

India and Japan: Prospects for Civil Nuclear Cooperation

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India-Japan bilateral ties have expanded in recent years in strategic domains including security and economic ties. This paper particularly explores cooperation in the exchange of nuclear technology which, it is argued, has high potential for growth. India is looking for various sources of energy to meet the increasing demand to sustain its economic growth. Japan in turn has developed high-technology expertise in the nuclear field; and these two factors could be combined to take the India-Japan relationship forward.

Both countries have repeatedly stressed the need for controlling the proliferation of weapons of mass destruction (WMD). In this context, Japan has noted India's non-proliferation track record. In the joint statement of December 2001, for example, the leaders of both governments had agreed to "work as partners against proliferation" of WMD and to cooperate in implementing vigilant export controls of sensitive and dual-use materials and technology.

The nuclear issue has two aspects, namely, the demand for abolition of nuclear weapons and growing interest in the peaceful use of nuclear energy. The votaries of complete disarmament are the "have-nots" – Japan, the Non-Aligned countries, Australia, Canada and New Zealand – who have "argued rather from an idealistic standpoint, emphasizing the inhumanity of nuclear weapons".¹ The leaders of the recent nuclear disarmament movement are basically the "have" nations, led by the US, whose policy stance is determined by the security environment that has emerged in the post-Cold War era. In particular, President Barack Obama's speech in Prague in April 2009 that aimed to create a world without nuclear weapons is significant. The United

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States' Nuclear Posture Review (NPR), released in April 2010, "moved Obama's nuclear disarmament policy a step further by declaring a reduction in the number and role of nuclear weapons in the national security of the US and its allies".²

The growing interest in nuclear energy world-wide, including developing countries, is driven by concerns about energy security and global warming. But growth in nuclear power generation brings with it risks of safety, nuclear proliferation and nuclear security. There will always be risks of turning nuclear power to military purposes. Securing this risk demands that necessary safety mechanisms, non-proliferation (safeguards) and security are put in place. This principle of 3-Ss was first agreed upon by the G-8 countries and was included in the Leaders' Declaration of the G8 Hokkaido Tokyo Summit in 2008.

This paper discusses the current debate in Japan and the dilemma about forging civil nuclear cooperation with India. The possible impact of the Fukushima incident on Japan's nuclear future is also evaluated. The paper concludes that Fukushima is a reminder to countries around the world to move towards putting stringent safety mechanisms in place to make nuclear energy a reliable and clean source of energy, but neither Japan nor India can do away with nuclear energy as an option for its energy security policy.

Stances of India and Japan

As the only country to have been a victim of nuclear attack, Japan is quite sensitive to things nuclear and Japanese public opinion is vehemently opposed to nuclear proliferation and nuclear weapons in any form.³ Japan has remained inflexible on issues such as the Nuclear Non-Proliferation Treaty (NPT) and Comprehensive Test Ban Treaty (CTBT). Though Japan now understands India's position and history of using nuclear power for civilian purposes, a public acknowledgment of this changed perception could send a wrong signal to the world about Japan's possible nuclear future.

India-Japan ties chilled following India's 1998 nuclear tests at Pokhran. Japan suspended all its economic aid to the then on-going projects. The move was seen in India as Japan's over-reaction and lack of understanding of India's compulsions. Political relations, however, steadily improved from 2001 onwards, during the tenures of Junichiro Koizumi, Shinzo Abe, Yasuo Fukuda and Taro Aso. The trend has continued during Hatoyama's regime and now Kan Naoto.

