Introduction
The Future of Environmental Measures and Crematorium

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On September 1, 2025, the Japan Meteorological Agency has announced that the average temperature of the summer (i.e., June 1 through August 31) of 2025 turned out to be the hottest ever since the statistics recording started in 1898. It was +2.36℃ above the average year, exceeding +1.76℃ recorded in 2024 and 2023.

In Japan, the Cabinet Decision on the Plan for the Global Warming Countermeasures was made on February 18, 2025. It is a comprehensive plan based on the Global Warming Prevention Act, revised from the previous Plan decided by the Cabinet on October 22, 2021. On the same day, February 18, Japan also submitted its new Nationally Determined Contribution (NDC) to the UNFCCC. In it, Japan declared that it aims to reduce greenhouse gas emission by 60% in Fiscal Year 2035 and by 73% in Fiscal Year 2040, respectively, from its Fiscal Year 2013 levels. These are ambitious targets aligned with the global 1.5℃ goal and on a straight pathway towards the achievement of net zero by 2050.

Following the most recently made Cabinet Decision as well as the submission of NDC, the Japanese government intends to speed up measures for zero-emission, boost green finance, encourage projects, investment, and innovation of zero-emission, aiming to drive both environmental progress and economic growth. As we get closer to the end of 2025, we have no time to waste.

Cremation involves various environmental issues, i.e., choices of fuel, reuse of heat from cremation, etc. Many EU countries have adapted to meet these concerns. The high temperature exhaust gas from cremation is widely re-used. The gas goes through a heat exchanger that creates hot water. Hot water is then used not only for the facility heating, and sometimes for community heating. In Japan, people used to feel that using heat from cremation is "disrespectful" or "inappropriate." However, this perception has been changing over time. In the near future, the first cremation facility that uses exhaust gas for heating the facility will be operational. Today, more people are in favor of actively using such heat source especially if that would be environmentally friendly and help reduce the operation cost. General perception of crematory by community residents are changing for the better as well.

Technological development of the cremation furnace is essential for moving toward the net zero goal. Unfortunately, environmental countermeasures are often costly. They tend to get low priority in the current cost-cut conscious Japan. Unless action is taken, Japan may fall far behind in executing environmental countermeasures.

The fuel choice for cremation furnaces significantly affects the environmental aspects of cremation. In Sweden, biofuel is used, and the Netherlands are moving forward with switching to electric furnaces. In 2024 in Great Britain, a validation test was launched in a crematory using100% hydrogen gas as fuel. A similar hydrogen fuel cremation pilot test is planned in Japan for pet cremation. The environmental benefits of hydrogen are recognized, but cost and infrastructure requirements are hindering practical applications. Despite hydrogen's downsides in manufacturing means and cost, it may become one of the main choices for cremation.

Improvements in cremation efficiency will help to address environmental issues. In Japan, especially in rural municipalities, there are crematories that are not operated fully. That could be due to depopulation, unbalanced population, or location of crematories. To achieve carbon neutrality, crematories need must be operated in full capacity. Crematories that are not in full operation might designate certain days as "no-cremation day" and shut the furnace down.

There are movements in some countries to switch from CO2 emitting cremation to burial. Since cremation rate is close to 100% in Japan, going back to burial is not realistic. Yet the execution of environmental countermeasures must move on with no time to waste. Cremation in Japan must adapt to meet environmental and societal needs.

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