

トップシティ

From Kagoshima to the world

Sakurajima

桜島

世界
貢献

VOLCANO

防災対策

防災
教育

火山

鹿児島市

**Kagoshima City
Model City
Framework of
Volcanic Disaster
Risk Reduction**

Kagoshima City

Kagoshima City Model City Framework of Volcanic Disaster Risk Reduction

Mayor of Kagoshima City **Hiroyuki Mori**



Foreword

Over the past years, volcanic disasters have been frequently occurring in many countries around the world, including Japan. Therefore, promoting disaster risk reduction against such volcanic activities is urgently required.

Because Kagoshima City coexists with Mt. Sakurajima, which has been an active volcano over the past 60 years, the city has a wide variety of knowledge and measures on volcanic disaster risk reduction. We believe that effectiveness and innovativeness of the city's hardware- and software-oriented measures, such as removal of volcanic ash, evacuation planning, monitoring activities, erosion control facilities, and collaboration with disaster-related institutes, are one of the very best for volcanic areas not only in Japan, but also around the world.

With this background, we have now formulated the “Kagoshima City Model City Framework of Volcanic Disaster Risk Reduction.” This framework is intended to increase the level of comprehensive volcanic disaster risk reduction around the Sakurajima region. Furthermore, in order to attract incoming tourists and opportunity-based visitors to the city, the framework is designed to disseminate Kagoshima City itself, which has been working on the latest volcanic disaster risk reduction measures, to the rest of the world, as well as benefits of having a volcano close by.

From now on, we aim at achieving the zero victim goal through the development of a disaster-resistant city, based on this framework. At the same time, we will also strive to make international contributions to disaster risk reduction for volcanic areas through promotion of volcanic disaster risk reduction education that is passed on to the next generation, as well as through worldwide dissemination of the “Kagoshima Model” of volcanic disaster risk reduction.

To promote the implementation of this framework, every one of us, including the local residents, communities, research institutes, and private and public sectors, needs to cooperate with each other. Not only that, we also need to work with a wide variety of public sectors, such as municipal organizations surrounding Mt. Sakurajima, within the prefecture, and in other volcanic areas both inside and outside the country. We greatly appreciate your further understanding and cooperation on this matter.

Finally, we would like to express our deepest gratitude to all the residents who were willing to share their opinions and advice on this framework with us, as well as to the members of the Model City Framework Review Commission and other significant contributors.

March, 2019



Contents

● Chapter 1: Formulating a Framework

1	Background and Purpose of Formulating a Framework	1
2	Role of the Framework	1
3	Time Period	1

● Chapter 2: Circumstances Surrounding the City

1	Volcanic Activities of Mt. Sakurajima	2
2	Volcanic Activities and Disasters in Japan and the Rest of the World	3
3	Volcanic Disaster Risk Reduction Inside and Outside the Sakurajima Island	4
4	Benefits and Resources from the Volcano in the Sakurajima Island	5

● Chapter 3: Basic Structure

1	Objective	6
2	Main Components	6

● Chapter 4: Main Components and Directions

【Main Component 1】	Disaster Risk Reduction Measures for Achieving “the Zero Victim Goal” in a Major Eruption	8
【Main Component 2】	Disaster Risk Reduction Education “Passing on to” the Next Generation	9
【Main Component 3】	Contributing to the World Through “Kagoshima Model”	10

● Chapter 5: Before Implementing the Framework

1	Operating Bodies and Role Assignment	11
2	Process Management	11





● Chapter 1: Formulating a Framework

1. Background and Purpose of Formulating a Framework

As Mt. Sakurajima, a volcano in Kagoshima City, has been active over the past 60 years, regions around the volcano, including inhabited areas and farmlands, have been heavily affected.

The volcano is located in Kagoshima City, which has a population of approximately 600,000 residents, and the city has been implementing a wide variety of hardware- and software-oriented measures for volcanic disaster risk reduction through trial and error.

