

Fukushima Reconstruction: Current Status and Radiation Health Risks

Executive summary

Mitsubishi Research Institute conducted a questionnaire survey to understand the awareness of people in the Tokyo Metropolitan Area and Fukushima Prefecture regarding the status of reconstruction in Fukushima and the effects of radiation on health.

Questionnaire survey results revealed that half of the residents of Tokyo are concerned about radiation-related health effects. It is necessary to impart the latest scientific knowledge and information to them. To address the issue of damage caused by harmful rumors, it is also desired to enhance awareness in order to shift attitudes from only: “I eat Fukushima food products myself” to: “I recommend them to family members and friends, etc.”

According to materials prepared by the Education Board of Fukushima Prefecture, one of the prioritized guiding principles of the radiation-related education program is to “enable students and children to impart information to others based on scientific grounds.” This would be of use as reference when people in Tokyo communicate appropriate information to others, including Japanese and those in international spheres, regarding the status of reconstruction in Fukushima as well as the effects of radiation.

We propose introducing programs in which students’ parents can also learn together with family members about the latest situation in Fukushima as well as the effects of radiation. In addition, due to the further extension of the education program to volunteers of the 2020 Tokyo Olympics and Paralympics, an understanding of the status of Fukushima is expected to be further developed.

1. Connotations of the 2020 Tokyo Olympics/Paralympics for Reconstruction from Earthquake Disaster

The 2020 Tokyo Olympics/Paralympics are also called “the Olympics/Paralympics for Praying for and Celebrating Reconstruction,” because one of the event’s major objectives is to communicate both domestically as well as internationally the status of reconstruction after the Great East Japan Earthquake Disaster and the calamity of the TEPCO 1st Fukushima Nuclear Power Station. Because 2020 is the 10th anniversary of the earthquake disaster, it is a great opportunity to announce to the world the progress of reconstruction.

The Action Plan of the Tokyo Organising Committee of the Olympic and Paralympic Games designated, “Reconstruction, All Japan, and Communication to the World” as major themes of the Games. It specifically intends to attract tourists to disaster-hit areas, keep the memory of the disaster from fading, and prevent damage caused by harmful rumors or other detrimental factors.¹

Tokyo, the main venue for the Games, is expected to play the role of disseminating information on the reconstruction since the Great East Japan Earthquake Disaster and the nuclear reactor accident. To achieve this, it is important that the people of Tokyo have a sound and accurate understanding of the reality of that reconstruction, as well as the effects of radiation on health.

¹ The Action Plan of the Tokyo Organising Committee of the Olympic and Paralympic Games, 2017. <https://tokyo2020.jp/jp/games/legacy/items/legacy-report2017.pdf> (last visited Nov. 10, 2017).

We conducted a questionnaire to understand the awareness of people in the Tokyo Metropolitan Area and Fukushima Prefecture regarding the status of reconstruction in Fukushima and the effects of radiation on health.

An outline of the survey is as follows:

- Survey Duration: Aug. 9 to 17, 2017
- Survey Areas and Number of Samples:
 - Tokyo Metropolitan Area - 1000 Samples
 - Fukushima Prefecture - 500 Samples
- Target of Survey: Male and Female Residents, Age 20 to 69
- Survey Method: Internet Questionnaire

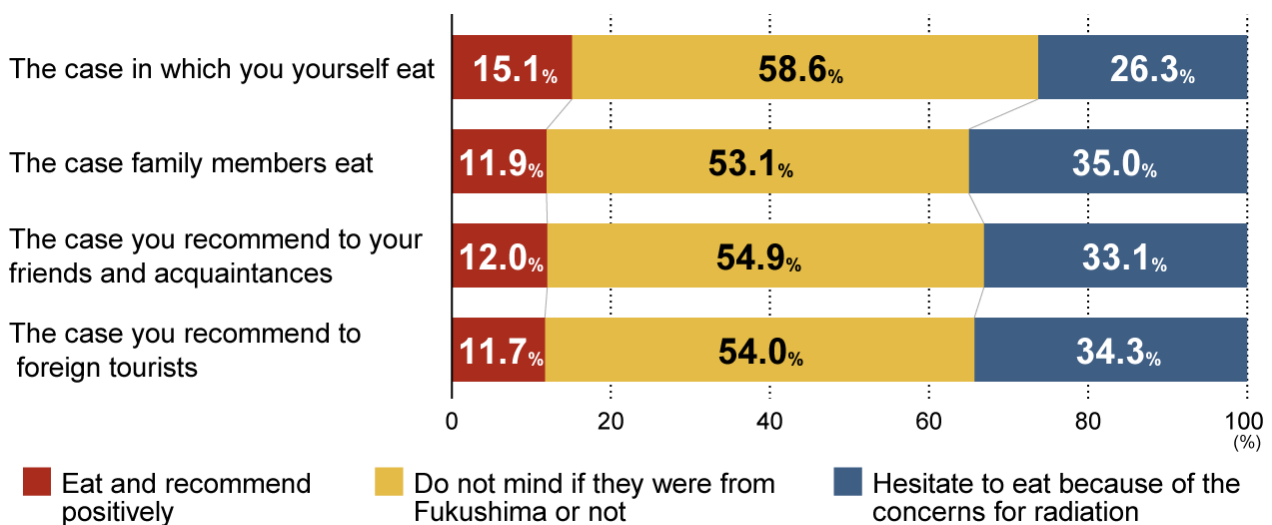
2. Views on Foods Produced in Fukushima Prefecture

Among the respondents in Tokyo, more than half (58.6%) replied that if there was no difference compared with food products of other prefectures, and, when we ourselves eat, they “would not mind if they were produced in Fukushima Prefecture or not” (Fig. 1). On the other hand, about one fourth (26.3%) of respondents responded that they “hesitate to consume Fukushima products due to radiation concerns.”

To the query if they mind if family members, friends, acquaintances and foreign tourists (not themselves) eat Fukushima products, more than one third (33.1 - 35.0%) replied they “would hesitate due to radiation concerns.” The higher level of hesitancy regarding consumption by other people compared to their own consumption indicates their concerns for their family members, acquaintances, etc., irrespective of their own willingness to buy and consume Fukushima products. It is necessary to enhance their awareness to a concern-free level where: “It is no problem to recommend Fukushima food products to family members and acquaintances, etc.”

