Medium-term and Long-term Action Policies of the Centre for Environmental Creation [Phase 2]

FY2019 – 2021

(Provisional Translation)

The Centre for Environmental Creation

Formulated in February 2015

Revised in February 2019

Contents

1. Introduction

For the purposes of recovering Fukushima's environment from radioactive contamination and creating there a new environment, the Centre for Environmental Creation (hereafter, the "CEC")[1] was established by Fukushima Prefecture (hereafter, the "Prefecture") with the support of the Japanese government. The CEC serves as the central organization to conduct necessary research and development and provide relevant information and education for those purposes.

In accordance with the Act on Special Measures for Fukushima Reconstruction and Revitalization (Act No. 25 of March 2012) and the Basic Guidelines for Fukushima Reconstruction and Revitalization (approved by the Cabinet in July 2012; revised in June 2017), the Japanese government has worked on the development of decontamination technologies, provided technical advice on the decontamination work and conducted research on the environmental dynamics of radioactive materials and their influences on ecosystems. The Prefecture, meanwhile, has carried out the activities, in accordance with the Fukushima Prefecture Basic Plan for the Environment (the 4th version formulated by the Prefecture in March 2017), to push forward with the recovery process and to realize a sustainable society blessed with beautiful nature. The role of the CEC is to coordinate the initiatives undertaken by the national government and those by the Prefecture toward the shared goal of creating an environment in which the Prefecture's residents (hereafter, "residents") can live safely for decades to come.

The national government's initiatives are implemented by two national research institutions comprising the CEC: the Japan Atomic Energy Agency[2] (hereafter, the "JAEA") and the National Institute for Environmental Studies[3] (hereafter, the "NIES"). Close collaboration between those two organizations and the Prefecture (hereafter, the "three parties") is the key to effective research and other projects.

Medium-Term and Long-term Action Policies of the CEC (hereafter, the "Action Policies") herein are generated to specify the policies governing the CEC's initiatives that are implemented jointly by the three parties and thereby promote the materialization of those initiatives, which are built on the Basic Plan of Fukushima Prefecture for the Centre for Environmental Creation (tentative title) formulated by the Prefecture in October 2012 (hereafter, the "CEC Basic Plan").

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[1] The CEC facilities include: the Miharu town facilities (the Main Building, the Research Building and the Information & Communication Building); accessory facilities (in Otama village and Inawashiro town); the Minamisoma city facilities (the Main Building and the Calibration Building); and the Fukushima branch.

[2] The JAEA, in accordance with the Basic Guidelines for Fukushima Reconstruction and Revitalization, conducts research and development to recover the environment from radioactive contamination and shares its research findings with other parties; its current activities are in the seven-year timeline (FY2015-2021) under the JAEA's Plan for Achieving the Medium-Term Goals.

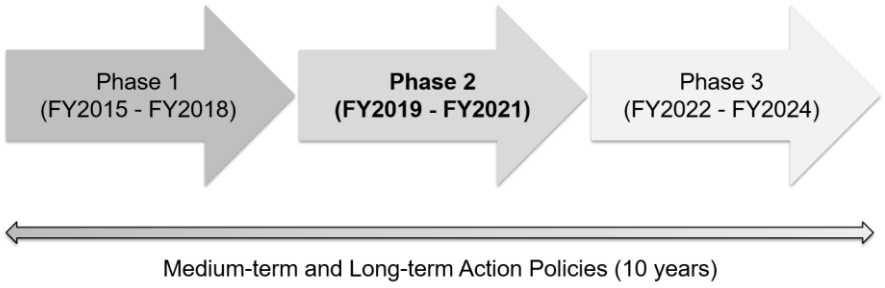
[3] The NIES, in accordance with the Basic Guidelines for Fukushima Reconstruction and Revitalization, assesses and develops the technologies for disposing of contaminated waste and soil as well as conducts research on the environmental dynamics of radioactive materials; its current activities are in the five-year timeline (FY2016-2020) under the NIES' Medium- to Long-term Plan.

With the completion of Phase 1 (FY2015-2018), we revised the Action Policies to reflect therein our research findings and social or other background changes that were made or occurred during the phase.

2. Phases for Action Policies

We herein describe the Action Policies for the ten years from FY2015 until FY2024[4] so that the three parties can closely collaborate and properly, effectively and efficiently implement the CEC's initiatives based on the Basic Guidelines for Fukushima Reconstruction and Revitalization and the CEC Basic Plan. In light of the fact that there are no precedents serving as a model for the CEC's activities and in view that there will be some changes in social landscape, etc., the Action Policies are three-phased: Phase 1 for FY2015 - 2018; Phase 2 for FY2019 - 2021; and Phase 3 for FY2022 - 2024.

We renew the Action Policies upon the completion of one phase to reflect the three parties' overall performance, research findings and background or social changes in the Action Policies for the next phase.



3. Administrative Structure, etc.

(1) Basic approaches

Based on the Fukushima Prefecture Basic Plan for the Environment (the 4th version; formulated by Fukushima Prefecture in March 2017), the Prefecture pushes forward with the Action Policies by autonomously and synthetically implementing the initiatives aimed at restoring the safe environment and realizing a sustainable society blessed with beautiful nature under collaboration with the JAEA and the NIES.

Japan's only institution for comprehensive research and development on nuclear energy, the JAEA conducts, based on the Basic Guidelines for Fukushima Reconstruction and Revitalization, research and development toward the recovery of the environment from radioactive contamination. The JAEA, for example and in

[4] The CEC facilities were partially inaugurated in FY2015 and fully opened in FY2016. The Action Policies apply to the ten-year period from FY2015 until FY2024.

particular, studies the dynamics of radioactive materials in open areas such as forests and river basins in order to visualize an amount of radiation and develop a system that will enable us to estimate an amount of diffuse radiation, and shares its study findings with other individuals or organizations concerned.

Based on the Basic Guidelines for Fukushima Reconstruction and Revitalization, the NIES, Japan's core research institution on the environment, conducts the following at the CEC facilities: research to establish technological systems for reducing contaminated waste and soil and storing them safely until disposal; elucidation of the long-term environmental dynamics of radioactive materials and evaluation of their impacts on the environment; study to establish a method to protect and conserve the environment; and support for cities and towns so they make best use of their environmental resources and thereby revitalize their economies.

The JAEA and the NIES also encourage corporate entities to reflect the Action Policies in their business plans. Those two institutions, as part of the three parties comprising the CEC, make best use of their outstanding knowledge and research resources so that the CEC can fulfil the task of bringing restoration and rebirth to the environment of the Prefecture.

(2) Working organizations

At the CEC, the following three organizations work for the environmental recovery and creation.

The Prefecture:	Fukushima Prefectural CEC (a branch organization of the Prefecture; hereafter, the "FPCEC")
JAEA:	Fukushima Environmental Safety Center, the Japan Atomic Energy Agency (hereafter, the "JAEA Fukushima Center")
NIES:	Fukushima Branch, the National Institute for Environmental Studies (hereafter, the "NIES Fukushima Branch")

We hereafter collectively refer to those organizations as the "three organizations."

(3) Administrative structure

(i) Liaison and Coordination Committee:

The Liaison and Coordination Committee, consisting of members who include the representatives of the three organizations and the heads of Divisions as defined in (ii), is installed to draw up an annual plan based on the Action Policies and acts as a liaison among the three organizations.

(ii) Research Project Division Committees:

The CEC's Research Project has four Divisions so that the three organizations can align their research activities. The Divisions are installed for four different research fields as shown in Table 1, with each having a Division Committee consisting of members from the three organizations. Each Division Committee may also include university or other institution researchers, as deemed necessary.

Each Division is headed by the head of Division who runs and arranges for the Division's research activities. The heads of Divisions preside their Division Committee meetings, draw up annual plans, supervise the progress of the plans, and release the Division's research findings.

The members of the Division Committees are assigned to a research activity relevant to the characteristics of the organization to which they belong. The heads of Divisions are encouraged not only to share information with institutions other than the three organizations, but also to promote joint research or coordination across the Divisions through, for example, joint Division Committee meetings.

(iii) Prefecture Residents Committee:

As part of the effort to reflect the needs of residents in the CEC's initiatives, the CEC seeks opinions and advice from the Prefecture Residents Committee, which comprises of residents who work in different industries and have various backgrounds.

Table 1: Research Project Divisions

Divisions	Fields of Research
Radiation Measurement	Analysis and measuring techniques; and methods and models to assess radiation exposure, etc.
Decontamination, and Contaminated Waste Disposal	Support for the development of decontamination technology; and proper treatment and reuse of waste, etc.
Environmental Dynamics	Interpretation of radiation transfer behavior; construction of radioactivity migration models; and evaluation of radiation influences on ecosystems, etc.
Environmental Creation	Creation of sustainable towns, resilient society, etc.

The Figure 1 below provides the overview of the administrative structure.

