

INDIA

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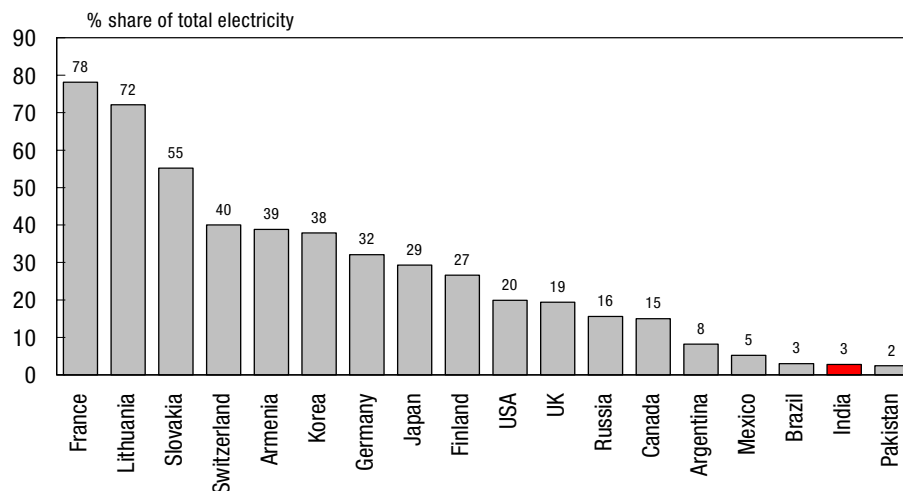
India Economics

Indo-US Nuclear Energy Deal: Significant Step Forward

- **PM Manmohan Singh's visit to the US** last month went well beyond most expectations. While there were no commitments on support for India's bid for a permanent seat on the UN Security Council, there were gains on many fronts ranging from the far-reaching nuclear pact, to the launch of the CEO forum, closer ties in space exploration and measures to accelerate economic growth through greater trade, investment and technology collaboration
- **The nuclear pact:** The highlight of PM Singh's three-day visit to the US was the joint statement¹ by President Bush and PM Singh, where the president stated that "as **a responsible state with advanced nuclear technology**, India should acquire the same benefits and advantages as other states and that he would seek agreement from Congress to adjust US laws and policies to enable full **civil nuclear energy cooperation and trade with India.**"
- **A big step forward:** Despite PM Singh agreeing to separate India's civilian and strategic nuclear facilities and allowing inspection of its civilian facilities, we believe the nuclear pact is a big step forward as it effectively ends three decades of India being treated as a nuclear have-not, and should eventually bestow on the country all the rights and advantages that come with being a Nuclear Weapons State (NWS) (*although this title has not been granted*).
- **Implications for India:** While India is still not formally defined as a nuclear weapons state, we believe the likelihood of getting all the rights and advantages of a NWS is far more important than being formally classified as a NWS. In addition, the biggest gain from the agreement should come from enhanced levels of energy security, as permitting trade in civil nuclear energy (including fuel) would allow India to develop its nuclear facilities for electricity generation

Percent Share of Nuclear Energy in Total Electricity- A Comparative View

Currently nuclear energy accounts for less than 3% of electricity generation. The Nuclear Pact should improve this ratio thus reducing dependence on other energy sources.



Source: World Nuclear Association.

¹ For the detailed joint statement please refer to the Indian government's release at <http://pib.nic.in/release/release.asp?relid=10233> or at the White House website: <http://www.whitehouse.gov/news/releases/2005/07/print/20050718-6.html>

Nuclear energy in India – a brief background

To gain a perspective of the importance of the nuclear pact, one needs to note that along with Israel and Pakistan, India has declined to sign the Nuclear Non-Proliferation Treaty (1970), which has so far been signed by 186 nations. The NPT aims to restrict the possession of nuclear weapons, and effectively divides countries into Nuclear Weapons States (countries that acquired nuclear weapons prior to 1970 – these are the US, UK, France, Soviet Union, and China), and non-NWS.

Because India has not signed the NPT, it has been largely excluded from trade in nuclear plants or materials. Despite this, India’s nuclear weapons capabilities are well recognized. It has 14 nuclear power plants, four of which are within the International Atomic Energy Agency (IAEA) safeguards.²

India — Operating Nuclear Power Reactors

Unit-Location	Capacity (MWe)	Date of Commercial Operation
Tarapur 1+2	320	1969
Rawatbhata 1+2	300	1973,1981
Kalpakkam 1 +2	390	1984,1986
Narora 1+2	440	1991,1992
Kakrapar 1+2	440	1993,1995
Kaiga 1+2	440	2000
Rawatbhata 1+2	440	2000
Total (14)	2770	

Source: Nuclear Power Corporation of India Limited.

The nuclear pact — key details

What the US said it will do

In simple terms, the July 18 joint statement acknowledges India’s status as a state with advanced nuclear technology. Key points include:

- 1 President Bush specifically stated that India being a responsible state with advanced nuclear technology should acquire the same benefits and advantages as other states.
- 2 To enable full civil nuclear energy cooperation and trade with India including fuel supply to the safeguarded reactors at Tarapur, the President would seek agreement from Congress to adjust US laws and policies to remove any constraints within Congress that could stand in the way of facilitating supplies of nuclear fuel and other related technologies.
- 3 The US is likely to encourage its allies to extend similar benefits

How will India reciprocate?

