

Statement as delivered by Dr. Anil Kakodkar
Chairman, Atomic Energy Commission and
Leader of the Indian Delegation
at
48th IAEA General Conference
Vienna, 22nd September 2004

Mr. President,

Let me first of all congratulate you on behalf of my Government and on my own behalf, on your election as President of the 48th General Conference. I am sure under your able Presidentship and with the support of your team and the Secretariat of the Agency; this General Conference will be able to accomplish the tasks before it.

I also take this opportunity to welcome the entry of the State of Chad, the Islamic Republic of Mauritania and the Togolese Republic to the membership of the International Atomic Energy Agency (IAEA).

Mr. President, this year is the Golden Jubilee Year for the Department of Atomic Energy in India. During the fifty years that have gone by, the Indian Atomic Energy programme has come of age. The self-reliant Research & Development activities by the scientists of the Department of Atomic Energy in India have led to robust industrial operations in Heavy Water Power Reactor technology and associated Fuel Cycle, Heavy Water and Electronics & Instrumentation which have all demonstrated commercial excellence

in their performance. We are now well poised to translate our R&D attainments into commercial industrial activities related to Fast Power Reactors and Thorium reactors as we continue to work for rapid expansion of nuclear power capacity based on thermal reactors. This step is in tune with our long standing three stage nuclear power programme designed to meet the emerging very large scale electricity needs in India using our modest uranium and vast thorium resources.

We have utilised the Golden Jubilee Year for a comprehensive stocktaking of our achievements and chalking out of a roadmap for the future. This exercise involved nearly 1500 young scientists and their mentors. Through this exercise we have now identified our collective vision. We have also completed a study on the growth of electrical energy in India over the next fifty years and the role nuclear power can be expected to play. Since all our estimates for an appropriate energy mix for India's sustainable development in the coming decades, include nuclear power in a significant proportion, India is determined to build upon this half a century of accumulated national capabilities. The threatening rise of oil prices this summer has once again made a compelling argument about cost effectiveness of nuclear power. Quite independently, the prevailing low interest rates also favour investments in nuclear power.

In a nutshell, the future course of our programme would aim at the following:

- Shift to a large-scale construction programme on Fast Reactors and their associated Fuel Cycles as early as possible.
- Develop Fuel Cycles with short doubling time
- Demonstrate technologies for large scale thorium utilisation.
- Develop technologies to support faster growth of thorium systems.
- Develop technologies for co-generation of electricity, hydrogen and water.
- Work on Fusion technologies.

Our vision also encompasses a strong emphasis on nurturing domestic education – research linkages as well as on research – technology linkages covering a broader mandate of scientific research with special emphasis on nuclear energy and radiation.

Mr. President, I am very happy to inform you that the construction of the first 500 MWe nuclear power plant based on Fast Breeder Reactor in India has been launched at Kalpakkam. The unique mixed Plutonium-Uranium carbide fuel in FBTR has reached a burn-up of around 125,000 MW/dt. The Fuel cycle for this reactor has been closed with the successful reprocessing of spent fuel from FBTR.

The work on 300 MWe Advanced Heavy Water Reactor (AHWR) a Technology demonstration for Thorium Utilisation including

several important developments in thorium fuel cycle is progressing well. The work on a Compact High Temperature Reactor is continuing. CIRUS the 40MWe research reactor is now fully operational after a major refurbishing.

The Steady State Superconducting Tokamak designed to be the first 1000 second Steady State Tokamak with superconducting toroidal and poloidal magnetic fields which can be used for a number of Physics investigations of relevance to ITER is currently getting ready for magnet cool down and first phase commissioning tests. The 2.5 GeV Synchrotron (INDUS-2) and the K-500 Superconducting Cyclotron are also nearing completion. The Giant Metrewave Radio Telescope, a completely indigenous instrument of a unique design is now a full fledged international observational facility for radio-astronomy below 1.4 GHz. An international team of researchers, while working on GMRT, discovered a “binary millisecond pulsar”, an important discovery in the field of astronomy. Our collaboration with the European Organization for Nuclear Research (CERN) and other agencies is progressing well.

Expansion of nuclear power based on our modest uranium and abundant thorium resources is possible only through a closed nuclear fuel cycle involving fuel reprocessing and refabrication activities supporting Fast Reactors and Thorium Reactors. This is the only way one could utilise emission free nuclear power in large capacities necessary for meeting the energy needs of the vast growing economy of India. Reprocessing and refabrication of plutonium bearing fuels

have thus a very important role in the Indian nuclear power programme. We have accumulated sufficient industrial scale experience in plutonium recycle in thermal as well as in fast reactors to carry forward and meet our objectives.

Mr. President, nuclear energy today is at crucially important cross roads. While there is ever increasing need for safer and cleaner energy sources, where nuclear energy provides extremely promising possibilities, the long established concept of 'atoms for peace' is now under threat due to the irresponsible actions of a few states. This challenge should be addressed through constructive and forward looking engagement amongst all countries that have a stake in the future of nuclear energy, to come up with policies as well as technological solutions, based on the principle that international commitments made must be respected. India will work in partnership with like minded countries in this dialogue process.

