distribution of an action plan brochure to all the households in the prefecture. Although the individual activities promoted by each council might be modest, they have grown into great accomplishments in the last three years.

The fruits of these activities are as follows:
1. Farm and non-farm households have had opportunities to meet.
2. Good points of farm villages and the local resources were rediscovered.
3. Environmental awareness was fostered in farm households.
4. Children were educated about the environment in conjunction with agricultural infrastructure improvement and rural development.
5. Opportunities were created for residents, experts, and administration staff to meet together.

7. Conclusion
In March 2001, 7 councils out of 13 which were established in FY 1998 adopted “Mizusumashi” Clean Water Action Plans combining their efforts over the last 3 years. Concrete actions will be taken steadily to improve immediate problems based on the action plan. In order for a practical activity started in a local area to become an established one, continuous learning and fostering of community leaders is also essential. For this reason, the prefectural government built up a system to support the activities of residents in regard to environmental conservation, and the "Mizusumashi" center was opened by the Shiga Land and Water Association. Each concrete action that is undertaken through council activities will be provided support and be fostered if it is still small.

Shiga Prefecture, which has Lake Biwa at its center, has given special consideration to water quality preservation and rural environmental protection when conducting agricultural infrastructure improvement and rural development. The "Mizusumashi" Clean Water Initiative was a product of these long-term efforts, so receiving this prize has greatly encouraged us. As an "environmentally concerned prefecture," we will continue to promote Shiga Prefecture agricultural infrastructure improvement and rural development as befits the era of the environment.

(written by TANIZAWA Masami)

Dr. UENO Award

Restoration of the Land from the Eruption of Mt. Unzen Fugen-dake

Shimabara Office, Nagasaki Prefecture

1. Introduction
The Shimabara Peninsula, a leading agricultural area of Nagasaki Prefecture, accounts for approximately 24% of the Prefecture’s total cultivated acreage and 40% of its gross agricultural production. In the peninsular highlands is Unzen-Amakusa National Park, Japan’s first national park. The park includes Shimabara, Unzen, and Obama spa resorts, as well as many other attractive sightseeing spots, once very popular with tourists.

On November 17, 1990, Mt. Unzen-Fugen-dake began to erupt after 198 years of dormancy. The eruption produced huge pyroclastic and debris flows that caused severe damage to Shimabara City, Fukae Town, Ariake Town, and other surrounding townships.

The largest pyroclastic flow, that of June 3, 1991, and subsequent repeated pyroclastic and debris flows caused fatalities and damaged a number of buildings. This was an unprecedented
disaster in Japan, with total damage to agriculture, fishery, commerce, and industry estimated to amount to more than 230 billion yen.

Even while the volcano was still active, various restoration measures were formulated and implemented with the cooperation of different sectors that were, closely monitoring the gradually subsiding volcanic activity. Based on these restoration efforts, a government-private sector joint-restoration program was launched in 1997, when the five-and-a-half-year volcanic activity was declared over. Under the slogan "Building a More Comfortable and More Affluent Community than Before," the program includes the Farmland Restoration Project and the Comprehensive Shimabara-Fukae Farm Area Development Project, implemented in combination with various other projects.

2. Basic policy for farmland restoration

For restoration of the disaster-stricken area, the Basic Policy for Farmland Restoration and the Basic Policy for Sediment Control were established in 1992, two years after the great disaster.

The Ministry of Agriculture, Forestry and Fisheries (Agricultural Structure Improvement Bureau), the Forestry Agency and the Ministry of Construction (currently the Ministry of Land, Infrastructure and Transport) each formulated and carried out plans to implement the restoration policies. It was decided that Nagasaki Prefecture should conduct the farmland restoration projects on behalf of the national government, after the stricken area was designated a disaster zone as a result of more than 10 official disaster assessments. The Prefecture commenced restoration work in fiscal 1993, at first in areas surrounding the heavily devastated area, due to the danger of pyroclastic and debris flows, and proceeded with the projects while securing safety.

O Restoration plans

After the eruption disaster, a 331-hectare farmland area, including 265 hectares of land surrounding the directly devastated farmland, was collectively redeveloped for productivity improvement of local agriculture and establishment of disaster-resistant agriculture by means of greenhouse horticulture.

1) The directly stricken area was redeveloped and restored to its former state and rezoning of land, under the Farmland and Agricultural Facility Restoration Project.

2) All of the indirectly stricken area was redeveloped through land rezoning under the Disaster-related Farmland Readjustment Project.

3) Farmland irrigation facilities in the entire area were redeveloped under the Comprehensive Prefectural Farm Area Development Project.

3. Technical features of the Farmland Restoration Project

In implementing the Farmland Restoration Project, the following distinctive methods are employed, in view of the basic policies described above, local geographical features, and various other factors.

1) The size of a standard plot is set at 30 ares (75 m by 40 m) to make it easier for farm households to introduce greenhouse horticulture. Also, the farm fields were developed to have only a gentle gradient of 0.5%.