Fig. 1 Awareness of Food Produced in Fukushima Prefecture (Case of People in Tokyo)

Suppose Fukushima food products have no difference compared with those produced in other prefectures in terms of price and quality, and choose among the following three choices the one which is the closest to your views on Fukushima products.



Source: Mitsubishi Research Institute, Inc.

Regarding the level of radioactivity in food, measurements have been gathered since immediately after the earthquake disaster in 17 eastern Japanese prefectures, including Tokyo and Fukushima Prefecture. If food with a radiation level exceeding the reference level is identified,² measures are taken at relevant villages, towns and cities not to allow shipment, distribution and consumption of that kind of food. According to the survey of agricultural, forestry and fisheries products conducted in Fukushima Prefecture in 2016, the ratio exceeding the reference level in food is extremely low at 0.03%.³ The results of the questionnaire survey on radioactive level measurements are shown in Fig. 2. They indicate that more than 30% of respondents did not know anything about the implementation of radioactive level measurements. The level of understanding of the reality of radioactive substances in food still remains low.

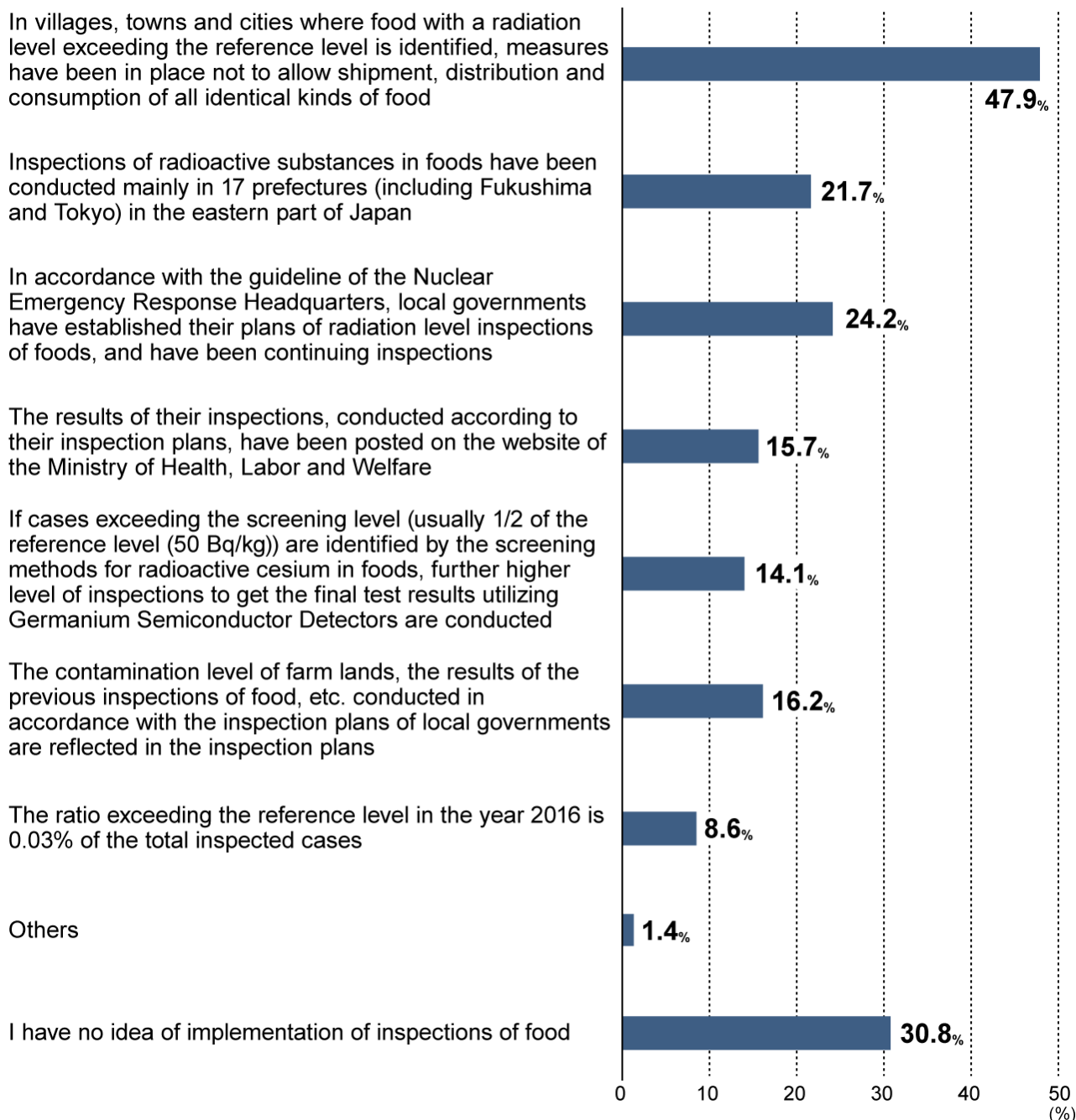
If their awareness improves in this regard, changes in their buying behavior can be expected because of their renewed belief that it would not pose a problem even if they recommended other people to buy Fukushima products for consumption.

² Drinking Water: 10 Bq/kg, Cow Milk: 50 Bq/kg, Food for Infants: 50 Bq/kg, Ordinary Food: 100 Bq/kg.

³ Fukushima Prefecture, *The present situation of Fukushima Prefecture – Views from 10 Indices*.
<https://www.pref.fukushima.lg.jp/sec/11045b/10sihyo.html> (last visited Nov. 10, 2017).

Fig. 2 Knowledge about Food Inspections (Case of People in Tokyo)⁴

Give us what you know about the information regarding the inspection of radioactive substances in foods.



Source: Mitsubishi Research Institute, Inc.

⁴ Question items were excerpted from “The 8th Fact-Finding Survey of Consumers’ Awareness of Damages Caused by Harmful Rumors,” Consumer Affairs Agency, Oct. 2016. Partly adapted from: http://www.caa.go.jp/earthquake/understanding_food_and_radiation/pdf/161005kouhyou_1.pdf.

