

Joint Standing Committee on Treaties

Inquiry into Nuclear Non-proliferation and Disarmament

Submission by Citizens' Nuclear Information Center (Tokyo, Japan)
16 January 2009

Introduction

This submission was written on the understanding that the “international treaties involving Australia which relate to nuclear non-proliferation and disarmament” referred to in the Inquiry’s terms of reference include bilateral nuclear cooperation agreements to which Australia is a party. The submission addresses the following two topics in which Australia and Japan share a particular interest:

- The Agreement between the Government of Australia and the Government of Japan for Cooperation in the Peaceful Uses of Nuclear Energy (hereafter referred to as “the Australia-Japan Nuclear Cooperation Agreement”, or “the Agreement”)
- The International Commission on Nuclear Non-proliferation and Disarmament (ICNND), which is co-chaired by Gareth Evans of Australia and Yoriko Kawaguchi of Japan.

Recommendations and brief supporting comments are given below. The attached background paper provides a more detailed analysis. In particular the paper analyzes the risk of Japan acquiring nuclear weapons in future and the prospects for a so-called “nuclear renaissance”. Both of these issues are frequently misrepresented. By avoiding the more sensational claims that are commonly made, the background paper attempts to provide a realistic account of both issues.

Bilateral Nuclear Cooperation Agreements

Recommendations

The report of the Joint Standing Committee on Treaties should recommend that:

- Australia withdraw permission for Japan to enrich Australian-origin uranium and reprocess spent nuclear fuel containing Australian-origin uranium;
- reprocessing of spent nuclear fuel be prohibited under all bilateral nuclear cooperation treaties to which Australia is a party;
- Australia refrain from supplying other countries with equipment relating to the enrichment or reprocessing of nuclear material or to the production of heavy water, or cooperating in the development of these technologies.

Reasons

Australia currently permits Japan to enrich Australian-origin uranium and reprocess nuclear fuel produced from Australian-origin uranium. However, Japan’s uranium enrichment and reprocessing programs have experienced major problems. Both programs are uneconomic and it is doubtful whether they will be commercially viable for the foreseeable future.

Uranium enrichment, reprocessing of spent nuclear fuel and production of heavy water are referred to as “sensitive technologies” because of the nuclear proliferation risks which they entail. Although Japan does not have a nuclear weapons program now, that situation could change in future. In that case Australian-origin uranium would inevitably find its way into nuclear weapons.

Besides the longer-term risk of Japan producing nuclear weapons, Japan's uranium enrichment and reprocessing programs send the wrong signal to other potential proliferators, such as Iran. They complicate international efforts for nuclear disarmament and non-proliferation.

For these reasons, by permitting Japan to enrich Australian-origin uranium and to reprocess spent fuel containing Australian-origin uranium, the Australia Japan Nuclear Cooperation Agreement undermines Australia's objectives in the field of nuclear disarmament and non-proliferation.

International Commission on Nuclear Non-proliferation and Disarmament

Recommendations

The Joint Standing Committee should provide independent and objective advice to the ICNND, while the Australian Parliament should conduct a thorough debate of the implications of the Joint Standing Committee's report for Australia's nuclear non-proliferation and uranium export policies. Specifically, the Joint Standing Committee on Treaties should recommend that the ICNND:

- consider the benefits for nuclear non-proliferation and disarmament of a world-wide phase-out of reprocessing;
- seek to generate political support for such a move;
- address the proliferation problems that arise from nuclear energy as a whole;
- refrain from proposing measures to address these problems which would have the undesirable side-effect of promoting uncompetitive nuclear energy programs, or of perpetuating existing programs beyond their natural life;
- rigorously scrutinize proposed multilateral approaches to the nuclear fuel cycle to see if there is a risk that they could exacerbate the problems they are purported to solve.

Reasons

It is widely believed that a "nuclear renaissance" is imminent. It is by no means certain that the "nuclear renaissance" will eventuate, but if it does it will increase the already considerable nuclear proliferation risks associated with nuclear energy programs.

Countries which opt to use nuclear energy should not pursue a "closed fuel cycle" approach. Closed fuel cycles involve the reprocessing of spent fuel, which is unnecessary, uneconomic and polluting. It is also the easiest route to acquiring the ingredients for a nuclear bomb.

Many proposals have been made to address the proliferation risks of nuclear energy and the nuclear fuel cycle, including multilateral approaches. Every effort must be made to find ways to minimize proliferation risks, but there is a danger that some of the proposals being pushed will cause more problems than they solve.

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Appendix

Background Paper for Submission to Joint Standing Committee on Treaties Inquiry into Nuclear Non-proliferation and Disarmament

1. Australia-Japan Nuclear Cooperation Agreement

1.1 Japan's Reprocessing Program in a Historical Context

The Australia-Japan Nuclear Cooperation Agreement was signed in 1982. Among other things, it allows for the supply of nuclear material, equipment and sensitive technology. This includes the supply of Australian uranium for use in Japan's nuclear reactors. The Agreement permits Japan to enrich Australian uranium and reprocess spent fuel made from "Australia-related nuclear material", i.e. spent nuclear fuel containing uranium sourced from Australia.

The Australia-Japan Nuclear Cooperation Agreement would not have permitted reprocessing had not US President Carter agreed five years earlier to let Japan reprocess spent fuel containing US-origin material. In 1977, following intensive negotiations, President Carter agreed to let Japan reprocess US-origin spent fuel at the Tokai Reprocessing Facility, which was then under construction. (The name of the government nuclear research and development organization which owns and operates this facility has changed several times, but it is currently called the Japan Atomic Energy Agency (JAEA).)

It is important to understand that the US decision to permit reprocessing by Japan was a political not a scientific decision. The decision went against the then Carter Administration's policy of not permitting reprocessing of US origin spent nuclear fuel and was only made after intensive lobbying by the Japanese government. US Ambassador Mike Mansfield advised President Carter, "Unless a compromise is reached — there will be profoundly adverse effects on the future of U.S.-Japan relations....Prime Minister Fukuda has publicly called this a 'life and death' issue for Japan."¹ The US government agreed to let Japan reprocess on the condition that the plutonium separated was mixed with uranium (mixed oxide or MOX). This compromise provided a fig leaf of cover, but the US government knew perfectly well that if Japan wished to extract pure plutonium, it could do so in matter of a few days.²

Since India used its first separated civilian plutonium to make a bomb in 1974, U.S. policy has effectively been "We don't reprocess. You don't need to either."³ This was a sound policy on cost, safety and non-proliferation grounds. It has been largely successful in limiting the spread of

¹ NLC-98-273, Declassified documents. Document dated, August 13, 1977. Declassified on May 28, 1999.

