

# Japan nuclear reactor operating rate hits record low in Jan.

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TOKYO (Kyodo) — The operating rate of 54 commercial nuclear reactors in Japan fell to a record low of 10.3 percent in January from 15.2 percent in December as three reactors were shut down for regular checkups, the Japan Atomic Industrial Forum said Friday.

Since the March 2011 earthquake and tsunami triggered the Fukushima Daiichi nuclear plant accident, the suspension of nuclear reactors for checkups has been prolonged, with only three reactors remaining in operation at the end of January.

As one of the three is scheduled to suspend operation for a regular checkup in February, the operating rate this month is expected to fall to the lowest level since such data began to be collected in April 1977.

The 54 reactors include the four at the six-reactor Fukushima Daiichi complex that Tokyo Electric Power Co. offered to decommission after the plant was crippled by the natural disasters.

Before restarting nuclear reactors idled for checkups, operators are required to have safety test results for the reactors approved by the government and obtain consent from communities where the reactors are located.

The government has begun the final procedure to approve results of “stress tests” for two reactors at the Oi nuclear power plant in Fukui Prefecture. But prospects are dim for the local community to consent to their restart.

**Kyodo Press**, February 3, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/03/20120203p2g00m0dm145000c.html>

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## Operations at all TEPCO nuclear reactors to be halted in March

TOKYO (Kyodo) — Tokyo Electric Power Co. said Thursday it will suspend operations of the No. 6 reactor at the Kashiwazaki-Kariwa nuclear power plant in Niigata Prefecture on March 26 for a periodic check, a plan that will take all of its 17 reactors out of service.

The No. 6 reactor with a power output of 1.356 million kilowatts is the last to be suspended out of the plant's seven reactors.

It will be the first time all 17 units have been halted since the April 15-May 6 period of 2002, when they were suspended after a public outcry over revelations that TEPCO had hidden problems at its nuclear plants.

Out of the seven at the Kashiwazaki-Kariwa plant, the No. 1, No. 2, No. 3 and No. 4 as well as the No. 7 reactors have been suspended as a result of periodic checkups and a 2007 earthquake that badly damaged the prefecture and its vicinity.

On Jan. 25, TEPCO suspended the No. 5 reactor at the plant for a periodic check, leaving the No. 6 reactor the only one in service both at the plant and throughout the utility's service area.

TEPCO says it wants to restart the operations of the seven reactors in stages, starting in fiscal 2013 or later.

But Niigata Gov. Hirohiko Izumida said the factors that triggered the 2011 crisis at the six-reactor Fukushima Daiichi plant must be examined and identified before the seven are allowed to restart operations. The nearby Fukushima Daini plant also run by TEPCO has four reactors.

Among Japan's 54 commercial reactors, only two will be in operation — the No. 3 reactor at the Tomari plant in Hokkaido and the No. 3 reactor at the Takahama plant in Fukui Prefecture. Both will go offline for regular checkups by late April.

**Kyodo Press**, February 10, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/10/20120210p2g00m0dm024000c.html>

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## **Gov't request for nuclear storage facility site sends shockwaves through Fukushima**

The government's request that an interim facility to store soil and other waste contaminated with radiation be built somewhere in Futaba county near the crippled nuclear power plant sent ripples of concern through local governments and residents in Fukushima Prefecture.

On Dec. 28, Environment Minister Goshi Hosono met and asked local leaders in Fukushima Prefecture for permission to build an interim storage facility somewhere in Futaba county in which two municipalities host the troubled Fukushima No. 1 Nuclear Power Plant.

Some local residents, particularly those people who want to return to their homes in areas near the nuclear power station, are worried that such a storage facility could stay there permanently. But those residents who have given up hope of returning to their homes have tended to accept the government request.

At the meeting with Hosono in Fukushima city on Dec. 28, Okuma Mayor Toshitsuna Watanabe said, "I will take the proposal seriously and consider it." Katsurao Mayor Masahide Matsumoto said, "We have no option but to accept it because it is needed." Some local residents are paying attention to the fact that there will be no places to dispose of such waste unless the interim storage facility is built, while hoping that new jobs will be created for the construction of the facility.