The city's efforts in volcanic disaster risk reduction have been resulting in more effective, feasible measures than ever, thanks to its many years of experience and accomplishments. These measures, with further improvement, can be disseminated to the rest of the world as a classical example of volcanic disaster risk reduction, possibly contributing to the mitigation of disaster damage caused by volcanic activities all over the world, including Japan.

With this background in mind, the Model City Framework of Volcanic Disaster Risk Reduction is formulated. This framework is intended to enhance the level of the city's comprehensive disaster risk reduction against volcanic activities of Mt. Sakurajima in partnership with local residents, local communities, research institutes, private and public sectors. The framework is also designed to disseminate "Kagoshima City," which has been working on the latest volcanic disaster risk reduction measures, to the rest of the world with benefits of having a volcano close by, as well as to attract incoming tourists and *opportunity-based visitors* to the city.

**Opportunity-based visitors* are those who visit the city on an opportunity basis and work with the local residents and communities for various purposes (they are neither inhabitants of the city nor incoming tourists).

2. Role of the Framework

This framework is intended to further enhance disaster risk reduction against volcanic activities of Mt. Sakurajima. Also, as part of the Second-Half Basic Plan of the city's Fifth Comprehensive Plan, which is designed to promote the fundamental objective of "A safe and secured city that provides a sound livelihood," the framework outlines future directions for a model city in the field of domestic and international volcanic disaster risk reduction in association with the city's other measures.

3. Time Period

The framework is designed to last for five years from fiscal 2019 to 2023. Necessary revisions and changes shall be made subject to completion of the city's Fifth Comprehensive Plan (fiscal 2021) and/or formulation of the next comprehensive plan (fiscal 2022).



Chapter 2: Circumstances Surrounding the City

1. Volcanic Activities of Mt. Sakurajima

(1) Volcanic History of Mt. Sakurajima

Mt. Sakurajima, one of the most active volcanoes in the world, is supposed to have started its volcanic activities approximately 26,000 years ago or later. This relatively young volcano, known as a complex volcano consisting of the Kita-dake and the Minami-dake, is located in the south part of the Aira Caldera (the circular region of the north part of Kagoshima Bay) that is thought to have been created by massive volcanic activities about 29,000 years ago. The past volcanic activities can be traced back to 1,300 years in ancient documents, and the volcanic activities during these years were characterized as repeated lateral eruptions producing flows of lava and summit eruptions creating falls of ash.

The major eruptions were reported to have occurred in the Bunmei era (from 1471 to 1476), the An-ei era (from 1779 to 1782), the Taisho era (1914), and the Showa era (1946), and the eruptions in the Bunmei, An-ei, and Taisho eras created lateral craters on the both sides of the central craters. These lateral craters produced, in the case of the Taisho eruption, large amounts of lava flowing into the east part of the Sakurajima Island, bridging the 400-meter-wide Seto strait between the island and the Ōsumi Peninsula. In the west part of the island, the lava covered 8 km² of the region, of which a 2.4 km² land area was newly reclaimed. Moreover, as the ash-buried Kurokami Shrine Gate tells, massive amounts of pumice and ash were piled up 2 meters high in some places. The latest major eruption occurred in March, 1946, which was a lateral eruption on the east side of the Minami-dake (the Showa Crater), producing flows of lava.

Many inhabited areas became buried in lava, and the local communities were heavily affected in each of these major eruptions.

(2) Recent Volcanic Activities and Expected Eruption

Since the October 13, 1955 eruption, Mt. Sakurajima has been repeatedly pushing lava up to the bottom of the crater, actively causing summit eruptions for a long period of time. Local residents in the Sakurajima Island and areas around, as well as the agriculture of the region, have been heavily affected by these volcanic activities.

Furthermore, since the Taisho eruption in 1915, massive amounts of magma have been accumulated in the magma chamber over the past 100 years, pushing up the Aira Caldera ground. These phenomena are supposed to be serious wake-up calls of the next major eruption, calling for full preparation for the expected disaster.