Cited in Charles S. Costello III, "Nuclear Nonproliferation: A Hidden but Contentious Issue in the U.S.-Japan Relationship During the Carter Administration", Harvard East Asia Student Conference, February 27-28, 2004, Cambridge, MA.

http://www.marilark.com/harvard/harvard/Charles_S_Costello.htm

(This is a slightly modified version of the article in reference 2 below.)

² NLC-98-276, Declassified February 20, 1999. Memo dated August 3, 1977, to Zbigniew Brzezinski from the Nuclear Regulatory Commission.

Cited in Charles S. Costello III, "Nuclear Nonproliferation: A Hidden but Contentious Issue in the U.S.-Japan Relationship During the Carter Administration" in *Asia-Pacific Perspectives*, May 2003, p. 4.

³ Frank von Hippel, *Managing Spent Fuel in the United States: The Illogic of Reprocessing*, A research report of the International Panel on Fissile Materials, January 2007, p.20.

reprocessing. Today, Japan is the only non-nuclear weapon state that engages in commercial reprocessing.⁴

US policy underwent major changes under the Bush Jr. Administration. On 11 February 2004 President Bush made the following statement:

“The world must create a safe, orderly system to field civilian nuclear plants without adding to the danger of weapons proliferation. The world's leading nuclear exporters should ensure that states have reliable access at reasonable cost to fuel for civilian reactors, so long as those states renounce enrichment and reprocessing. Enrichment and reprocessing are not necessary for nations seeking to harness nuclear energy for peaceful purposes.

“The 40 nations of the Nuclear Suppliers Group should refuse to sell enrichment and reprocessing equipment and technologies to any state that does not already possess full-scale, functioning enrichment and reprocessing plants.”⁵

On the face of it, this formulation represented a threat to Japan's reprocessing program, because the Tokai facility was not “full-scale” and the commercial plant being constructed at Rokkasho in the north of Japan was not “functioning”. As it turned out, this was more a problem of careless wording rather than an intention on behalf of the Bush Administration to cease cooperating with Japan's reprocessing program. Two years later the formulation was adjusted and expanded into the Global Nuclear Energy Partnership (GNEP).⁶ GNEP represents a departure from past policy in that it proposes that US recommence reprocessing. Under GNEP, the US plans to develop so-called “proliferation-resistant recycling” technologies. Besides the fact that the word “recycling” is misleading, it has become increasingly clear that the proliferation resistance of the proposed technologies ranges from virtually nil to very limited.⁷ The nature of the partnership remains vague, cost and technical barriers are high and it is likely that the Obama Administration will limit GNEP or even abandon it altogether. Certainly, statements by President-elect Obama about nuclear energy suggest that he is unlikely to be an enthusiastic supporter of GNEP.⁸

The Australian decision to permit Japan to reprocess spent nuclear fuel containing Australian origin uranium was premised on the prior US decision. US agreement to Japanese reprocessing was inconsistent with its general policy on reprocessing and subsequent efforts to redefine the US policy in terms of GNEP are likely to fail. This should lead people to question the special exception for Japan. The following discussion will show that whatever Japan's current intentions may be, it is wise to be concerned about the risk of Japan developing nuclear weapons at some time in the future.

1.2 Japan's Reprocessing and Uranium Enrichment Programs as a Proliferation Risk

As the victim of the atomic bombings of Hiroshima and Nagasaki, Japan is widely viewed as the last country that would consider developing nuclear weapons. We have no reason to believe that

⁴ Ibid.

⁵ “Remarks by the President on Weapons of Mass Destruction Proliferation”, Fort Lesley J. McNair - National Defense University, Washington, D.C. February 11, 2004.

⁶ *Global Nuclear Energy Partnership*, US Department of Energy Website:

<http://www.gnep.energy.gov/>

⁷ von Hippel 2007 op. cit.

⁸ The following cautious quote is from the campaign statement, *Barack Obama and Joe Biden: New Energy for America*:

“...before an expansion of nuclear power is considered, key issues must be addressed including: security of nuclear fuel and waste, waste storage, and proliferation.”

The Obama-Biden Plan for energy and the environment posted on the web site of the Office of the President Elect does not even mention nuclear energy:

http://change.gov/agenda/energy_and_environment_agenda/

any post-war Japanese government has attempted to develop nuclear weapons. However, as discussed below, that might not always be the case for future governments. But before addressing the question of intentions, let us first consider the question of capabilities.

(a) Japan's Fissile Material Production Capability

Any country wishing to obtain nuclear weapons must gain access to fissile material.⁹ The two available routes are enriching uranium and extracting plutonium from spent nuclear fuel. Japan has plants capable of carrying out both these processes. Besides the reprocessing facility at Tokai, Japan has plants for enrichment and reprocessing at Rokkasho in the northern tip of the island of Honshu. These plants are owned by Japan Nuclear Fuel Ltd. (JNFL), which is jointly owned by Japan's major power companies.

Japan's enrichment and reprocessing facilities are subject to monitoring and verification under a safeguards agreement with the International Atomic Energy Agency (IAEA). However, although the safeguards applied to Japan's nuclear program are the most extensive and expensive in the world, it is not possible to guarantee that the IAEA's safeguards objectives are met. IAEA's safeguards objectives are defined as "the timely detection of diversion of significant quantities of nuclear material".¹⁰

--Missing Plutonium--

To illustrate this point, in 2003 it was discovered that of the 6.9 tons of plutonium separated at the Tokai reprocessing facility in the period from 1977 to 2002, the measured amount of plutonium was 206kg less than it should have been.¹¹ Given that the IAEA defines a "significant quantity" of plutonium as 8kg, this means that since the Carter Administration agreed to let Japan operate the Tokai Reprocessing Facility, enough plutonium has gone missing to make about 26 bombs. After further investigations, the Japanese government claimed that it could explain where some of the missing plutonium had gone and reduced the figure to 59kg, but that is still enough for 7 bombs.