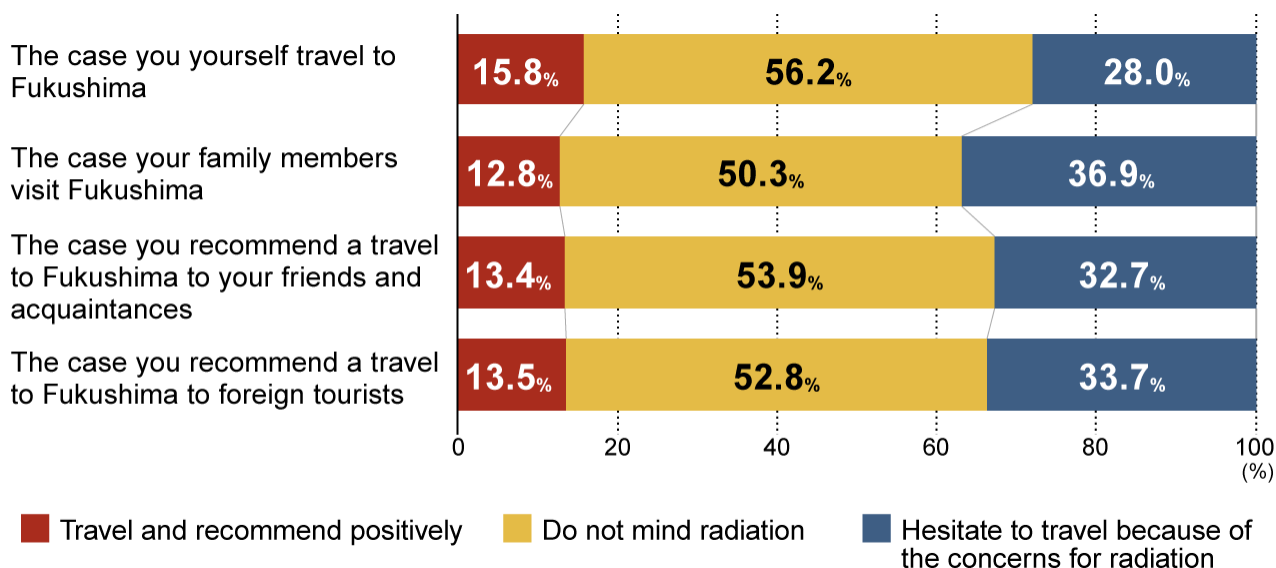
3. Awareness of Travel to Fukushima Prefecture

We asked about travel to Fukushima Prefecture as well. In the cases of travel by themselves, while more than half (56.2%) of respondents replied: “They do not mind radiation,” 28% worried about radiation and hesitated to travel to Fukushima. In the cases of travel by family members, friends, acquaintances, and foreign tourists as well, 32.7 to 36.9% of respondents raised radiation as a reason for hesitating to travel to Fukushima (See Fig. 3).

Many foreign tourists are expected to visit Japan during the period of the 2020 Tokyo Olympics and Paralympics. Some of them may consider traveling to Fukushima for sightseeing. In this context, people in Tokyo should have a sound and correct understanding of the status of Fukushima Prefecture, including radiation.

Fig. 3 Awareness of Travel to Fukushima Prefecture (Case of People in Tokyo)

In the following situations, choose one which is the closest to your views on travel to Fukushima out of the three choices.



Source: Mitsubishi Research Institute, Inc.

4. Awareness of Effects of Radiation on Health

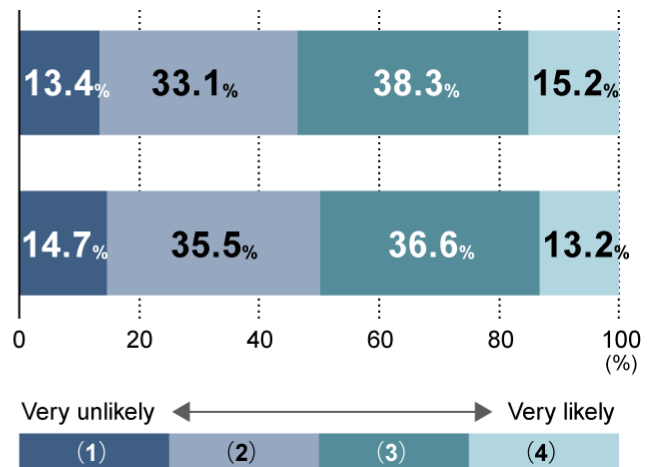
Fig. 4 shows the results of the questionnaire survey regarding the possibility of future health hazards (cancer for example) of current and future generations. Nearly half of respondents indicated a high probability of their incidence. (Among the current generation: (3) 38.3%+(4) 15.2% = 53.5%, Among future generations: (3) 36.6%+(4) 13.2% = 49.8%)

Fig. 4 Effects of Radiation on Health (Asked to People in Tokyo)⁵

Describe your current understanding of how radiation exposure has affected the health of residents in Fukushima Prefecture.

What do you think is the likelihood of damage to their health (e.g. cancer onset) in later life as a result of their current level of radiation exposure?

What do you think is the likelihood that the health of their future (i.e. as yet unborn) children and grandchildren will be affected as a result of their current level of radiation exposure?



Source: Mitsubishi Research Institute, Inc.

In connection with the issue, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), which had been examining scientific data on the effects of radiation on health, reported as follows.⁶

“No deterministic effects from radiation exposure has been observed among the public and none has been expected in the future...” Nor has a “...discernible increase in heritable diseases among the descendants of those exposed by the accident” been expected. No discernible radiation-related increases in rates of leukemia or breast cancer, nor in other types of solid cancer besides thyroid cancer, has been expected. The possibility of an increased risk of thyroid cancer in Fukushima Prefecture, such as occurred after the Chernobyl accident, can be discounted because the doses absorbed by the thyroid after the accident at Fukushima were substantially lower.”

The status where more than half of people considers that radiation-related health effects could affect not only the current generation but also future generations may result in erroneous prejudice against people in Fukushima Prefecture.

With the passage of six years since the nuclear reactor accident, it may be natural for people in Tokyo, which is far away from Fukushima, to have fewer opportunities to get information on radiation. However, if the understanding of residents of Tokyo remains inaccurate until the 2020 Tokyo Games, such inaccurate information may be imparted to international tourists visiting Japan.

⁵ Question items were excerpted from “Radiation Medical Science Center, Fukushima Medical University, ‘Fukushima Health Management Survey: Mental Health and Lifestyle Survey,” 2017. <http://www.pref.fukushima.lg.jp/uploaded/attachment/240069.pdf>.

⁶ UNSCEAR, “Levels and effects of radiation exposure to the nuclear accident after the 2011 great east-Japan earthquake and tsunami,” *UNSCEAR Paper: Developments since the 2013 UNSCEAR Report*. http://www.unscear.org/docs/publications/2016/UNSCEAR_WP_2016_JAPANESE.pdf (last visited Oct. 10, 2017).