In the field of possible cooperation in critical civil nuclear area between India and Japan, differences do exist. Though several summit meetings have taken place to discuss these, a breakthrough has eluded them. During his visit to India in December 2009, Yukio Hatoyama stressed the importance of bringing into force the CTBT at an early date. In a joint Press interaction, he stressed on the global momentum towards early entry into force of the treaty and expected India to join the United States and China to sign and ratify it at an early date.⁴ Prime Minister Manmohan Singh reiterated India's commitment to a unilateral and voluntary moratorium on nuclear explosive testing.⁵

Hatoyama also referred to the Fissile Material Cut-Off Treaty (FMCT) and expected India to join Japan in the negotiation process for its early conclusion. The FMCT proposes to prohibit further production of weapon-grade uranium and plutonium. The two Prime Ministers "supported the immediate commencement of negotiations in the Conference on Disarmament and an early conclusion" of FMCT. They also supported the "strengthening of international cooperation with a view to addressing the challenges of nuclear terrorism and clandestine proliferation".⁶ Hatoyama almost made high-technology trade conditional to India's effort for a speedy conclusion of the FMCT. Japan expects India to assure that its high-tech imports would not be diverted for weapons or to third countries, taking note of the "enormous" scope in the area.⁷

Prime Minister Singh reiterated India's longstanding position that India's decision on the CTBT would follow ratification by the United States and China. Should the US and China ratify the CTBT, "a new situation will emerge", he said.⁸ As regards the NPT, India has taken a consistent position from the beginning that the treaty is discriminatory. In a marked departure from its earlier stand, Japan now understands and appreciates "the circumstances in which India had to go for the nuclear weapon" in 1998. Prime Minister Hatoyama appreciated his Indian counterpart's explanation of the circumstances in which India developed nuclear weapons.⁹

Even when negotiations on the civilian nuclear deal with the US were going on, there were reports in 2006 that Washington was putting pressure on India to agree to a future moratorium on testing of dual-use missile technology that could be used to deliver a nuclear payload and moratorium on testing another atomic bomb as a quid pro quo for the civilian nuclear deal.¹⁰ India rejected the demand as a backdoor entry to the CTBT.

India's Quest for Nuclear Energy

In view of the waiver granted by the 45-nation Nuclear Suppliers' Group (NSG) to India to conduct trade in nuclear materials and technology, it may be a matter of time before Japan sees the enormous benefits that would accrue if it revisits its position.¹¹ Energy-starved India is keen to woo Japan's thriving nuclear power industry but Tokyo has so far not allowed Japanese companies to do business in nuclear reactors and related technology until New Delhi agrees to sign the CTBT. But in view of the entering into force of the Indo-US nuclear agreement in December 2008 and further nuclear agreements signed by India with countries like France, Russia, Canada, Kazakhstan, etc., Japan currently finds itself in a relatively awkward position. The US and France would want Japan to enter into a nuclear agreement with India in order to promote their own nuclear commerce with India by building nuclear power plants in India with Japanese collaboration.

After the US entered into the nuclear deal with India, followed by France and Canada, and on-going talks with other countries such as South Korea, the US and French companies in particular are keen that Japan should conclude a similar deal with India as soon as possible. The French and American reactor vendors have complex tie-ups with leading Japanese nuclear engineering companies for supply of components. Areva of France and Westinghouse and General Electric of the US are not allowed to engage in nuclear commerce with India unless Japan has a formal agreement for nuclear cooperation with it. Hence, GE Hitachi and Toshiba-Westinghouse cannot sell nuclear plants and technology to India unless the Diet gives formal approval.

Both, the Ministry of Economy, Trade and Industry (METI) and the Japan Atomic Energy Agency (JAEA), are keen that the deal with India should come through at the earliest. In particular, METI minister Naoshima Masayuki, JAEA chairman, Kondo Shunsuke and chief secretary general of the Cabinet Sengoku Yoshito are in favour of an early conclusion of a deal that would facilitate sales of nuclear plants and large infrastructure projects such as bullet trains to India.

During his visit to India in December 2009, Hatoyama had alluded to the possibility of Japan starting to export nuclear plant equipment and other hi-tech items in his discussion with Prime Minister Manmohan Singh. This promise was conditional on India refraining from conducting further nuclear tests. After receiving exemption from the NSG, following India's deal with the US, India upped the ante and signed quickly agreements with France, Russia, Kazakhstan and Canada for the sale of uranium fuel and/or nuclear equipment;

it is also likely to enter into a similar agreement with South Korea. Unless Japan joins this list soon, it will be losing its share of the nuclear pie in the Indian market.¹²