Compared to the 6.9 tons of plutonium separated in the fourteen odd years up to 2002 at Tokai, the design capacity of the Rokkasho Reprocessing Plant is 8 tons per year. That represents a very significant safeguards challenge. Hironobu Nakamura et al of JNFL's Nuclear Material Control Department admitted that in large reprocessing plants, no matter how much measurement precision is improved, detecting "significant quantities" is "problematic" (a euphemism for "impossible"). They said that a simple estimate of "material unaccounted for" (MUF) at Rokkasho could be in the order of 20~30 kgPu at the end of a one year accountancy period.¹² Japanese government and industry are quick to stress the other aspects of IAEA safeguards besides materials accountancy,

⁹ Note that a Fissile Materials Cut-Off Treaty (FMCT) as currently envisaged will not require a cut-off of production of fissile materials in civilian programs.

¹⁰ *IAEA Safeguards Glossary*, 2001 Edition, p.13.

One significant quantity of plutonium is defined as 8 kg of plutonium and 25 kg of highly enriched uranium (p.23).

IAEA's general timeliness detection goal is one month for unirradiated direct use material, which includes highly enriched uranium, plutonium, and MOX. (pp.25, 32, 33)

¹¹ Japan Atomic Industrial Forum, "Better Accounting of Plutonium Urged at JNC's Tokai Reprocessing Plant", *Atoms in Japan*, May 2003, pp.19~20.

¹² Hironobu Nakamura, Toshihiko Utsugi, Yoshihiko Noguchi, Hideto Adachi, Tomonori Iwamoto, "Material Accountancy and NDA Approach for U-Pu Co-Denitration Area (MBA-4) at RRP", *The 25th Annual Meeting of the INMM (Institute of Nuclear Materials Management) Japan Chapter: Record of Proceedings*, 2005 p.203, 207. (Meeting held 11 November 2004, Japanese article.)

namely containment and surveillance, but materials accountancy remains the central component of IAEA safeguards.¹³

--MOX--

As mentioned above, the agreement between Japan and the US that allowed Japan to operate the Tokai reprocessing facility involved a compromise. Instead of storing the separated plutonium in pure form, Japan agreed to store it as a mixed oxide of uranium and plutonium (MOX). Japan trumpets the proliferation resistance of MOX, but the IAEA classifies MOX as a “direct use material”, which can be converted to nuclear weapons usable form in the order of one to three weeks.¹⁴ The process of separating pure plutonium from MOX is chemically straightforward and unirradiated MOX (i.e. before it is loaded into reactors and irradiated as MOX fuel) does not involve the high levels of radiation that discourage separation of plutonium from spent fuel.

--“Reactor Grade” versus “Weapons Grade” Plutonium--

Japan has amassed a total of about 46 tons of separated plutonium, almost 9 tons of which is held in Japan. Based on the conservatively high IAEA value for one significant quantity of 8 kgPu, 9 tons is enough for over 1,100 nuclear weapons. Japan loves to point out that this plutonium is “reactor grade plutonium” not “weapons grade plutonium”. However, the term “reactor grade plutonium” is just a label. It does not mean that it cannot be used in nuclear weapons. The IAEA takes the view that any isotopic combination of plutonium, except if it contains more than 80% of the plutonium-238 isotope, is direct use nuclear weapons material.¹⁵ In a 2005 report published jointly by Oxford Research Group and Citizens’ Nuclear Information Center, Barnaby and Burnie state, “A good nuclear-weapons designer could construct a nuclear weapon from three or four kilograms of the plutonium produced by the Rokkasho-Mura reprocessing plant.”¹⁶ No one doubts that the plutonium stockpiled by Japan could be used in nuclear weapons and it is dishonest for Japan to suggest otherwise.

--FBR “Super Weapons Grade” Plutonium--

Japan’s fast breeder reactor (FBR) program presents an additional proliferation problem. Japan’s nuclear fuel cycle policy presumes that at least some of the plutonium separated at reprocessing plants in Japan and overseas will be used in FBR fuel. Due to the failure of the FBR program to date, the government and nuclear power companies decided that some of Japan’s plutonium stockpile should be consumed as MOX fuel in light water reactors, but the FBR program has not been abandoned. The current restart date for the troubled Monju prototype FBR is February 2009, although further delays are likely.

A special feature of fast breeder reactors is that they “breed” plutonium when neutrons produced by fission reactions in the reactor core are absorbed by uranium nuclei in a blanket of uranium placed around the reactor. The plutonium thus produced is composed almost entirely of the plutonium-239 isotope. This composition is sometimes referred to as “super weapons grade” plutonium, because it is the most convenient composition for producing nuclear weapons. People should be concerned

¹³ International Atomic Energy Agency, INFCIRC/153 (Corrected), June 1972

“29. ...the Agreement should provide for the use of material accountancy as a safeguards measure of fundamental importance, with containment and surveillance as important complementary measures.”

¹⁴ IAEA Safeguards Glossary, 2001 Edition, p.22.

¹⁵ IAEA Safeguards Glossary, 2001 Edition, p.33.

¹⁶ Frank Barnaby and Shaun Burnie, *Thinking the Unthinkable: Japanese nuclear power and proliferation in East Asia*, Oxford Research Group and Citizens’ Nuclear Information Center, August 2005, p.8.

that if Japan ever succeeds in breeding plutonium in this way it will accumulate a stockpile of this “super weapons grade” plutonium.

--Uranium Enrichment--

The above discussion focused on reprocessing, but Japan also has a uranium enrichment program. The program has been spectacularly unsuccessful from a commercial point of view, but it gives Japan the capability to produce highly enriched uranium (HEU) if it wishes to do so. The purpose of the Rokkasho Uranium Enrichment Plant is to produce low enriched uranium (LEU) for Japan’s light water reactors, but it could be reconfigured to produce HEU if a decision were made to do so. Such a reconfiguration might be detected by the IAEA inspectors, but there is no technical obstacle to using the plant to produce HEU for weapons use. Alternatively, the technology developed for the declared plant could be used in a clandestine plant. According to Thomas Cochran, chief nuclear scientist at the Natural Resources Defense Council, “...a small centrifuge enrichment plant with up to a few hundred centrifuge stages can be readily hidden from the IAEA and from foreign intelligence efforts.”¹⁷

There is no dispute about the fact that Japan is capable of producing the key ingredients of nuclear weapons, namely plutonium and HEU. If Japan were determined to produce nuclear weapons, it is highly likely that IAEA inspectors would not detect the diversion of plutonium or highly enriched uranium in time to prevent Japan from producing several nuclear weapons. In the end, a large part of the IAEA safeguards system depends on faith. At this point in history, Japan is regarded as a trustworthy state. The following section addresses the question of whether this faith is justified.

