



IAEC

INTERNATIONAL ATOMIC ENERGY CONSULTING

DOING BUSINESS IN INDIA OPPORTUNITIES AND CHALLENGES

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SPECIAL SUMMIT III ON GLOBAL NUCLEAR ENERGY MARKETS

Evolution of Nuclear Energy Program in India

- India had the most advanced nuclear program in all of Asia until 1960's
- 1944: Dr. Homi Bhabha sought funds from a non-governmental charity organization to set up an institute to conduct atomic research with the purpose of alleviating poverty and disease in India
- 1948: India, having gained freedom in 1947, established the Atomic Energy Commission (AEC), with Dr. Bhabha as its first Chairman
- 1954: India announced its 3-stage nuclear program at a global conference in New Delhi
 - Stage 1: Natural Uranium (and supplementary LEU) fueled reactors
 - Stage 2: Mixed Oxide (MOX) fueled reactors
 - Stage 3: Thorium fueled reactors
- 1956: The first industrial scale 1 MW reactor using enriched uranium began operations
- 1960: A 40-MW reactor, developed in partnership with Canada and the U.S., attained criticality (Asia's first)



INDIA'S GROWING NUCLEAR POWER PROGRAM

- India has built 22 nuclear power plants so far
 - Installed Capacity is 6780 MW
- India has currently 9 nuclear power plants under construction
 - 6700 MW's of new capacity will be added by the end of the 13th 5-yr plan (2022)
- India is planning to build another 28 nuclear power plants in the next 15 years
 - 10 new 700-MW Pressurized Heavy Water Reactors (PHWR's) were approved for construction by the Indian Government on 5/17/17
 - 10 additional plants under consideration are indigenously designed 900-MW Indian Pressurized Water Reactor (IPWR)
- Market opportunities for U.S. nuclear supplier go beyond W and GEH
 - India will be commissioning, on an average, 2 reactors per year for the next 15 years
 - Single purchasing window: Single utility/buyer (NPCIL), no provincial jurisdictions and a fully transparent regulatory and procurement process
 - Check out latest opportunities in India at: http://www.npcil.co.in/main/All_Tenders.aspx



CHALLENGES IN DOING BUSINESS WITH INDIA -1

- Indians are tough negotiators:
 - Patience and Persistence
 - No hidden agendas – supplier is told upfront what is to be expected
 - There is “Value Engineering” and then there is “Frugal Engineering”
 - NASA (2014): “Maven Mission” to Mars - \$671 million
 - Hollywood (2013): “Gravity” movie cost - \$100 million
 - ISRO (2014): “Mangalyaan Mission” to Mars - \$74 million
- New “Make in India” policy is a national priority
 - Local manufacturing and JV’s are encouraged
 - Foreign manufacturers are diversifying FROM India
 - Two recent examples: Apple and GM
 - Lockheed discussing possibility of manufacturing F-16’s in India



CHALLENGES IN DOING BUSINESS WITH INDIA - 2

- The U.S. Nuclear Export Controls Policy (Current Executive Branch directives) is not conducive to civil nuclear sales to India
 - LWR related technology and hardware transfers (810/110) restrictions to countries possessing “Advanced Nuclear Technology” under the bilateral 123 Agreement (as is the case with India) should be streamlined
 - India is not a “Generally Authorized” destination under NNSA Part 810 rules which is inconsistent with recent declarations of the U.S. Congress and the Department of Defense
 - HR 4909, NDAA (2017), Section 1292, requires U.S. Secretaries of Defense and State to clear roadblocks to cooperation with India so that it becomes a key defense partner
 - U.S. and India have established the U.S.-India aircraft carrier and jet engines technology cooperation programs
 - The U.S. engages in joint military exercises (ground, air and sea) with India more often than any other country, including those within NATO
- It appears that NNSA decision to exclude India from 810 Appendix A list on the basis of being “inimical to U.S. interests” is not supported either by the U.S. Congress or the DOD



CHALLENGES IN DOING BUSINESS WITH INDIA - 3

- U.S. industry outlook towards India needs a commercial customer focus:
 - NPCIL is managed as an autonomous public sector unit (PSU) with independent Board of Governors, accounting and audit systems that are comparable to western standards, and credit ratings assessed by American credit agencies
 - The business model for success is NOT to look at how India's deals with Russia, but to focus on the customer (NPCIL) and meet its expectations
 - NPCIL cannot sign any contract that is not approved by its independent Board
 - NPCIL for all practical purposes is a commercial entity that seeks the best value from its suppliers
- Following passage of the Civil Liability for Nuclear Damage Act of India (CLNDA), India joined the Convention on Supplementary Compensation for Nuclear Damage (CSC), advocated by the U.S. The instrument of ratification was delivered to the IAEA on February 4, 2016
 - While the Indian nuclear liability law was formally endorsed by the U.S. Government in January 2015, it is still not well understood by the U.S. nuclear supplier community



“MAKE IN INDIA” PROVIDES NEW OUTLOOK

- Focus on “Make in India” represents a major refocus in the Indian policy making
 - In the civil nuclear sector, reiteration of such a policy was made by the Indian Government on May 17, 2017 when it authorized 10 additional reactors for construction
 - There are new opportunities for U.S. suppliers willing to participate in India’s indigenous reactor construction program

- The Editorial Board of the Economic Times (India’s version of the WSJ) on May 23, 2017 made following comments regarding the new policy on nuclear power:

“The Cabinet’s green signal to rev up India’s nuclear power capacity needs to be followed through with concrete plans to rationalize costs and reap scale economies in plant execution But more needs to be done regarding innovative design, standardized equipment and strict timelines for construction.

*Sourcing and managing component costs would be key ... There is also a need to leverage **international experience** to step up efficiency in project implementation, operations and possible expansion.”*