During his visit to South Korea in June 2010, India's Minister of External Affairs, S.M. Krishna, recognized "Korean capabilities in civil nuclear energy" and exchanged drafts for signing an Inter-Governmental Agreement on Peaceful Uses of Nuclear Energy.¹³ South Korea is the world's fifth-largest atomic energy producer; atomic energy accounts for 40 per cent of South Korea's power generation.¹⁴ The Korea Electric Power Company has secured a \$40 billion nuclear deal to build and operate four nuclear reactors of 1000 MWe (mega Watt equivalent) each in UAE. An early conclusion of an agreement between India and South Korea will help address India's growing energy needs. South Korea has announced similar deals with Turkey as well. The attraction of Japanese nuclear technology is its sophistication compared with the others. Sourabh Gupta of Samuels International Associates in Washington DC holds the view that

India could still access Russian and South Korean technologies, though the range of options and quality of such technologies might retard India's own progress in developing industry technology standards that could make its civil nuclear sector globally competitive someday in the future ... if ever.¹⁵

India currently has twenty civilian nuclear reactors. It also has a flourishing and largely indigenous nuclear power programme and expects to develop 20 GWe (giga Watts equivalent) nuclear capacity on line by 2020 and 275 GWe by 2052; and aims to supply 25 per cent of electricity from nuclear power by then.¹⁶ It has also mastered some of the related technologies such as uranium exploration, mining, fuel fabrication, heavy water production, reactor design and construction and operation, besides reprocessing and waste management. Besides the fast breeder test reactor (FBTR) (40 MWth) at Kalpakkam, it plans to build a 500 MWe fast reactor (PFBR), which is likely to be operational in 2012. India is also developing technology to utilize its abundant resources of thorium as a nuclear fuel in the third stage of its three-phase nuclear programme.¹⁷

Japan's Dilemma

The Japanese government as well as the public seem confused on what stance Japan should take regarding nuclear cooperation with India. While there is no sharp division either in the LDP (Liberal Democratic Party) or the ruling DPJ

(Democratic Party of Japan) that would threaten a split in either party on the issue, the Hiroshima experience lurks always in the Japanese sub-consciousness and this shapes the Japanese thought process. This is unlikely to be erased soon.

Under the circumstances, the DPJ finds itself in the midst of defining a course that would not abandon Japan's stated policy on nuclear disarmament, while at the same time facilitating nuclear commerce with India. As forging a "strategic partnership" has already received endorsement from its foreign policy community, Japan is struggling to find a middle path that would enable it to meet both ends.

Though still noncommittal, Japan understands India's strategic importance and the significance of meeting its energy demand. There is greater appreciation in Japan that nuclear power would also help India fight global warming. The two countries had their first round of talks on 28 June 2010 aimed at sealing a bilateral civilian nuclear cooperation pact. Under this pact, Japan would export its nuclear power generation technology and related equipment to India while banning India from using them for military purposes or transferring them to another country.¹⁸

The Japan Forum on International Relations (JFIR) strongly recommends Japan to forge nuclear links with India.¹⁹ Supporting India's economic growth momentum, Japan recognizes that India's greatest challenge to maintain growth is to secure sufficient energy supplies, especially for the generation of electricity. Importantly, Japan's technology and expertise in generating and ensuring the safety of nuclear power is among the best in the world; and JFIR therefore urged Japan to cooperate with India in these areas in view of its excellent position. In particular, it identified specific reasons why Japan needs to cooperate with India, including (i) the political significance of such cooperation; (ii) the need for India to deal with its lack of energy resources; (iii) the growing threat of global warming; (iv) the advantages of promoting cooperation in science and technology; and (v) the contribution by Japanese corporations involved in nuclear power.²⁰ The JFIR recommendation said: "... we call on the Japanese government to cooperate with India on this issue, while at the same time showing initiative in the global campaign for nuclear disarmament."²¹

Japan is one of the few technologically advanced producers of nuclear power reactors. Toshiba alone has over 30 per cent of global civilian nuclear reactor building capability. If Japan relaxes its policy and agrees to cooperate with India, the Indian nuclear market itself will unfold growth potential of

about \$100–150 billion in a decade's time. This is a huge attraction by itself for Japan to reconsider its position soon. Japan's experience in Kazakhstan could be an appropriate guide.²² This will have a propelling effect on greater economic engagement by Japanese corporations in Indian economic activities, giving a tremendous boost to the dormant economic ties between the two countries.