(b) Japan’s intentions concerning nuclear weapons

Disingenuous claims made by the Japanese government and nuclear industry about the proliferation resistance of MOX and reactor grade plutonium reflect their single-minded determination to develop a “closed nuclear fuel cycle”. However, that doesn’t mean the Australian government should believe their claims. Rather, their willful misrepresentation of the fact that MOX and reactor grade plutonium are not proliferation resistant should arouse suspicion.

The question that arises is, does Japan have an intention to produce nuclear weapons? The simple answer would appear to be, “Not at the moment.” There is no evidence that any post-war Japanese government has had a nuclear weapons program. However, there are reasons to be concerned about the potential for this situation to change at some time in the future.

--Retaining the Nuclear Weapons Potential--

The nearest thing to a smoking gun was a secret Ministry of Foreign Affairs report that stated, “The policy for the time being is not to have nuclear weapons, but the economic and technical potential to produce nuclear weapons will always be retained and care will be taken not to accept any restrictions on this”.¹⁸ The report was produced in 1969, but its existence only became publicly known through an article published in the *Mainichi Shimbun*¹⁹ on 1 August 1994. On the face of it, this document is hard to reconcile with the “Three Non-Nuclear Principles” first articulated by Prime Minister Sato on 11 December 1967. The “Three Non-Nuclear Principles” are as follows:

¹⁷ Thomas B. Cochran, "Adequacy of IAEA’s Safeguards for Achieving Timely Detection", Chapter 6 in Henry D. Sokolski (Ed.), *Falling Behind: International Scrutiny of the Peaceful Atom*, Strategic Studies Institute, February 2008, p.133-137.

¹⁸ *Japanese Foreign Policy Principles* (“Wagakuni no Gaikou Seisaku Taikou”), produced in 1969 by the Foreign Relations Policy Committee (“Gaikou Seisaku Inkaikai”). The Foreign Relations Policy Committee was an informal committee established within the Ministry of Foreign Affairs in 1968. Translation by Citizens’ Nuclear Information Center.

¹⁹ The *Mainichi Shimbun* is one of Japan’s leading national newspapers.

“not possessing, not producing and not permitting the introduction of nuclear weapons into Japan”.²⁰

This apparent inconsistency begs the question, what was the government’s real policy? Was the single-minded determination to pursue, in defiance of the wishes of the US government, a problem-prone²¹, long-delayed and costly²² “closed nuclear fuel cycle” really a single-minded determination to retain “the economic and technical potential to produce nuclear weapons”? On the basis of the publicly available information, it is impossible to do more than speculate, but it is conceivable that both policies co-existed. To legalistically minded bureaucrats, the wording in the Foreign Affairs document might not necessarily contradict the “Three Non-Nuclear Principles”. Alternatively, the existence of the two policies might have reflected tensions between a range of views held by different people within the government and the bureaucracy. It would be unfair to the many people who, however mistakenly, believed a “closed” nuclear fuel cycle would assure Japan’s energy security to assume that they all shared a secret objective of retaining the option of developing nuclear weapons. Equally, however, it would be naïve to assume that the nuclear weapons option played no role in decision makers’ calculations.

-- Politicians’ Public Statements--

It is beyond dispute that the nuclear weapons option exercises the minds of some elements of the political elite. There is a long list of statements by senior politicians that demonstrate clearly that the “nuclear allergy” attributed to the general Japanese public does not afflict the political elite to the same degree. These statements are usually couched in terms of the need for a debate on the subject.²³ In a world where the acquisition of nuclear weapons by non-nuclear weapons states is illegal, one wonders what useful purpose could be served by opening up a debate about something that is out of the question. It is hard to escape the conclusion that the real purpose of such

²⁰ Refer the following pages on the Ministry of Foreign Affairs website:

<http://www.mofa.go.jp/policy/un/disarmament/nnp/index.html>

<http://www.mofa.go.jp/policy/un/disarmament/nnp/announce.html>

²¹ For information on the problems at the Rokkasho Reprocessing Plant, see articles on the following page of Citizens’ Nuclear Information Center’s web site:

<http://cnic.jp/english/topics/cycle/rokkasho/index.html>

²² See the following comment about the cost of the Rokkasho Reprocessing Plant by Liberal Democratic Party Diet Member Taro Kono (currently chair of the House of Representatives Foreign Affairs Committee) in an interview with the Japanese consumer magazine *Tsuan Seikatsu*:

"If you divide [the difference in the cost of electricity with and without reprocessing] by kilowatt hours, it works out to a difference of 0.5 yen, but the total difference is 10 trillion yen....If the next plant is built, the cost will be even greater. Already for construction alone 2.1 trillion yen has been spent on the Rokkasho Reprocessing Plant. That is 3 times the original estimate of 0.7 trillion yen. In the end it is the consumers who will have to foot the bill." (Spoken in response to comments by Hajimu Yamana of Kyoto University.)

"Heated Debate: Considering Japan's Energy Problem - Should the Rokkasho Reprocessing Plant be Operated or Abandoned?" (An interview which took the form of a debate between two supporters (Taro Kono and Hitoshi Yoshioka) and two opponents (Hajimu Yamana and Kumao Kaneko) of the Rokkasho Reprocessing Plant), *Tsuan Seikatsu* No. 234, October 2008, p.205. Published by Catalogue House. (Translation by CNIC.)

²³ For example, Taro Aso (then Foreign Minister, now Prime Minister) made the following comment in 2006:

"When a neighboring country is going to have nuclear weapons, one can refuse to even consider the matter," he told a Diet committee. "But I think it is important to discuss the issue."