Nevertheless local leaders and residents are faced with a dilemma. In order for residents to return to their homes, it is necessary to decontaminate their municipalities, but the interim storage facility could hamper residents' efforts to go back to their homes. Namie Mayor Tamotsu Baba said, "Residents will not be able to return because the negative image is so strong." Kawauchi Mayor Yuko Endo voiced concern about the possibility that the interim storage facility could be used permanently. "We want the government to legally guarantee (that the facility will be used only for 30

years)."

Soichi Saito, 62, who lives in a temporary house in Iwaki, is skeptical about the government's intentions, saying, "They say it is an interim storage facility, but I suspect that it will become a final disposal site." He had run a farm in the town of Futaba with his family before the disasters struck northeastern Japan.

A 60-year-old farmer, who moved into a temporary house in Aizuwakamatsu from Okuma, said, "Is it fair that we send electricity to Tokyo but waste will be put in Futaba county? If we accept it, no one will be able to live here."

Meanwhile, Masumi Kowata, 56, from Okuma, who lives in a temporary house in Aizuwakamatsu, said, "Even if we use tax money to try to decontaminate high dosage areas, they will not become livable. It is better for us to accept the facility and have the government prepare other places for us to live instead."

When the government plan was unveiled, Kowata was angry, saying, "Is the government going to put more burden on the people of Fukushima?" But when she visited her home briefly, she realized that levels of radiation were so high in the area near her home. "Even if we want to go back, I don't think we will be able to live in our hometown that is tainted by radiation," she said. More and more members of a women's civic group formed in the wake of the disasters have tended to accept the interim storage facility as they now think that it would be needed to facilitate decontamination work, she said.

*Mainichi Shimbun*, December 29, 2011

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2011/12/29/20111229p2a00m0na004000c.html>

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## **Furnace malfunction hobbles Aomori spent nuke fuel reprocessing plant**

AOMORI — A furnace malfunction at a nuclear fuel reprocessing plant here has stalled a planned trial run of the facility, throwing the future of Japan's nuclear cycle policy into doubt.

Yoshihiko Kawai, president of plant operator Japan Nuclear Fuel Ltd. (JNFL), announced at a regular press briefing on Jan. 30 that a problem with a furnace at the Rokkasho Reprocessing Plant has forced a halt to the preparatory work for a test of the plant before it officially goes into operation. The furnace is designed to mix molten glass with highly radioactive liquid waste.

The cause of the malfunction has yet to be determined, with no prospect of restoring the equipment to operation in the near term, JNFL said. The technical impasse could prompt calls for a review of the country's nuclear fuel cycle policy, under which spent fuel from conventional nuclear reactors would be reprocessed into MOX plutonium-uranium mixed-oxide fuel for so-called "pluthermal" and "full MOX" reactors.

The plant has repeatedly delayed a full-scale trial run since December 2008 due to a spate of troubles. JNFL had taken various corrective measures before starting to check the status of the furnace on Jan. 24 ahead of the planned test.

According to Kawai, plant workers began work with the plant's "B-System" furnace, which has no

history of use in trials and is separate from the plant's "A-System," which caused trouble four years ago.

On Jan. 24, when workers started melting beads made from a mixture of glass and nonradioactive mock liquid waste in the furnace and pouring the molten material into a container below, they found the flow gradually slowing down, threatening to block the furnace outlet. Workers suspended the procedure three times and stirred the furnace interior in an attempt to restore function, but the glitch has not yet been fixed. Furthermore, unidentified and unexpected black particles each measuring several millimeters were found in the outflow.

"We will continue our restoration work for a while so that we can recover the equipment and ascertain the cause of the problem in a careful manner," said Kawai. The president also said he would make efforts to remain on-schedule for a trial run in early February and the completion of the plant in October, ruling out the possibility of suspending the furnace for inspections at the moment. Regarding the furnace problem's possible effects on the mounting calls for a review of the nation's nuclear fuel cycle policy, Kawai said, "It is important to proceed with our work carefully and without too much strain. We want everyone to understand the situation in terms of advancing the debate as well."

Following plant trouble in 2008, the company has repeatedly conducted experiments using a test furnace in Ibaraki Prefecture and struggled to improve operating methods and devices. In the wake of the nuclear disaster at the Fukushima No. 1 nuclear plant in March 2011, the company had its safety measures updated and approved by Aomori Gov. Shingo Mimura in December that year, ahead of preparations for the plant trial.

