STATE MINISTER FOR RESEARCH AND TECHNOLOGY
REPUBLIC OF INDONESIA

"Indonesian Policy on the Development and Utilization of Nuclear Energy"

by

M. Hatta Rajasa

Excellencies,

Distinguished Delegates,

Ladies and Gentlemen,

It is indeed a great pleasure and an honor for me to be invited on behalf of my country, Indonesia, to participate again in this distinguished Forum for Nuclear Co-operation in Asia. Please kindly allow me, first of all, to express my deep appreciation to the Minister of State for Science and Technology Policy of Japan, and Prof. Yoichi FUJIIE, Chairman of the Atomic Energy Commission of Japan. This fourth Forum enables me to express my views and hopes that this cooperation would be fruitful for all member countries and it certainly is for Indonesia.

Ladies and Gentlemen,

As I have mentioned last year a law regarding the National System for Research, Development, and Application of Science and Technology has been enacted by the Indonesian Parliament to be the Law no 18, 2002. This law is expected to strengthen, among others, the role of science and technology for accelerating the achievement of various objectives set by our country. The final drafts of government regulations as the derivatives of this law have been completed and are expected to be the instruments to implement the law to contribute solutions on the economic recovery. Furthermore, the Ministry of Research and Technology is now step wisely having more solid co-ordination program among research and development institutions, universities, as well as with the industries and NGOs to set the "Landmarks 2020", which are focused at the supply security of food and energy, the two most essential objects for not only survival, but also for wealth creation to sustain the development.

Ladies and Gentlemen,

Security of supply of food for the whole nation is a basic needs that should be facilitated by the Indonesian government. In this regard, the Ministry of Research and Technology Office has to establish a road-map on R & D activities to be carried out by all of the R&D institutions sinergistically. One of those activities is the application of nuclear technology in the field of agriculture, such as irradiation induced new mutants of crops, improvement of growth and quality of the ruminansia animals, and also post

harvest technology utilizing irradiation techniques. These are indeed congruent with activities of the IAEA as well as FNCA.

In Indonesia, the National Nuclear Energy Agency (BATAN), in cooperation with the Ministry of Agriculture, continues to carry out research and development in agriculture joining the FNCA activities in this field, namely mutation breeding and bio-fertilizer. While continuing the research and development on the topics relating to drought tolerance sorghum and soybean mutants as well as insect resistance orchids, BATAN also continues to develop new varieties of rice. Some more candidates of the new rice varieties have been indicated. In responding to some customer taste satisfaction, three new varieties have been released in the year 2003, namely: Kahayan, Winongo and Diah-suci. It is also attempted to establish supply security of the seeds located at some provinces to enhance the supply system of the crops. In the mean time the development of various formulae of food supplements for ruminansia animals has been progressing aiming at the utilization of locally available material.

As a tropical country, Indonesia is also willing to participate in the activity related to the banana improvement, and sweet potato projects as a part of Mutation Breeding Project of FNCA for the forthcoming years.

Ladies and Gentlemen,

In the field of energy, availability and continue supply of energy is a key role to develop our industry. Although Indonesia is recognized as an energy exporter for the neighboring countries in the Asia and Pacific region, the

energy source per capita is relatively small while the reserve locations are not so favorable as compared to the places of domestic demands. The Indonesian – IAEA study namely "Comprehensive Assessment of Different Energy Sources (CADES) for Electricity Generation in Indonesia" had been carried out in 2001 – 2002 shows that evident. Final Report of the Study had been submitted formally by the IAEA to the President of the Republic of Indonesia on August 6th, 2003.

The report indicates that the energy mixed strategy has to be applied in Indonesia by considering all of energy sources available in this country, including also the use of NPP for electricity generation to fulfill Java – Bali grid starting at about 2016. The total share of nuclear energy is expecting to be around 5 % of the total electricity generation in the year 2025, i.e. about 6,000 MWe. Should the Generation IV reactor having small capacity be available with the economical features as mentioned to be the aim, introduction of the very small NPP might be realized earlier at smaller grids out side of Java Islands.

In order to realize the energy mixed strategy, a lot of works have to be done. Dissemination of this study results to other relevant institutions, Departmental as well as Ministerial Offices have been carried out to anticipate concerted efforts to overcome the problem on energy security for the next twenty years from now on. At the same time public information and education have to be performed also to all level of society in order to get better public acceptance. The use of nuclear energy as a part of the Long-term National Energy Policy now is being drafted. We expect that the consultation with Parliament on the use of NPP as stipulated by Nuclear Energy Act No. 10 year 1997, can be done by sometime next year.

The pre-project activities for NPP program are carried out accordingly, such as activities relating to candidate site permit, the NPP owner establishment, etc.