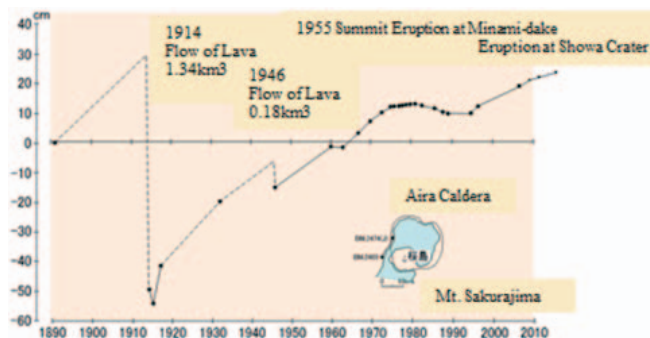


Figure 1. Relationship between up-and-down movements of the Aira Caldera ground and volcanic activities of Mt. Sakurajima (Source: Kyoto University Sakurajima Volcano Research Center)

2. Volcanic Activities and Disasters in Japan and the Rest of the World

(1) Recent Volcanic Activities and Disasters

① Volcanic Disasters in Japan

In recent years, the 2014 Ontake eruption claimed many lives, and Level 5 eruption warning was issued for the first time in the Kuchinoerabu Island in 2015, which eventually forced evacuation of the island's entire population. The year 2015 also saw Level 4 eruption warning in Sakurajima, as well as Level 3 in the Hakone volcano. Some volcanoes including Mt. Kirishima and Mt. Kusatsu-Shirane have been active since 2016, grabbing public attention.



Figure 2. Volcanic Activities of Mt. Ontake
(Source: The Summary of the September 2014 Ontake Eruption, the Cabinet Office [Disaster Management])

② Volcanic Disasters in the World

There are thought to be approximately 1,500 active volcanoes in the world. In 2018, Volcán de Fuego in Guatemala erupted killing dozens of people, and Kīlauea in Hawaii continuously produced flows of lava forcing more than 1,000 of local residents to evacuate from the surrounding region. Also, several small and large volcanoes all over the world, including Mt. Merapi and Mt. Soputan in Indonesia, are reported to have been active causing disastrous effects.

(2) Volcanic Disaster Risk Reduction in Japan

After the 2014 Ontake eruption, part of the Act on Special Measures concerning Active Volcanoes was revised, which then became effective in December, 2015. Within this revised Act, the prime minister designates areas of high eruption risk as “hazard areas for eruptive events,” in which appropriate evacuation plans should be formulated beforehand in order to relieve human suffering. These designated areas are obliged to set up a volcanic disaster risk reduction committee as well as to add necessary information to the regional disaster prevention planning.

This revised Act requires municipal organizations, based on advice from the volcanic disaster risk reduction committee, to collect and distribute information on volcanic phenomena, issue and distribute forecasts and evacuation-related notices given by the local administrative chief (eruption warnings). Municipal organizations are also required to add the blow details, as well as the above-mentioned articles, to the regional disaster prevention planning; evacuation areas and routes, names and addresses of facilities for mass gatherings and the disadvantaged, disaster and rescue drills etc. In addition to these, municipal organizations are obliged to distribute volcanic disaster prevention maps to their local residents and inform them of potential volcanic disasters.



3. Volcanic Disaster Risk Reduction Inside and Outside the Sakurajima Island

(1) Routine Measures to Remove Volcanic Ash

To remove ash produced by eruptions on a day-to-day basis, the following removal measures are performed; the usage of road sweepers, distribution of ash bags to homes, pool cleaners and air conditioner cleaning at school, construction of PVC greenhouses for protecting crops, construction of erosion and forest control facilities. These measures are intended to comprehensively develop the city into an ash-resistant city.

(2) Evacuation Plan

As for evacuation in case of Mt. Sakurajima producing a major eruption, the volcanic disaster risk reduction section has been added to the city's regional disaster prevention planning, in which evacuation guidelines, including information distribution, evacuation instructions, transportation of evacuees, and evacuation centers, are set out in accordance with the magnitude of an eruption. Moreover, local residents have been notified of this evacuation plan through distributions of the Sakurajima volcanic hazard map and the evacuation manual. In addition, the Sakurajima volcanic disaster drill has been performed on 12th January for half a century, on which the Taisho eruption took place.