President Kawai had stressed in October last year that keeping the nuclear fuel cycle business going "is necessary from the perspective of environmental conservation as well" if compared to burying spent fuel and waste. He had also said the closure and disassembly of the plant could cost some 1.4 trillion yen, on top of the approximately 2.2 trillion yen that was spent on its construction.

The construction of the Rokkasho reprocessing plant, which ultimately aims to recycle nuclear fuel by extracting plutonium and uranium from spent nuclear fuel, began in 1993 for a planned completion in 1997. However, an array of troubles, including technical problems and exposure of one worker to high-level radioactive liquid waste, have forced JNFL to postpone official completion as many as 18 times.

While the government has clearly set forth the promotion of the nuclear fuel cycle in the nation's Framework for Nuclear Energy Policy, protests against the policy have heightened since the outbreak of the Fukushima nuclear disaster. The prototype "Monju" fast-breeder reactor in Fukui Prefecture, which is aimed at efficiently utilizing reprocessed nuclear fuel, has no prospect of restarting. As such, the Japan Atomic Energy Commission has embarked on a full-scale review of the nuclear fuel cycle policy. The total amount of spent nuclear fuel at nuclear power plants across Japan currently stands at some 14,000 metric tons, with nowhere to go unless reprocessing gets under way.

*Mainichi Shimbun*, January 31, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/31/20120131p2a00m0na016000c.html>

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## **Hokkaido Electric seeks dismissal of demand for decommissioning of Tomari reactors**

Hokkaido Electric Power Co. called on the Sapporo District Court on Feb. 13 to dismiss plaintiffs' demand that all three reactors at the Tomari Nuclear Power Plant be decommissioned, saying that it is impossible to rely completely on even advanced science and technology for "absolute" safety of nuclear reactors.

During the first public hearing on a lawsuit filed by 612 plaintiffs from Hokkaido and elsewhere at the Sapporo District Court — the first lawsuit in Japan to dispute the future existence of nuclear reactors in operation since the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant — Hokkaido Electric said, "It is impossible to seek absolute safety in the use of advanced science and technology."

According to the plaintiffs, there has been no case in past lawsuits on nuclear power plants of an electric power company acknowledging that there is "no absolute safety." The plaintiffs lashed out at Hokkaido Electric for its argument based on what they described as "so-what" logic.

The group of plaintiffs is represented by Yugo Ono, professor emeritus at Hokkaido University, and others, who argue that "the existence of the nuclear reactors itself violates the personal rights of residents." In the court hearing on Feb. 13, Hokkaido University professor Masuyo Tokita, one of the representatives of the plaintiffs' group, said, "Nuclear power generation is the most dangerous way of producing electricity in Japan, a leading earthquake country in the world. For people to spend their days at ease, nuclear reactors must be stopped."

Hokkaido Electric, however, made a rebuttal statement that the plaintiffs did not provide any specific reason why the nuclear reactors were dangerous. Moreover, the utility said, "devices, equipment and facilities based on science and technology carry with them a possibility of a certain degree of danger." Hokkaido Electric insisted that preventative measures based on the concept of multifaceted protective mechanisms were taken to ensure the safety of the Tomari Nuclear Power Plant.

*Mainichi Shimbun*, February 14, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/14/20120214p2a00m0na011000c.html>

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## **Another reactor to shut down, leaving only 2 units online in Japan**

TSURUGA (Kyodo) —Kansai Electric Power Co. said Friday it will suspend its only remaining active reactor — the No. 3 reactor at the Takahama nuclear plant in Fukui Prefecture — for a regular checkup early Tuesday, leaving only two of Japan's 54 commercial reactors online.

Of the remaining two, the No. 6 reactor at Tokyo Electric Power Co.'s Kashiwazaki-Kariwa plant in Niigata Prefecture will be offline on March 26, and the No. 3 reactor at Hokkaido Electric Power Co.'s Tomari plant in Hokkaido will be suspended in late April, both for regular maintenance.

As no reactors have resumed operations even after the completion of checkups since the Fukushima complex disaster last March, it is highly likely Japan will have no actively operating reactors after the two are shut down for checkups.