We have been actively supporting the Agency's programmes related to nuclear security. We organised an International Training Course on Physical Protection of Nuclear Installations last year along with the IAEA. A similar course would be repeated this year as well. We have also been active partners in IAEA programmes related to safety and security of radioactive sources. In this regard, we recently conducted IAEA Regional Workshop on Regulatory Authority Information System (RAIS), that can be used for creating and maintaining the national registry of radiation sources. We have also conducted a Regional Workshop on Development on National

Strategies for improving control over Radioactive Sources including Orphan Sources. We have offered to conduct such courses on a regular basis for the Agency. We could even serve as a Regional Training Centre.

However, it seems to us that we need to look at this problem in a more fundamental way. Atoms with their immense potential can provide energy in quantities required for fulfilling the developmental aspirations of the entire world in a sustainable manner. Deployment of technologies capable of realising these objectives along with policies that reduce inequalities could provide a more lasting solution and minimise the strain on resources that would get expended on security programmes at least in the long-term. INPRO programme of IAEA with its focus on safety, economics, waste management, sustainability and proliferation resistance is thus of crucial importance and needs our sustained support. India strongly believes that innovative nuclear energy systems must play a progressively increasing role in sustainably meeting large future demands of energy in the economically developing countries. The Agency must place a high priority on activities which facilitate achievement of this objective. We are very glad to note the progress made on assessment of innovative nuclear energy systems, validation of INPRO Methodology through reviews by a broad spectrum of experts, and the initiation of work on the preparation of INPRO User's Manual. The Indian National Case Study on AHWR was completed in time. Apart from contributing to a review of INPRO methodology, this extensive exercise also helped us in evaluating the salient design features of

AHWR in the light of INPRO objectives. We note with appreciation that from 2004, INPRO is partly funded through the Regular Budget supporting one professional and one general service post. However, considering its role in effectively meeting the IAEA mandate in the long run, INPRO merits greater financial support from the Regular-Budget to sustain and accelerate this important programme.

While we have made significant progress on thorium utilisation technologies driven by domestic key drivers, it is now increasingly recognised that thorium fuel cycles do offer some interesting possibilities in terms of INPRO objectives.

At this point, I also wish to mention the International Conference organised by the Agency and hosted by Government of the Russian Federation in Obninsk to celebrate 50 years of electricity production through nuclear power. The historic occasion to me was a reminder of the ability of scientists to address a challenge with innovative technological approaches. The occasion was also a message that the challenges that we face today would also need innovative technical approaches.

The Agency's efforts in managing Nuclear Knowledge, including knowledge preservation, knowledge dissemination, strengthening of education and training for capacity building through networking, are laudable. Establishment of the Asian Network for Education in Nuclear Technology (ANENT) to promote, disseminate and preserve nuclear knowledge and to ensure the continued

availability of talented and qualified human resources in the nuclear field in the Asia region has been an important step. In India all aspects of knowledge management in nuclear field, including HRD, knowledge preservation and Technology Transfer to promote indigenous development have been a sustained and comprehensive programme for more than four decades. Recent initiatives taken by the Agency in this area including organizing a conference on Knowledge Management at Saclay earlier this month are timely and need to be further strengthened. Our experts are working in close cooperation with the Agency, in this area.

Mr. President, India has perhaps the largest pool of young talent. Human resource is our strength. Our scientific pool in nuclear science and technology is fully competent, self-sustaining and with clarity on roadmap to follow for supporting our growing programme both in terms of deployment of additional capacities as well as in terms of development of new technologies. Even so we do recognise the importance and the value of international collaborations. We have been actively interacting on the WANO platform, programmes at CERN as well as STAR collaboration at Brookhaven National Laboratory and many others including of course the Technical Cooperation Programmes of IAEA. We hope that conditions would soon become favourable for India to also ratify the IAEA Convention on Nuclear Safety. At present there is an inconsistency between the stated objectives of the Convention on Nuclear Safety, namely, “to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-

operation including, where appropriate, safety-related technical co-operation” and the restrictive practices that exist for trade even for safety equipment. India has followed a consistent and responsible approach to development of its self-reliant atomic energy programme for national welfare and would continue to do so. Our export control framework is time tested.

Mr. President, the role of International Atomic Energy Agency in promoting several developmental programmes for the betterment of humankind using nuclear technologies is unique and must be sustained and expanded. We have been active supporters and participants in such IAEA programmes. Several IAEA meetings, training programmes for IAEA Fellows and scientific visits continue to take place in India. Our scientists have participated in a large number of IAEA expert assignments and CRPs. Needless to say that the funding of T.C. programme, a statutory activity of the Agency, should have our encouragement and support. We on our part have always been paying our contribution to the Technical Cooperation Fund in time and in full. We will do so this year as well.

Mr. President, before I conclude, I want to re-emphasise that Technology is the key to the solution for most of the problems if not all, faced by humanity. We must see a big picture and together adopt strategies that provide seamless mobility for technology flow, without, of course, compromising safety and security. Our strategies in this regard need to be proactive rather than reactive. We must together with the Agency attack the root cause rather than the symptoms. We

could perhaps work to develop a vision on how IAEA should move forward on this path. Such an exercise would be very timely as we approach the Golden Jubilee of the Agency.

Let us launch Atoms for universal welfare in a safe and secure world. We owe it to humanity.

Thank you Mr. President.