Continuing coal power means more global warming, extreme weather and disasters

Nagasaki Prefecture wants to become carbon neutral.
To do this, renewable energy is needed, not thermal power plants; continuing to burn fossil fuels will only make our situation worse.
However…
The GENESIS Matsushima Plan (Saikai City, Nagasaki) is an attempt to keep an outdated coal-fired power plant operating.
There are a number of problems with this plan.

1. **Massive CO_2 emissions, accelerating global warming**
2. **Extending the life of an aging power plant will lock in CO_2 emissions far into the future**
3. **Air pollution control equipment is inadequate, with serious health impacts**
4. **It would dim the prospects for renewable energy**

What is the GENESIS Matsushima Plan?

GENESIS Matsushima Plan is a project by J-Power to modify the Unit 2 of the Matsushima Thermal Power Station in Saikai City, Nagasaki Prefecture. J-Power will attach gasification equipment, gas turbine and heat recovery steam generator to the outdated Unit 2 , aiming to improve its efficiency.J-Power, one of Japan's largest energy companies, owns the Matsushima Thermal Power Station. With the GENESIS Matsushima Plan, the company intends to attach gasification equipment to Unit 2 and continue to use this unit while only slightly improving its efficiency.

Project name	GENESIS Matsushima Plan
Site	2573-3 Matsushima Uchigo, Oseto-cho, Saikai City, Nagasaki Prefecture
Technology	Gas turbine and steam (combined cycle)
Output	Currently: Unit 1: Retired / Unit 2: Mothballed
	Future: Approx. 500 MW
Fuel	Coal / biomass and ammonia co-firing (planned)
Construction start	2026 (planned)
Operation start	2028 (planned)

Source: J-Power's press release

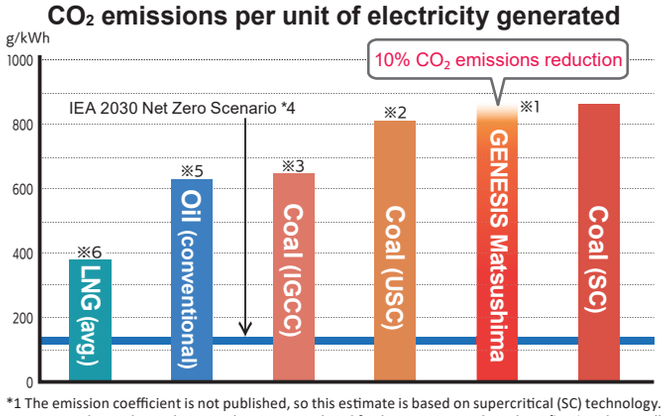
In the future, it aims to generate electricity from biomass and ammonia co-firing, and use carbon capture, utilization, and storage (CCUS), technology to capture CO_2 emitted from power generation. Discussions are also underway about using the hydrogen generated by the gasification facility for power generation, or for supplying it to other industries. The Matsushima Thermal Power Station is aging coal-fired power station, and based on the international agreement to phase out inefficient coal-fired power station, should be retired. Unit 1 (500 MW) was retired in May, 2025, but for the Unit 2, which is mothballed since April 2025, J-Power is currently in the midst of an environmental impact assessment (EIA) for this project.

1 Massive CO_2 emissions, accelerating global warming

The climate crisis is growing more serious day by day. The global average temperature rise must be limited to no more than 1.5ºC above pre-industrial levels if we want to avoid the most dangerous impacts, and countries around the world need to achieve a carbon-neutral society by 2050. To accomplish these goals, Japan - as a developed country - must phase out all coal-fired power generation by 2030.

Electricity generation from coal emits more CO_2 than any other type of thermal power - twice as much as even gas. In fact, coal is the largest source of greenhouse gas emissions in Japan's power sector.

CO_2 emissions per unit of electricity generated



*1 The emission coefficient is not published, so this estimate is based on supercritical (SC) technology. Matsushima Thermal Power Plant is an outdated facility, so even with coal gasification there will be no significant reduction in emissions.
*2 CO_2 emission factor of J-Power's Isogo Thermal Power Station (ultra supercritical, USC) is 810 g-CO_2/kWh.
*3 CO_2 emission factor of IGCC Hirono/Nakoso power station (integrated coal gasification combined cycle, IGCC) is 652 g-CO_2/kWh respectively (draft environmental impact statement).
*4 The power sector emission factor in 2030, per "Net Zero by 2050: A Roadmap for the Global Energy Sector" (International Energy Agency, IEA) is 138 g-CO_2/kWh.
*5 CO_2 emission factor of former Yokosuka Thermal Power Station (oil) was 627 g-CO_2/kWh (draft environmental impact statement).
*6 CO_2 emission factor for high efficiency LNG-fired power generation (gas turbine combined cycle, GTCC) is 340 g-CO_2/kWh.

Source: Prepared by Kiko Network

2 Extending the life of an aging power plant will lock in CO_2 emissions far into the future

The Matsushima Power Station's Unit 1 was retired, but remainingUnit 2 will emit about 3 million tons of CO_2 per year if they become operational - that's huge. This alone is equivalent to about 40% of Nagasaki Prefecture's annual emissions of 8.144 million tons (FY2019 [indirect emissions]). Additionally, even if the GENESIS Matsushima Plan is realized, efficiency improvement is approximately 10%, so it would not significantly reduce the plant's emissions.