5. What you would like to communicate about the 2020 Tokyo Games and what do you expect

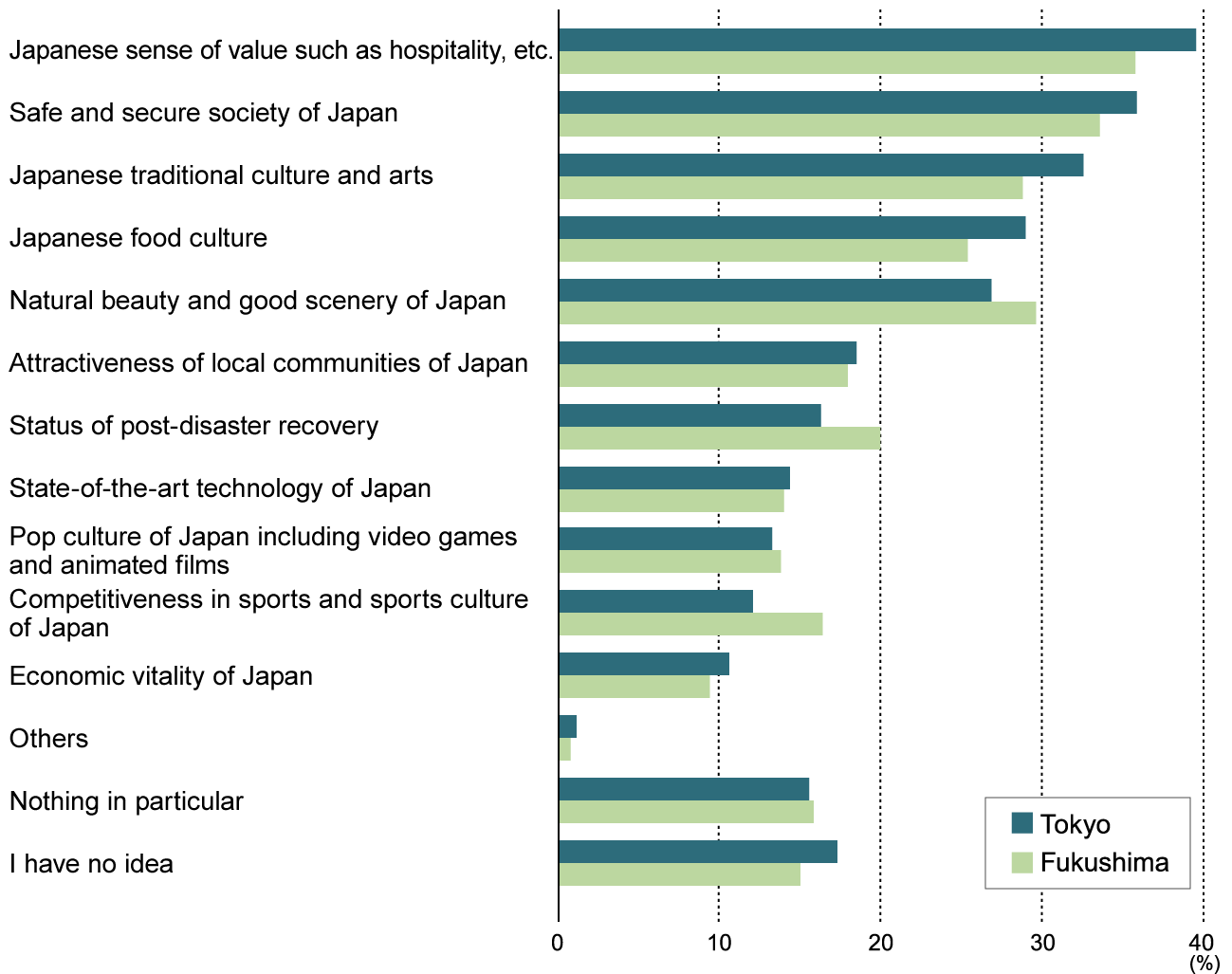
What do Japanese people wish to communicate about the 2020 Tokyo Olympics and Paralympics? In this context, the results of the questionnaire survey targeted people in Tokyo and Fukushima regarding what they want to show people from foreign countries are detailed in Fig. 5.

The most popular items for Tokyo and Fukushima were “Japanese values such as hospitality, etc.” followed by “Safe and secure Japanese society.” On the other hand, those who picked up “Status of post-disaster recovery” accounted for 20% in Fukushima and just over 15% in Tokyo. Both remained relatively low.

Besides, we asked what they expect the 2020 Games to bring for Japan (Fig. 6). The most common item for Tokyo and Fukushima was “Promoting sports (including sports for handicapped people.)” The second most common item was “Enhanced convenience of transport infrastructure such as airports, railways, and roads” for Tokyo, and “Increased tourists” for Fukushima.

Fig. 5 What you would like to communicate about the 2020 Tokyo Games (Tokyo and Fukushima)⁷

What would you like to communicate to the world in the 2020 Tokyo Olympics and Paralympics?