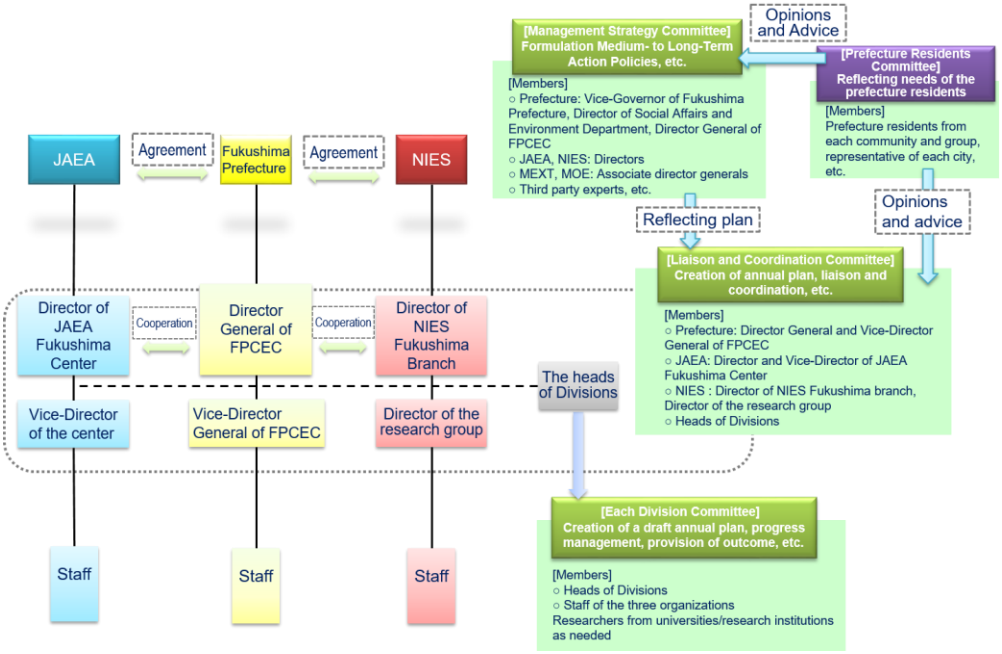


Figure 1: Administrative Structure to Push Forward with the Action Policies

4. Basic Principles for Projects

In light of the objectives behind the foundation of the CEC, its activities must be built on the following principles.

- The CEC places its priorities on understanding the radical environmental changes caused by the nuclear accident and on solving the remaining many issues toward the recovery and restoration of the Prefecture, all the while considering the needs of the Prefecture's residents, particularly the needs of those who were and are forced to evacuate their homes. The CEC strives to enhance its functions so it can respond to various kinds of changes, including those in social landscape, and can thereby help realize, without much delay, an environment in which residents can feel safe. The CEC also works for the creation of a new environment for the post-restoration future.

- The CEC keeps reforming its initiatives for the recovery and restoration process, mainly those aimed at preventing radiation from affecting residents' health, to provide the children and grownups residing the Prefecture with an environment in which they can live safely and comfortably. The CEC relentlessly explores and strives to help create a society that is safe and secure and meets the diversifying needs of residents.

In order to effectively and efficiently address the immediate and medium- to long-term issues, the three organizations make a full-scale effort, based on the aforementioned basic principles and with support from the national government, for the following four Projects: Monitoring; Research; Collection and Provision of Information; and Education, Training, Information Exchange and Communication. The three organizations keep improving their administrative structures and resources to make their concerted effort a comprehensive and productive one.

Moreover, in order to heighten the effectiveness of the four Projects, the three organizations collaborate with other research institutions in various areas, including those in the agriculture, forestry and fisheries areas, as shown in Figure 2.

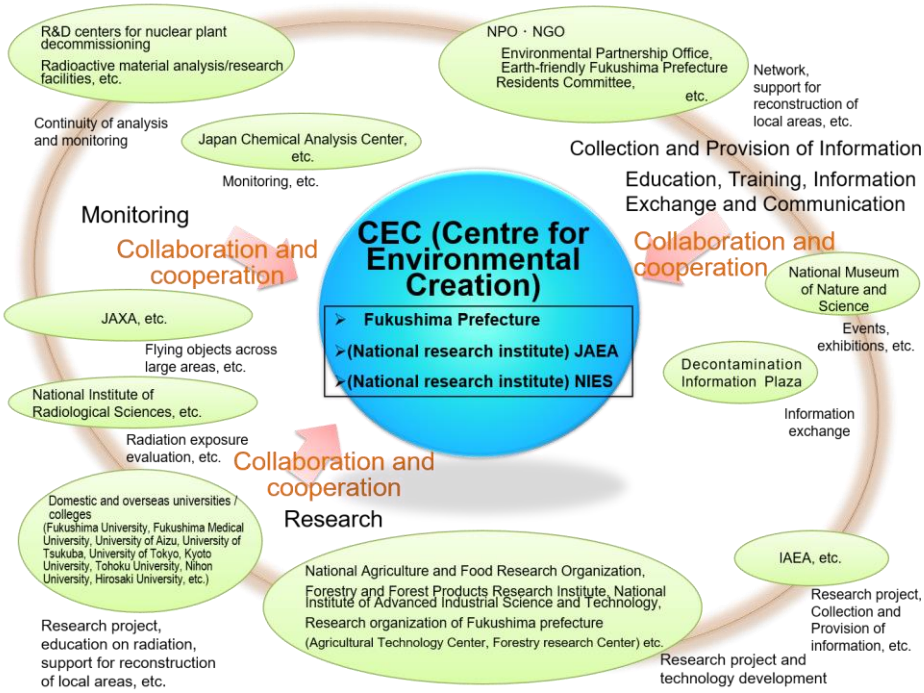


Figure 2: Collaboration between CEC and other Organizations

5. Medium-term and Long-term Action Polices (FY2015 – 2024)

(1) Monitoring Project

Environmental radiation is monitored by the national government, local governments and business operators in a shared manner in accordance with the Comprehensive Monitoring Plan established by the Monitoring Coordination

Committee[5] of the national government. Given the fact that radioactive materials have affected various aspects of residents' lives and also in light of their concerns over the impacts of the decommissioning work, the monitoring of airborne radiation doses and radioactive materials need to be conducted meticulously and continuously.

In order to help residents alleviate their concerns, the FPCEC, the core monitor, continuously conducts the monitoring of environmental radiation in people's living environment and in the surroundings of the nuclear power plant, consolidates the results and releases the data to the public.

Jointly with the CEC's Research Project, the FPCEC also monitors hazardous substances contained in the general environment in accordance with the plan generated by the Prefecture's government departments concerned, in order to help protect the environment and ensure the safety and security of residents. The FPCEC also works with the Research Project in other initiatives, including the one aimed at protecting Lake Inawashiro from contamination and improving its water quality.

In case of an emergency that may result in environmental contamination, the FPCEC will adjust its monitoring structure so it can handle a broader range of matters than usual and work with, based on the Nuclear Emergency Preparedness and Response Guidelines, the national government, which has supervised the entire monitoring process. Therefore, the FPCEC reinforces its resources and structure so it gains the capability of more rapidly conducting the monitoring and analysis of hazardous substances contained in the general environment.

(2) Research Project

For the restoration of the environment from radioactive contamination, we need to have a clear grasp of the contamination state and understand the dynamics of radioactive materials and implement a series of measures before moving on to the process for recovering the biota and ecosystem, which include: the decontamination of contaminated areas and facilities; evaluation of the decontamination work; and the reduction, storage, treatment, disposal, and reuse of removed soil and contaminated waste.

Then, in order to recreate the beautiful Fukushima in which residents can live safely for decades to come, we need to establish a regional-circular society --- a society making use of the region's environment, resources, industries, etc. ---, while at the same time always paying careful attention to the radiation state and the progress of the decontamination work. We also need to apply in practice the lessons we learned from

[5] The Committee coordinates the radiation monitoring work that is conducted by the ministries or agencies concerned, local governments and business operators in the aftermath of the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station accident (2011) to ensure that the work is accurately and systematically carried out.

the Great East Japan Earthquake and introduce measures to protect the Prefecture's environment in order to make its society resilient against disasters.

To fulfil all those tasks, we need to have cutting-edge technologies and techniques and even improve them. We, therefore, calculatedly and systematically push forward with our research activities. We provide our findings for the Prefecture and the national government so they can timely and properly use them for their own initiatives. We give priorities to research with themes that we believe will turn out most effective to pursue the CEC's basic principles.

In order to avoid that our research activities overlap other institutions' and ensure that our research findings will turn out useful for practical application and will thereby contribute to the solution of some problems, we seek support from the Ministry of Education, Culture, Sports, Science and Technology, the Ministry of the Environment, and the International Atomic Energy Agency (hereafter, the "IAEA") and strengthen our partnerships with other research institutions, better understand their research fields, and establish a platform[6] where universities and research institutions inside and outside Japan can share and exchange information.

(3) Collection and Provision of Information Project

We need to have a function that allows us to collect research findings and monitoring results from a wide range of sources and bring such information or data to residents in an easy-to-understand and well-organized manner.

In that task, the FPCEC plays a central role side-by-side with the JAEA Fukushima Center and the NIES Fukushima Branch. To be more specific, the FPCEC organizes and provides the information and research findings about radiation and decontamination for residents. The FPCEC also globally collects and shares such information or knowledge through international expert meetings, etc., and then makes its collected information and knowledge available to other parties.

In order to enhance our functions to collect and provide information and also facilitate others to search or browse our collected information, the Information Project uses the Internet, such as an e-mail magazine (for residents) and SNS[7], apart from the periodical publication of paper brochures.

(4) Education, Training, Information Exchange and Communication Project

For the purposes of bringing the information about the Prefecture's environment and the state of radiation to the people inside and outside the Prefecture and developing

[6] Academic research platform and society's information infrastructure shared by the participants to generate, collect, accumulate, distribute, share and use a vast amount of various kinds of information.

[7] Social Networking Service; online platform allowing users to build a social network.

human resources capable of creating a future for the Prefecture, we need to provide certain education and training for the people outside the CEC and also need to intermingle with them.

