

"Project Formulation Survey" under the  
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Projects for  
ODA Overseas Economic Cooperation  
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Summary Report

Vietnam

The survey on the diffusion of the incinerators for  
disposal of industrial & medical wastes in Vietnam

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## Introduction

Vietnam's remarkable economic growth in recent years has brought with it a worsening waste problem. Almost all of the industrial wastes generated in Vietnam are disposed of in landfills, and this is leading to the problems of inappropriate landfill disposal and illegal dumping. In particular, the inappropriate landfill disposal and illegal dumping of highly hazardous industrial wastes and medical wastes have the possibilities to cause environmental destruction and seriously affect the public's health.

Such illegal dumping and inappropriate landfill disposal were once serious social issues for Japan as well. However, Japan has made enormous progress toward eliminating these problems by strengthening its legal system and improving its waste disposal systems. Today, most of Japan's hazardous wastes are disposed of in landfills after being made harmless and undergoing reduction through incineration.

Irisan Kizai K.K. (hereafter "Irisan") is a company mired in a severe business environment arising from the nuclear power plant accident that occurred following the Great East Japan Earthquake of March 11, 2011. Having studied the environment sector as a potential area for new business growth for some time, Irisan is making preparations to begin the sales of incinerators for the disposal of industrial wastes in Vietnam. It is taking this step with an eye to contributing to the above-mentioned waste problem—and particularly the industrial waste problem—in that country.

This survey was conducted to ensure the success of Irisan's sales of industrial waste disposal incinerators in Vietnam, and to propose ODA projects that will help resolve the problem of medical waste disposal, which is a particularly important aspect of Vietnam's serious waste problem.

To achieve these purposes, the survey team first ascertained the actual situations surrounding medical waste disposal in Vietnam and the government policy toward resolving this problem by conducting interviews with central government offices (namely, the Ministry of Natural Resources and Environment and Ministry of Health, among others), the local governments of major urban areas and their vicinities, and public corporations that handle waste disposal.

Next, the survey team studied the degree to which Irisan's incinerators will be effective in resolving problems in the disposal of industrial and medical wastes in Vietnam that were

identified in the previous step.

Finally, based on its findings, the survey team is proposing ODA projects to involve medical waste disposal systems that are centered on Iriisan's small-scale incinerators.

## I. Description of the current situation and development needs of the development issues concerned in the surveyed country(ies)

In implementing the survey, the survey team first conducted interviews with and observed incineration facilities at local governments, namely centrally-run municipalities and outlying provinces, to ascertain the demand for the incinerators to be sold in this business.

As a result, it was found that "centralized disposal" of medical wastes was already taking place at four centrally-run cities (namely, Hanoi, Ho Chi Minh, Haiphong, and Da Nang) and in Quang Nam and Lam Dong Provinces. In other provinces, medical institutions at the provincial or district level were engaging in "on-premises incineration" using incinerators installed on their grounds, while small medical institutions at the town or village level asked neighboring medical institutions to incinerate their wastes or disposed of them in landfills.

It should be noted that "high operating costs" and "aging facilities" were identified as problems in incinerators in the centrally-run cities and provinces that practice "centralized disposal." Aging facilities, in particular, is a cause of frequent malfunction, low performance, and air pollution. Another problem was "inadequate capacity" arising from the rapidly growing volume of the wastes that are a consequence of regional economic development. Also, it was found that the problems of "high operating costs," "aging facilities," and "inadequate capacity" also exist in provinces that practice "on-premises incineration." In addition, the team's observations of incineration facilities found "improper waste management" and "inappropriate operation" to a degree inconceivable in Japan. These circumstances were the causes of "frequent malfunction," "air pollution," and "smoke and odor."

Next, the team sought to confirm officials' awareness of current circumstances and future policy by conducting the interviews targeting the central government agencies and offices concerned. As a result, the team found that central government agencies and offices recognized the above-mentioned problems, and that guidelines and a master plan for medical waste disposal had been established in "approval of the master plan on hazardous solid medical waste treatment

systems through 2025” (Prime Minister’s Decision No. 170/QD-TTg) of February 2012 to resolve this situation.

This decision stipulates that almost all the provinces in Vietnamese territory will switch from “on-premises incineration” to “centralized disposal” by 2025. It also presents “incineration” and “non-incineration” as disposal options. Particularly in the case of “incineration,” it notes that this method has the benefits of destroying infectious agents and minimizing bulk on the one hand, but requires solutions to the problems of cost and exhaust on the other.

However, the team’s interviews targeting the previously mentioned centrally-run cities and outlying provinces revealed that many favor “incineration” as their means of complying with Decision No. 170/QD-TTg. Moreover, the team found that regional governments that currently practice “on-premises disposal” identified “inability to secure maintenance expenditure,” “need to build systems from scratch,” and “concerns about covering collection costs” as problems relevant to the decision.

Based on the findings described here, the team confirms that, given Vietnam’s shift in policy regarding disposal of medical wastes, the demand for incinerators of a size that can respond to the problems of “cost” and “air pollution” and satisfy disposal capacity requirements demanded by “centralized disposal” would exist throughout Vietnam.