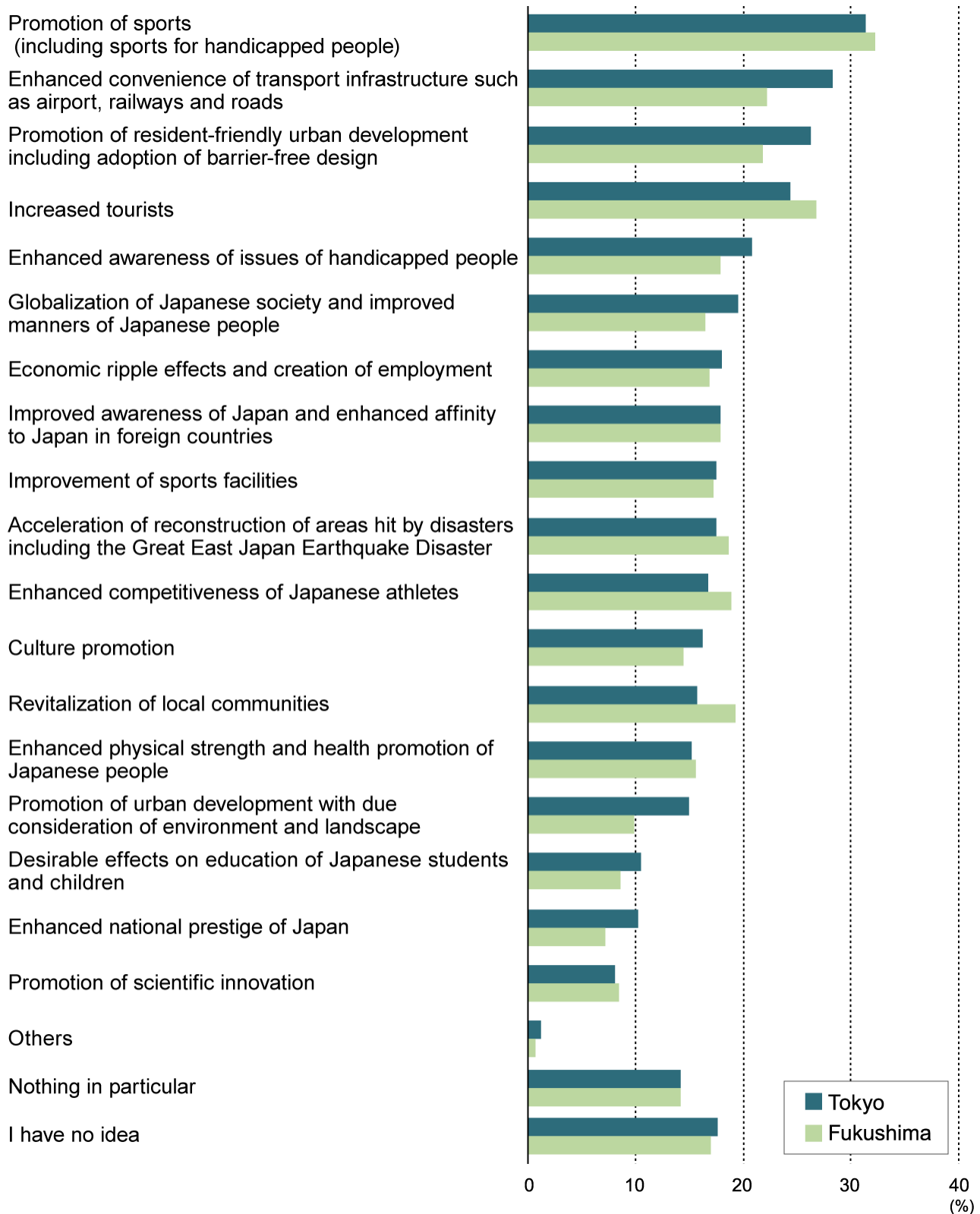


Source: Mitsubishi Research Institute, Inc.

⁷ Question items were adapted from “Public Opinion Survey on the 2020 Tokyo Olympics and Paralympics,” Cabinet Office. See <http://survey.gov-online.go.jp/h27/h27-tokyo/index.html> (last visited Nov. 10, 2017).

Fig. 6 What do you expect of the 2020 Tokyo Games⁸

What do you expect the 2020 Tokyo Olympics and Paralympics to bring about for Japan?



Source: Mitsubishi Research Institute, Inc.

⁸ Id.

From the above results, it is clear that the understanding of people in Tokyo regarding the effects of radiation, as well as the status of reconstruction in Fukushima, is insufficient. It is also apparent that people have yet to fully recognize that the 2020 Tokyo Games are also a key way of communicating the status of reconstruction from the 2011 disaster. It is necessary to reconfirm the meaning of “the 2020 Tokyo Games for Reconstruction,” and develop an accurate and sound understanding, among people in Tokyo in particular, on the status of reconstruction and the effects of radiation in Fukushima Prefecture.

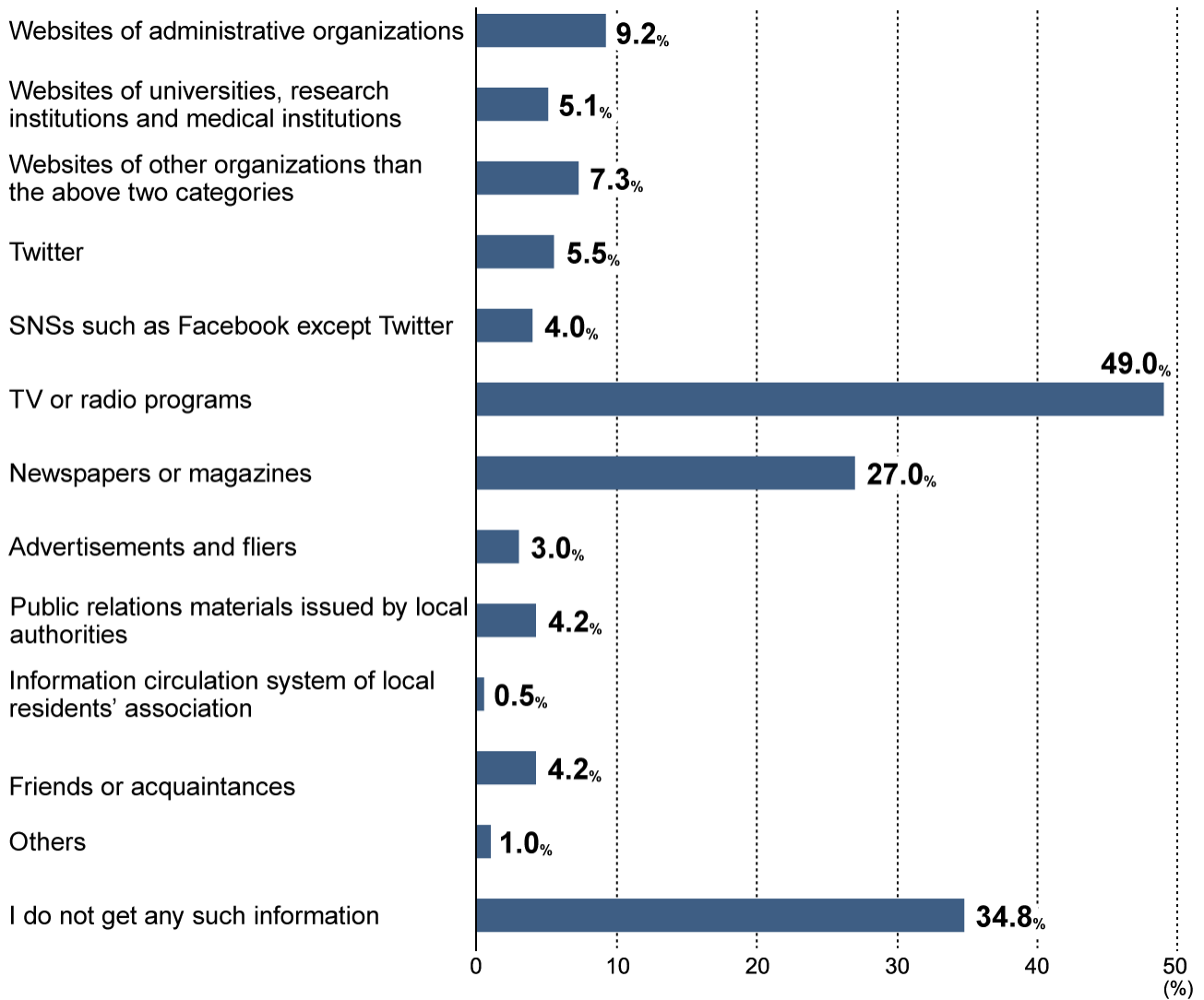
6. Information Media Accessed to Understand the Status of Reconstruction of Fukushima

