

A TECHNICAL EXAMINATION OF U.S.-INDIA NUCLEAR DEAL

Impacts of the U.S.-India Nuclear Deal on India

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U.S.-India Relations

- **History of mistrust between United States and India**
- **Clash of perceptions:**
 - **India's views on nuclear weapons**
 - **U.S. views and NPT obligations**
- **India's 1974 nuclear test and legal issues**
- **Nuclear Suppliers Group (NSG) and U.S. nonproliferation initiatives**
- **India's 1998 tests and international "outrage"**
- **India's pursuit of nukes: "Dog House" and "Club House"**
- **The New Millennium: Détente in U.S.-India relations**
- **India and United States: Next Steps in Strategic Partnership**

July 2005 Agreement

- **Bush-Singh surprise announcement on 18th July 2005**
- **Mixed reactions in India about the pact**
 - Ministry of Foreign Affairs enthusiastic
 - Main opposition reacted quite strangely
 - Communists' response not a surprise
 - Nuclear establishment responded cautiously
 - Policy community divided about pros and cons
 - Media, barring some exceptions, extremely enthusiastic
- **Deal suggested the government operated secretly and only a few were in the decision-making loop**
- **In the following months U.S. and Indian governments worked to get a deal signed during President Bush's visit in March 2006**

March 2006

- Intense negotiations since July 2005 about civil-military separation of India's nuclear facilities
- Pressures from various quarters (in US and India) suggested the deal could get killed
- General perception in India: President Bush and Secretary Rice were more sympathetic to India's views compared to the other constituencies
- India's AEC chief raises concern about "shifting goalposts" (additional requirements from Indian side), forcing the government to reassure the public & opposition
- India-U.S. negotiations: Unprecedented media coverage and public discourse on a highly technical issue for the first time
- March 2006 visit of President Bush, signing of the "historic" nuclear deal, elevated public perception about current U.S. administration, and some minor dissent in Delhi and other places over Danish cartoons!

Impact on India's Foreign Policy

- For many decades, foreign policy establishment was in an enthusiastic pursuit of “Nehruvian” (Jawaharlal Nehru) idealism
- In some instances, foreign policy goals were pursued even at the cost of national interest
- New thinking: crafting foreign policy goals which were in tune with national interests (commercial, trade, and more recently energy)
- **Grail of India's Foreign Policy Establishment**
 - Permanent seat in UNSC (a place in the “high table”)
 - Formal recognition for its nuclear weapons
- U.S.-India nuclear deal offers a partial fulfillment (informal recognition) of the second objective
- Relaxation of high-tech import sanctions was not primary objective because indigenous capabilities, achieved through a painful process, have made the country reasonably self-reliant

Impact on India's Foreign Policy

- **Speculation about the underlying motivations of India-U.S. nuclear rapprochement in various contexts**
- **What are U.S. motivations?**
 - Quid pro quo for participation in U.S.-led security initiatives?
 - China and Iran
- **Pitfalls of “containment” policies in Asia.**
 - India will cooperate where both national interests converge
- **What are Indian motivations**
 - Nuclear issue major irritant in bilateral relations
 - Time was ripe for engaging with the United States
- **Will failure to get U.S. laws amended affect India-U.S. relations?**
 - Nuclear deal has become the symbolic focus of India-U.S. relations
 - India would expect active U.S. participation for having NSG access

India's Energy Resource Base

Energy Resource	Amount	Electric Potential (TWe-yr)
Coal	54 billion tonnes	11
Hydrocarbons	12 billion tonnes	6
Uranium	61000 tonnes	
In PHWRs		0.4
In FBRs		42
Thorium (in FBRs)	~300000 tonnes	155

PHWR= Pressurized Heavy Water Reactor

FBR=Fast Breeder Reactor

India's Energy Policy

- Country needs major energy related investments from domestic and foreign capital
- GDP is growing at 7-8 % per year, and commercial energy demand will increase as well.
- Current installed capacity of around 125 GWe simply not sufficient to meet current and projected future demand
- Emphasis on energy efficiency improvement, renewable sources and nuclear power.
- Coal cannot be ignored because of domestic availability. India-specific technologies like gasifiers for high-ash coals, nuclear reactors for thorium utilization etc. being developed
- Experience from sanctions has laid emphasis on indigenous design, development and manufacture of energy equipment & systems.

Reactors Under Operation

Reactor	Type	MWe (net)	Start Date
Tarapur 1 & 2	BWR	150 X 2	1969
Kaiga 1 & 2	PHWR	202 X 2	1999-00
Kakrapar 1 & 2	PHWR	202 X 2	1993-95
Kalpakkam 1 & 2	PHWR	155 X 2	1984-86
Narora 1 & 2	PHWR	202 X 2	1991-92
Rawatbhata 1	PHWR	90 X 1	1973
Rawatbhata 2	PHWR	187 X 1	1981
Rawatbhata 3 & 4	PHWR	202 X 2	1999-00
Tarapur 4	PHWR	490 X 1	2005
Total (15 reactors)		2993 MWe (net)	

Reactors under Construction

Reactor	Type	MWe (net)	Start Date
Tarapur 3	PHWR	490 X 1	2006
Kaiga 3 & 4	PHWR	202 X 2	2007
Rawatbhata 5 & 6	PHWR	202 X 2	2007-08
Kudankulam 1 & 2	PWR (VVER)	905 X 2	2007-08
Kalpakkam PFBR	FBR	470 X 1	2010
Total (8 reactors)		3578 MWe (net)	

Impact on India's Nuclear Energy Policy

- Nuclear energy plays a marginal role in India's energy mix (around 3%), but expected to grow in the coming years
- Nuclear energy policy follows the “three stage” plan charted by Homi Bhabha.
 - Pressurized Heavy Water Reactors (PHWRs)—First Stage
 - Fast Breeder Reactor (FBRs)—Second Stage
 - Thorium Reactors—Third Stage
- Three-stage program makes less economic sense under current conditions, but India's position in the NPT regime reinforced faith and official patronage for this plan
- External civilian nuclear energy cooperation can have positive influences
 - Provide an alternative vision for the DAE in India
 - Help evaluate the economics of different reactor systems
 - Free the DAE from the mental isolation
 - Help public to gain information access & better understanding

Difficulties of Civil-Military Separation

- Civil-military separation difficulties can be traced to the organization's history since the late 1940s
- DAE has created an intricate web of interconnections among various units, which make a workable civil-military separation extremely difficult, if not impossible
- These difficulties are reflected in India's promise to effect the transition in a "phased manner"
- Separation was not DAE's choice or wish, it was forced upon them from the political authorities.
- Confusion over what's needed to make nuclear weapons material persists at the political level. DAE's monopoly in technical advice and decision-making complicates matters further

Impact on India's Nuclear Safety

- DAE is comfortable with current convenient arrangement between its facilities and regulatory authority
- Not to say that DAE's facilities have a Soviet-style record or poor safety practices like some critics would like us to believe
- Relationship between India's Atomic Energy Regulatory Board (AERB) and DAE and AERB's effective independence (subject of a major controversy ten years back)
- Opening up of many facilities will force the DAE to do a rethink on its concept of regulation
- This will also contribute to public confidence about nuclear facilities in general
- Current indications suggest that DAE is unlikely to yield except if confronted with a safety-related accident