Neither India nor Japan carries any historical baggage in their bilateral relations and the "strategic" character of the relationship will receive a huge impetus if Japan sheds some element of inflexibility on the nuclear issue. Between strategic partners (for example between Japan and the US), there should always be room for some accommodation. If Japan accords flexibility to its strategic partner India on the issue of nuclear commerce, it would be "a powerful statement of Japan's investment in the bilateral strategic relationship".

Before India got the NSG to decide in its favour, India agreed to let the IAEA inspect fourteen of its twenty-two reactors. To enter into the nuclear deal with the US, India agreed to separate its civil and military nuclear facilities and agreed to place its facilities under IAEA safeguards. India not only stands committed to continue a moratorium on nuclear tests but also agreed to involve itself in negotiations on FMCT. The trouble is that Pakistan seeks a balance of nuclear forces and as a result negotiations on FMCT have been stalled. Some analysts take the view that granting India an exemption from NSG strictures was a mistake because this has weakened the non-proliferation regime. It is also argued that if Japan does not dilute its position on a no-testing pledge by India, some of the harm done on the NSG exemption may be diluted.

On 18 June 2010 the Japanese Cabinet adopted a new ten-year growth strategy, which included promoting export of nuclear power generation facilities.²³ Kan Naoto's plan to "rebuild the country" through his New Growth Strategy aims "to promote ties with emerging economies in Asia and encourages exporting infrastructure – including nuclear technology – to the region by cooperating with governments and the private sector".²⁴

In the DPJ's trade policy there is a slow but careful movement towards promoting exports and investments in emerging markets. India fits into this Japanese framework perfectly. In June 2010, METI unveiled the government's new "Industrial Structure Vision" strategy.²⁵ Recognizing modestly how the "deadlocked position" of Japanese industries was causing them to lag behind the world's major players and market changes, the "Vision" identified "Four Shifts" in government and private sectors.²⁶ In a message to the Japanese people in June 2010, METI minister Masayuki Naoshima explained the

“Vision”.²⁷ He said that Japan needed to formulate and implement a strategy that allowed it to be a winner on the global stage by crossing the boundary between the government and enterprises, between ministries, and between the national and local governments.

The seriousness of Japan’s vision statement can also be discerned from the fact that Naoshima retained his portfolio in the Kan government after Hatoyama’s resignation from office. In the context of India-Japan relations, it is important to note that the presidents of Hitachi, Toshiba and Mitsubishi Heavy Industries accompanied him when he visited India in April 2010. They form the core lobbying group for engaging with India in a civil nuclear deal. During this visit, the two sides agreed to put aside past differences on the nuclear issue and established a Joint Working Group (JWG) on civil nuclear cooperation. The decision to establish a JWG was taken in a meeting between Deputy Chairman of the Indian Planning Commission, Montek Singh Alhwalia, and Naoshima during the fourth ministerial-level meeting of the India-Japan Energy Dialogue.²⁸

On 22 October 2010 a consortium of thirteen Japanese companies²⁹ joined hands to establish International Nuclear Energy Development of Japan Co. Ltd. (JINED), headquartered in Tokyo, to engage in activities leading to the proposals to support nuclear power plant projects in the emerging countries.³⁰ JINED’s mission is to present proposals to countries that are going to build their first nuclear power stations. JINED President Ichiro Takekuro (from Tokyo Electric Power Co.) stated his aspiration to “prepare best proposals that are comprehensive packages of the know-how accumulated over the last 50 years [by Japan] in areas such as advanced technology and fuel procurement”.³¹ Currently in collaboration with METI, JINED is aiming to win nuclear power plant project orders in Ninh Thuan province, Vietnam.³² JINED has formulated a behaviour code centred around the following three pillars: (a) to see that the safety culture according top priority to assurance of the 3-Ss (safety, security and safeguards) takes solid root in the company; (b) to engage in proposal activities adapted to the wants and needs of the country concerned; and (c) to earn and keep the trust of stakeholders and society as a whole.³³

Competition in the Indian Nuclear Market

How would a deal between Japan and India, when it comes through, be viewed in Japan’s neighbourhood? If the deal with Japan precedes a similar

deal with South Korea, the latter will lose some of the business that it expects. Japan's entry will also deprive Russia of some of the advantages that it has enjoyed so far in the Indian nuclear market.