Fig. 7 describes the results of the questionnaire survey for people in Tokyo regarding information media for understanding the status of reconstruction in Fukushima Prefecture. The most popular media are “TV and radio programs,” which almost half of respondents (49.0%) selected.

The second most popular media are “newspapers and magazines,” which about one fourth of respondents (27.0%) picked up. As for “website,” although those of administrative organizations are searched most, their usage rate was only 9.2%. This indicates that people tend to get information passively from TV programs, etc. rather than actively seeking information from websites.

Fig. 7 Information media used to learn about the status of reconstruction in Fukushima (for people in Tokyo)⁹

What are your usual information media to know the status of reconstruction of Fukushima Prefecture?



Source: Mitsubishi Research Institute, Inc.

Summary of Questionnaire Survey Results

- To address the issue of damage caused by harmful rumors, it is desired to enhance awareness from: “I eat Fukushima food products myself” to: “I recommend them to family members and friends, etc.”
- In view of the fact that half of the residents of Tokyo are concerned about radiation-related health effects, it is necessary to impart the latest scientific knowledge and information to them.
- TV and radio news programs are the most common means for many people to get information about the reconstruction of Fukushima Prefecture.

⁹ *Supra* note 4.

7. Effectiveness of Education on Radiation-related Matters—an Opportunity for Obtaining Accurate Information

After the accident at the TEPCO Fukushima First Nuclear Reactor, education programs on radiation-related matters and disaster prevention were introduced at schools in Fukushima Prefecture, where emphasis is placed on developing the children's "ability to survive," including the ability to think, make judgements, and act by themselves making use of the knowledge on radiation and disaster prevention they learned. The Education Board of Fukushima Prefecture developed Japan's first-ever radiation-related education guideline in November 2011, and based on this curriculum a radiation-related education program has been implemented at primary and junior high schools in Fukushima. Currently, the program has been expanded from schools to communities in a collaborative program administered by local communities and research institutions. In the school program, students and children are encouraged not only to learn about radiation, but also to communicate what they learn in their own words based on a sound and accurate understanding.

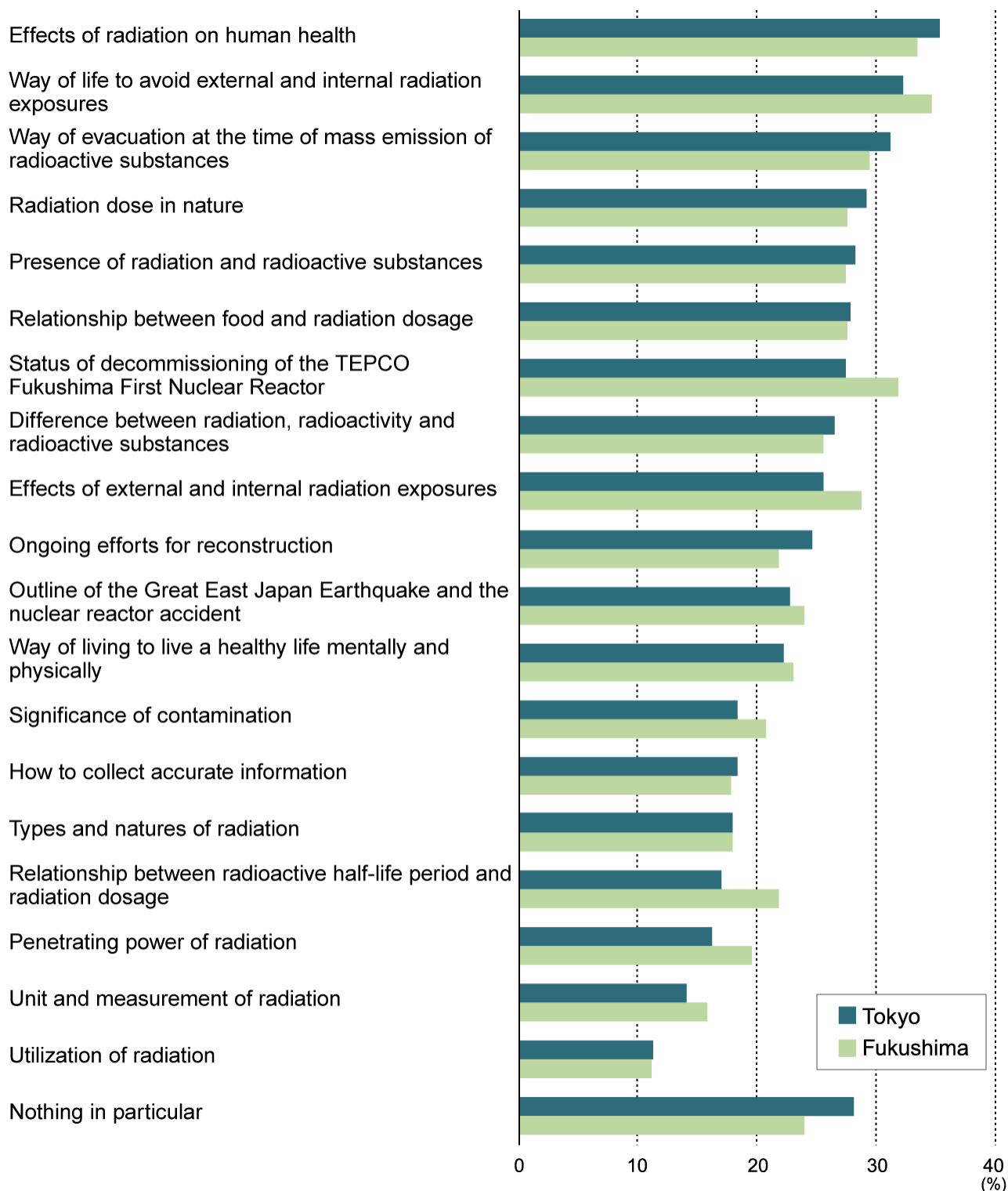
In our questionnaire survey, we asked what people in Tokyo and Fukushima want to know about the currently implemented radiation-related education program (Fig. 8). Results indicated that in both Tokyo and Fukushima, they were more interested in radiation-related health effects as represented by question items such as "Effects of radiation on human health" and "Way of life to avoid external and internal radiation exposure" compared to other items.