The FPCEC assists the Prefecture's education board in enhancing its educational programs --- for both teachers and students --- on radiation and the environment. The JAEA Fukushima Center and the NIES Fukushima Branch, meanwhile, play a central role, together with universities and other research institutions, in the development of researchers and other human resources necessary for the creation of a new environment.

We make use of the Information & Communication Building to build a network with NPOs and residents. We also enhance our communication about radiation and the decontamination work and its risks. We also provide training programs for business operators involved in the environmental recovery and creation.

The Figure 3 below shows how the four Projects (Monitoring; Research; Collection and Provision of Information; Education, Training, Information Exchange and Communication) are related to one another.

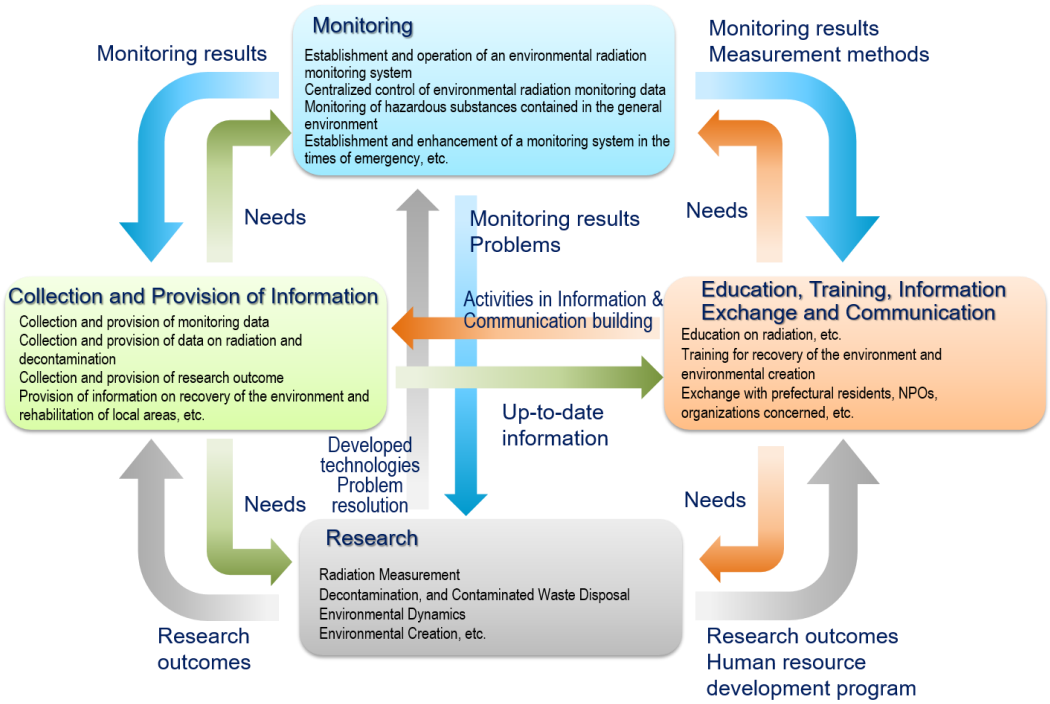


Figure 3: Relationships among the Four Projects

6. Action Policies for Phase 1 (FY2015 – 2018)

(1) Monitoring Project

(i) Establishment and operation of a system for detailed and continuous environmental radiation monitoring:

Environmental radiation monitoring will be implemented by measuring the radiation in the environment according to a comprehensive monitoring plan.

We will enhance and improve continuous radiation monitoring throughout the Prefecture, using real-time radiation dose measuring systems, with monitoring posts installed in the elementary and junior high schools, public parks, etc., which constitute people's living environments, and radiation monitoring to encourage the return of people forced to leave their homes because of the nuclear accident.

Furthermore, we will construct and operate a system which is equipped to reflect the opinions and views of both residents and experts in monitoring plans to ensure detailed and precise radiation monitoring.

(ii) Centralized control, analysis, and evaluation of monitoring data such as that on radiation in the environment:

We will centralize the administration of the various environmental radiation monitoring data processed by participant organizations to facilitate its use by residents at one time. We will also analyze and evaluate and endeavor to optimize data, including its precision control, in complement to research activities.

To ensure the traceability of measurements of radioactivity and radiation, we will construct a precision control system including regular calibration of measuring instruments and checking measuring methods.

In addition, we will construct and operate a system for monitoring hazardous substances in the general environment and controlling monitoring data on a centralized basis.

(iii) Establishment and operation of a system for monitoring radiation in the environment at times of emergency:

We will construct and operate an emergency monitoring system in accordance with the Nuclear Emergency Preparedness and Response Guidelines, and will consider the potential and practicalities of constructing an environmental radiation monitoring system to cater for decommissioning work at Fukushima Daiichi Nuclear Power Station (in particular the removal of fuel debris, etc.) as a medium- to long-term issue.

The Figure 4 below provides the overview of the Monitoring Project in Phase 1.

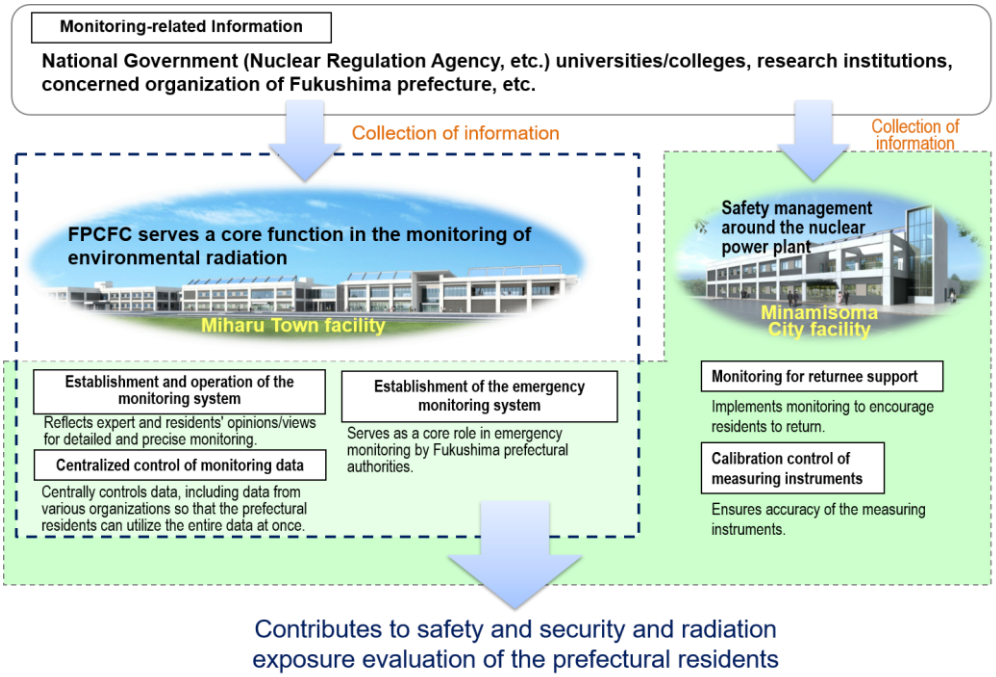


Figure 4: Monitoring Project (Phase 1)

(2) Research Project

We will give priorities to the immediate issues related to the recovery of the Prefecture's environment, such as: thorough implementation of the decontamination practices; proper treatment of removed soil and contaminated waste, etc.; and elucidation of the environmental dynamics of radioactive materials. The three parties will also collaborate in the research for creating a new environment.

(i) Radiation Measurement:

It is necessary to develop radiation measurement technologies and methods for evaluating radiation doses and thus gain an exact knowledge of the current exposure dose; predict future doses; assess the safety and risks in the living environment; and disseminate the results of such measurements and evaluations in an easy-to-understand manner.

To achieve this, we will develop analysis methods that enable the rapid and/or simple analysis of radioactive materials found in various samples from the environment; technologies that enable measurement of a detailed dose rate distribution in a large area in a short time; technologies for measurement in water systems (rivers, lakes, the sea, etc.); and technologies that enable highly precise continuous measurement in the field. We will also endeavor to create methods for

the presentation of readily-understandable measurement results e.g., visualized presentation techniques for dose rate distribution.

We will develop methods for evaluating exposure doses allowing for differences in radioactivity concentration among areas, and matched with lifestyles of individuals, for the safety and peace of mind of residents.

(ii) Decontamination, and Contaminated Waste Disposal:

To facilitate environmental recovery, it is necessary to develop decontamination techniques to effectively and efficiently remove radioactive substances from the contaminated soil, etc. It is also necessary to conduct research and development so that the vast amounts of removed contaminated soil and waste generated in the decontamination work, etc. will be disposed of appropriately, and so that the bulk of such removed soil and contaminated waste can be reduced and put under strict control throughout the process leading to its final disposal that is conducted outside the Prefecture.

To achieve this, we will develop effective and efficient decontamination techniques based on the cesium adsorption/desorption mechanism, and conduct research to inhibit the outflow of radioactive materials from forests, etc. We will also conduct research to assess the decontamination effects and environmental impacts of decontamination.

We will develop and enhance technologies reducing the bulk of removed soil and contaminated waste. We will also study and consider the adoption of technologies and methods for the safe control of such soil and waste at temporary storage sites and Interim Storage Facilities, as well as those for transport, reuse of contaminated waste.

(iii) Environmental Dynamics:

To promote decontamination in the Prefecture and encourage the return of residents forced to leave their homes because of the nuclear accident by understanding exposure doses, and predicting such doses in the future, it is necessary to achieve a precise understanding of the environmental dynamics of radioactive materials, including their movement in the environment, and assess and predict their environmental impacts.