(3) Research and Monitoring Activities

The meteorological observatory has been constantly monitoring volcanic activities of Mt. Sakurajima. Kyoto University Sakurajima Volcano Research Center has also been conducting research on these activities, while three observation tunnels have been constructed for observing the volcano. These research and monitoring activities are thought to be one of the best in the world.

(4) Collaboration with Disaster-Related Institutes

As for collaboration with disaster-related institutes, the so-called Five Party Meeting takes place about every two months, held by Kyoto University Sakurajima Volcano Research Center, Kagoshima University Research and Education Center for Natural Hazards, the Kagoshima meteorological observatory, the Ōsumi branch of the Kyushu Regional Developmental Bureau, Kagoshima Prefecture, and Kagoshima City. This meeting enables the meeting members to establish solid partnerships between them on a routine basis.

(5) Measures Against Massive Amounts of Pumice and Ash due to a Major Eruption

As part of preparation for a major eruption in Sakurajima, the nation's most advanced measures against massive amounts of pumice and ash produced by the eruption have been formulated in the region. These measures have been included in the regional disaster prevention planning, and examinations of emergency vehicles and removal of rubble from roads have been performed in order to increase the effectiveness of the measures.

(6) Collaboration with Regions Surrounding Mt. Sakurajima

To discuss measures against constant volcanic activities of Mt. Sakurajima as well as to derive support from the central government and the prefecture, the Council for Measures Against Sakurajima Volcanic Activities has been organized in association with Tarumizu city, Kirishima city, and Kanoya city. Also, the Kinkowan-Oku Meeting has been organized with Kirishima city, Aira city, and Tarumizu city, which are all located in the closed-off section of the bay, to conduct disaster drills together.

4. Benefits and Resources from the Volcano in the Sakurajima Island

(1) Utilization of Resources and Benefits from Sakurajima

The city, as a capital of Kagoshima Prefecture, is the center of education, culture, healthcare, and public administration in the region, while it has amazing natural landscapes such as the majestic Sakurajima and the beautiful Kinkowan as well as unique histories and cultures. The city also offers a variety of distinctive regional resources, including hot springs, distilled spirits, Kurobuta Berkshire pork, and Sakurajima radish.

Acknowledged as a city with a population of 600,000 coexisting with an active volcano, “Sakurajima-Kinkowan Geo Park” was founded in 2013. These facts make it possible for the city to build up a brand image with a volcano in order to gain an international reputation.

As major schemes of the Third Kagoshima City Tourism Future Strategy (formulated in March, 2017) indicate, the city has been working on the expansion of tourism and enhancement of regional development through a multifaceted perspective, utilizing the Sakurajima volcano and Sakurajima-related materials such as “Sakurajima-Kinkowan Geo Park,” “Marine Activities in Kinkowan,” “the In-city Hot Springs,” “the Capital of the Delicious Food Made-in-Kagoshima,” and “Green Tourism.”



Figure 2. Logo of Sakurajima-Kinkowan Geo Park

(2) Unique Gifts from Mother Nature in Volcanic Areas

In order to protect agricultural crops from falls of ash, volcanic-area-specific measures have been implemented, such as correction of the soil acid level, construction of roofed facilities for farmers, stabilization of agriculture through mixed husbandry with livestock business and crops, with support from relief projects for agricultural business in ash fall areas and disaster recovery projects granted by the central government, the prefecture, and the city. With these backgrounds, crops including Sakurajima Komikan, loquats, and Sakurajima radish are produced and more than 1,200 cattle are fed in the Sakurajima region.



