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# Interaction

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## WHO IS GOING TO BE PRIME POWER OF THE WORLD?

AD NCA

## CASS SEMINAR

## KEYNOTE ADDRESS

## 08 JUNE

**I would emphasise on Pakistan's national leadership to make the most of this diplomatic vacuum and focus our national technology plans on familiarization, development, induction and indigenization of emerging technologies in relevant areas of civil and military applications to serve the purposes of comprehensive national security. An appropriately focused national task force with clearly defined lead agency, mandate, objectives and reasonable resources at its disposal could be a good start point.**

## EXPANSION OF UNITED NATIONS SECURITY COUNCIL

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## PAKISTAN'S COLLABORATION WITH IAEA IN PEACEFUL USES OF NUCLEAR TECHNOLOGY

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During his visit to Pakistan in February 2023, DG International Atomic Energy Agency (IAEA) Rafael Grossi observed that "Pakistan's capacity in establishing new nuclear power plants indicates a promising future for nuclear energy and achieving Sustainable Development Goals." At present, Pakistan is operating six Nuclear Power Plants (NPPs) that come under IAEA safeguards. Four NPPs are located at Chashma (C1,C2,C3,C4) and two are located in Karachi (K1 & K2). The combined power generating capacity of C-series is 1320 MWs, and the total power generating capacity of K-series is 2200 Mws.

Together they produce 3520 MWs of electricity, contributing about 12% in the total energy mix of the country. On 20 June 2023, Pakistan and China signed a Memorandum of Understanding on a NPP to be built at Chashma with 1200 MWs power generation capacity. It will be seventh NPP built in Pakistan with Chinese assistance and fifth at Chashma.

Established in 1956, Pakistan Atomic Energy Commission (PAEC) is the essential driver of peaceful uses of nuclear technology in Pakistan. PAEC contributes towards achieving 11 out of 17 UN Sustainable Development Goals (SDGs). These include (i) Affordable and Clean Energy; (ii) Clean Water and Sanitation; (iii) Quality Education; (iv) Good Health and Well Being; (v) Zero Hunger; (vi) Partnerships for the Goals; (vii) Life on Land; (viii) Life Below Water; (ix) Climate Action; (x) Industry, Innovation and Infrastructure; and (xi) Poverty Alleviation.

PAEC's four agriculture and biotechnology institutes have produced over 140 high-yield, weather-tolerant and highly adapted varities of crops including cotton, wheat, rice, sugarcane, lentils and oilseeds. Climate-resilient cotton plants have provided an impetus to the textile industry of Pakistan.

This became possible through joint collaboration between Nuclear Institute for Agriculture and Biology (NIAB), IAEA and Food and Agriculture Organization (FAO). According to IAEA, "with the collaboration between Pakistan's NIAB, the IAEA and FAO, Pakistani scientists have reached a level of expertise that they can share with other countries."

Recently, NIAB has been designated as an IAEA "Collaborating Centre in Agriculture and Biotechnology". NIAB is also the national laboratory under IAEA's Zoonotic Disease Integrated Action (ZODIAC) initiative which aims to strengthen the preparedness and capabilities of member states to rapidly detect and timely respond to outbreaks of zoonotic diseases and future pandemics.

Pakistan was designated as the regional center for "Ray of Hope" initiative of IAEA during DG Grossi's recent visit to Pakistan. The initiative aims at increasing the availability of radiotherapy facilities in the developing countries. This initiative focuses on prioritizing a limited number of high-impact, cost-effective and

sustainable interventions in line with national needs and commitments of participating countries.

Pakistan also collaborates with IAEA in conducting training courses at national, regional and international levels. In 2021, "Practical Arrangements" were signed between Pakistan and IAEA which will help Pakistan to share its expertise in agriculture, human health, training and regulation with member states, especially from Africa.

In 2022, IAEA and FAO developed an emergency support package for the affectees of floods in Pakistan, leading to economic losses of more than $30 billion. The package aims to assist the country to use nuclear technology to assess the impact of floods on soil, crops and the potential spread of zoonotic diseases.

In 2022, IAEA granted Pakistan's National Institute of Safety and Security (NISAS) the status of "Collaborating Center in the field of Nuclear Security". The expertise of the faculty and state-of-the-art facilities of NISAS will be utilized to support implementation of IAEA nuclear security action plan for capacity building of IAEA member states in nuclear security, education, training and technical support.

Pakistan Institute of Nuclear Science and Technology (PINSTECH) is an IAEA partner in the work related to human health, nutrition and water analysis. In addition, under UNDP /IAEA/RCA(Regional Co-operative Agreement) Marine Sub-Project (2002) titled "Management of Marine Coastal Environment and its Pollution (RAS/8/083)", PINSTECH initiated essential field and laboratory activities in collaboration with other key end user institutions for study of various components of marine pollution project. Based on this, the IAEA recognized PINSTECH as a "Regional Resource Unit (RRU)" for UNDP/IAEA/RCA Marine Sub-Project.

PINSTECH offers extensive applied research and training programs and has established specialised labs working indigenously for the peaceful applications of nuclear technology in life sciences, environmental sciences, industries, medical and agriculture. Pakistan Atomic Research Reactor -I (PARR-I) located in PINSTECH was the first research reactor which Pakistan received under the Atoms for Peace Program (1956) from the US. The power generating capacity of PARR-I is 10 MW. PARR-II located in the same facility is a 30 KW research reactor.

These reactors are used for R&D and have helped Pakistan to achieve self-reliance in applications of nuclear technology in many areas. For instance, Molybdenum Production Facility at PINSTECH produces Molybdenum-99 which is used for diagnosis of different type of cancers in hospitals. The marvels achieved by PAEC would not have been possible without the indefatigable efforts and the wholehearted commitment of Pakistan's nuclear scientists and engineers.

PAEC's leading institutes such as Pakistan Institute of Engineering and Applied Sciences (PIEAS), Karachi Institute of Power Engineering (KINPOE) and CHASNUPP Center of Nuclear Training (CHASCENT) collectively provide high quality education and training to its workforce. These institutes also contribute to R&D programs of PAEC.

Nuclear technology can play a vital role in nation's growth and development. Pakistan, with the help of IAEA, has successfully used nuclear technology in a number of fields despite various challenges. Pakistan's nuclear programme has made significant contributions to socio-economic development of the country and welfare of its people. In Pakistan's journey of using nuclear technology for peaceful generating power, China has been a prominent partner. All six NPPs operating in Pakistan have been established in collaboration with China. The new NPP Chashma-5 (C-5) will also be built with Chinese assistance.

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