To achieve this, we will conduct research and assessments to understand actual material cycles on land, including forests, and clarify re-contamination mechanisms, and the transfer of radioactive materials. We will also endeavor to precisely clarify the actual conditions informing the movement and accumulation of radioactive materials in hydrosphere, including rivers, lakes and the sea, and assess and model

the environmental dynamics of those materials.

In addition, we will conduct research to predict the behavior of wildlife, including eating habits, and investigate the *in vivo* concentration of radioactive materials, to understand the effects of radiation exposure on wildlife.

We sill also implement long-term monitoring of the biota, and construct ecosystem models to predict the effect on human life of changes in the ecosystems, and to facilitate research methods for ecosystem management and the preservation of biodiversity over a large area.

(iv) Environmental Creation:

In order to encourage the return of residents forced to leave their homes because of the nuclear power plant accident, and to create a safe and comfortable environment for those people, it is necessary not only to facilitate the recovery of the environment by decontamination and other activities, but also to support the creation of a foundation for their own future vision of this newly-created environment. In the research for environmental creation, we should endeavor to impart the natural legacy of the beautiful and rich environment of the Prefecture to future generations by complementing this environment to its best advantage.

To achieve these goals, we will consider local characteristics such as those of the environment, resources and industries, and study quantitative models and sustainable future scenarios for environmental creation to respond to issues such as those associated with creation of a low-carbon society, material-cycle society, and a society in harmony with nature. We will also conduct research for the creation of a disaster-resilient society in environmental terms, as informed by the experiences accumulated as a result of the Great East Japan Earthquake.

We will conduct research to preserve the natural environment of the Prefecture as represented by Lake Inawashiro and the Urabandai Lakes, and create an improved environment to be passed down to future generations.

A schematic diagram of the uses of outcomes of the above-mentioned research project is shown in Figure 5.

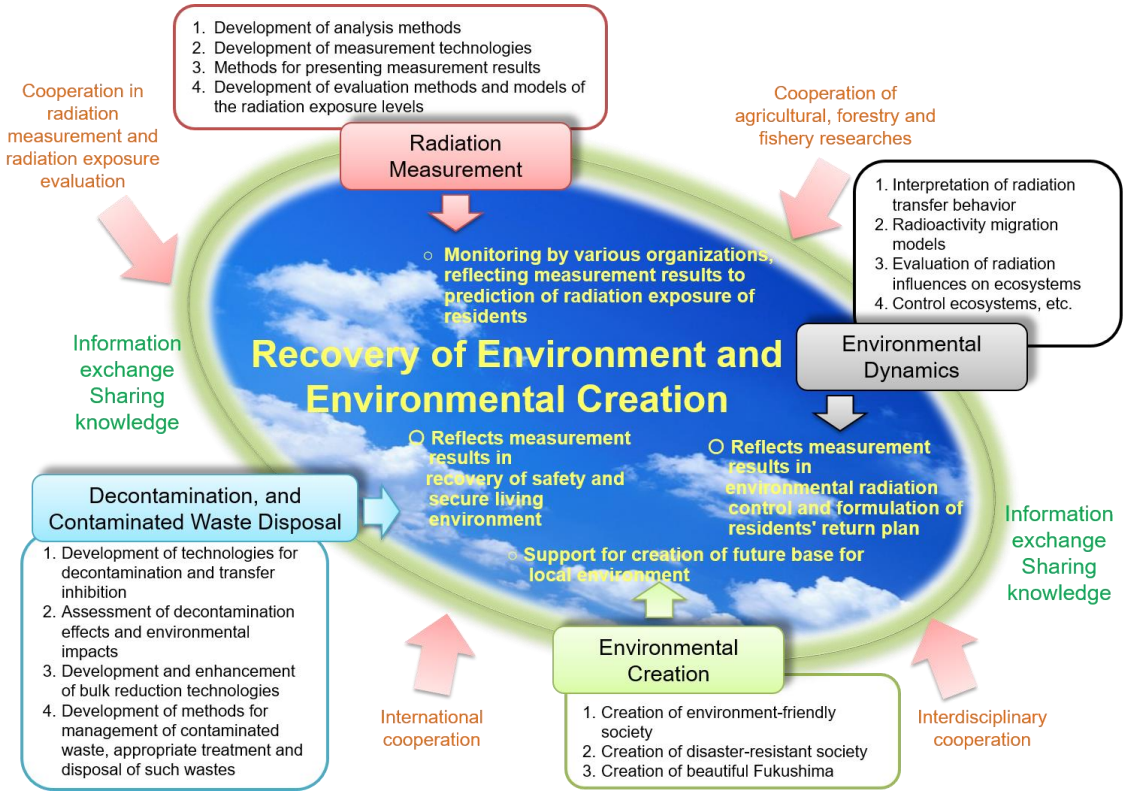


Figure 5: The Use of the Outcomes of Research Project (Phase 1)

(3) Collection and Provision of Information Project

(i) Collection and provision of monitoring data:

We will construct a system for collecting, organizing, and providing to prefectural residents, the monitoring data on environmental radiation and hazardous substance in the environment in the possession of the concerted organizations in Japan, and in an easily understandable manner.

We will construct a system whereby data from environmental monitoring outposts can be checked in real time, and create readily-understandable explanations of monitoring data, such as indexes for environmental assessment. Thus, we will endeavor to collect and provide monitoring data in a manner which will allow us to flexibly address the needs of residents.

(ii) Collection and provision of research outcomes:

We will collate not only its own research outcomes, but also relevant research results from the IAEA, universities and other research organizations, by cooperating with those organizations.

In addition, we will actively provide research results through various academic societies, and international conferences and facilitate the provision of information by its staff through workshops and exchange with visitors.

(iii) Collection and provision of information on the recovery of the environment, rehabilitation of local areas, and environmental creation:

We will collect and provide information on recovery status of the environment and rehabilitation of local areas, for example by decontamination and environmental creation in the Prefecture, on a centralized and comprehensive basis.

We will also collect and provide information about the creation of the Prefecture's environment.

(iv) Initiatives at the Information & Communication Building:

The Information & Communication Building will provide visitors from and beyond the Prefecture, including those from other countries, with information on the situation in the Prefecture as well as radiation, and research outcomes of CEC, through its Exhibition and Experiential Learning rooms.

In addition, we will construct an international research network centered on the Prefecture, and organize international conferences, academic conventions, workshops, etc., to collate and provide relevant information from and four researchers in Japan and overseas countries at its conference room, hall, and multi-purpose training room.

The Figure 6 below provides the overview of the Collection and Provision of Information Project in Phase 1.

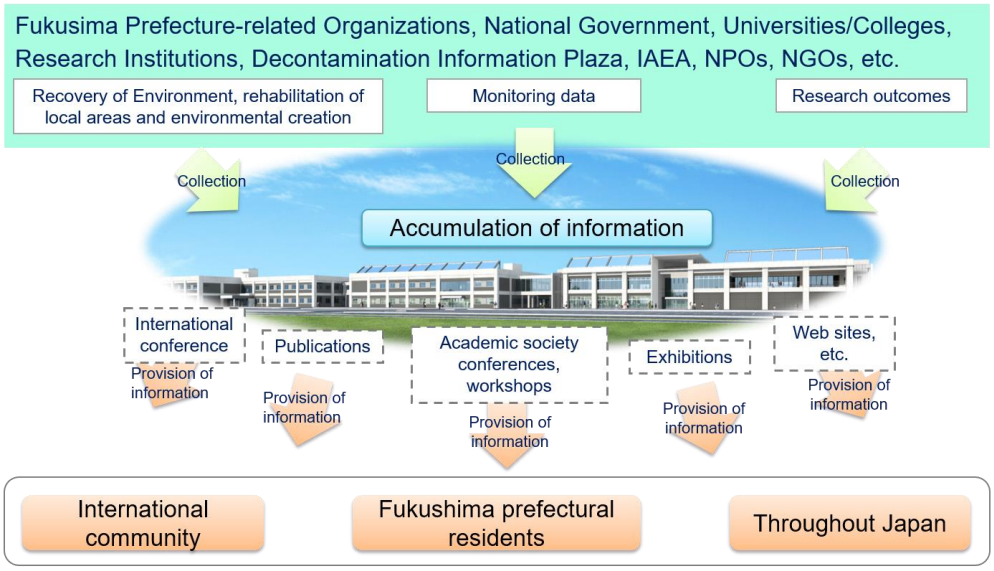


Figure 6: Collection and Provision of Information Project (Phase 1)

(4) Education, Training, Information Exchange and Communication Project

(i) Education on environmental radiation:

In order to implement and support educational activities for elementary and junior high school students, we will be equipped with exhibition and experiential learning facilities in line with the guidelines "Guidance for Education on Radiation" produced by the Prefecture's board of education. We will create a "learning notebook" as a follow-up tool for participants of an exhibition tour and experiential learning program to promote the use of those facilities.

In addition, to promote knowledge diffusion among visitors from the Prefecture and beyond, including those from overseas, we will create operation programs tailored to respective age groups and levels of acquired knowledge, and plan events with a view to attracting repeat visitors. By these means, the facilities will be operated in a flexible manner.

(ii) Training on recovery of the environment and environmental creation:

In order to nurture human resources for decontamination work, we will in cooperation with relevant institutions, both organize lecture meetings and practical training sessions, and provide training programs for local governments, to develop coordinators capable of contributing to the diffusion of knowledge for the recovery of the environment and environmental creation, as well as human resources for waste control and environmental management, in cooperation with universities, etc.

