US-INDIA CIVIL NUCLEAR COOPERATION AGREEMENT: GLOBAL & REGIONAL IMPACTS

PAKISTAN'S PERSPECTIVE

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SECURITY AND COOPERATION IN SOUTH ASIA: A GLOBAL PERSPECTIVE

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PLAN OF PRESENTATION

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2. Chronology of the Indo-US Cooperation
3. Salient Features of the 123 Agreement
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5. The Way Forward for Pakistan

1. DEVELOPMENT OF NUCLEAR POWER IN THE REGION

1. The first NPP went critical in India in 1969 and in 1971 in Pakistan.
2. The embargoes on nuclear activity in India and Pakistan were imposed in the seventies after India's first nuclear test in 1974.
3. The embargoes nearly halted Pakistan's Nuclear Power Program but India continued with its indigenous Nuclear Power Program.
4. Generally speaking, the first four indigenous Indian nuclear power plants were built in the period 1971 to 1992 and took an average of 13 years and 9 months to build. India continues to replicate 220 MW units 14 times.
5. Similarly it is noticed that the first 7 Indian reactors operating in the period 1969 to 2004 have had very low availability factors ranging from 22% to 61%.
6. India ratifies the IAEA nuclear safety convention – March 2005.

2. CHRONOLOGY OF US-INDIAN NUCLEAR COOPERATION

• CIRUS becomes operational	1960
• Tarapur becomes critical	1969
• RAPS-I becomes operational	1973
• Indian Nuclear Test	1974
• Indian and Pakistani Nuclear Tests	May 1998
• September 11	2001
• Certain post 1998 test sanctions against India (and Pakistan) lifted after they joined US led coalition against terrorism	2001
• Indian PM meets US President and discusses transfer of civilian and military technology to India	Nov 2001

Cont.

CHRONOLOGY OF US-INDIAN NUCLEAR COOPERATION…

- Indo-US High Technology Cooperation Group — Nov 2002
- Launch of Next Steps in Strategic Partnership (NSSP), including nuclear cooperation — Jan 2004
- US President and Indian Prime Minister agree in principle for Civilian Nuclear Cooperation. Joint Statement issued — Jul 2005
- US President visits India and informed of the Indian plan to separate Civilian & Military Nuclear Programme — Mar 2006
- The bill to authorize US President to waive the restrictions on India under Atomic Energy Act of 1954 proposed in June 2006 and approved (Henry Hyde Act) — Jul 2006

Cont…

CHRONOLOGY OF US-INDIAN NUCLEAR COOPERATION…

- India has 17 NPPs in operation including 13 indigenous, 6 under construction and 8 committed. 8 PHWRs and PFBR will not be under IAEA safeguards. — Jul 2007
- Unveiling of the 123 Agreement — Aug 2007
- The Validated End User (VEU) Program for India approved. It will allow exports from USA to India of dual-use items. — Oct 2007

To put the Indo-US agreement into effect three remaining steps yet to be taken:

- **Indian agreement with IAEA on safeguards**
- **Exception from Nuclear Supplier Group (NSG)**
- **Final Approval from US Congress**

3. Salient Features of the 123 Agreement

(Pakistan would welcome non-discriminatory Civil Nuclear Cooperation amongst all states. Nuclear electricity is necessary to mitigate environmental concerns and for economic development.)

1. It confirms and desires to engage in full scope civil nuclear cooperation, research and development, nuclear safety, commercial trade in nuclear reactors related technology and fuel.
2. The agreement mentions possibility of an amendment to enable transfer of sensitive technologies and equipment to India. (VEU Program announced in Oct 2007.)

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SALIENT FEATURES OF THE 123 AGREEMENT …

3. Both US and India grant each other consent to reprocess spent fuel. This would require India to first establish a new national facility under IAEA safeguards dedicated to reprocess safeguarded nuclear material.

4. India commits to put under IAEA safeguards in perpetuity all civil nuclear materials and equipment.

5. US will support India in developing a strategic reserve of nuclear fuel to guard against any disruption over the lifetime of Indian reactors.

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SALIENT FEATURES OF THE 123 AGREEMENT …

6. If despite these agreements, a disruption of fuel supplies to India occurs, the US and India would jointly convene a group of friendly supplier countries such as Russia, France and the UK to pursue measures for restoring fuel supply to India.
7. After a long time, the American firms will be able to invest in India's nuclear industry and bring latest technology to the Indian market which will boost US industry and Indian economy (No NPP constructed in past three decades in USA).
8. It also opens up possibility of export to USA of NPP equipment manufactured in India.

4. PAKISTAN'S CONCERNS

1. The agreement is country specific to the exclusion of others similarly placed and in need of nuclear electricity.
2. This agreement sets a precedent that a Non-NPT Weapon State can be helped to meet its energy needs.
3. The agreement gives India "virtual status" of a Member of the Nuclear Club (Pakistan is not recognized similarly and this will lead to further imbalance.).
4. All recognized nuclear weapon states (except China) have voluntarily halted production of fissile material for nuclear weapons. India is free to not halt.

