a New Deal to Rural India.

The challenge before you is to pursue good quality science, world class research and yet be able to address the needs of development and employment creation in rural India. Those of you who meet this challenge will be regarded as the real architects and builders of modern India.

Ladies and Gentlemen,

Let me focus my attention on three challenges that science and technology must address to promote rural development. First, we have to increase agricultural productivity - the productivity of land, labour, seed and plant and other factors of production.

This is what I call the Second Green Revolution. Second, we have to develop affordable and appropriate technologies for energy and water. Third, we have to promote labour-using, yet efficient and relevant technologies in both farm and non-farm business.

Second Green Revolution

The National Commission on Farmers has suggested a programme for “Agricultural Renewal” that can

be the starting point of the Second Green Revolution. The five components suggested are: (a) soil health enhancement through concurrent attention to the physics, chemistry and microbiology of the soils;

(b) water harvesting, water conservation and sustainable and equitable use of water; (c) access to affordable credit and to crop and life insurance reform; (d) development and dissemination of appropriate technologies and, (e) improved opportunities, infrastructure and regulations for marketing of produce.

I would add two more elements to this package, namely: (f) the application of science and biotechnology to the improvement of seeds and utilization of herbal and other plants; and, (g) the application of science to animal husbandry to improve the productivity of livestock and poultry. There is much that science and technology can do in each of these seven areas. There is much that agricultural universities can in fact do in each of these areas.

The technologies we develop must be economically affordable and relevant to small and marginal farmers, especially in drought prone regions. Two criticisms of the first Green Revolution have been: one, that it did not benefit dry land agriculture; and, two, that it was not scale neutral and had benefited large farms and big farmers. While evidence shows that this was not always the case, we must ensure that Second Green Revolution technologies have a special focus on dry land agriculture and do benefit small and marginal farmers.

The Second Green Revolution will not be possible without a rejuvenation of our agricultural universities and research institutions. We have to revitalize these institutions. We have to improve their academic standing and their relevance to agrarian society and the economy.

All advanced agricultural economies are knowledge-based economies. We must broaden the knowledge base of our farmers to enable them to make the best use of new technologies. Our farmers' needs for information are multi-faceted and these are not limited to technology alone. They need information about agriculture as a business, about farming practices, about policy initiatives, about best practices of other farmers and on market intelligence. Therefore, timely availability of information is a critical component in the development of our agriculture.

Our extension services need to gear up to meet these and emerging demands of farmers. Extension services have languished in the past two decades. We have to find innovative ways in which the skills of agricultural graduates can be harnessed for effective extension work. New communications tools can be used to overcome physical barriers between farmers and researchers. I am happy to learn that the Indian Council for Agricultural Research is seeking to provide electronic connectivity to about 200 Krishi Vigyan Kendras to make them hubs for accessing information by our farmers. I believe that Krishi Vigyan Kendras should function as 'knowledge banks' in each district. They must bring scientists, extension workers and farmers together and bridge the gap between potential and actual farm yields.

Energy and Water

Water and energy, like land, are scarce resources. Science and technology can help on the supply side by increasing factor productivity and by developing technologies that conserve utilization of these resources. The western world has not invested enough in research on water, bio-mass, solar and other relevant sources of energy because they are not under the kind of pressure we face. Solar energy and bio-mass are areas where Indian scientists must be at the forefront of research and development. I believe we can contribute to more economic use of resources, to improved productivity and to affordable infrastructure development through such research. Our Government will encourage world class research in appropriate water and energy related technologies.

We are in urgent need of science-based solutions in energy and water provisioning, especially in rain-fed areas. Ground water use needs to be accompanied by mandatory rainwater harvesting and aquifer recharge. Our Government has taken several initiatives in watershed development and ground water replenishment. In some regions of the country, inter-linking of rivers may contribute to reduced dependence on ground water and to re-charge of ground water. I seek a more informed debate on utilization of river waters in a manner that would be ecologically sustainable and economically affordable.

I hope the session devoted to these issues at this Congress can come forward with suggestions as to how we can bring 10 million hectares of additional land under irrigation without associated environmental damage and with minimal human dislocation.

Employment Generation and Non-Farm Activity

Ladies and Gentlemen,

Public policy must respond to an important trend in the Indian economy. While the share of agriculture in national income is falling rapidly, the share of population dependent on agriculture is not declining as rapidly. This is creating rural distress and contributing to enforced migration to urban areas. The only sensible response to this trend is to create productive employment opportunities in rural areas, both in the farm and non-farm sectors. Scientists and technologists must develop labour-using technologies both in agriculture and in rural manufacturing so that jobs can be created closer home for those of our citizens who live in villages.

This requires a multi-pronged approach. To be sure, it requires investment in skill development. It requires financing of labour-using technologies on the farm, especially in processing, packaging and marketing farm produce. We must also help modernize our handlooms and handicraft industries to enable rural artisans to reconnect with new markets. New functional townships must be developed, away from existing cities but equipped with basic infrastructure, to attract new investment in manufacturing and services sectors in rural areas.

All this opens up opportunities for new technology development. Agricultural universities must be intellectually alive to such possibilities and develop courses and programmes to train people living in rural areas. We have no option but to encourage people living in rural areas to continue to live there even as the quality of their life is improved and more and more modern amenities are provided for them.

To enable this we must look at decentralized energy generation, decentralized social and economic infrastructure development, decentralization of governance and of the rules and regulations governing business activity. Excessive centralization has been the bane of development in India. While we create a single market, removing internal barriers to trade and movement of goods, services and people, we must enable the development of local markets so that local solutions can be generated to address local problems.

Ladies and Gentlemen,

It is my sincere hope that within the foreseeable future we can rapidly modernize rural India and ensure that the gains of development reach every corner of our vast country. Our scientists must work with Government, with non-government organizations, with local bodies and stakeholder groups to make this happen. I hope your Congress will devote itself to such urgent concerns of our people, and enthuse you to rededicate yourselves to the greater glory of our Nation.

I wish you all a Happy New Year. May your path be blessed. Jai Hind!

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