In addition, we will initiate capacity development programs for human resources to be active in the field of environmental emergences and the creation of disaster-resilient environments.

(iii) Information exchange and communication with residents, NPOs and relevant organizations:

We will provide a venue and opportunities for information exchange and communication among residents and NPOs to give such actors a voice in the future of Fukushima. We will organize workshops and lectures at which our staff will exchange and communicate with visitors to enhance residents' understanding of the effects of radiation, etc.

We will also organize programs, events, PR activities (circuit exhibitions in the Prefecture) in cooperation with the Decontamination Information Plaza, National Museum of Nature and Science, and invite volunteer participation of local residents in these initiatives.

The Figure 7 below provides the overview of the Education, Training, Information Exchange and Communication Project in Phase 1.

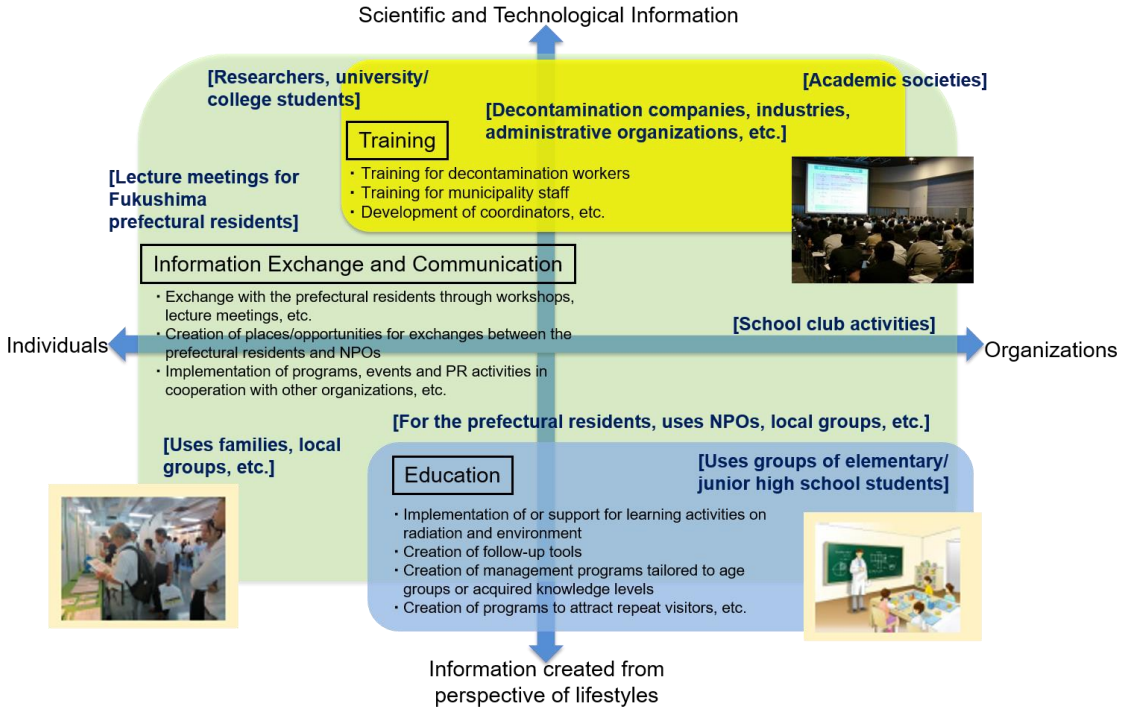


Figure 7: Education, Training, Information Exchange and Communication Project (Phase 1)

7. Overall Performance Assessment for Phase 1

Toward the restoration of the environment from radioactive contamination and toward the creation of a new environment in which residents can live safely for decades to come, the three organizations solidly implemented, based on the basic principles, the initiatives of the Monitoring, Research, Collection and Provision of Information, and Education, Training, Information Exchange and Communication Projects.

(1) Monitoring Project

The Project members monitored environmental radiation in accordance with the country's Comprehensive Monitoring Plan and the Prefecture's Power Plant Surrounding Environment Monitoring Plan, and monitored hazardous substances contained in the general environment in accordance with the plan formulated by the Prefecture's government departments concerned, both in a solid manner, and thus helped ensure the safety and security of residents.

In the future Phases, in addition to the meticulous monitoring of radiation at residential areas and the surroundings of the nuclear power plant through the use of the monitoring system established in Phase 1, the Project members should review,

while placing the utmost importance on the safety and security of residents, the monitoring items to align with the latest environmental radiation status, progress of the decommissioning process (removal of fuels and fuel debris) and conditions of the evacuation-order zones. Moreover, the Monitoring Project should reinforce its collaboration with the Research and the Collection and Provision of Information Projects and also with other relevant organizations, particularly the Prefecture's government departments concerned.

(2) Research Project

Under the management and coordination by the heads of Divisions (for the Radiation Measurement, Decontamination & Contaminated Waste Disposal, Environmental Dynamics, and Environmental Creation Divisions), the Project members worked with the researchers from the IAEA and other institutions, yielding the following significant results: the development of the techniques to measure and analyze environmental radiation; the establishment of the methods to evaluate the decontamination effects and to effectively perform decontamination; the development of the technology to safely handle and reduce contaminated waste; the exact grasp of the migration of radioactive materials into the environment and wildlife; and the development of a method for designing an environmental creation model. According to the heads of Divisions, those results were not only employed by the national and local governments for their administrative measures but also helped alleviate the concerns of residents. The assessment by the heads of Divisions found, meanwhile, the necessity of continuing to conduct or newly conducting the following: further optimization and sophistication of the developed radiation measuring and analysis techniques toward their practical application; the study on the methods to evaluate the migration of radioactive cesium after the landfill of contaminated waste and to evaluate the safety of the interim storage of removed soil, etc.; the elucidation of the migration behavior of radioactive materials into the environment and the estimation of their impacts on the wildlife, and the sophistication, based on the estimation, of the model (Environmental Dynamics); interdisciplinary study for designing an evidence-based sustainable community as part the medium- to long-term restoration plan (Environmental Creation). The assessment also pointed out that the Research Project should work with more various research institutions and that the Project should accelerate the practical application and integration of their findings by, for example, using the developed techniques in their field surveys.

During the Phase 1 period, there were a few changes in the background and social landscape that we should take into consideration for the upcoming Phase. Firstly, the Prefecture's environment saw a steady improvement as is proven by the fact that

evacuation orders, except for the ones issued for the Difficult-to-Return Zones, were lifted and that the scheduled decontamination work for the daily-living sphere was completed. Secondly, the national government announced, through the 5th Basic Environment Plan (approved by the Cabinet in April 2018), that it seeks to create a Regional Circular and Ecological Sphere, which is a self-reliant and decentralized society where each region demonstrates its strengths by utilizing its unique characteristics and where different resources are circulated within each region, in other words, a form of society, according to the Plan, which leads to the symbiosis of and exchange with neighboring regions and hence leads to the building of wider networks (in terms of nature such as forests, mountains, rivers, and sea) and new economic communities (in terms of people, money, etc.) and which thus ultimately generates new value chains complementing and supporting regional resources and revitalizes both urban and rural (agriculture, forestry and fishery) regions. Those changes clearly indicate the necessity of the Research Project's raising the proportion of future-oriented initiatives with a long-term perspective.

In the upcoming Phases, therefore, the three organizations will place a particular emphasis on the Environmental Dynamics and Environmental Creation Divisions. The CEC, meanwhile, should reinforce the alignment between the Research Project and the Collection and Provision of Information Project to bring more widely the Research Project's findings to residents and the people outside the Prefecture and the country.

(3) Collection and Provision of Information Project

In order to send the information about environmental recovery and creation to the people beyond the Prefecture, the Project members: built and launched a website having a portal site function, through which they released information about radioactivity inspections and the CEC's research findings; held research briefing sessions and convened CEC symposiums for and with other research institutions working for the environmental recovery and creation; conducted facility tours (of the Main and Research Buildings); and held mini lectures.

The Information & Communication Building received approx. 239,000 visitors (who included approx. 61,000 from school groups and other general groups, including approx. 16,000 from outside the Prefecture) during the period from July 2016, when the Building was opened, until the end of February 2019. By providing there exhibits and experiential learning programs, the Project members helped visitors acquire basic knowledge about radiation and informed them about the Prefecture's current state and received, according to questionnaire surveys conducted with visitors, high reviews.

Under the structure established in Phase 1, the Project members will upgrade the CEC's website and event programs to better absorb the needs of residents and make

our information more accessible. While appreciating the fact that the activities at the Information & Communication Building certainly heightened many people's understanding about radiation and the Prefecture's state, we realized that the CEC was not widely recognized; we need to heighten our visibility inside and outside the Prefecture.

In Phase 2, therefore, the Project members will make better use of the network with other organizations and also explore, together with the Research Project, a more effective way to collect and provide information that meets the needs of residents. The Information Project will also seek to enhance the CEC's website and other functions to deliver, across and beyond Japan, the findings made by the Monitoring and the Research Projects and the information about the Prefecture's environmental recovery and creation. At the same time, the Project members will launch more aggressive PR to those in the education and tourism fields inside and outside the Prefecture to attract more visitors to the Information & Communication Building. And of course, the members will enhance the lineup of exhibits and programs to better meet the needs of residents.