Quoted in “Aso keen to explore nukes but Abe says debate is ‘finished’”, *The Japan Times*, 19 October 2006.

statements is to reduce the resistance to the idea of Japan acquiring nuclear weapons. For the general public this is unthinkable, but it is not unthinkable for the political elite. For example, the official policy of the Liberal Democratic Party (LDP), which has been in power almost continuously since the war, is that possession of nuclear weapons would not be unconstitutional.²⁴ A literal reading of the Japanese Constitution prohibits Japan from having a military in the first place. The original intention of the Constitution has long since been subverted, but the fact that the question of the constitutionality of nuclear weapons ever arose suggests that some people wanted to consider the possibility of obtaining them.

Nevertheless, despite the range of views held by members of the political elite, the Japanese government's official policy remains opposed to the acquisition of nuclear weapons. The "Three Non-Nuclear Principles" remain the official policy to this day (although the third principle has been breached by the US military) and the danger of a nuclear-armed Japan does not appear to be imminent. This is probably the most important point to emphasise.

--The Case of Toshio Tamogami--

That said, a recent scandal involving the Chief of Staff of the Air Self Defense Force (ASDF) raises more questions about the long-term stability of Japan's non-nuclear weapon status. Toshio Tamogami was dismissed for writing an essay which denied Japanese wrong doing in World War II. He has not retracted any of the claims made in his essay and continues to make statements which seem to suggest that he is positioning himself as the leader of the right-wing historical revisionist movement in Japan. Among his many provocative statements, he is reported to have said that Japan should consider developing nuclear weapons.²⁵

It has been said that "Mr. Tamogami's thinking permeates the ASDF".²⁶ It is certainly true that he went out of his way to spread these views within the ASDF. The similarities between Tamogami's views and those spouted in the past by senior members of the LDP, including current Prime Minister Taro Aso and former Prime Minister Shinzo Abe (who appointed Tamogami in the first

²⁴ Prime Minister Shinsuke Kishi made the following statement in 1957 and prime ministers and senior Cabinet ministers have confirmed this interpretation up to the present day.

"It is not unconstitutional for Japan to possess nuclear weapons, simply because they are called nuclear weapons, provided they are within the definition of self-defence."

Reported in the *Asahi Shimbun*, 7 May 1957.

²⁵ (1) Extract from Bradley K. Martin, "Ousted Japan Air Force Chief Calls for Nuclear Weapons Debate", *Bloomberg.com*, 1 December 2008:

<http://www.bloomberg.com/apps/news?pid=20670001&refer=japan&sid=aeu.6CmaBEQI>

Japan's former air force chief, forced into retirement for denying World War II aggression against its Asian neighbors, said the country should start a discussion on whether to develop nuclear weapons.

"I think there should be debate about this, because nuclear deterrence would be enhanced as a result," Toshio Tamogami, former head of the Air Self Defense Force, told reporters today at the Foreign Correspondents' Club of Japan in Tokyo.

(2) Extract from Julian Ryall, "Japan 'should develop nuclear weapons'", *Telegraph.co.uk*, 1 December 2008:

<http://www.telegraph.co.uk/news/worldnews/asia/japan/3538566/Japan-should-develop-nuclear-weapons.html>

Japan should consider developing nuclear weapons, the former head of the Japanese air force has said. And if the country had atomic weapons in 1945, it should have used them against the Allies, General Toshio Tamogami added.

²⁶ "Deviant thinking on defense", Editorial in *The Japan Times*, 16 November 2008:

<http://search.japantimes.co.jp/mail/ed20081116a1.html>

place) are also disturbing.²⁷ It is frightening to think that Tamogami held these views while serving as ASDF Chief of Staff and even more frightening to think that these views might be widely shared within the Japanese military establishment. It is to be hoped that Tamogami and his views will disappear into obscurity, but given the resonance between his views and those previously articulated by members of the Japanese political elite, that is probably overly optimistic. However, it is vital that the virus that he has helped spread within the ASDF be contained.

In light of the above discussion, it is necessary to put into perspective Japan's policy of "not possessing, not producing and not permitting the introduction of nuclear weapons into Japan". While not disputing that no post-war Japanese government has intended to acquire nuclear weapons, there is no way of guaranteeing that intentions will not change in future. It will depend both on internal factors, including power realignments within the Japanese political system, and external factors, such as the success of negotiations for the elimination of North Korea's nuclear weapons. Above all, in the long term it will depend on the success of negotiations for global nuclear disarmament. In the meantime, the capability that Japan indisputably possesses to produce the ingredients for nuclear weapons, along with the mixed political signals about intentions are reason enough to be concerned about the long-term stability of Japan's non-nuclear weapon status.

1.3 Implications for Global Nuclear Disarmament and Non-Proliferation

Large-scale reprocessing of the type carried out at the Rokkasho Reprocessing Plant is expensive and technically difficult. However, small-scale reprocessing, if it is not subject to IAEA safeguards and does not prioritise environmental protection or worker health, is a relatively straight-forward chemical process.²⁸ As the weakest link in the nuclear proliferation chain, every effort should be made to discourage reprocessing, which is an unnecessary, uneconomic and polluting addition to any nuclear energy program.

It is hard to see how nuclear weapons can be eliminated in a sustainable way unless reprocessing is eliminated. Seen in this light, the determination of Japan to continue with its reprocessing program is a major barrier to nuclear disarmament. Japan's reprocessing program also makes it much more difficult to persuade other countries to forgo the reprocessing option, thus making it much harder to control nuclear proliferation.

²⁷ The denials by Taro Aso and Shinzo Abe of some of the worst aspects of Japan's role during the war are one of the reasons why they are considered hawks within the LDP. For example: Mr. Aso refused to acknowledge that his family's company, Aso Mining, used hundreds of British and Australian prisoners of war as slaves, until Health Ministry documents confirming this were unearthed in December 2008. ("Taro Aso firm worked Aussies as slaves", *The Australian*, December 20, 2008:

<http://www.theaustralian.news.com.au/story/0,25197,24826099-25837,00.html>)

Mr. Abe "provoked anger in China and South Korea when he said there was no evidence that women were forced to become sex slaves by the Japanese army during World War II." ("Profile: Shinzo Abe", *BBC Web Site*: <http://news.bbc.co.uk/2/hi/asia-pacific/4392480.stm>)

²⁸ See for example Henry D. Sokolski, "Assessing the IAEA's Ability to Verify the NPT" Chapter 1 Appendix II (The Proliferation Dangers of LWRs) in Henry D. Sokolski (Ed.), *Falling Behind: International Scrutiny of the Peaceful Atom*, Strategic Studies Institute, February 2008, p.58.