## II. Possible applicability of the SME's products and technologies, and prospects for future business development

Irisan has its head office in Fukushima City, Fukushima Prefecture. Fukushima City is experiencing extremely tough economic times as a result of the Great East Japan Earthquake and subsequent nuclear power plant accident. Although a variety of Government of Japan-led reconstruction-support measures are underway there, the regional economic environment continues to be harsh. Given such circumstances, Irisan is attempting to find new overseas business opportunities in the environment sector, an area in which Irisan has been studying future-oriented business strategies for many years.

Specifically, Irisan is planning to sell incinerators for industrial waste disposal that are capable of handling between 3 and 24 tons per day, with the main focus on those handling 6 tons per day, to industrial waste disposal businesses in Vietnam. For this purpose, it developed an

incinerator for industrial waste disposal in Vietnam in cooperation with JetTEK Co., Ltd. (a Japanese company) and FBE Vietnam (a Vietnamese company). It then established a production system by entering into a contract with a local producer for production in Vietnam and providing it with technical guidance. In December 2012, the local producer manufactured a 6 ton/day industrial waste disposal incinerator. This incinerator underwent and passed an exhaust inspection in Vietnam in January 2013. Concurrently, Irisan has also established sales and maintenance systems and completed preparations for full-scale sales from 2013.

Employing Japan's world-leading exhaust-control technologies and know-how, Irisan's incinerators pass Vietnamese exhaust regulations and provide durability and other performance aspects that are competitive with American and European products as well as those produced in Vietnam.

Moreover, with the exception of some components, the incinerators are almost entirely manufactured in Vietnam. Consequently, their base prices are on a par with those of competing American and European products that enjoy a large share of the Vietnamese market. Furthermore, because they are made to be compact, they offer more affordable initial costs compared to American and European products because they require less expenditure for buildings and ancillary facilities.

In addition, the application of patented technology eliminates the need for a primary combustion chamber burner. This reduces fuel consumption to about one-fifth that of similar American and European products and lowers operating costs dramatically.

Thus, Irisan's incinerators' strengths are illustrated in the fact that they greatly lower initial and operating costs while also delivering advanced exhaust control performance and durability.

It deserves noting that while Irisan's short-term focus will be on sales within Vietnam, it anticipates future sales in Thailand, Cambodia, the Philippines, and other countries of Southeast Asia. Such sales will not only help expand Irisan's own business but also make a contribution toward developing Vietnam's manufacturing industry and strengthening its export power.

### III. Expected development impact and effect on business development of the proposing SMEs in the surveyed country(ies) through proposed ODA projects

Vietnam is currently making a shift toward “centralized disposal” in line with Decision No. 170/QĐ-TTg of 2012. Two methods are being considered under “centralized disposal”; namely, incineration and non-incineration. For the adoption of the incineration method, “cost” and “air pollution” are identified as pertinent issues.

Furthermore, the findings of the survey indicate that, in the shift to centralized disposal, it will be necessary to build the disposal process (i.e., waste collection, transport, incineration, and final disposal) from scratch. This raises the questions of how to obtain “initial costs” and “operating costs” as well as how the system should be maintained.

Moreover, because the shift to “centralized disposal” will lead to larger numbers of disposal processes and personnel, the risks of “contamination” and “illegal dumping” will become an even greater concern. Consequently, the “establishment of rules for appropriate operation” and “supervision of appropriate operation” will be required.

Irisan’s incinerators have the characteristics of “excellent exhaust control and high durability” together with “low initial and operating costs.” Furthermore, Japan possesses excellent private sector- and government-led medical waste disposal systems that are designed to prevent “contamination” and “illegal dumping.”

Supplying Japan’s technologies and know-how for private sector-run medical waste disposal systems and government-run management systems to Vietnam, combined with use of Irisan’s incinerators, in the form of ODA projects, can contribute significantly to the resolution of these problems.

Irisan is in the business of selling industrial waste disposal incinerators to “industrial waste disposal businesses” in Vietnam. The success of this business will hinge on “raising recognition and trust in Irisan’s products” and “developing a robust incinerator market that stresses environment-friendliness.”

The implementation of the above-mentioned ODA projects will contribute considerably to the realization of these two conditions. Irisan believes that one result of such projects will be its products’ ability to secure an advantageous position in the industrial waste disposal incinerators market.

#### IV. Proposals for formulating ODA projects

As a result of the survey, the team confirmed that providing medical waste disposal systems that use Irisan's incinerators to Vietnam as part of ODA projects could make a significant contribution toward resolving medical waste disposal-related problems in that country. The team further recognized the need to make any ODA projects that are implemented in compliance with the guidelines and plans that are based on Vietnam's Decision No. 170/QD-TTg.

Additionally, two points must be borne in mind when providing support here. The first is that establishing a medical waste disposal system that utilizes Japan's technologies and know-how will require a phased approach; specifically, "the initial establishment of a medical waste disposal system followed by its broad diffusion throughout the country." And the second is the need to prepare for the solutions to problems in covering disposal costs that exist in some regions. For example, it will be necessary to introduce such measures as "co-incineration with non-medical industrial wastes," which is an approach employed in Japan.