(4) Education, Training, Information Exchange and Communication Project

The exhibits at the Information & Communication Building and the supplementary education at elementary and other schools inside the Prefecture helped many students have a better understanding about radiation, etc., and questionnaire surveys conducted at schools found that the exhibits and experiential learning programs raised children's interest and knowledge. The Project members gave lectures and held workshops on radiation and decontamination at universities and technical colleges as part of their effort to develop, toward the future, human resources who will work in the environmental recovery field.

The Project members also held symposiums and conferences on environmental creation to share the knowledge with those working at the Prefecture's government departments concerned, researchers at other institutions and NPO members. The exhibits jointly created by the National Science Museum for the Information & Communication Building were particularly effective to attract visitors and evoke their interest in science.

The Project members used the Wildlife Symbiosis Centre and the Inawashiro Aquatic Environmental Centre, both the CEC's accessory facilities, to hold workshops on the environment and raised the awareness of environmental conservation among visitors. Those two Centers were also used by some NPOs as their activity hubs.

Since the Phase 1 exhibits and experiential learning programs received high reviews from elementary school students, the Project members are going to continue with the

education activities on radiation. At the same time, however, they should implement other educational activities so that they respond to the rising public interest and awareness about decommissioning, environmental conservation and post-disaster environment. The members should also seek to enhance the CEC's visibility inside and outside the Prefecture by, for example, strengthening the collaboration with other organizations, research institutions and groups.

In Phase 2, therefore, the Project members should review or renew the exhibits and experiential learning programs at the Information & Communication Building to better respond to the needs of visitors, schools and the Prefecture's education board. The members should also seek to extend the CEC's networks with other organizations or groups, and thereby conduct more joint programs or PR activities with them, as well as reinforce the promotion targeting education groups inside and outside the Prefecture to attract more of them to the Information & Communication Building, besides the effort to create more opportunities for the CEC's members to intermingle with residents.

Implementation of initiatives through collaboration by national research institutions and a local government is one of the first of its kind in Japan. We closely coordinated the activities by the three organizations, made careful arrangements for them to comprehensively and progressively work together, and promoted the initiatives that capitalized on the varying characteristics and strengths of those three organizations. We thereby helped, we believe, Fukushima make some steps forward toward environmental recovery and creation.

As we have described, our Phase 1 activities of the Monitoring, the Research, the Collection and Provision of Information, and the Education, Training, Information Exchange and Communication Projects turned out productive. To accelerate the restoration and rebirth of Fukushima, however, we still have many tasks to fulfil in each Project field. We must further tighten our alignment with other research institutions, universities and the Prefecture's government departments concerned and must further improve our coordination among the Projects in Phase 2.

Moreover, in drawing up the Action Polices for Phase 2 that starts in FY2019, we need to consider the following: progress of the decommissioning process; completion of the district-wide decontamination[8] work for all the areas except for the Difficult-to-Return Zones; increases in the transfer and collection amounts of removed soil, etc. resulting from the installation of interim storage facilities and specified waste landfill facilities; roles of

[8] It refers to the decontamination work conducted in full scale at a wide range of areas by the national and local governments based on the verification project (conducted on the effectiveness of the decontamination techniques, etc.) and the preceding decontamination process (conducted, before full-scale decontamination process, at a facility serving as the hub of the decontamination work, roads with an access to the areas subject to the decontamination work, and infrastructure facilities supplying water, etc. necessary for the decontamination work).

the Information & Communication Building in the context of the national government's strategy against rumors about the Prefecture; reconstruction of daily living at the areas for which evacuation orders were lifted; rising interest in the creation of a sustainable local environment; and all other changes, including those in social landscape, that have occurred since the Great East Japan Earthquake and Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station accident (2011).

8. Action Policies for Phase 2 (FY2019 – 2021)

As more than eight years have passed since the Great East Japan Earthquake and the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station accident (2011), evacuation orders are lifted for more and more areas, and initiatives for the restoration and rebirth of Fukushima are solidly on track.

To bring more progress to the restoration and rebirth process and thus realize a living environment to which residents can feel affectionately attached and in which they can live comfortably, safely and securely, it is essential that evidence-based measures are in place. In fact, the processes to recover the environment from radioactive contamination and create a new environment require various initiatives --- including those for revitalizing the evacuation areas, for preventing rumors and oblivion, for protecting people from the decommissioning work and contaminated water, and for designing a sustainable model ---, and all those initiatives take medium- to long-term plans. To help materialize those plans, we need to incessantly conduct the Monitoring and the Research activities and enhance our scientific knowledge.

We are also expected to continuously and effectively provide accurate information about the Prefecture's environmental recovery and creation, through educational and training programs, etc., to residents as well as other people outside the Prefecture, and we are therefore and thereby expected to build an extensive network with the outside world.

To fulfil those tasks, we must further strengthen the cooperation among the three organizations and tenaciously pursue, with support from the local government's departments concerned, research institutions and NPOs, the successful implementation of our initiatives that are categorized into the four Projects: Monitoring; Research; Collection and Provision of Information; and Education, Training, Information Exchange and Communication.

The Figure 8 below provides the overview of the four Projects in Phase 2.

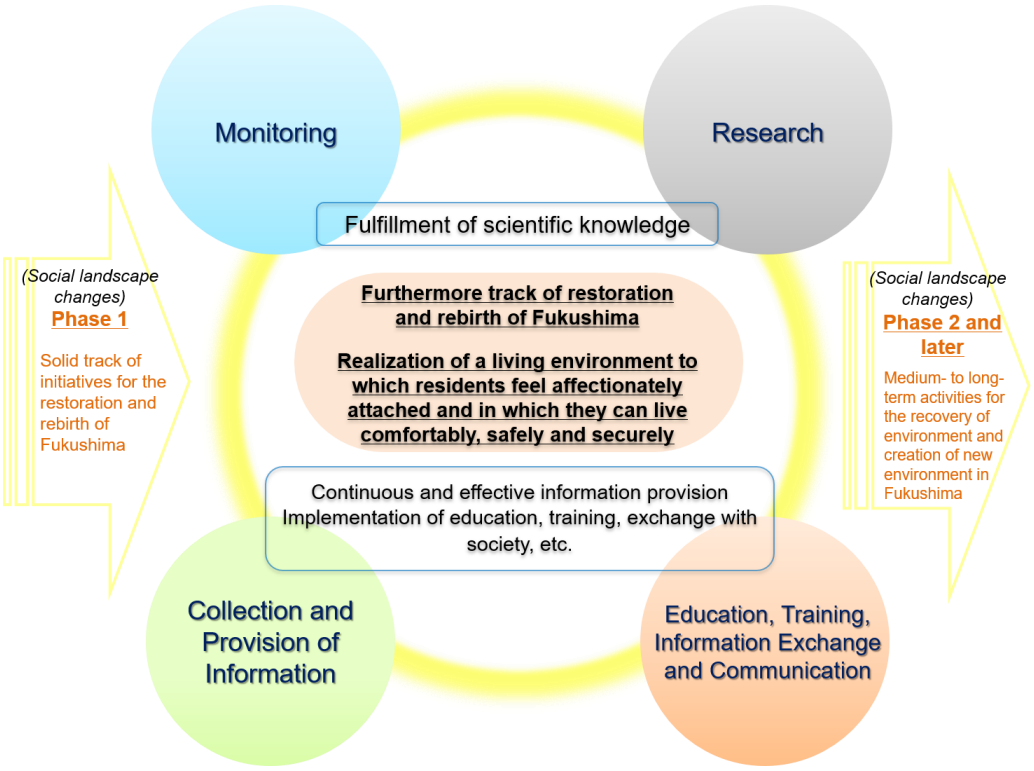


Figure 8: Four Projects in Phase 2

(1) Monitoring Project

(i) Establishment/Operation of a system to meticulously and continuously monitor radiation:

In accordance with the Comprehensive Monitoring Plan formulated by the Monitoring Coordination Committee of the national government and also in accordance with the Fukushima Prefecture's Monitoring Plan for the Power Plant Surroundings, the Monitoring Project members will meticulously monitor radiation in all areas across the Prefecture, including the surroundings of the nuclear power plant. With regard to the monitoring of the nuclear power plant surroundings, the members will draw up a specific plan to enhance their monitoring level toward the decommissioning process and comprehensively review the monitoring activities based on the Fukushima Prefecture's Policies Concerning the Monitoring of Environmental Radiation (February 28, 2018; the medium- to long-term policies for the five years until FY2022), all the while at the same time continuing with the hitherto monitoring activities to ensure the safety and security of residents.

In addition, for more thorough radiation monitoring, they will seek to introduce and operate an administrative system that will allow them to incorporate, in the monitoring plans, not only the needs of residents and local public organizations but also the opinions from experts and research findings.

(ii) Monitoring of hazardous substances contained in the general environment:

Solidly based on the plans formulated by the Prefecture's government departments concerned, the Project members will monitor hazardous substances contained in the general environment and thereby seek to contribute to the conservation of the environment and the safety and security of residents.

The members will also launch a study about the potential air pollution or other impacts on the environment that may be caused by the full-scale operation of the interim storage facilities and specified waste landfill facilities or by the start of the large-scale thermal power plants. The Monitoring Project will also conduct joint research with the Research Project on the measures to protect and improve Lake Inawashiro's water quality.

(iii) Centralized control, analysis and evaluation of monitoring data:

Radiation monitoring data: The Monitoring Project members will centralize the data so that residents, outside organizations, etc. can get and use all the data at one time. The members will also work with the Research Project members to analyze and evaluate the data.