Kansai Electric President Makoto Yagi called for further energy-saving efforts in a press conference in Tokyo on Friday, warning of tighter electricity supply through March following the suspension of the reactor.

Meanwhile, the government's Nuclear and Industrial Safety Agency has endorsed results of so-called stress test on two suspended reactors at the utility's Oi power plant in Fukui Prefecture, a prerequisite to reactivate the units. The Nuclear Safety Commission is expected to further evaluate the results submitted by Kansai Electric.

While the government seeks resumption of the idled reactors, Fukui Gov. Issei Nishikawa has said he will not accept the reactors' restart unless safety standards that reflect lessons learned from the Fukushima nuclear accident are set up.

**Kyodo Press**, February 18, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/18/20120218p2g00m0dm012000c.html>

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## **DPJ endorses revised bill to limit life span of nuclear reactor to 40 years**

Stressing that the possible extension of a reactor's life span would be "exceptional," the draft legislation stipulates that if a reactor meets the necessary requirements, the environment minister "can approve" the extension of its operational life of no more than 20 years.

Satoshi Arai, head of the DPJ project team on measures against nuclear accidents, said, "We made it clear that it is extremely difficult to operate nuclear reactors for more than 40 years." The government is expected to make a Cabinet decision on related bills soon as it tries to enforce them on April 1.

On exceptional rules, nuclear disaster minister Goshi Hosono said on Jan. 6 that the government would introduce the 40-year limit on the operational life of a nuclear reactor. He said the government planned to set exceptional rules to approve the extension of a reactor's operational life if requested by nuclear plant operators as long as it has no safety problems after checking the degree of deterioration of nuclear facilities and technological capabilities to ensure safety of nuclear facilities. But Hosono did not say for how long the operational life of a reactor could be extended.

However, while Hosono was on an overseas trip, bureaucrats in charge of handling the issue explained that "the extension of up to 20 years can be approved." Amid the confusion, Hosono stressed in Washington D.C. on Jan. 18 that it would be difficult to operate a nuclear reactor for more than 40 years.

According to bills the government presented to a DPJ joint meeting on Jan. 23, the environment minister "has to approve (the extension) if a reactor is deemed to comply with requirements." But the wording was modified after DPJ lawmakers lashed out at the proposal, saying it could be taken to mean a nuclear reactor can be operated for 60 years.

*Mainichi Shimbun*, January 26, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/26/20120126p2a00m0na018000c.html>

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### **Only 3 reactors online in Japan after Chugoku Electric halts unit**

MATSUE, Japan (Kyodo) — Chugoku Electric Power Co. suspended its only remaining active reactor for scheduled checkups early Friday, leaving only three of Japan's 54 commercial reactors still online.

The three active reactors — located in Hokkaido, Niigata and Fukui prefectures — will also be suspended by late April for mandated maintenance.

Hiroshima-based Chugoku Electric has two reactors, both at its Shimane Nuclear Power Station in Matsue City. The other reactor has been suspended for inspection. A third reactor is being built.

The utility, which will have to submit safety test results to the government, may find it hard to win local approval for rebooting the existing reactors or activating the third reactor when it is ready, in the wake of the nuclear crisis at the Fukushima Daiichi power plant.

The utility said even without the reactors, it has enough power supply capacity for this winter, projected at 12.01 million kilowatts of electricity, against the expected maximum demand power of 10.58 million kw.

It said it plans to continue supplying electricity to Kansai Electric Power Co. Its power supply arrangement with Kyushu Electric Power Co., which started Jan. 19, will be subject to daily monitoring of demand and supply, it said.

Meanwhile, the Japanese government may be able to avoid issuing an order to restrict electricity usage next summer, even if the nation has no atomic power supply at that time, industry minister Yukio Edano said Friday.

His comments came at a time when all of Japan's 54 commercial reactors are expected to be suspended in April, unless the reactors that are currently idle for scheduled checkups become operational by then.

"Of course, if all the nuclear power plants are not operating, the demand for and supply of electricity are expected to be significantly severe," Edano told reporters. But he also said, "There is a good chance that we can get through without issuing a restriction on electricity usage."

Edano said the government has been exploring ways to avoid issuing such an order and affecting businesses.