Nagasaki Prefecture and Saikai City are trying to be carbon-neutral by 2050, which means net zero greenhouse gas emissions. Prolonging the life of this aging power plant, which has already been in operation for over 40 years, and continuing to emit CO_2 will undermine the goals and efforts of the region.

③ Air pollution control equipment is inadequate, with serious health impacts

Coal contains many pollutants, and when burned as a fuel, it emits a number of air pollutants such as PM2.5 particles and nitrogen oxides, which pollute the air and affect asthma and other respiratory illnesses.

Both units at the Matsushima Thermal Power Station are an old, outdated design, and their environmental equipment is not up to par. This causes the plant to emit air pollutants in higher concentrations than other coal-fired power plants.

J-Power claims that the GENESIS Matsushima Plan will reduce emission concentrations. However, the emissions will still be significantly worse than at other power plants.

Plant	Company	Capacity	Technology	Started	Nitrogen oxides (ppm)	Sulfur oxides (ppm)	Soot (mg/m³N)
Matsushima Plant, Unit 1	J-Power	500 MW	SC	1981	300	260	100
Matsushima Plant, Unit 2 (future)	J-Power	500 MW	SC	1981	170	120	50
Kobe Plant, Units 1&2	Kobe Steel	700 MW each	SC	2002	24	24	10
Kobe Plant Units 3&4	Kobe Steel	650 MW each	USC	2022	20	13	5
Isogo Plant, Unit 2	J-Power	600 MW each	USC	2009	13	10	5

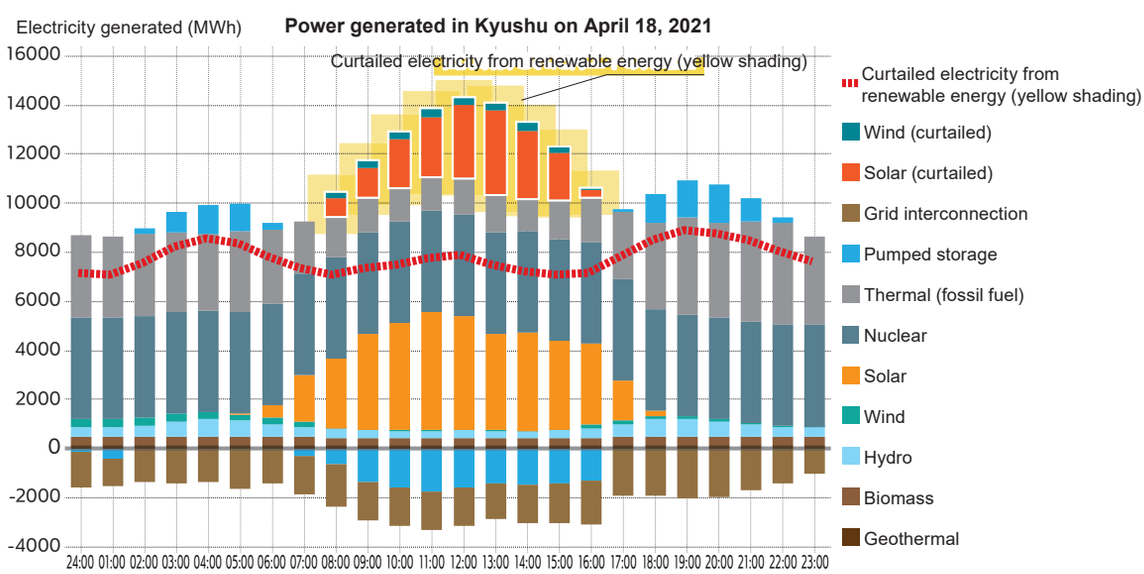
Source: Prepared by Kiko Network from the first screening report environmental impact assessment for GENESIS Matsushima (p15), draft environment impact statement for Units 3 and 4 at Kobe Power Plant (p30), and J-Power annual report 2009.

④ It would dim the prospects for renewable energy

To avoid a worsening climate crisis, the world needs to decarbonize as soon as possible, and to do this we must end the use of coal for power generation. This means actively transitioning to a society based on renewable energy such as wind and solar power, not fossil fuels like coal.

As shown in the graph below, electricity from renewable energy alone increasingly exceeds demand in the Kyushu Electric Power Co. service area, where the Matsushima Thermal Power Station is located, but solar and wind power output is being curtailed. In the FY 2024, the Kyushu Electric Power Co. service area excluding the islands, total curtailed electricity from renewable energy was approx. 200 GW. Simultaneously, offshore wind farm is being developed in the Goto Ciry and Saikai City, and geothermal power generation is operating at Unzen City. These are examples that illustrate how extending the use of thermal (fossil fuel) power plants hinders the use of renewable energy at the regional level, like placing stumbling blocks in the way or putting the brakes on the promotion of renewables in the region.