Hazardous substance monitoring data: The Monitoring Project members will work with the local government's departments concerned and other outside organizations to analyze and evaluate the data and see whether the environmental criteria are satisfied.

The Project members will establish a system that will allow them to promptly respond to the addition of new restricted substances or to changes to the measurement methods. The members will also conduct precision control, which involves the regular calibration of measuring instruments and the checking of measuring methods, and thus ensure the traceability of their measurements.

(iv) Establishment and operation of the emergency monitoring system:

Monitoring of environmental radiation: The Project members will work on the construction of a monitoring system and operational procedures for an emergency that conform to the Nuclear Emergency Preparedness and Response Guidelines. The members will also seek to enhance the system and will participate in the Off-Site Center's atomic disaster drills and activity drills to improve the monitoring skills.

In a situation where the diffusion of a radioactive material is suspected at a Difficult-to-Return Zone or other areas due to an emergency like a forest fire, the Nuclear Emergency Response Headquarters will monitor radiation in the surrounding areas in accordance with the Emergency Measures for Large-scale Fires

at Evacuation-order Areas (established in March 13, 2012; revised on April 30, 2014); however, the Prefecture will also take part in the radiation monitoring, if so requested, jointly with the Research Project.

Monitoring of hazardous substances in the general environment: The Project members will work on the enhancement and reinforcement of the current system so they can more rapidly conduct a survey and analysis in the occurrence of an environmental pollution accident or other emergency.

The Figure 9 below provides the overview of the Monitoring Project in Phase 2.

Figure 9: Monitoring Project (Phase 2)

(2) Research Project

In Phase 2, too, the Research Project members will conduct their research activities for the recovery from radioactive contamination and the creation of a new environment under the four Divisions, all the while taking account of the hitherto Project findings and changes in social landscape, etc. The Research Project will shift its emphasis to the Environmental Dynamics and the Environmental Creation Divisions from the other two, all the while, however, ensuring to further tighten the coordination among the four Divisions and across the three organizations. More specifically, the Project members will work on the development and sophistication of analytical methods and will conduct the research concerning the storage, reduction, reuse, and disposal of removed soil and contaminated waste, while placing a focus on the studies concerning

the environmental dynamics of radioactive materials and their impacts on the environment. Moreover, toward the creation of Circulating and Ecological Economy announced by the national government in the 5th Basic Environment Plan, the Research Project members will study the following: how to use local environmental resources to revitalize regional economy; what to do to make a society resilient against disasters; and how to conserve the Prefecture's nature represented by Lake Inawashiro. They will also get themselves flexibly engaged in the activities that are not included in the Project's original plan but that they believe will contribute to the safety and security of residents: for one, they will work side-by-side with the Monitoring Project members in the occurrence of a natural disaster like a forest fire or flooding to study the changes in the dynamics of radioactive cesium and other materials and the impacts of those changes on the surrounding environment.

In Phase 2, as mentioned earlier, the Research Project will put an emphasis on the Environmental Dynamics and Environmental Creation Divisions and, in order to effectively push forward with those Division research activities, the Research Project will seek to reinforce the coordination among the four Divisions; for example, the multiple Divisions share the research fields, and the technique developed in Phase 1 by the Radiation Measurement Division will be applied for the Divisions' Phase 2 field-surveys. Through joint Division Committee meetings, etc., the Research Project members will seek to reinforce their collaboration with other organizations inside and outside Japan and thus push forward with their research. They will also strengthen the coordination with other Projects and with the national and local administrative agencies (by, for example, having an opportunity to exchange opinions with them on a regular basis) in order to make sure that their research findings will be used for society. The Research Project will also explore a way to deliver its information more widely to residents and other people inside and outside the country.

Based on the aforementioned policies, the Research Project will conduct the following research under the four Divisions.

(i) Radiation Measurement:

We need to develop highly-sophisticated analytical and measuring techniques in order to: identify and understand the impacts caused by the Tokyo Electric Power Company's Fukushima Daiichi Nuclear Power Station accident (2011) on its surroundings; identify and understand the impacts from the decommissioning process that will last a long period of time and from the measures taken against contaminated water and from the treatment process of contaminated waste on their surrounding environments; and monitor radiation during an emergency. Also in order to help residents go back to their homes, we need to collect the data concerning

the radiation exposure levels at their home areas and concerning the migration of radioactive materials, etc. as well as the information that will enable us to precisely estimate the radiation exposure levels and reduce the levels.

In order to develop such analytical and measuring techniques, the Division members will conduct study on the practical use of the techniques developed in Phase 1, optimize those techniques for each analysis specimen, verify the measurement results, and seek to upgrade the techniques, all the while taking account of the progress of the decommissioning process, the state of the measures taken against contaminated water and other social needs. Toward the development of a method to evaluate radiation exposure levels and model them, they will also work on the verification of the radiation exposure evaluation model and seek to upgrade it.

All those initiatives will be pursued by other Divisions (mainly the Environmental Dynamics Div.) and by other Projects (mainly the Monitoring Project) as well. In case of a natural disaster or other emergency, the Radiation Measurement Division will collaborate with other Divisions and Projects to have a clear grasp of radioactive materials in the surrounding environment.

(ii) Decontamination, and Contaminated Waste Disposal:

It is our task to accumulate scientific knowledge about decontamination and share it with residents in order to alleviate their concerns over post-decontamination-work radiation (the district-wide decontamination work is completed except for the Difficult-to-Return Zone). We are also expected to provide technical support for the city and town governments to decontaminate Specified Reconstruction and Revitalization Base. With regard to the handling of removed soil etc., besides the securing of safety at the interim storage facilities and during transport to/from there, we are expected to: restore the temporary storage sites to original state; manage the interim storage facilities over a long time; reduce or reuse such soil for/before the final disposal process outside the Prefecture. With regard to the handling of contaminated waste, we are expected to provide long-term technical solutions for proper control and disposal at the final disposal site.

As the technical support for the decontamination work, the Division members will seek to heighten the precision of the decontamination simulation system toward the use by the national and local governments and also toward the use in the research on radiation dynamics. The members will also explore effective anti-radioactive material countermeasures based on the change in the air dose rate at the post-decontamination land and water areas and the methods to properly manage removed soil etc. during transfer and properly restore the temporary storage sites to

original state. Moreover, in order to establish the techniques to properly manage and reuse contaminated waste, the Division members will conduct research for/on the following: the exact grasp of radioactive nuclide behavior at the final disposal and interim storage facilities and the establishment of proper treatment techniques; the development of a tool that rationally selects, according to radioactivity risk, whether to dispose of or reuse contaminated waste or byproducts generated from radioactive materials at contaminated areas; and the development of a technique to use decontaminated biomass. Briefly speaking, the Division members will study the storing, interim storage, reduction, reuse, and disposal of removed soil and contaminated waste.

In conducting such research, the Division will use the technologies, techniques or knowledge developed or obtained in Phase 1 and will also work with other Projects (mainly the Collection and Provision of Information Project) and align with the national and local administrative agencies. The Division will also join a restoration support initiative led by the Environmental Creation Division.

(iii) Environmental Dynamics:

The safety and security needs of residents are diversifying as evacuation orders are lifted and residents are returning to their homes and as the measures to counter the decommissioning work and contaminated water are seeing progress. In order to meet such needs of residents, we need to evaluate the direct and indirect impacts of radioactive contamination on people's living environment and on ecosystems and then, based on the results, accumulate and elaborate our knowledge or techniques for controlling the potential risks that exist in people's living and recovering the environment and ecosystem from radioactive contamination.

Toward the evaluation of the migration behavior of radionuclides, the Division members will pursue a detailed grasp of the dynamics of radioactive cesium, including the elucidation of the production mechanism of dissolved radioactive cesium at river basins, and will keep their joint activity with the Radiation Measurement Division members in the vicinity of the nuclear power plant to get a clear picture about the area's contamination with radioactive cesium and other radioactive nuclides. Based on the results, the Environmental Dynamics Division will seek to sophisticate its radioactive cesium migration model. Furthermore, the Division will continue with the study focused on radionuclide transfer from environment to wildlife and evaluation of influence of no resident in the evacuation designated zones on fauna are continue. Using these results, the Division members will develop the population dynamics model. The Division members will also work on the research concerning the management of wildlife and the evaluation and

estimation of impacts of land-utilization changes and influences from natural disasters. Based on the results from those research works, the Division members will seek to build an evaluation system database that will enable us to evaluate the direct and indirect impacts of radioactive contamination on people's living environment and ecosystems, construct a medium- to long-term monitoring system. Eventually, the Division members will establish an initial and early-stage environment investigation technique and then an environment-management technique to get us prepared for a natural disaster or other emergency.

The Division members will effectively push forward with all those initiatives by aligning with the Radiation Measurement Division (and its initiative to utilize the developed technologies) and the Environmental Creation Division (and its initiative to support the restoration of disaster-affected areas), by tying up with other Projects (mainly the Collection and Provision of Information Project) and by collaborating with the national and local administrative agencies.

(iv) Environmental Creation:

As the works for the restoration and rebirth of Fukushima are steadily underway, the Prefecture is no longer an exception when it comes to the creation of a Regional Circular and Ecological Sphere (which is set forth in the 5th Basic Environment Plan). Amid such background, we are expected to continue with the research for the restoration of the beautiful and natural-rich environment and the creation of an environment-friendly and sustainable society that is also safe to live in and resilient against disasters, and are then expected to apply those research findings, through an integration approach, to the initiatives for realizing, beyond restoration, a future-oriented, sustainable environment for Fukushima.