India itself will face a huge absorption capacity problem when civil nuclear commerce unfolds a vast arena of business. During Russian Prime Minister Putin's visit to India in March 2010, the two countries signed a nuclear cooperation agreement. India agreed to a roadmap that outlined plans to build more nuclear power plants with the use of Russian reactor technology.³⁵

Though the exact figures on construction of nuclear reactors remain disputed, according to Russia's nuclear chief Sergei Kiriyenko, who visited India in December 2009, Russia would build up to twenty reactors at three sites in India.³⁵ According to the Department of Atomic Energy, the roadmap outlines timelines for steps to be taken for the construction of units 3 and 4 at the Kudankulam nuclear power plant in Tamil Nadu. The roadmap also provides for construction of units 5 and 6 at Kudankulam and two reactors at Haripur in West Bengal. Two Russian VVER-1000 reactor units are already under construction at Kudankulam and are scheduled to start commercial operation in the latter part of 2011.

However, mere agreements for setting up new nuclear reactors are not enough. Execution of projects entails a host of issues such as land acquisition, rehabilitation and resettlement, environment permits and water usage, electricity pricing and liability, all of which have the potential to be extremely contentious. There is also a risk of getting entangled in legal gridlock. While Japan will face ideological hurdles, India may find it difficult to select sites for new plants because of environmental issues. There is already discontent brewing in the rural areas about the reckless rape of nature in the name of industrialization. Further industrial abuse by policymakers in Delhi can create a constituency that can have the potential to destabilize the system. The Indian government faces a big challenge to satisfy its disgruntled segment if its rising nuclear sector is not to be halted.

Post-Fukushima Scenario

The tsunami triggered by the massive earthquake of 11 March 2011 with a magnitude of 9 on the Richter scale, which crippled the Fukushima Daiichi nuclear power plant, has raised fundamental questions worldwide about the future of the global nuclear energy industry and energy security. Fears of massive radiation in the surrounding countryside led the Japanese government

to establish a 20 kilometre exclusion zone around the plant, though staying away at least 80 kilometres seems a better option. Japan's nuclear scientists and technicians struggled to stop highly radioactive water from flowing into the Pacific and injected nitrogen to prevent more hydrogen explosions and thereby stabilize the complex. Though nitrogen pumping has its own risks, Japan's Nuclear and Industrial Safety Agency approved it as a necessary measure.

Even while world attention has focused on the dramatic efforts to prevent a nuclear meltdown, the mood inside Japan has shifted against the use of nuclear energy. Other countries too have started reviewing their stance on the future development of nuclear industry. China has delayed the construction of new nuclear reactors. The ruling Christian Democrats in Germany lost the state election over the nuclear issue. Some of the South East Asian states which were earlier eager to climb on the nuclear power bandwagon have begun rethinking. France is pushing for international standards on nuclear safety. The Fukushima incident is likely to impact on the future of India's Jaitapur nuclear plant too.

Before Fukushima, the nuclear power industry in Japan was on the cusp of a period of growth. In view of the rising fuel costs and concerns about the greenhouse gas effects of fossil fuels as well as a slowdown in production of hydrocarbons, many states around the world had pinned their hopes on cleaner energy such as nuclear power. The problems had begun to accentuate as crude oil production showed signs of decline with production levels in Malaysia and Brunei flattening and Indonesia turning a net importer. The heavy concentration of oil production in the Middle East and the recent political convulsions in the region created a sense of volatility in both supply and prices and this led to revival of interest in nuclear power.

