

Domestic and international implications of operating Rokkasho

Aileen Mioko Smith

Executive Director, Green Action (Japan)

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MAIN POINT : DEMAND-SIDE IS KEY

No demand for plutonium means no operation of Rokkasho.

Less operation of nuclear power plants in Japan means less pressure to operate Rokkasho.

OUTLINE

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- **Domestic Implications if Rokkasho operates**
- **How to Delay and Eventually Stop Rokkasho**
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OVERVIEW - 1

How has the Nuclear Fuel Cycle Policy (of which Rokkasho is a part) been “useful”?

It “bought” time. Helped Japan delay facing up to its nuclear waste problem.

But this has resulted in making the problem worse.

OVERVIEW - 2

Arguments against the operation of Rokkasho:

Arguments against the operation of Rokkasho are many and have been outlined thoroughly and eloquently over decades.

The Rokkasho reprocessing plant:

- Is nuclear proliferation / Creates unaccounted for plutonium (MUF)
- Increases the danger of nuclear terrorism
- Is bad for the economy
- Is at best insignificant for conserving resources
- Is bad for the environment
- Increases the danger of catastrophic nuclear accidents
- Worsens the nuclear waste management problem
- Undermines Japan's own long-term security
- Is even detrimental politically to nuclear power

CURRENT STATUS - 1

Unfortunately, all logical arguments not to operate Rokkasho have been to date irrelevant in terms of changing the current policy.

The Rokkasho plant has passed the Nuclear Regulation Authority (NRA) post-Fukushima regulations. The plant is to be completed by the end of the first half of fiscal 2022.

CURRENT STATUS - 2

Plutonium Surplus

- Japan has accumulated 46.1* metric tons of separated plutonium.**
(*approx.) (**end 2020)
This is enough to make more than 5000 Nagasaki-type bombs.
- On July 31, 2018, the Japan Atomic Energy Commission (JAEC) issued “The Basic Principles on Japan’s Utilization of Plutonium” in which it stated Japan will “reduce the size of its plutonium stockpile” and stated, “..the stockpile is not to increase from the current level.”
Therefore, Rokkasho can only operate if it does not interfere with reducing Japan’s plutonium stockpile.

CURRENT STATUS - 3

MOX fuel use program

Japan is attempting to recycle its accumulated plutonium (and thus reducing its surplus) by having it fabricated into uranium-plutonium mixed-oxide (MOX) fuel and using it in nuclear power reactors (light water reactors).

- **The current consumption of plutonium is too low to enable Rokkasho to operate fully.**
- **4 reactors (Takahama Units 3 and 4; Genkai Unit3; Ikata Unit 3) have been consuming MOX fuel.**

Currently Genkai and Ikata are not.* *due to plutonium in the UK having been consumed

- **The annual consumption of plutonium in a reactor using MOX fuel is 0.3~0.4/t.**

The Federation of Electric Power Companies of Japan's aim is for these reactors to consume approx. 2 tons annually.

- **The following 4 units obtained approvals from local authorities to use MOX fuel but have not restarted after the Fukushima accident:**

Tomari Unit 3, Onogawa Unit 3, Hamaoka Unit 4*, Shimane Unit 2

*The governor of Shizuoka where the Hamaoka reactor is located rescinded approval April 2, 2014.

CURRENT STATUS - 4

Ohma a 100% MOX plant

“Electric Power Development Co., Ltd. (hereinafter, “J-POWER”) hereby announces that it has decided to revise the date for start of operation of its Ohma Nuclear Power Plant currently under construction, from the scheduled November 2014, to a future date yet to be determined. ”

March 30, 2012 Electric Power Development Co., Ltd.

DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 1

Cost the Japanese people more money:

Operating the Rokkasho Reprocessing Plant (RRP) will cost the Japanese people about 10 trillion yen more over the 40-year design life of the plant than not operating it and simply storing the spent fuel.

再処理工場・MOX工場 vs 乾式貯蔵のコスト比較より

<http://kakujo.net/npp/sfp-j.html#d14>

DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 2

Increase pressure to have more reactors use MOX fuel

DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 3

Increase spent MOX fuel at reactor sites and therefore aggravate the spent fuel pool problem

Spent MOX fuel is more toxic than spent uranium fuel and cannot be reprocessed at Rokkasho.

DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 4

Increase safeguard issues at nuclear reactor sites.