Last summer, the government imposed rare restrictions on electricity consumption by large-lot users in eastern and northeastern Japan to cope with supply constraints caused by the country's worst nuclear crisis at Tokyo Electric Power Co.'s Fukushima Daiichi power plant, which was triggered by the March massive earthquake and tsunami.

This winter, the government avoided issuing such an order, but has been asking for voluntary



cooperation to save electricity consumption since Dec. 1 in areas excluding Okinawa prefecture.

Demand for electricity in Japan tends to rise more in the summer than in the winter.

Currently, only three of Japan's 54 commercial reactors are operating, with one suspended earlier Friday, and are slated to begin scheduled checkups by the end of April. It is not clear when the reactors would be reactivated amid heightened public concern about the safety of nuclear power.

**Kyodo Press**, January 27, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/27/20120127p2g00m0dm030000c.html>

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### **TEPCO to shut down another reactor, to leave only 1 in service**

NIIGATA (Kyodo) — The No. 5 reactor at the Kashiwazaki-Kariwa nuclear plant in Niigata Prefecture will be suspended for scheduled checkups in the early hours of Wednesday, leaving only one out of a total of 17 reactors run by Tokyo Electric Power Co. in service, the utility said.

All 17 reactors will go offline by the end of March with the No. 6 reactor at the plant to be shut down by then for checkups, the utility known as TEPCO said.

Among Japan's 54 commercial reactors, only three reactors, except those of TEPCO, are currently in operation — the No. 3 reactor at the Tomari plant in Hokkaido, the No. 3 reactor at the Takahama plant in Fukui Prefecture, and the No. 2 reactor at the Shimane plant in Shimane Prefecture.

The No. 5 reactor in Niigata will undergo checkups for at least five months, while it remains unclear when stress tests, a prerequisite for restarting the reactor, will be conducted, TEPCO said.

Meanwhile, the mayor of Hakodate on the northernmost main island of Hokkaido called on the industry ministry and the ruling Democratic Party of Japan to indefinitely freeze a project to construct a nuclear power plant in the town of Oma in Aomori Prefecture.

Construction of the Oma plant, only 23 kilometers from a point in Hakodate across the Tsugaru Strait, has been suspended following the crisis at the Fukushima Daiichi nuclear power plant.

"Building a new nuclear plant is unacceptable" at a time when people have been talking about decommissioning of existing plants in the future," Hakodate Mayor Toshiki Kudo told Seishu Makino, senior vice minister of economy, trade and industry.

Makino responded the government will take the call "in a sincere manner," a ministry official said.

**Kyodo Press**, January 25, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/25/20120125p2g00m0dm023000c.html>

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## **Safety Agency OKs Stress Tests on 2 N-Reactors in Fukui**

Tokyo, Jan. 18 (Jiji Press)—Stress tests on two nuclear reactors in Fukui Prefecture were properly carried out and the results are valid, the Nuclear and Industrial Safety Agency said in a draft report Wednesday.

The agency was giving its first assessment of nuclear plant stress tests since the country introduced a new rule last year that nuclear plant operators must conduct such tests before restarting reactors.

In October, Kansai Electric Power Co. <9503> submitted the results of the stress tests on the No. 3 and 4 reactors of its Oi nuclear plant in the central Japan prefecture.

The company concluded that the reactors would be safe even if they were hit by an earthquake 1.8 times stronger than its maximum assumption and a tsunami four times higher, or 11.4 meters.

The prime minister and the industry minister will decide whether to allow the restart of the two reactors after a hearing with experts and approval from the Nuclear Safety Commission.

**Jiji Press**, January 18, 2012

<http://jen.jiji.com/jc/eng?g=eco&k=2012011800999>

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## **Shikoku Electric to halt Ikata nuclear plant for checks**

TAKAMATSU (Kyodo) — Shikoku Electric Power Co. said Friday it will halt the No. 2 reactor of its Ikata nuclear power plant in Ehime Prefecture on Jan. 13 for scheduled checkups, bringing the three-reactor plant to a complete halt for the first time since the No. 3 unit started operating in 1994.

The action comes as many of the suspended reactors in Japan have remained unable to restart operation due to safety concerns following the Fukushima Daiichi nuclear plant crisis triggered by the March 2011 earthquake and tsunami in northeastern Japan.