"As for chemically separating the plutonium from spent fuel, this could be accomplished in a facility as small as 65 feet by 65 feet...This plutonium separation plant also need not be elaborate. Yet another "quick-and-dirty" design plant, detailed by the nuclear industry's leading experts in the late 1970s...employs technology little more advanced than that required for the production of dairy products and the pouring of concrete."

Unlike reprocessing, uranium enrichment is a prerequisite for light water reactor-based nuclear power programs. Uranium enrichment is more technically difficult than reprocessing, but, as the Pakistani and Iranian uranium enrichment programs demonstrate, the technical barrier is not insurmountable for determined states. The more states that develop uranium enrichment capabilities, the more difficult it will be to control proliferation via this route. It is not surprising, therefore, that a December 2008 report commissioned by the US Congress questioned the wisdom of providing financial support for a so-called “nuclear renaissance”.²⁹

Japan’s uranium enrichment program is now at a turning point. Its official capacity is 1,050 ton-SWU/year, but in fact only one of the plant’s seven cascades is still operational and all but a few of the centrifuges in that cascade have been closed down.³⁰ JNFL is preparing to test new centrifuges, which are scheduled to begin operation in 2010, but there is no guarantee that these will work as planned. Considering the problems JNFL has had with the current centrifuges and the problems it is having with the Rokkasho Reprocessing Plant, it is hard to imagine the new centrifuges being an instant success. On commercial grounds, it is hard to see why Japan needs indigenous uranium enrichment technology. On the other hand, Japan’s uranium enrichment program provides the perfect alibi for countries like Iran - or Brazil, or any number of other countries that claim they need to be able to enrich their own uranium.

In an attempt to solve these problems, many proposals have been put forward to internationalise the nuclear fuel cycle. Despite the superficial appeal of these proposals, they have not come to much so far. IAEA Director General, Dr. Mohamed ElBaradei, is a great proponent of this approach, but a 2005 report³¹ which he commissioned identified as many problems as benefits. For example, nothing can make uranium enrichment and reprocessing completely resistant to a so-called “breakout” scenario³², where a country deliberately decides to breach its IAEA safeguards

²⁹ *World at Risk: The Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism*, Vintage Books, December 2008.

“Concern about the spread of nuclear weapons intensifies with the possibility of a large increase in nuclear power production to meet growing energy demands—a nuclear renaissance. As additional countries acquire nuclear facilities—particularly if they build uranium enrichment facilities or reprocessing facilities, ostensibly to provide fuel for their power plants and reduce the waste associated with the spent nuclear fuel—the number of states possessing the knowledge and capability to “breakout” and produce nuclear weapons will increase significantly.” (pp.14,15)

“The spread of nuclear technology and nuclear material heightens concern that non-nuclear-weapon states might decide to develop nuclear weapons, building on their civilian nuclear industry. It also increases the possibility that terrorists might be able to steal—or buy from an insider—the materials or technical knowledge needed to construct a nuclear weapon. We should discourage, to the extent possible, the subsidizing of nuclear energy in ways that would cause states to choose it over other energy sources, without fully accounting for this risk.” (pp.55,56)

³⁰ See the following pages on JNFL’s Japanese web site:

<http://www.jnfl.co.jp/press/pressj2008/pr080425-1.html>

http://www.jnfl.co.jp/business-cycle/1_nousyuku/nousyuku_03/nousyuku_03_02.html

Limited information is also available on JNFL’s English web site:

<http://www.jnfl.co.jp/english/uranium.html>

³¹ *Multilateral Approaches to the Nuclear Fuel Cycle: Expert Group Report to the Director General of the International Atomic Energy Agency*, International Atomic Energy Agency, 22 February 2005.

³² *Ibid.* p.131.

agreement, or to use an international facility located within its territory to produce nuclear weapons material. Furthermore, technical skills gained within multilaterally controlled civil programs can be transferred to weapons programs. For reprocessing at least, it would be far better to give it up altogether. The question of what to do about uranium enrichment is less tractable if one assumes that nuclear power programs will continue to exist for the foreseeable future. Perhaps it is time to reconsider that assumption. Certainly it would be wise to avoid succumbing to pressures to subsidise a “nuclear renaissance”.

2. International Commission on Nuclear Non-proliferation and Disarmament

2.1 General Comments

Citizens’ Nuclear Information Center (CNIC) is aware that Australian NGOs are following the work of the International Commission on Nuclear Non-proliferation and Disarmament (ICNND) and that civil society will seek opportunities to have input into the Commission’s work. Japanese NGOs are also keenly interested in the ICNND and intend to submit recommendations to the Commission in due course. Independently of any recommendations that Japanese civil society as a whole might make, CNIC would like to draw attention to some important issues that the Australian Parliament and its Joint Standing Committee on Treaties should consider.

The comments about reprocessing and uranium enrichment made in section 1 on the Australia Japan Nuclear Cooperation Agreement are equally relevant to the work of the ICNND. The ICNND should consider the benefits for nuclear non-proliferation and disarmament of a world-wide phase-out of reprocessing and seek to generate political support for such a move. The ICNND should also address the proliferation problems that arise from nuclear energy as a whole. In doing so, it should not allow itself to be co-opted by governments or industry which are committed to nuclear energy and reprocessing. It is vitally important that civil society and cross-party bodies like the Joint Standing Committee on Treaties provide independent and objective input to counter this danger.

The 25 September 2008 joint statement by ICNND Co-Chairs Gareth Evans and Yoriko Kawaguchi states, “The implications of the likely “nuclear renaissance” due to climate change and energy security concerns will be a focus for the Commission, including the need for renewed attention to nuclear safeguards, safety and security.”

“Safeguards”, “Safety” and “Security” are the three elements of the Japanese government’s 3S slogan. The Japanese government is vigorously promoting this slogan in all international fora which address nuclear issues. Regardless of whether or not one supports nuclear energy in general, as long as nuclear energy programs exist, the problems that they cause must be addressed. Hence, we have no argument about the need to give attention to “safeguards”, “safety” and “security”, although we would add a fourth element, namely “radioactive waste”. However, it is important to ensure that measures taken to address these problems do not have the undesirable side-effect of promoting uncompetitive nuclear energy programs, or of perpetuating existing programs beyond their natural life.³³ In particular, internationalization of the nuclear fuel cycle should not be seen as a panacea.