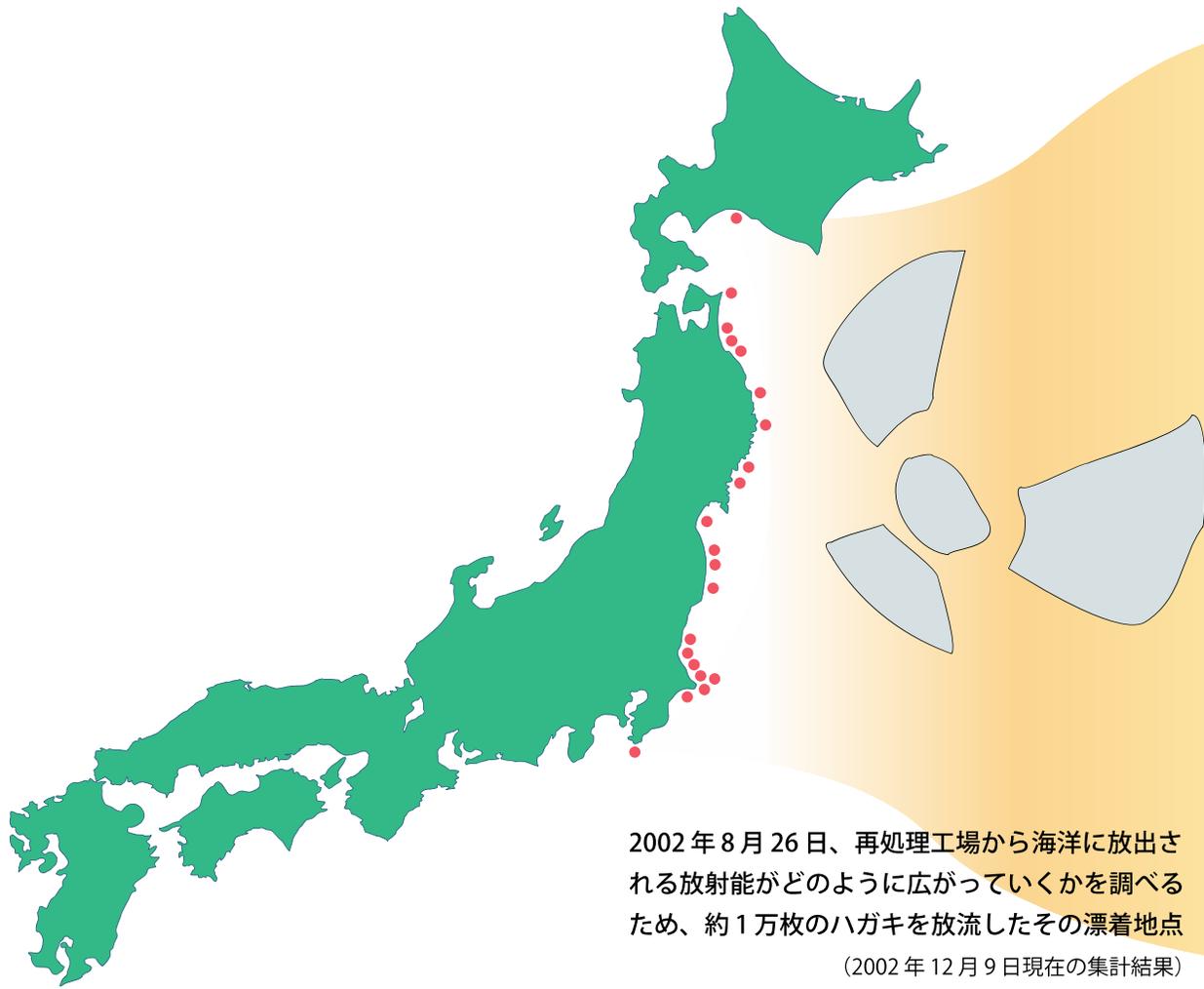
DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 5

Will lead to marine and aerial radioactive discharges

The amount of tritium that would be **annually** released into the marine environment from Rokkasho full-scale commercial operation will be more than 10 times the **total** amount of tritium planned to be released by Tepco from the damaged Fukushima Daiichi nuclear power plant. Public awareness of this will increase opposition to Rokkasho.

Approx. 10,000 post cards released by citizens from off-shore right near the Rokkasho reprocessing discharge pipe floated as far as Tokyo Bay, thus raising concern about radioactive discharges along the coast from Aomori to Tokyo. (August 2002)

海に捨てられる放射能は、 北海道から千葉まで流れていきます



- 苫小牧 1枚 (北海道)
- 東通村 1枚 (青森県)
- 六ヶ所村 109枚 //
- 三沢市 4枚 //
- 八戸市 2枚 //
- 普代村 1枚 (岩手県)
- 山田町 1枚 //
- 気仙沼市 6枚 (宮城県)
- 歌津町 2枚 //
- 仙台市沖 2枚 //
- 相馬市 1枚 (福島県)
- 原町沖 10km 1枚 //
- 広野町 1枚 //
- ひたちなか市 1枚 (茨城県)
- 銚田町 1枚 //
- 大洋村 2枚 //
- 鹿嶋市 8枚 //
- 神栖町 3枚 //
- 波崎町 15枚 //
- 銚子市 2枚 (千葉県)
- 千倉町 1枚 //

2002年8月26日、再処理工場から海洋に放出される放射能がどのように広がっていくかを調べるため、約1万枚のハガキを放流したその漂着地点
 (2002年12月9日現在の集計結果)

DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 6

Will increase pressure to move forward with the J-MOX fuel fabrication plant in Aomori

(Scheduled completion: first half of fiscal 2024)

Rokkasho cannot operate without this J-MOX plant operating because there will be no place to fabricate the separated plutonium.