J-Power should present a scenario that does not include the GENESIS Matsushima Plan, and instead should propose more flexible operation of the regional power system.



Source: Prepared by Kiko Network from Institute for Sustainable Energy Policies (ISEP) Energy Chart data.

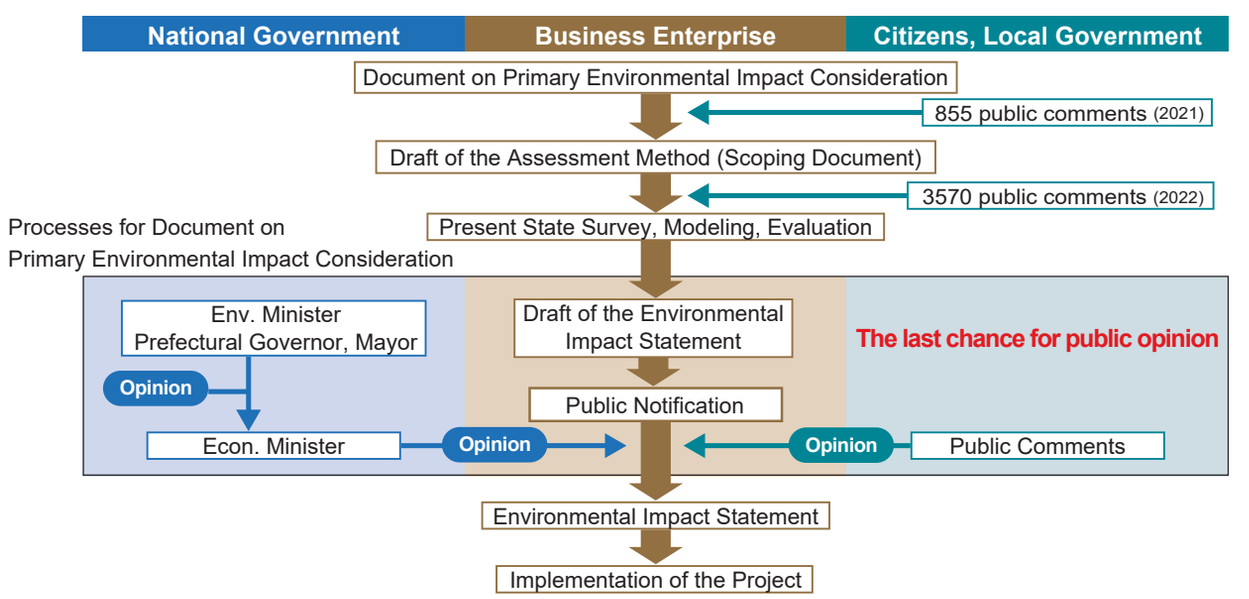
Speak up for a “Just Transition”

Nagasaki Prefecture has developed its “Second Nagasaki Prefecture Global Warming (Climate Change) Countermeasures Implementation Plan”, which includes a long-term goal of realizing a decarbonized society by 2050. Saikai City, where the Matsushima coal-fired power plant is located, also included in its “Saikai City Global Warming Countermeasures Implementation Plan (regional policies edition)” to “aim for realizing decarbonization by 2050”. Now, the entire community should be involved in deciding what it needs in order to mitigate any impacts on employment and the local economy associated with the power plant, and what is necessary to ensure a just transition.This case is also an important opportunity for Japanese society as a whole. Until now, our society has developed with a heavy reliance on fossil fuel power plants. How can we transform into a modern society in tune with the times?

Submit comments for the environmental assessment!

The GENESIS Matsushima Plan is currently undergoing an environmental assessment process. Throughout this process, the public can express opinions related to the plant’s impacts on the environment. We now know the problems with this plan to extend the life of a coal-fired power plant, and we can call for its cancellation. Let’s tell J-Power that we need something better.

For input on the first screening report of the environmental impact assessment, which was processed in September 2021, 855 comments were submitted by citizens from around the country. On the scoping document (the second stage of the EIA process), which was processed in October 2022, over 3,000 comments were submitted. This shows that many citizens have serious concerns about the GENESIS Matsushima Plan.



After 2012, many coal-fired power plants were being planned across Japan. Citizens and communities concerned that climate action would be delayed raised their voices and organized, and were able to stop some plans. Every voice calling for change helps us to move toward a decarbonized society.

We urge everyone to submit their comments in the environmental impact assessment process, calling on J-Power to reconsider its plans. Your voice will be an important step toward averting the climate crisis and creating a safe, healthy, and sustainable future for Japan.

KIKO NETWORK 気候ネットワーク

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Kiko Network (https://www.kikonet.org)

Tokyo Office: 6B, Fujimori Bldg., 2-12-2, Hirakawacho, Chiyoda-ku, Tokyo 102-0093, JAPAN

TEL 81-3-3263-9210、FAX 81-3-3263-9463、E-mail tokyo@kikonet.org

Kyoto Office: 305 Takakura Bldg. Takakura-dori, Shijo-agaru, Nakagyo-ku, Kyoto 604-8124, JAPAN

TEL 81-7-5254-1011、FAX 81-7-5254-1012、E-mail kyoto@kikonet.org