2) Some parts of the indirectly stricken area, where cultivated soil remained, were restored by removing the topsoil, preparing the crop cultivation base soil, and then re-covering with the topsoil. In other parts of the area where sediment had been carried and thickly deposited by debris flows, cultivated soil was brought from outside the area for soil dressing.

3) Generally, ridges between fields are formed with soil. However, this area under farmland restoration has volcanic ash soil, which is easily affected by water erosion and may cause
collapse of the ridge slopes. To provide a disaster-resistant structure, therefore, coarse fragments of lava produced by the volcanic eruption were used to construct ridges of random rubble masonry.

4) Farm roads in the fields were constructed to a width of five meters, to function as lifelines in case of emergency.

5) Regarding drainage ditches, random rubble masonry was provided to a flood level reached once in ten years, to prevent scouring due to the properties of volcanic soil. Sedimentation basins were also provided in various locations along the ditches, to provide for possible cultivated soil outflow caused by floods.

6) To promote the introduction of greenhouse horticulture, farmland irrigation facilities were provided in each farm field.

7) The Annaka Triangle Zone, surrounded by the Mizunashi River and training dikes, is the area most heavily damaged by repeated debris flows. In this 93 ha zone, including approximately 47 ha of farmland, a land-raising project was proposed and implemented, in combination with land readjustment, farmland restoration, and other projects, in response to the desire of local residents for improved safety and to secure dumping places for sediment carried by debris flows, which are expected to occur repeatedly, and for waste soil excavated from sediment control dam construction by the Ministry of Construction (currently the Ministry of Land, Infrastructure and Transport). (Amount of soil required to raise land: 3.64 million cubic meters. Average height of land raising: Approx. 4 meters)

4. Effects of restoration projects on local agriculture

The main portion of the restoration work was completed only five years after commencement in January 1994. Of 667 disaster-affected farm households, approximately half (374 households) resumed farming.

The restoration projects have had the following effects:

1) Land rezoning and farmland irrigation facility redevelopment have facilitated introduction of hothouse cultivation, supported by the Disaster Prevention and Farming Support Project for Areas Surrounding Active Volcanos. The total area under hothouse cultivation has increased to 67 ha from 18 ha before the disaster, contributing to a 50% increase in gross agricultural production from the pre-disaster figure.

2) With the increasing introduction of hothouse cultivation, new fruits and vegetables, such as peaches, "papaya-melons," and asparagus), have been added to the agricultural product lines of the Shimabara Peninsula area. Production of flowers and ornamental plants (chrysanthemums, orchids, etc.) has also been expanded.

3) The growth in scale of tobacco cultivation has accelerated recovery of the disaster-stricken area.

4) Extending through the center of the devastated area, the farm road for the wide-area farming complex has greatly contributed to the promotion of farming by tenant farmers from outside the local agricultural community, who lease farmland; the road has also contributed to, revitalizing agricultural production activities and streamlining the distribution system, while functioning as a road for evacuation and restoration work.

5) Many farm households in the disaster-stricken area had been forced to change their occupation due to long-term designation of their farms as an alert area. However, as a result of farmland restoration efforts, these households finally recovered their places for production and living, and resumed farming.

6) The Mt. Unzen-Fugen-dake eruption disaster restoration projects have successfully triggered
farmland redevelopment on the Shimabara Peninsula, which is rich in crop fields, producing great ripple effects. The Comprehensive Farm Area Development Project for Fostering Future Farmers has been formulated and approved for 405 hectares of fields in seven districts, and requests are increasing from all over the Peninsula for systematic redevelopment.

5. Conclusion
With the end of the volcanic activity, restoration of devastated farmland under the catch phrase “Revive! Land of Green and Natural Beauty!” is finally entering the last phase. Disaster-affected farm households have resumed full-scale farming through the introduction of greenhouse horticulture and acquisition of new technologies and skills. The beautifully restored farmland has been sown with new seeds, restoring the fertile green land. This successful restoration is due to both the disaster-affected farm households’ strong will to resume farming and the implementation of various effective restoration programs.

The toughness of the people in this region, who have recovered from near zero, must have encouraged the victims of the Great Hanshin-Awaji Earthquake in Hyogo Prefecture in 1995 and the eruption of Mt. Usu in Hokkaido in 2000 to pursue restoration. On the Shimabara Peninsula, the government and the private sector will continue their joint efforts to construct “A More Comfortable and More Affluent Community than Before.”

(written by SHIBATA Hirokazu)

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**Outstanding Contribution Awards**

1. **NAKAHARA Michio;** Analyses on the trends in overseas agricultural development projects

2. **NAKAMURA Tadaharu;** Reclamation, conservation and disaster prevention for farmlands in the Shikoku region

3. **TSUTSUI Hikaru;** Contributions to international cooperation in water resources and irrigation development, and overseas education in irrigation, drainage and land reclamation engineering

4. **NAKAGAWA Kozaburo;** Contribution to the development of new water management schemes and improvement of irrigation and drainage facilities in the middle watershed of the Tone River

5. **HYAKUMOTO Kazuo;** Contribution to the development of high-yielding irrigated agriculture and new irrigation technologies for upland agricultural areas with low-quality soils

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