Sakurajima Komikan



Loquat



Sakurajima Radish

Figure 3. Popular Crops in Sakurajima

(Source: The Second Stage Promotion Plan for Agriculture, Forestry and Fisheries in Kagoshima City)

● Chapter 3: Basic Structure

1. Objective

Based on the purpose of formulating the framework and circumstances surrounding the city, the objective of the framework is set out as follows:

<Requirements for Model City>

- In order to cope with a major eruption produced by Mt. Sakurajima, measures for volcanic disaster risk reduction are comprehensively implemented.
- Children, local residents, private sectors, and disaster research institutes appreciate not only volcanic disaster risk reduction, but also the benefits of the volcano and Mt. Sakurajima itself.
- Domestic and international contributions to mitigating potential damage in volcanic areas, such as disseminating volcanic disaster risk reduction of Mt. Sakurajima to other parts of Japan and the world, are made.

<Objective>

In association with local residents, communities, research institutes, and private and public sectors, Model City takes disaster risk reduction measures that allow to coexist with Mt. Sakurajima, while contributing to mitigating potential damage in volcanic areas of other parts of Japan and the world as a model city of volcanic disaster risk reduction.

<Benefits of Becoming Model City>

- Best preparations for volcanic disaster risk reduction makes Kagoshima a safer place to be, which will consequently increase the numbers of domestic and international tourists, researchers, and public officials visiting Kagoshima as well as the number of opportunity-based visitors who have extensive knowledge about Mt. Sakurajima and Kagoshima.

2. Main Components

Three main components have been set out to achieve the objective of the framework:

● Disaster Risk Reduction Measures for Achieving
“the Zero Victim Goal” in a Major Eruption

● Disaster Risk Reduction Education “Passing on to” the Next Generation

● Contributing to the World Through “Kagoshima Model”

[Structure of the Model City Framework]

Objective

In association with local residents, communities, research institutes, and private and public sectors, Model City takes disaster risk reduction measures that allow to coexist with Mt. Sakurajima, while contributing to mitigating potential damage in volcanic areas of other parts of Japan and the world as a model city of volcanic disaster risk reduction.

Main Components

Disaster Risk Reduction Measures for Achieving “the Zero Victim Goal” in a Major Eruption

Disaster Risk Reduction Education “Passing on to” the Next Generation

Contributing to the World Through “Kagoshima Model”

Directions

1. Comprehensive Examination and Reconstruction of Evacuation Plan in the Sakurajima Island
2. Promotion of Disaster Risk Reduction Measures and Disaster Drills for Major Eruption in the City Center
3. Formulation of Effective Disaster Recovery and Reconstruction Plans for Major Eruption
4. Establishment of Closer Relationships with Related Public Sectors and Disaster-Related Institutes
5. Formulation of Promotion Plans Strengthening Volcanic Disaster Risk Reduction
6. Formulation of Effective Information Dissemination Plans

1. Promotion of Volcanic Disaster Risk Reduction Education for Children and Students in “the Next Generation”
2. Promotion of Enlightenment Activities on Volcanic Disaster Risk Reduction for Local Residents, Communities, and Private Sectors
3. Fostering of Specialists in Volcanic Disaster Risk Reduction
4. Effective Dissemination of Information on Benefits and Cultures of Volcanoes Combined with Volcanic Disaster Risk Reduction

1. Active Dissemination of Know-How on Volcanic Disaster Risk Reduction
2. Mutual Collaboration with Other Volcanic Areas in Japan and the World
3. Attracting Domestic and International Volcano-Related Conferences
4. Active Dissemination of Information in Volcano-Related Conferences and Meetings
5. Actively Accepting Inspection Tours for Volcanic Disaster Risk Reduction Measures
6. Formulation of Disaster Relief Plans for Other Volcanic Areas in Need of Help

*Actual implementation of each component is subject to the city’s implementation plan for the comprehensive plan as well as to its budget for each fiscal year.

● Chapter 4: Main Components and Directions

【Main Component 1】

Disaster Risk Reduction Measures for Achieving “the Zero Victim Goal” in a Major Eruption

Further improving the existing measures of volcanic disaster risk reduction helps formulate more effective disaster plans to achieve the zero victim goal in a major eruption.