Shikoku Electric plans to restart the No. 2 unit on March 18 for test operation after the checkups and resume its commercial operation on April 12, but given the impact of the Fukushima nuclear crisis the prospects for resumption are uncertain. The Nos. 1 and 3 units are also undergoing regular checks.

The Ikata plant is the only nuclear power station of Shikoku Electric serving Shikoku Island in western Japan.

**Kyodo Press**, January 6, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/06/20120106p2g00m0dm133000c.html>

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## **2 more reactors difficult to build at Tsuruga nuke plant: operator**

FUKUI (Kyodo) — The operator of the Tsuruga nuclear power plant in Fukui Prefecture told reporters Thursday that construction of two more reactors at the plant would be difficult to start in March as earlier planned.

“We’d like to advance the plan, but it would be extremely difficult given the murky prospects for examinations,” Yasuo Hamada, president of Japan Atomic Power Co., said as he visited the Fukui prefectural government office to offer New Year’s greetings.

The operator asked in 2004 for approval to build Nos. 3 and 4 reactors at the Tsuruga plant, and the central government has since been examining the quake resistance of the planned new reactors.

The magnitude 9.0 quake and subsequent tsunami last March that triggered the major nuclear accident at the Fukushima Daiichi power plant has made it difficult for the central government to give a green light to the construction of new reactors.

Currently the Nos. 1 and 2 reactors at the plant are shut down for regular checkups. And in November a group of about 40 residents in Shiga Prefecture, just south of Fukui, filed a suit seeking a provisional court order prohibiting the restart of the two reactors, citing a fear of a severe accident.

The No. 1 reactor at the plant began commercial operation in 1970 and the No. 2 did so in 1987.

Makoto Yagi, president of Kansai Electric Power Co., also visited the Fukui government office and told Gov. Issei Nishikawa that the utility will make all-out efforts to restart this year its reactors in the prefecture.

Nishikawa expressed hope that the operator will steadfastly implement measures agreed upon with the central government for resuming reactor operations.

Of the 13 reactors run by Japan Atomic Power and the Osaka-based utility in Fukui, only the No. 3 reactor at the Takahama plant is in operation now. But that reactor too is scheduled to be shut down in February for a scheduled checkup.

**Kyodo Press**, January 6, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/06/20120106p2g00m0dm104000c.html>

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## **Report that puts nuclear power cost well above 2004 estimate endor**

TOKYO (Kyodo) — A government panel on Monday endorsed a report that recalculated the power generation costs of various energy sources in the wake of the nuclear disaster at the Fukushima Daiichi power plant, with the cost of nuclear power generation estimated well above the previous projection in 2004.

The report is expected to be reflected in discussions to review the country’s energy policy, which is moving toward reducing reliance on nuclear power after the Fukushima disaster threw the safety of Japan’s nuclear power plants into doubt.

According to the report, nuclear power generation costs 8.9 yen per kilowatt hour when including

expenses associated with nuclear accidents, higher than a 2004 projection of 5.9 yen per kwh. The figure was unchanged from the draft unveiled last Tuesday.

The report said that costs would increase depending on the scale of damage caused by a severe nuclear accident. The 8.9 yen figure assumes losses totaling 5.8 trillion yen and would increase by 0.1 yen for every additional 1 trillion yen in losses.

The cost figures for electricity generated by coal-powered thermal plants as well as by liquefied natural gas-powered thermal plants were also unchanged from the draft at 9.5 yen per kwh and 10.7 yen per kwh, respectively.

In the 2004 projection, the cost of electricity generated by coal plants was pegged at 5.7 yen per kwh and that from LNG plants at 6.2 yen per kwh.

Minor revisions were made to the projected cost for 2030 of coal-powered thermal plants, which dropped to 10.3 yen per kwh from the draft estimate of 10.8 yen after including a possible improvement in power generation efficiency.

As for renewable energy sources, the cost of wind power generation on land was estimated at between 9.9 and 17.3 yen per kwh, and of power generated by home solar panels at 33.4 yen to 38.3 yen per kwh.

But in 2030, the report said the cost of wind and solar power generation could drop to as low as 8.8 and 9.9 yen per kwh , respectively, owing to technological advances and mass production of the equipment used.

**Kyodo Press**, December 20, 2011

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2011/12/20/20111220p2g00m0dm036000c.html>

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