DOMESTIC IMPLICATIONS IF ROKKASHO OPERATES - 7

Will increase pressure to move forward with the Ohma full-MOX plant.

Operation of Ohma is essential for operation of Rokkasho.

If operated at full capacity, Ohma is designed to consume approximately 1.7 tons of plutonium.



INTERNATIONAL IMPLICATIONS IF ROKKASHO OPERATES - 1

Nuclear Proliferation

The world is entering a highly unstable and uncertain time - including the higher risks of military confrontation between major powers. The operation of Rokkasho will contribute to this destabilization.

Japan is the only non-weapon state that reprocesses.

By reprocessing, Japan is undermining the nonproliferation regime. It is not possible to safeguard Rokkasho operation without the potential to divert plutonium each year - MUF.

Starting up Rokkasho will make this problem worse. It is setting a bad example for other states.

For states that are interested in acquiring a nuclear-weapon option, they can point to Rokkasho as an example of a “legitimate internationally accepted activity”.

Ending reprocessing in Japan: An alternative approach to managing Japan's spent nuclear fuel and separated plutonium, by Takubo / von Hippel, IPFM, November 2013

The Rokkasho reprocessing plant when operated at full capacity is designed to separate about 8 tons of plutonium annually.

This is enough plutonium to make more than 1000 Nagasaki-type bombs.*

“As the only non-weapon state that reprocesses, Japan is undermining the nonproliferation regime by setting an example that states interested in acquiring a nuclear-weapon option can point to as a legitimate internationally accepted activity.”

(IPFM 2013 p.2)

INTERNATIONAL IMPLICATIONS IF ROKKASHO OPERATES - 2

Nuclear terrorism

Separated plutonium is a target for would-be nuclear terrorists. (Ref. IPFM p.2)

INTERNATIONAL IMPLICATIONS IF ROKKASHO OPERATES - 3

International opposition to radioactive discharges into the marine environment

HOW TO DELAY AND EVENTUALLY STOP ROKKASHO ? - 1

U.S. Deputy Secretary of Energy Poneman stated in 2012*

(*when pointed out to emissaries from the Noda Administration the inconsistencies in that administration's nuclear policy)

- 1. If nuclear power is abandoned, reprocessing also must be abandoned because use of the separated plutonium in reactor fuel would become impossible.**
- 2. Conversely, if a policy of plutonium separation is adopted, nuclear power must continue in order to provide a use for the plutonium.**

(Quote from IPFM Nov.2013 p.15 Footnote 40.)

HOW TO DELAY AND EVENTUALLY STOP ROKKASHO ? - 2

- No demand for plutonium means no operation of Rokkasho.
- Less operation of nuclear power plants in Japan means less pressure to operate Rokkasho.

Therefore...

HOW TO DELAY AND EVENTUALLY STOP ROKKASHO ? - 3

Separation of plutonium at Rokkasho could be prevented if lawsuits, public opposition, and concern from local authorities can:

- prevent more reactors from using MOX fuel, or delay / stop the use of MOX fuel in nuclear reactors
- delay, stymie or prevent further nuclear reactor restarts
- jeopardize or shut down the operation of currently operating nuclear reactors
- reduce the prospect of the Ohma nuclear reactor moving forward
- raise enough public / political concern against radioactive releases into the marine environment from Rokkasho

This work, if successful, is effective nuclear non-proliferation work.

IN CONCLUSION - 1

Even as far back as 1993, Tokyo Electric Power Company (TEPCO) and Kansai Electric Power company (KEPCO) nuclear fuel cycle managers admitted they felt “trapped” into reprocessing. (IPFM 2013 page. 6. Comment relayed to Frank von Hippel.)

This admission no doubt is representative of the dilemma of all 9 Japanese utilities.

Facilitation between utilities, prefectures/local authorities, and all parties involved has been needed for decades.

But this has proved to be politically far too difficult.

IN CONCLUSION - 2

Lawsuits and activism to stop nuclear power in Japan and addressing radioactive releases into the marine environment are important, and perhaps at present the most viable, efficient, and effective way forward to prevent Rokkasho from separating plutonium.

And, addressing the Rokkasho issue in light of recent geopolitical changes is crucial to deter the Japanese government from rolling out the next step in the nuclear fuel cycle policy – the operation of Rokkasho.

IN CONCLUSION - 3

A clear and present challenge:

How to reduce the danger of spent nuclear fuel pool storage at reactor sites without creating an outlet (a pressure relief valve) to enable further increases in the production of spent nuclear fuel.

This is the debate that must be held by those opposed to the Rokkasho reprocessing plant.