[Directions]

1. Comprehensive Examination and Reconstruction of Evacuation Plan in the Sakurajima Island

- Comprehensive examinations are conducted on the evacuation plan from the Sakurajima Island in reference to good risk reduction models of natural disasters, and knowledge and cases of domestic and international response to volcanic disasters in order to improve the evacuation plan including how to accommodate domestic and international tourists.

2. Promotion of Disaster Risk Reduction Measures and Disaster Drills for Major Eruption in the City Center

- Protective measures against massive amounts of pumice and ash in the city center, as well as disaster risk reduction measures for protecting domestic and international tourists, are further improved. Also, more carefully structured disaster drills are conducted, with particular attention paid to when to perform, how to evacuate, what to drill, and under what weather conditions the drill is performed.

3. Formulation of Effective Disaster Recovery and Reconstruction Plans for Major Eruption

- Damage caused by volcanic disasters tends to vary greatly, and recovery and reconstruction from such disasters generally require a significant amount of time. Therefore, appropriate plans that make swift recovery and reconstruction from a major eruption possible are set out.

4. Establishment of Closer Relationships with Related Public Sectors and Disaster-Related Institutes

- Relationships with public sectors and disaster-related institutes within the prefecture, as well as with those around the Sakurajima Island, are further reinforced, and the level of volcanic disaster risk reduction around the Sakurajima region is upgraded through the city’s leadership.

5. Formulation of Promotion Plans Strengthening Volcanic Disaster Risk Reduction

- Extensive research on how to reinforce the existing disaster-related measures is conducted, and related institutes in the city form a coalition working together as a whole.

6. Formulation of Effective Information Dissemination Plans

- In order to more smoothly and accurately disseminate information in disaster, constant communication with the mass media takes place under normal circumstances, building up effective information dissemination plans.



【Main Component 2】

Disaster Risk Reduction Education “Passing on to” the Next Generation

Promotion of volcanic disaster risk reduction familiarizes each one of the residents with the history and culture of Mt. Sakurajima and benefits of volcanoes. It also helps deepen their interests in and affections for the volcano as well as their understandings of how to behave in a volcanic disaster.

[Directions]

1. Promotion of Volcanic Disaster Risk Reduction Education for Children and Students in “the Next Generation”

- Children and students in the city center are given opportunities to see volcano specialists through lectures at school and tours to the Sakurajima Island. Moreover, useful textbooks and tools, such as supplementary reading materials and enlightening movies, are produced in order to enhance education for volcanic disaster risk reduction at school, among local residents and private sectors, and in local communities.

2. Promotion of Enlightenment Activities on Volcanic Disaster Risk Reduction for Local Residents, Communities, and Private Sectors

- Enlightenment activities are conducted to make every one of the residents, communities, and private sectors aware that each of them is a key player in volcanic disaster risk reduction.

3. Fostering of Specialists in Volcanic Disaster Risk Reduction

- Training plans for voluntary disaster organizations and disaster-related institutes are formulated to foster specialists who can respond to volcanic disasters as a leader of the community with extensive knowledge about volcanic disaster risk reduction. Furthermore, these training programs are provided to those specialized in volcanic disaster risk reduction from all over the nation.

4. Effective Dissemination of Information on Benefits and Cultures of Volcanoes Combined with Volcanic Disaster Risk Reduction

- While enlightenment activities on volcanic disaster risk reduction are disseminated in association with efforts by Geo Park, materials that provide direct experiences of volcanic disaster risk reduction, including facilities for disaster risk reduction such as erosion control facilities and disaster relics such as the ash-buried shrine gate, are combined with the beauties of the volcano, including benefits and the culture of the volcano (volcanic-area-specific food, specialty products made of volcanic ash). Dissemination of such combined information helps increase the number of tourists as well as to enhance regional development.



【Main Component 3】

Contributing to the World Through “Kagoshima Model”

The existing measures of volcanic disaster risk reduction for Mt. Sakurajima are disseminated as “Kagoshima Model” at every opportunity to make significant contributions to the rest of the world.