Here, Irisan proposes three project types—i.e., "pilot-type," "diffusion-type," and "development-type"—that are classified by their support period and content. All three types will be comprised of "provision of facilities, etc." to be based on project grant aid and yen loans and "technical cooperation."

First, the "pilot-type" project would identify two or three sites from Vietnam's northern, central, and southern regions that have organizations and frameworks capable of forming the foundation for "centralized disposal." Then Irisan would supply incinerators, incinerator buildings, and other facilities to those sites through "(small-sum) project grant aid," and provide their guidance concerning the establishment of systems for collection, transport, and disposal as well as government-led management systems through "technical cooperation."

As it pursues the short-term building of medical waste disposal systems using Japanese know-how, the project would also demonstrate the effectiveness of the medical waste disposal systems that utilize Irisan's incinerators and provide the education to support their diffusion by disclosing figures concerning environmental measurements, operating costs, and other considerations; holding seminars that bring together concerned actors; and accepting visits and inspections.

Next, the “diffusion-type” project would introduce the medical waste disposal systems utilizing Irisan’s incinerators that were established in the “pilot-type” project into 10 to 15 local governments that currently do not practice collection and disposal. Specifically, it would provide incinerators and other facilities, establish within a fixed term a support organization through collaboration by the Government of Japan and the Government of Vietnam, and provide support for the steps from planning to introduction by using the “grant aid for general projects” scheme. It would also provide the guidance for the establishment of the medical waste disposal systems that were already established in the “pilot-type” project as “technical cooperation.”

The project would thus promote the diffusion of “centralized disposal” based on Decision No. 170/QD-TTg. It would also help broaden acceptance of the need for environment-friendly incinerators and develop a robust incinerators market by spreading recognition of Irisan’s products throughout Vietnam.

Finally, the “development-type” project would establish “medical waste disposal systems” based on “co-incineration with the hazardous industrial wastes,” “diversified operational formats,” and other approaches in the provinces struggling to cover collection and disposal costs and about 30 local governments in which development is lagging. Specifically, it would supply the incinerators and other facilities of various sizes and support their steps ranging from planning to introduction by the support organization that was established in the “diffusion-type” project by creating a yen loan-based fund or providing sector loans. Also, it would provide guidance on the establishment of collection, transport, and disposal systems and government-led management systems through technical cooperation.

The project would thus support the full implementation of Decision No. 170/QD-TTg. It would also boost the recognition of Irisan’s products, and help broadening the acceptance of the need for environment-friendly incinerators and develop a robust incinerator market.

It should be noted that, in the interest of laying the groundwork for efficient implementation of the “diffusion-type” and “development-type” projects, Irisan is currently studying the ways of collaborating with the activities of other donors, such as projects that the Ministry of Health is promoting in cooperation with the World Bank.



Scheme (Project Formulation Survey)  
ODA Project Formulation Survey on Diffusion of Incinerators to address Industrial and Medical Waste Disposal-related Problems in the Socialist Republic of Vietnam

**Enterprise/site outline**

- Proposing enterprise: Irisan Kizai K.K.
- Location of proposing enterprise: Fukushima City, Fukushima Prefecture
- Site and counterpart organization: Vietnam (all territories); Ministry of Natural Resources and Environment or Ministry of Health

**Development issue in Vietnam**

Shift from “on-premises disposal” to “centralized disposal”

- Reduction of air pollution
  - Exhaust, smoke, and odor from incinerators are becoming a social problem.
- Reduction of operating costs
- High fuel consumption is a burden for medical institutions and businesses
- Growing infection and illegal dumping risks
  - Risks of infection and illegal dumping increase as numbers of participants and processes grow.

**Technologies/products of the SME**

- Strong energy-savings performance and advanced disposal technology
  - Dramatically reduces operating costs (1/5 costs of competitors) with patented technologies
  - Applies advanced exhaust control technologies developed under Japan's strict standards
- Price competitiveness
  - Lowers startup costs with local production and design of compact incinerators
- Provision of systems developed based on regional public/private collaboration
  - Provides operational and management know-how for medical waste disposal in collaboration with Fukushima Prefecture and infectious industrial waste disposal businesses in Fukushima Prefecture

**The ODA projects proposed in this plan and their anticipated effects**

- “Pilot-type project to support development of medical waste disposal systems” ([small-sum] project grant aid & technical cooperation)
- “Diffusion-type project to support development of medical waste disposal systems” (grant aid for general projects & technical cooperation)
- “Development-type project to develop medical waste disposal systems” (yen loans [sector loans] & technical cooperation)

Effects: Projects will effectuate appropriate disposal of medical wastes throughout Vietnam by diffusing medical waste disposal systems that control risks of air pollution, infection, and illegal dumping while also lowering operating costs.

**Business development impact for Japanese SMEs**

- Promotion of the industrial waste disposal incinerator business in Vietnam
  - Development of a robust incinerator market that stresses environment-friendliness by promoting understanding of high-performance incinerators
  - Enhancement of trust in and recognition of Irisan's incinerators and technologies among government officials and industrial waste businesses by employing Irisan's products in ODA