Furthermore, people in Fukushima showed a stronger interest than residents of Tokyo in general, but had little detailed information about radiation such as "Effects of external and internal radiation exposure," "Relationship between radioactive half-life period and radiation dosage," and "Penetrating power of radiation," in addition to items unique to Fukushima Prefecture, such as "Status of decommissioning Fukushima First Nuclear Reactor" and "Significance of decontamination."

As for the questionnaire item "Ongoing efforts for reconstruction," residents of Tokyo showed greater interest than people in Fukushima. In addition, a small difference in interest in the radiation-related education program between the residents of the two regions was found. If the radiation-related education program is to be introduced in Tokyo, the contents and methods currently adopted in Fukushima can also be applied in Tokyo. However, the addition of some topics of interest to residents of Tokyo may help communicate more accurately what they want to know.

Fig. 8 Items of interest in radiation-related education program (Tokyo and Fukushima)

The following are the contents of the radiation-related education program conducted in Fukushima Prefecture. Choose all the items you are interested to know the contents in detail if you have any chance.



Source: Mitsubishi Research Institute, Inc.

8. Proposal Taking Account of the 2020 Tokyo Games

8.1 The Extent of Fukushima's Knowledge and Know-how of Radiation-related Education for People in Tokyo

According to materials prepared by the Education Board of Fukushima Prefecture, one of the prioritized guiding principles of the radiation-related education program is to “enable students and children to impart information to others based on scientific grounds.”¹⁰ This would be of use as reference when people in Tokyo communicate appropriate information to others regarding the status of reconstruction in Fukushima, as well as radiation. For instance, “Effects of radiation on human health” about which residents of Tokyo showed an interest in our questionnaire survey (Fig. 8) have been designated to give guidance to lower grade children at primary schools and up to the third-year students at junior high-schools. People concerned in Tokyo may also prepare similar guides for children and students of each school year based on materials in Fukushima.

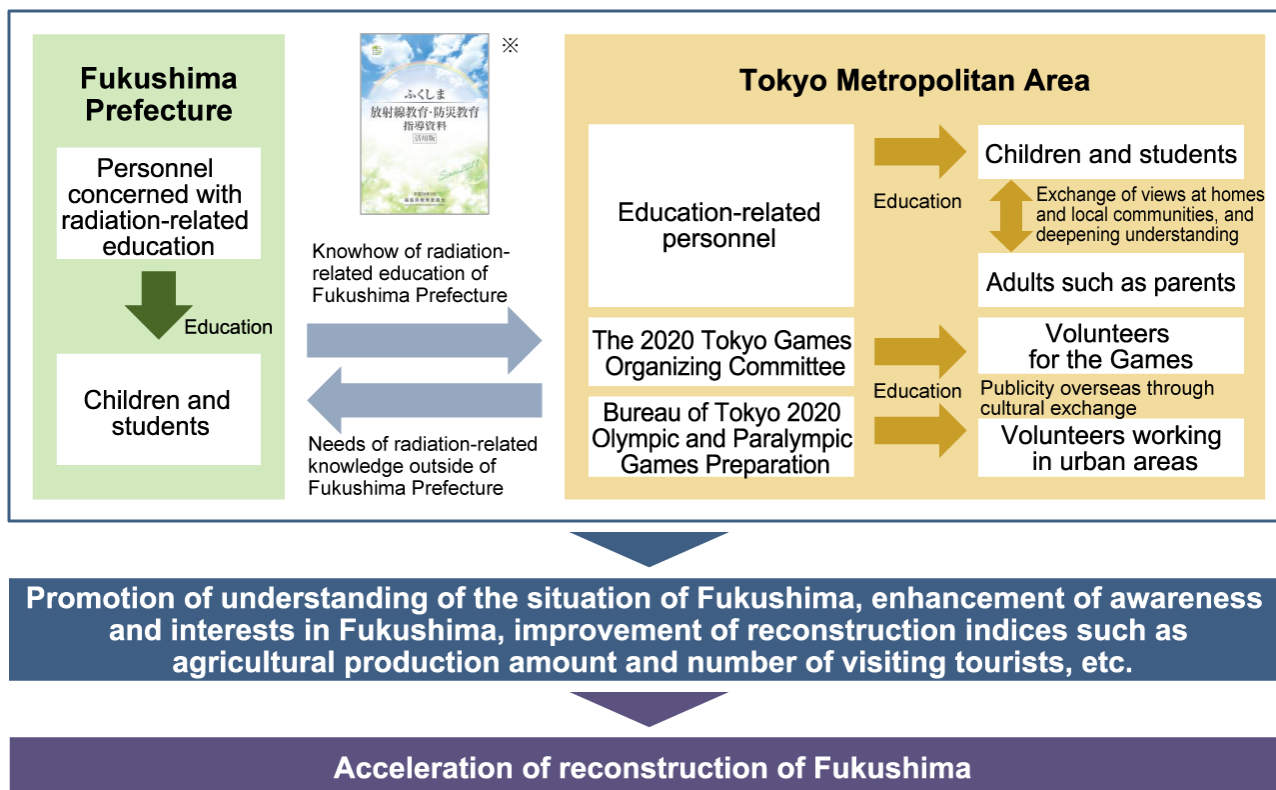
For implementing radiation-related education for people in Tokyo, we propose introducing programs in which students' parents can also learn together with family members about the latest situation in Fukushima, as well as radiation, and discuss them together in their homes.