In return, Prime Minister Manmohan Singh said that India would *reciprocally agree* to assume the same responsibilities, obligations, and practices and acquire the same

² IAEA safeguards broadly involve verification that nuclear programs are not misused to assemble nuclear weapons. Monitoring and verification activities focus on those nuclear materials that are crucial to weapons manufacturing, such as Uranium 233 and 235, and Plutonium 239. For more information please visit <http://www.iaea.org/OurWork/SV/Safeguards/index.html>

benefits and advantages as other countries with advanced nuclear technology. Key responsibilities include:

- 1 The identification and separation of civilian and military nuclear facilities and programs
- 2 Filing a declaration regarding civilian facilities with the International Atomic Energy Agency (IAEA), and placing these facilities within IAEA safeguards
- 3 Continuing the unilateral moratorium on nuclear testing
- 4 Refraining from the transfer of enrichment and reprocessing technologies to states that do not have them

Deal faces challenge of being accepted in both countries

While the nuclear deal is a big step forward in bilateral relations between the US and India, its acceptance is likely to be a tough challenge for both President Bush and PM Singh. President Bush will need to persuade Congress to adjust laws and US policies and convince the non-proliferation hawks — which will be by no means easy — while PM Singh will need to explain to both the Left Parties and the Opposition that separating civilian and military facilities and allowing inspection would not dent India's sovereignty and independence.

What the deal means for energy in India

The biggest gain from the joint statement enabling India with full civil nuclear energy cooperation and trade with the US including fuel supply will come from enhanced levels of energy security.

Greater energy security

Rising electricity demands met through nuclear sources, resulting in reduced dependence on crude oil and coal

Development of an alternate source of electricity generation

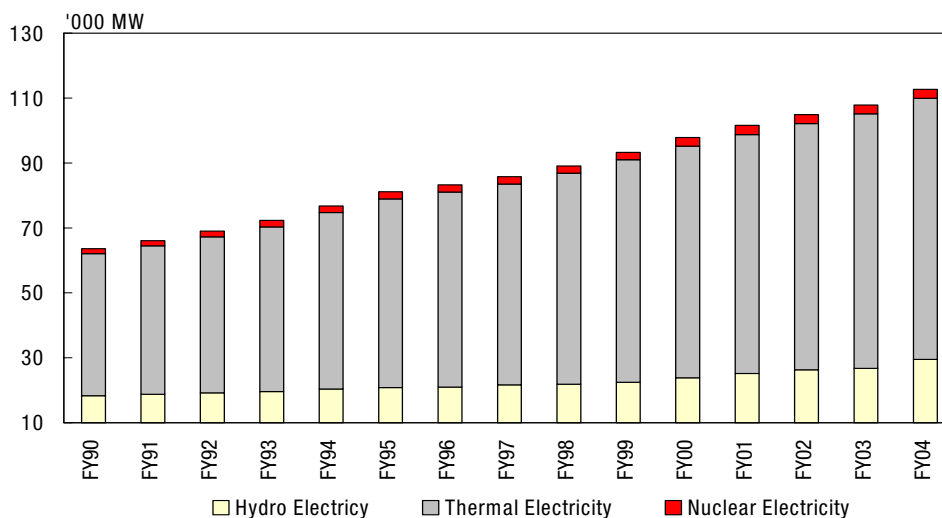
The agreement for full civil nuclear energy cooperation and trade should help India develop the use of nuclear facilities for electricity generation — and other civilian uses. This is a big positive given the rising demand for demand for power in India.³

Despite a rise in investment, the power sector still suffers from a wide demand–supply gap, with shortfalls of about 7% (energy deficit) and 11% (peak deficit). While over half the resources for electricity are powered by coal, coal reserves are limited.⁴ Moreover, the geopolitical risks associated with crude oil imports continue to rise, and reduced dependence on this source will only be beneficial.

³ According to the International Energy Agency, overall demand for energy in China and India is expected to double by 2030, while US demand is estimated to grow by only 35-50%.

⁴ For more details on reforms in India's Power Sector, please see the India Macroscopic "Power...ed by Reforms", dated 15 February 2005. For details on the coal shortage in India, please see the India Macroscopic ". Coal Shortage – A Growing Risk ", 13 April 2005

Trends in Electricity Sources in India- Hydro, Thermal and Nuclear ('000MWs)



Source: CMIE.

Use of nuclear energy for civilian purposes

Currently nuclear energy accounts for less than 3% of electricity generation. However, given that India has declined to sign the Nuclear Non-Proliferation Treaty, it has been largely excluded from trade in nuclear plants or materials. As a result India's nuclear power program has so far been largely without fuel or technological assistance from other countries resulting in the plants operating at sub-optimal capacities. However, this could change with the possibility of technology transfer. Interestingly, National Thermal Power Corporation Ltd (NTPC) has just announced that it intends to make arrangements to enter the nuclear energy business.⁵

What does the US gain from this?

The US-Indian collaboration, which began intensely shortly after 9/11, is emerging as one of the foundations of the global system. Over the past few months there has been much speculation about India becoming an Asian counterweight to China in an economic sense. It has been reported⁶ that India is likely to begin purchasing up to US\$5bn worth of conventional weapons, once Congress approves the deal.

⁵ See Business Standard, "NTPC has Nuclear Plans", dated 2 August 2005.

⁶ For details please refer to U.S.-Indian Relations and the Geopolitical System By George Friedman – Strategic Forecasting dated July 20, 2005

Disclosure Appendix

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