The Diet finalized the draft energy plan in June 2010, outlining the DPJ government's roadmap for the country's future energy needs. The DPJ had campaigned to reduce carbon emissions by 25 per cent below 1990 levels by 2020, though such a policy stance was unpopular with the business community. Japan relies on imports for more than 80 per cent of its energy needs and it had plans to reduce the figure to just 30 per cent by 2030 by increasing the percentage of nuclear energy. Currently, nuclear power accounts for 23.3 per cent of Japan's energy needs.³⁷

But because of a series of accidents between 1997 and 2007, public resistance to nuclear power plants grew, resulting in only five reactors being built in the past decade. Japan, therefore, forged a nuclear energy deal with

Kazakhstan in March 2010,³⁷ according to which Japan promised to supply nuclear energy technology to Kazakhstan in return for a stable supply of uranium. Also, Itochu, a Japanese trading company, bought a 15 per cent stake in Kalahari Minerals in March 2010 (headquartered in London), which is engaged in developing a large uranium mine in Namibia.

Among other measures, Japan moved closer to launch its controversial nuclear fuel recycling system. In 1997 the government decided to promote the use of mixed-oxide fuel (MOX) – a mix of uranium and uranium produced by recycling spent nuclear fuel, to be bought from France or Britain. This was possible because the local residents were convinced of its necessity and safety. Recycling nuclear fuel is at the core of Japan's long-term energy policy, since Japan needs a way to get rid of the nuclear waste produced.³⁸ Critics argue, however, that plutonium in recycled fuel would release more radiation than conventional fuel in the event of an accident; and could also be a target for terrorists.

In December 2009, a reactor in Kyushu started burning MOX. In February 2010, the Nuclear Safety Commission gave its approval for a restart of the Monju fast breeder test reactor in Tsuruga. This reactor is to “use some of the neutrons generated during the fission process to turn non-fissile uranium isotopes into plutonium that can be extracted from spent fuel”. Monju was closed in 1995 when leaking coolant damaged the plant, and a cover-up attempt damaged the plant's reputation. On 11 March 2010, twenty-nine scientists, opposed to restarting Monju, released a letter on the Citizens' Nuclear Information Centre website claiming that “checks of key pipes have been inadequate and that the current reactor set-up does not serve as a useful prototype for future fast-breeder reactors”.³⁹

In 2007 a magnitude 6.8 earthquake caused a shutdown of the Kashiwazaki-Kariwa plant in Niigata after radioactive cooling water leaked into the sea.⁴⁰

After the Fukushima incident, on 10 April 2011, demonstrators in Tokyo protested against the country's nuclear power plants. The rally by 3000 people, a large demonstration by Japanese standards, was organized by eight civic groups to protest the Hamaoka nuclear power plant located about 200 km southwest of Tokyo in Shizuoka Prefecture. Hamaoka is built in the heart of a region that seismologists believe is well overdue for a massive undersea earthquake of a magnitude 8 or higher and the protestors believe that a Fukushima-like disaster could happen again.

In the circumstances, the estimates of Japan's Federation of Electric Power Companies that almost half of the country's energy needs would be provided by nuclear power by 2030 do not appear to be realistic. Many in Japan want all the fifty-four functioning reactors closed down and decommissioned.⁴²

Conclusion

The DPJ government faces two huge tasks: to reconstruct the region devastated by the earthquake and the tsunami; and to decide whether to abandon completely the nuclear power sector for its energy needs. The first entails important policy decisions and immediate plans to mobilize funds. The second is even more complicated. If Japan shifts to oil and natural gas and searches for clean coal and other alternative technologies, such a policy choice would have ripple effects on the prices of the world's critical resources. Such quick reversal of policy choice does not, however, appear to be a realistic proposition.

METI, which promotes nuclear power and regulates the industry, will find it hard to convince the big business companies such as Toshiba, Hitachi, etc. for a policy to abandon nuclear energy as a source of the nation's energy needs. Other factors argued in the sections before Fukushima happened would still be valid and the prospects for India-Japan nuclear cooperation do not need to be viewed with pessimism.

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