In addition, not only children, students, and their family members, but those who have frequent and close contacts with foreign visitors, such as volunteers working in urban areas as well as volunteers for the 2020 Games, need this type of education. We propose to incorporate such curriculums to learn about the status of reconstruction in Fukushima and radiation in the volunteer education program.

Through such activities, an enhanced awareness and interest of people in Tokyo concerning the situation in Fukushima Prefecture, increased purchases of Fukushima products, greater number of visitors to Fukushima Prefecture, and eventually an acceleration of reconstruction in Fukushima can be expected (Fig. 9).

¹⁰ Education Board of Fukushima Prefecture, *Radiation-Related Education Guideline*, 5th ed, Mar. 2016.

Fig. 9 Extension of Fukushima’s radiation-related education to Tokyo¹¹



Source: Mitsubishi Research Institute, Inc.

8.2 Proposal of Reconstruction Acceleration Loop—Taking 2020 Tokyo Games as an Opportunity

We have already pointed out that understanding the status of Fukushima Prefecture is indispensable for the success of the 2020 Tokyo Olympics and Paralympics. For that purpose, we proposed extending radiation-related education programs. The next step is to accelerate reconstruction in Fukushima through such activities (Fig. 10).

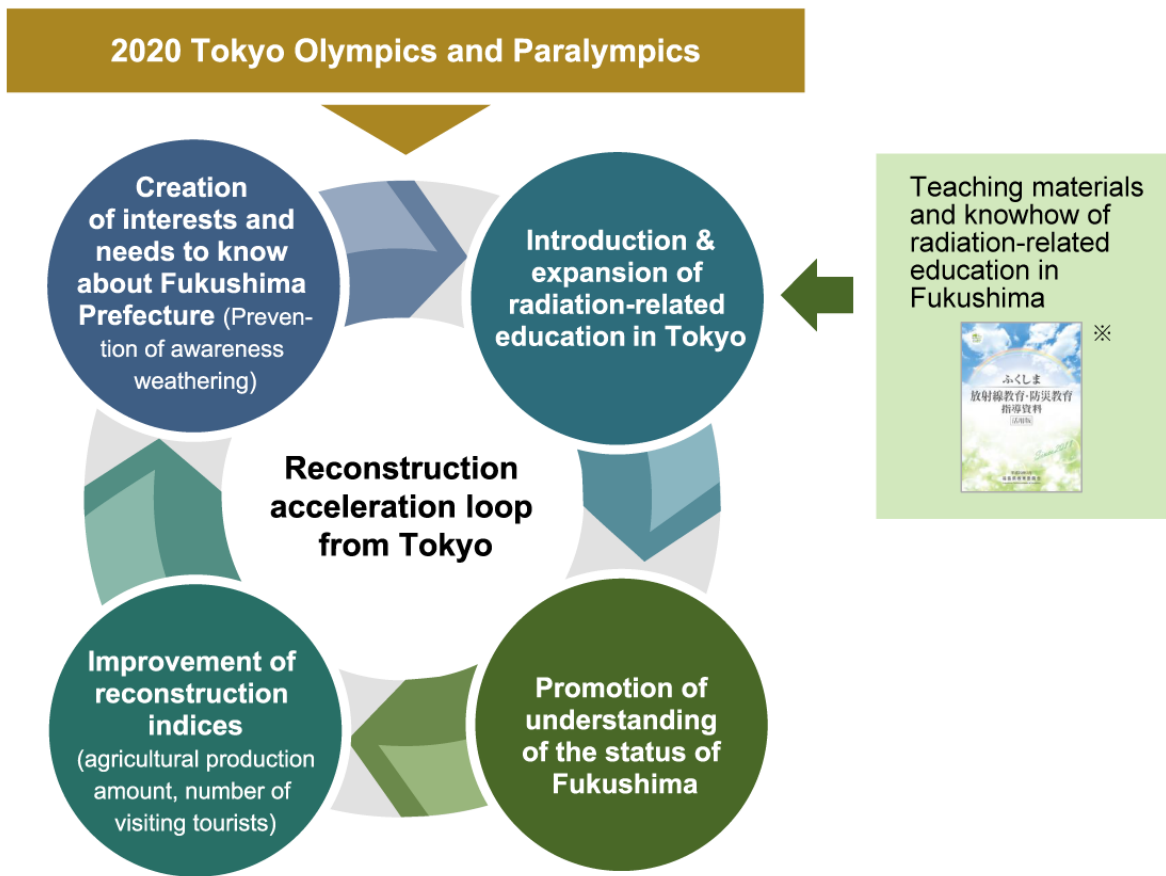
If the radiation-related education program is introduced in Tokyo, awareness of the situation in Fukushima will be enhanced. In addition, due to the further extension of the education program to volunteers of the 2020 Tokyo Olympics and Paralympics, an understanding of the status of Fukushima is expected to be further developed.

As awareness increases among school children and students as well as their parents, there will be less hesitation to purchase Fukushima food products among families, which will promote purchases of the products. Similarly, it will stimulate tourism in Fukushima Prefecture.

Promoting purchases of Fukushima food products will lead to an increase in sales at retail shops. If tourists visiting Fukushima Prefecture increase, a trickling word-of-mouth effect can also be expected. This type of increased exposure to things and people in Fukushima Prefecture will create and stimulate interest and a desire to know more about Fukushima Prefecture. This will help prevent a loss of people’s awareness of Fukushima and its earthquake disaster.

¹¹ Education Board of Fukushima Prefecture, *Fukushima Radiation-related Education & Disaster Prevention Education Guideline (Application Version)*. http://www.gimu.fks.ed.jp/shidou/h28_katuyou.pdf (last visited Oct. 9, 2017).

Fig. 10 Reconstruction acceleration loop—taking the 2020 Tokyo Games as an opportunity¹²



Source: Mitsubishi Research Institute, Inc.

As discussed above, introduction of radiation-related education for people in Tokyo and using the 2020 Tokyo Games as an opportunity to help the population gain a better understanding of the status of Fukushima is critically important for creating a reconstruction acceleration loop. The loop is also useful for preventing people’s interest and awareness of Fukushima Prefecture from fading.

This is an independent survey of Mitsubishi Research Institute, Inc. conducted as part of its internal project “Research on Communication of Reconstruction of Fukushima and Radioactive Risk Required for the 2020 Tokyo Olympics and Paralympics.”

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