As you are all aware, the utilization of NPP will certainly reduce the hazardous gas emission especially in Java Island. If the use of NPP can not be realized, the electricity should be generated by coal fired power plant, since the oil will be very expensive by then as well as scarce for electricity generation purposes. Additional used of coal to replace the amount of electricity being expected to be generated from NPP will also make some other problems on coal transportation as well as environmental effect, especially in Java Island where the land is expected also to provide food for the people living on. In this regard, Indonesia is therefore to support the CDM which should be applicable also for the NPP projects as mentioned in the Kyoto Protocol.

Ladies and Gentlemen,

R & D on the enhancement of radiation and Isotope application for medical and other industrial applications have been supported by government. In the field of medical application: cancer treatment using radiation together with the application of the nuclear medical instruments for diagnostics as well as theurapetics, and the use of radioisotopes and radiopharmaceuticals for palliative have been progressively accepted. Participation of Indonesia to the FNCA Project namely: Application of Radioisotopes and Radiation for Medical Use such as breast and nasopharyngeal cancers will thus be very beneficial for our community.

In the field of industrial application, a preliminary study on the use of electron beam machine for treatment of effluent gas from the coal power plant in Suralaya has been done in cooperation with other institution and the electricity state own company operating the plant. Other EBM utilizations for industry, such as liquid waste treatment, hardening of the surface metal, etc are also being studied. Co-operation in this field with FNCA member states is certainly welcomed.

For quite some years BATAN has been trying to develop capability relating to accelerator taking into consideration the future important roles of this machine. It is expected that this activities support the medium term program to build a demonstration accelerator to be utilized for research and development in the fields of activities to achieve the Landmarks. It is planned that by the end of this year a home made low energy electron accelerator is to be commissioned at BATAN's facility in Yogyakarta.

Our environmental quality has recently decreased significantly due to various improper development dictating us to do efforts for environment protection, among others: monitoring and controlling heavy metal air pollutant in the rural and urban area. Neutron activation analysis technique is expected to contribute on the determination of air particulate matter, mainly on the concentration of elements contained in the fine and coarse particles triggering the human health hazards. Since the marine environmental pollution has also been problem in this region, we expect in the long term program, the activity relating to "Marine Environmental Pollution Research and Monitoring Using nuclear based methods" can be considered as a common program of the FNCA.

Utilization of nuclear techniques has also been carried out in the activities relating to the development of renewable energy in Indonesia. The use of natural isotope for geothermal such as reserve calculation and management has been carried out in cooperation with other institutes. Utilization of mutation breeding techniques for "bio-oil" plants, i.e. *Yatropha curcas* L., and *Ricinus communis* L. to innovate new varieties for plant and crop producing more bio-diesel rather than utilization of crude palm oil, continues to be investigated.

In order to support all this development, Indonesia is also strengthen the nuclear licensing authority, BAPETEN (Indonesia Nuclear Control Board), to make sure that all nuclear activities in Indonesia is following safety procedure as well as other International regulation. The strengthening of BAPETEN is also important for the preparation of the NPP.

The important of availability of human resource with adequate number and qualification to support all nuclear activities mentioned previously has been taken into serious consideration by BATAN and BAPETEN. BATAN using its center for education and training continues holding the train the trainers on various courses as well as training for personnel requiring certification on various competence of nuclear technology. The polytechnique of nuclear science and technology is also improving the curiculae to satisfy the industries. Cooperation with universities as well as polytechniques has been extensified. It is still expected however that the cooperation on human resource development through FNCA will play an important role since there is a lack of expertise needed to suffis the requirement on future nuclear industry demands.

Ladies and Gentlemen,

The on going FNCA activities have been progressing as expected, i.e. the Utilization of Research Reactor covering the production of Tc-99m, neutron activation analyses, and neutron scattering; Application of Radioisotopes and Radiation for Agriculture consisting of mutation breeding, bio-fertilizer, etc; Application of Radioisotopes and Radiation for Medical Use such as breast and nasopharyngeal cancers; Public Information of Nuclear Energy; Radioactive Waste Management; Nuclear Safety Culture; Human Resources Development; and Application of Electron Accelerator.

We would like to confirm that we are ready to host the Radioactive Waste Management Workshop next week in Jakarta, and the Utilization of Research Reactor Workshop this coming January 2004 in Serpong, as well as the workshop on Mutation Breeding in June or December 2004 in Jakarta.

Excellencies,

Distinguished Delegates,

Ladies and Gentlemen,

Please allow me to conclude by expressing our strong endorsement for the FNCA and our readiness to participate fully in all of its activities. Lastly, I would like also to express our deep gratitude to our host, JAIF, on behalf of the Atomic Energy Commission of Japan and Minister of State for Science

and Technology Policy of Japan for convening this fourth Meeting of the FNCA.

Thank you very much,

State Minister for Research and Technology,
Republic of Indonesia

M. Hatta RAJASA.