“Whether voluntary or compulsory, multilateral facilities share a potential weakness with their national counterparts, namely the risk of the host country ‘breaking out’ ...”

³³ Henry D. Sokolski, "Assessing the IAEA’s Ability to Verify the NPT" Chapter 1 Appendix II (The Proliferation Dangers of LWRs) in Henry D. Sokolski (Ed.), *Falling Behind: International Scrutiny of the Peaceful Atom*, Strategic Studies Institute, February 2008, p.40, 41.

“...it is worth noting that a popular idea to promote nonproliferation that enjoys IAEA support—assuring supplies of nuclear fuel at “affordable” or “reasonable” prices with fuel

Proposals to implement multilateral approaches to solve problems associated with the nuclear fuel cycle should be rigorously scrutinized, in order to ensure that they will not exacerbate the problems they purport to solve.

ICNND should remain agnostic about whether we are on the verge of a “nuclear renaissance” and it should not buy into the debate about whether nuclear energy is a useful way of responding to climate change. Rather than discussing these issues in detail, we offer below some selected quotes and comments to alert members of the Joint Standing Committee on Treaties to the gap between rhetoric and reality.

2.2 “Nuclear renaissance” - fact or fiction?

(a) Rising cost estimates and credit risk

Quote 1 (May 2008): “[Nuclear] technology is very costly, potentially reaching over \$7,000 per kilowatt (kw) of capacity – by some estimates almost twice as much as new, scrubbed coal-fired power plants and three times as much as new, combined cycle natural gas power plants.”³⁴

Quote 2 (July 2006): “Projected costs of new nuclear power plants in the US have risen significantly in the recent past, as labor and materials costs rise and vendors complete a greater portion of detailed engineering, according to executives at Westinghouse, Areva NP, and General Electric. While all cautioned that it's difficult to compare numbers without knowing the precise scope of a given estimate, the three vendors quoted figures between \$1,600 and \$2,000 per installed kilowatt, a far cry from the \$1,200/KW that some were vaunting at the beginning of the decade.”³⁵

Quote 3 (June 2008): “The cost and complexity of building a new nuclear power plant could weaken the credit metrics of an electric utility and potentially pressure its credit ratings several years into the project, according to a new report from Moody's Investors Service.”³⁶

Comment: Comparing the first and second quotes, it can be seen that the Moody's estimate, which is typical of recent estimates, is several times higher than earlier estimates. Rising cost estimates and credit risks put a damper on expectations of a nuclear revival.

(b) Extravagant demands for subsidies in the US

Quote: “The Nuclear industry wants as much as \$100 billion in DOE loan guarantees for new reactors during President-elect Barack Obama's administration. Industry officials have long criticized the current pool of \$18.5 billion to support the deployment of new reactor designs as inadequate. The 14 new-reactor applications already filed with DOE total \$122 billion...”³⁷

Comment: There are many proposals for new nuclear reactors in the US, but there is no certainty that any of them will actually proceed. It has always been doubtful whether nuclear power projects could attract finance without massive government support. This is now even more uncertain, due to the financial crisis. Furthermore, President Obama has not so far shown any enthusiasm for nuclear energy. He might not be as willing as his predecessor to bankroll a massive new construction program.

banks and the construction of fuel making centers in nonweapons states—could, under certain circumstances, actually undermine the NPT's intent. If these assurances come with subsidies, more countries may be enticed to develop large nuclear programs that may not be economically viable.”

³⁴ Moody's Corporate Finance, *New Nuclear Generating Capacity: Potential Credit Implications for U.S. Investor Owned Utilities*, May 2008, p.2.

³⁵ Ann MacLachlan, “Estimates increase for costs of new nuclear plants in US”, *Nucleonics Week*, Platts, 6 July 2006.

³⁶ Moody's Investors Service Global Credit Research Announcement, “Moody's: Nuclear plant construction poses risks to credit metrics, ratings”, 2 June 2008.

³⁷ *Nuclear News Flashes*, Platts, December 11, 2008.

(c) Problems with construction of new plants in Finland and France

Quote 1: Finland's Okiluoto-3 plant (1,600-MW, EPR) - "On October 17, TVO said startup of the unit is about three years behind schedule."³⁸

Quote 2: France's Flamanville-3 plant (1,650-MW, EPR) - "Inflation and technical and regulatory changes share the bulk of the 20% cost overrun announced last week on the overnight cost of the Flamanville-3 EPR under construction in Normandy, Electricite de France said."³⁹

Comment: These are the only new plants under construction in Western Europe and they have both been plagued by problems. They are already way over-budget and behind schedule. They were meant to be showpieces for a new generation of nuclear power plants, but in fact they are exposing once again the unreliability of cost and construction time estimates for untested large-scale equipment.

(d) Stagnant demand in Japan

Quote: "A look at the plan for construction of new nuclear reactors reveals that the dates have been pushed back year after year. Some have been postponed for over 10 years...Decisions to construct power stations are determined by peak power output, so as long as peak power output does not increase, [Electric Power Companies] want to postpone construction of new nuclear power plants."⁴⁰

Comment: Decisions to build new plants are based on both minimum demand and peak demand. In Japan, minimum demand has been growing. This favours nuclear energy, which is used for base-load generation, but as long as peak demand does not also grow, Japanese power companies are not keen to increase nuclear generation capacity.

The Japanese government's greenhouse gas emissions reduction plan was premised on the construction of a large number of new nuclear power plants. Had the government relied less on nuclear and more on energy efficiency and renewable energy, it might not be falling so woefully short of its emissions reduction target.⁴¹ Also, there is an inherent contradiction in relying on the construction of new nuclear power plants to achieve a reduction in greenhouse gas emissions. New nuclear power plants will not be built unless energy demand grows, but the most effective way of reducing emissions is energy efficiency, which results in lower energy demand.

(e) Stalled and cancelled projects

Quote 1: South Africa - "South African utility Eskom last week scrapped its tender for a turnkey nuclear power station, saying the magnitude of the investment was too much for it to handle."⁴²

Quote 2: Turkey - "After more than a year of preparation, the sole bid to construct Turkey's first nuclear power plant at Akkuyu on the Mediterranean Sea was submitted September 24 by Russia's

³⁸ Ariane Sains and Ann MacLachlan, "TVO CEO sees improved workflow, potential for problems at Olkiluoto-3", *Nucleonics Week*, Platts, 20 November 2008.