[Directions]

1. Active Dissemination of Know-How on Volcanic Disaster Risk Reduction

- Detailed know-how on volcanic disaster risk reduction, such as how to sweep ash-covered roads and how to formulate an evacuation plan, is actively disseminated.

2. Mutual Collaboration with Other Volcanic Areas in Japan and the World

- Well-communicated partnerships with other volcanic areas in Japan and the world are established.

3. Attracting Domestic and International Volcano-Related Conferences

- In order to disseminate the advanced measures of volcanic disaster risk reduction for Mt. Sakurajima, domestic and international volcano-related conferences are attracted to the city.

4. Active Dissemination of Information in Volcano-Related Conferences and Meetings

- Participation in domestic and international volcano-related conferences and meetings helps actively disseminate the advanced measures of volcanic disaster risk reduction for Mt. Sakurajima.

5. Actively Accepting Inspection Tours for Volcanic Disaster Risk Reduction Measures

- Inspection tours from other parts of Japan and the world for volcanic disaster risk reduction, including the Comprehensive Disaster Drill for Sakurajima Eruption and disaster training, are more actively accepted than ever.

6. Formulation of Disaster Relief Plans for Other Volcanic Areas in Need of Help

- Disaster relief plans based on the experience and know-how gained from the measures for Mt. Sakurajima are formulated in case volcanic disasters occur in other volcanic areas. Also, agreements and partnerships with other volcanic areas are established under normal circumstances to provide quick relief work.

Chapter 5: Before Implementing the Framework

1. Operating Bodies and Role Assignment

Local residents, communities, research institutes, and private and public sectors are urged to be aware of their own roles in the framework, and work together with each other as a whole to implement this framework.

In addition to that, a wide variety of public sectors, including municipal organizations surrounding Mt. Sakurajima, within the prefecture, and in other volcanic areas in Japan and the world, are urged to collaborate with each other to implement the framework.

2. Process Management

As the focus of this framework is to increase the level of comprehensive volcanic disaster risk reduction for Mt. Sakurajima, the process management is assigned to the Kagoshima City Committee on Sakurajima Volcanic Disaster Measures.

Details of projects and plans to implement the framework are incarnated subject to discussions on the implementation plan of the city's comprehensive plan and its budget for each fiscal year. The action plan is created based on these projects and plans accordingly.

【Reference】

Committee members of Kagoshima City Model City Framework of Volcanic Disaster Risk Reduction

No	Committee members (Affiliation Title / Official Position)
1	Masato Iguchi (Sakurajima Volcano Research Center, Disaster Prevention Research Institute Kyoto University / Professor, Director)
2	Hiroshi Ikeya (Sabo & Landslide Technical Center / Technical advisor)
3	Nobue Kunizaki (Risk & Crisis Management Educational Institute Co., Ltd. / Disaster Management Adviser, Specialist for Disaster Prevention Education)
4	Akira Matsuda (Graduate School of Humanities and Sociology and Faculty of Letters, The University of Tokyo / Associate Professor)
5	Yasuhiro Ishimine (Reserch and Eucation Center for Natural Hazards, Kagoshima Universtiy / Specially Appointed Associate Professor)
6	Ryutaro Higashikawa (MACHIZUKURI CHIIKI FORUM・KAGOSHIMA TANKEN NO KAI, NPO / Rrepresentative Director)
7	Daisuke Fukushima (SAKURAJIMA MUSEUM, NPO / Chief Director)
8	Takako Nakashima (SAKURAJIMA SHUNSAIKAN, Co., Ltd. / Representative Director)
9	Maya Aley (Go! KAGOSHIMA, LLC. / Bilingual Staff)

※ Each affiliation title and official position as of March 2019.

Kagoshima City Model City Framework of
Volcanic Disaster Risk Reduction

Formulated on March 2019

Crisis Management Division Kagoshima City

Yamashita-Cho 11-1, Kagoshima City, 〒892-8677

TEL: +81-99-224-1513 (Direct)

FAX: +81-99-226-0748

Email: kiki-kazan@city.kagoshima.lg.jp

URL: <http://www.city.kagoshima.lg.jp/>