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PAKISTAN'S CONCERNS…

5. India is said to have limited reserves of uranium which it presently uses both for civil and military purpose. The agreement will enable India to import uranium for civil purposes, facilitating the diversion of its indigenous uranium reserves towards nuclear weapons.
6. US is persuading NSG to make India an exception. Other countries including Pakistan may like to be treated similarly.
7. This agreement may initiate a nuclear arms race in the region affecting economic development.
8. If India carries out nuclear tests the Indo-USA cooperation will be terminated but continued US interest in ensuring fuel supplies from other countries is noteworthy.

5. Pakistan's Nuclear Power Plans

KANUPP

KANUPP

Type: PHWR/CANDU of 100 MW net (original 125 MW net)

Contract: 24 May 1965;

Supplied by Canada on turnkey basis;

Most of the Construction and Installation Crew was Pakistani;

Peak Canadian manpower was ~ 60.

Commercial Operation: 1972

O&M by PAEC;

Vendor support withdrawn in 1976;

Only safety related support resumed in 1992.

Cumulative Gross Generation (end Apr. 07): 11.3 TWh

Life-time Capacity Factor: 30% (low)

Present Status: Refurbished for 15 year life-extension till 2019

Fuel: Manufactured locally and stored under IAEA surveillance system.

First loaded in plant in 1980.

Under IAEA Safeguards

KANUPP

Reactivity Drive Mechanism is being transferred to its parking position

CHASNUPP-1

CHASNUPP-1

Type: PWR of 300 MW net capacity

Contract: 31 Dec. 1991;
Supplied by China on turnkey basis

Construction Start (1st Concrete Pour): Aug. 1993

Commercial Operation: Sept. 2000

Operation: O&M by PAEC;
Vendor support available;
Fourth Refueling carried out in February 2007

Cumulative Gross Generation (end Apr. 07): 13.2 TWh

Lifetime Capacity Factor: 70% (last 3 years average: 82%)

Fuel: Imported from China

Under IAEA Safeguards

UNDER-CONSTRUCTION CHASNUPP-2

CHASNUPP-2

Type: PWR of 300 MW (net)

Contract: 4 May 2004

Construction Start (First Concrete Pour): Dec. 2005

Planned Commercial Operation: mid-2011

Contract Type: Being supplied by China on Turnkey basis;
50% participation in Installation & Commissioning Team planned

Fuel: To be imported from China; Lifetime agreement

Generation Cost: In 2011 will be about US Cents 6.0/kWh;
It will be cheaper than oil and most gas-fired plants

Will be Under IAEA Safeguards

NUCLEAR CAPACITY TARGETS: 2030

- The power capacity targets envisage a Nuclear installed capacity of at least 8,800 MW by 2030.
- 8,800 MW is a prudent estimate (downgraded from 20,000 MW) based on the current international scenario.
- This nuclear capacity will correspond to 5.4% of the capacity and about 8% of generation in 2030.
- There is room for substantial expansion of nuclear capacity beyond 8,800 MW to reduce dependence on imported natural gas.

COOPERATION OF PAKISTAN WITH INTERNATIONAL ORGANIZATIONS

- Pakistan is a Member of
  - International Atomic Energy Agency (IAEA)
  - World Association of Nuclear Operators (WANO)
  - Candu Owner's Group (COG)
  - World Nuclear Association (WNA)
- The number of visits by the Delegations/Missions/Teams of these Organisations to the Nuclear Power Plants of Pakistan and related facilities over the decades, is innumerable.
- Pakistan does not depend on its civilian nuclear power installations to further its defence capabilities.

5. THE WAY FORWARD FOR PAKISTAN

- Pakistan would like to see non-discriminatory approach by NSG. Growing energy needs, inadequate indigenous energy resources and global warming concerns favour large scale use of nuclear power in Pakistan.
- Pakistan would welcome opportunities to purchase NPPs , fuel and technology from friendly sources.
- The concept of Nuclear Power Parks advocated by PAEC since 2003, can be one of the options for future NPPs in Pakistan.
- The then Chairman PAEC (the speaker), while addressing WNA, London on September 06 2003, said:
  - "We would like to suggest joint ventures for setting up nuclear power plants in Pakistan. To alleviate proliferation and other concerns, nuclear power plants can be treated in a special manner. Several NPPs could be constructed in a designated zone, the boundaries of which are specially secured to the satisfaction of all concerned. It can be ensured that the plant and the associated facilities are fully safeguarded. This could be a solution for Pakistan".

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THE WAY FORWARD FOR PAKISTAN…

- The Nuclear Power Parks concept is now included in one of the five 'Multilateral Approaches to the Nuclear Fuel Cycle', suggested by the Expert Group constituted by the DG of IAEA (IAEA INFCIRC/640, 2005).
- Like the existing and under-construction NPPs, all imported NPPs will also be under IAEA Safeguards.

THANK YOU