³⁹ Ann MacLachlan, "EDF: Flamanville-3 cost rise due to inflation, technical/regulatory changes", *Nucleonics Week*, Platts, 11 December 2008.

⁴⁰ Baku Nishio, "Electric Power Supply Plan in an Era of Saturated Demand", *Nuke Info Tokyo No. 124*, Citizens' Nuclear Information Center, May/June 2008.

<http://cnic.jp/english/newsletter/nit124/nit124articles/electsupply08.html>

⁴¹ Greenpeace International and European Renewable Energy Council, *energy [r]evolution: A Sustainable Japan Energy Outlook*, June 2008, p.5.

"While the required reduction target for Japan is 6% below the 1990 level, Japan's emissions on the contrary have been increasing. In fiscal 2005, the year with the most up-to-date official figures available, Japan's emissions were 7.8% higher than the base year. This means Japan will actually have to achieve a reduction of about 14%, if it is to meet Kyoto Protocol commitments."

⁴² Ann MacLachlan, "Eskom cancels tender for initial reactors", *Nucleonics Week*, Platts, 11 December 2008.

Atomstroyexport, or ASE, in partnership with Ciner Holding, a Turkish company with interests in media and mining...⁴³

Quote 3: Indonesia - "Because of unfavorable political constellations and public reaction to a series of natural disasters which has beset the country since 2004, Indonesia will miss the target set two years ago by nuclear energy planners to begin generating electricity with uranium fuel on Java no later than 2017, Indonesian officials told Platts last week."⁴⁴

Comment: South Africa already has two reactors, while Turkey and Indonesia are hoping to build their first nuclear power plants. In the Turkish case, several other bidders withdrew and it is doubtful that the project will proceed on the basis of a single bid. In the Indonesian case, the local branch of the nation's largest Islamic organization, Nahdlatul Ulama, declared the proposed Muria nuclear power plant to be "haram" or "forbidden". There is considerable uncertainty about the future of each of these projects, but their failure to date casts serious doubt on the prospects for nuclear energy in developing countries.

(f) Industry bottlenecks

Quote: "The limited number of manufacturers and suppliers could cause bottlenecks in construction if there were multiple orders for new nuclear power plants in the US and abroad, industry officials said last week."⁴⁵

Comment: Predictions of a "nuclear renaissance" tend to overlook the decline in the nuclear industry's capacity and the lack of skilled staff. Even if money could be found to finance the construction of new nuclear power plants, industry would not be able to build them fast enough to meet the more optimistic scenarios, or to make a useful contribution to reducing greenhouse gas emissions (see (h) below).

(g) Real trends in nuclear generation

Quote: "The IAEA has revised upwards its nuclear power generation projections to 2030, while at the same time it reported that nuclear's share of global electricity generation dropped another percentage point in 2007 to 14%. This compares to the nearly steady share of 16% to 17% that nuclear power maintained for almost two decades, from 1986 through 2005...[W]hile projections for nuclear power's future rose, its share of the world's electricity generation today dropped from 15% in 2006 to 14% in 2007. "The reason is that while total global electricity generation rose 4.8% from 2007 to 2008, nuclear electricity actually dropped slightly", Rogner commented."⁴⁶

Comment: Reading the full IAEA staff report, one gets the impression that the prospects for nuclear energy are bright, even though the report announces the results of a disastrous year for nuclear power generation. Although the dates are rather confusing, it is clear that the reduction in nuclear generation was an absolute reduction, not just a relative reduction. The disjunction between rhetoric and reality should alert people to the fact that projections by organizations such as the IAEA, which are dedicated to promoting nuclear energy, are invariably over-optimistic. Projections for the year 2030 are unlikely to bear much relation to what will actually happen in 2030. At this very uncertain point in history the only basis for projecting the future of nuclear power is binding construction contracts.

⁴³ Mark Hibbs, "Council of Ministers to decide future of Turkey's reactor bid", *Nucleonics Week*, Platts, 6 November 2008.

⁴⁴ Mark Hibbs, "Politics and calamities stalking Jakarta's nuclear power ambitions", *Nucleonics Week*, Platts, 27 September 2007.

⁴⁵ Jenny Weil, "Supply chain could slow the path to construction, officials say", *Nucleonics Week*, Platts, 15 February 2007.

⁴⁶ IAEA Staff Report, "Nuclear's Great Expectations: Projections Continue to Rise for Nuclear Power, but Relative Generation Share Declines", 11 September 2008
<http://www.iaea.org/NewsCenter/News/2008/np2008.html>

(h) Climate change and nuclear power

Quote: “Even a massive, four-fold expansion of nuclear power by 2050 would provide only marginal reductions (4%) in greenhouse gas emissions, when we need global emissions to peak at 2015 and 50 - 80% cuts by 2050. Nuclear energy’s ‘contribution’ to fighting climate change would come too late (long after 2020), with huge costs (US\$ 10 trillion) and would create a myriad of other serious hazards related to accidents, waste and proliferation. These large costs and negative impacts make nuclear energy an obstacle to the necessary development of effective, clean and affordable energy sources – both in developing and industrialised countries.”⁴⁷

Comment: The figures in this quote are based on a comparison of the OECD International Energy Agency’s (IEA) *Energy Technology Perspectives 2008* Blue Map scenario and the World Energy Outlook 2007 450 ppm case.

2.3 Conclusion

The above quotes and comments suggest that reports of a “nuclear renaissance” are premature. The good news is that there is no cause for alarm if an expansion of nuclear energy does not eventuate. Nuclear was not going to solve the problem of climate change anyway. Nevertheless, the fact that so many countries which do not currently possess nuclear power stations, including countries in regions of tension, have expressed interest in nuclear power is reason enough to make a concerted effort to address the proliferation implications of “the peaceful use of nuclear energy”. The ICNND is right to focus on this issue.

⁴⁷ Quoted from a call to remove "nuclear activities" as an option in the Clean Development Mechanism of the Kyoto Protocol. The call was endorsed by over 300 organisations representing millions of members in 48 countries and submitted at the United Nations Climate Change Conference in Poznań on 10 December 2008 (COP 14).