The Division's initiatives to turn the Prefecture sustainable include: the development of a restoration scenario that also works for the creation of a new environment; research on the way to support energy business; and the model improvement concerning the use of forests at disaster-affected areas. The initiatives to make Fukushima more resilient against disasters include: the development of techniques and public management methods to control environmental risk factors, such as disaster wastes and chemical substances, and the verification of those techniques and methods. Toward the realization of a nature-rich environment, the Environmental Creation members will conduct a quantitative evaluation of the flow, stock, etc. of the substances contained in Lake Inawashiro and also seek to establish a method to control forests and ecosystems. Also with in mind the concepts of the "development of data coordination infrastructure" and the "logical path and chronological order for the processes from basic research to social implementation

and global diffusion" of the Integrated Innovation Strategy approved by the Cabinet in June 2018 and in order to generate an innovation for the Environmental Creation Division, the Division members will work on the following: the development of a Community Capacity Building method (for those who involved in a local society activity to acquire or improve their abilities to attain certain goals) toward the regional revitalization; the update of the regional environmental information system and its verification operation toward the projection of the region's environment in the future; and a study to find an accurate and easy-to-understand form of information provision.

In order to effectively push forward with all those initiatives, the Environmental Creation Division will work in alignment with other Divisions (mainly the Environmental Dynamics Division) and other Projects (mainly the Collection and Provision of Information Project) and will collaborate with the national and local administrative agencies.

The Figure 10 below provides the overview of the Research Project in Phase 2. For the details about the Research initiatives for Phase 2, see the "Research Plan for the Centre for Environmental Creation."

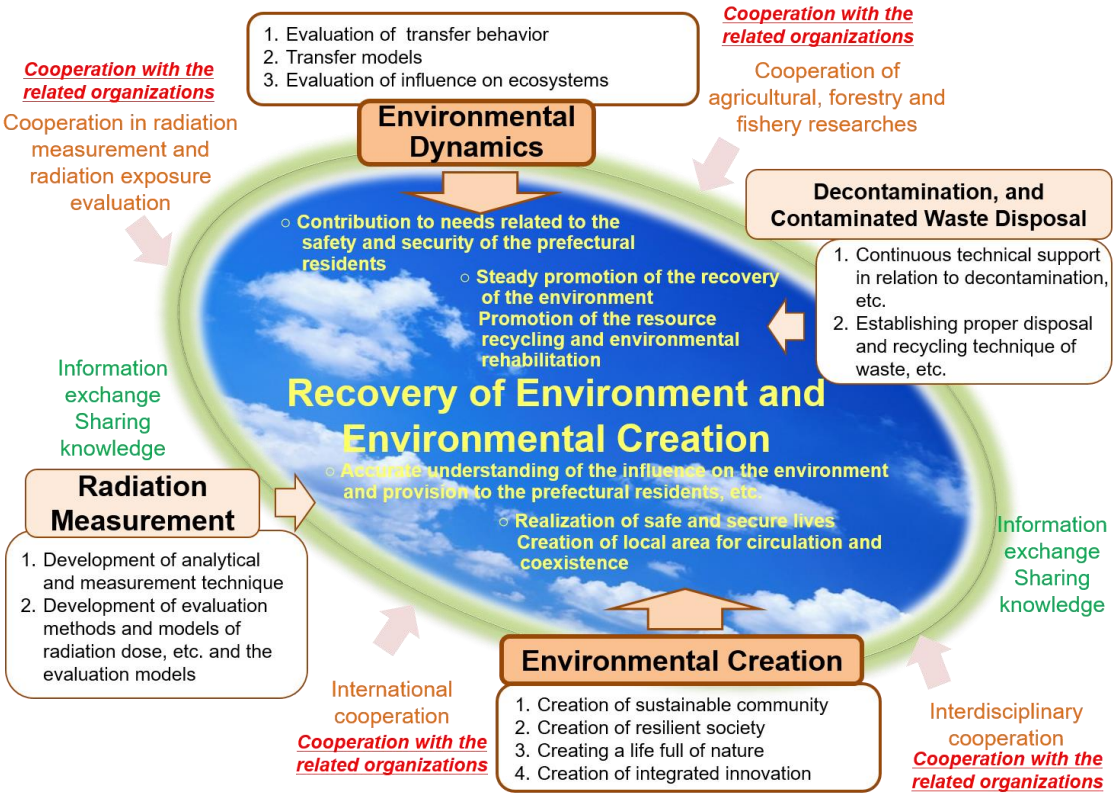


Figure 10: Research Project (Phase 2)

(3) Collection and Provision of Information Project

(i) Collection and provision of monitoring data:

The Collection and Provision of Information Project will work in alignment with the Monitoring Project to collect and organize the monitoring data on environmental radiation and hazardous substances contained in the general environment that are owned by the Prefecture's government departments concerned or by other organizations inside the country, and will provide the collected and organized data for residents and other people outside the Prefecture in an easy-to-understand manner through the use of visuals, etc. The Collection and Provision of Information Project will release the monitoring data on the spatial dose rates measured in the Prefecture to not only residents abut also the people outside the Prefecture in order to provide them with the correct information about the current state of the Prefecture and to thereby dispel rumors about the Prefecture.

Moreover, by using the techniques developed in Phase 1, the Project members will collect and provide monitoring data in a more flexible manner and thus respond to the changing needs of residents.

The Project members will also seek to establish an information service system that will allow them to promptly release monitoring data to residents, etc. in the occurrence of an emergency such as a forest fire.

(ii) Collection and provision of research findings:

The Collection and Provision of Information Project will seek, together with the Research Project, to more widely collect the findings by the IAEA, other international organizations, universities, and research institutions by accessing their websites or related literature, and will also seek to systematically organize such research findings, including the CEC's, for more convenient use by residents and other people.

Moreover, based on the Research Project's study results as to the way to effectively disseminate information, the Collection and Provision of Information Project members will clarify their information targets and purposes. The Collection and Provision of Information Project members will organize workshops and international conventions, invite companies and field tours, generate reports, renew the exhibits at the Information & Communication Building, run the Science Cafeteria, and give mini or full lectures inside and outside the CEC premises, all in order to actively and effectively bring the CEC's research findings to the people inside and outside the country. The Project will also create opportunities for residents to have dialogue or intermingle with the CEC researchers and will thereby promote residents' understanding about our research and findings.

(iii) Collection and provision of information about environmental recovery, regional rebirth and environmental creation:

In order to contribute to the safety and security of residents, the Collection and Provision of Information Project will seek to more widely collect the information about the Prefecture's environmental recovery, regional rebirth and environmental creation by joining hands with other organizations or by more actively accessing their websites and related literature. The Project members will seek to systematically organize the collected information for more convenient use by residents and will also organize symposiums, etc. to share the progress or findings of the initiatives undertaken by universities, research institutions, NPOs, and the Prefecture's government departments concerned.

Moreover, under close collaboration with the Research Project, the Collection and Provision of Information Project will conduct detailed decontamination simulation at the Restoration/Rebirth Bases in the Difficult-to-Return Zones, and then will estimate the future spatial dose rates at those Bases and provide the environmental recovery information for the national and local governments. The Project members will also work on the wider-ranged and longer-perspective provision of information about regional rebirth and environmental creation, such as the one about the natural and living environments in the future and about resource cycling.

(iv) Initiatives at the Information & Communication Building:

The Collection and Provision of Information Project members will effectively use the Information & Communication Building for the purpose of providing the findings from the aforementioned research activities or other information about environmental recovery, regional rebirth and environmental creation. In order to meet the needs of residents, the Project will also develop and renew the exhibits and experiential learning programs and thus better inform visitors about the Prefecture's current state, radioactivity, the CEC's research findings and so on, all the while taking into consideration the latest changes to the social landscape, etc., particularly the progress of the decommissioning work.

By the way, with the adoption of the Paris Agreement[9] and the Sustainable Development Goals[10] (hereafter, the "SDGs") in 2015, the world paradigm is shifting to the creation of a low-carbon, sustainable society. The Collection and Provision of Information Project will use the exhibits at the Information & Communication Building to inform visitors about such global initiatives represented by the Paris Agreement and the SDGs and disseminate the movement across the Prefecture.

Besides the tasks of making the exhibits and programs more interesting, the Collection and Provision of Information Project will also launch aggressive PR activities targeting schools, education boards and tourism agencies inside and outside the Prefecture to attract more visitors to the Information & Communication Building and deepen their understanding about the radiation and current environmental state in/about the Prefecture and thereby help eliminate rumors about the Prefecture. The CEC will, in fact, place a bigger emphasis than before on its PR activities because the Prefecture will receive more visitors from inside and outside the country before and after the 2020 Tokyo Olympics and Paralympics.

Moreover, the Collection and Provision of Information Project will accelerate the effort to organize academic conferences, international conventions and workshops toward the establishment of a global research network hub in the Prefecture and in order to collect and share information from/with researchers inside and outside Japan.

All the aforementioned initiatives will be carried out under close collaboration with the Education, Training, Information Exchange and Communication Project and other information service organizations.

The Figure 11 below provides the overview of the Collection and Provision of Information Project in Phase 2.

[9] The Agreement, setting forth the global framework for global warming countermeasures in and after 2020, was adopted at the United Nations Climate Change Conference (COP21) in December 2015. The Agreement is aimed at making every country in the world take part in the global warming countermeasures and at suppressing the increase in the Earth's average temperature to be less than 2°C and at completely eliminating greenhouse gas emissions across the world by the latter half of the 21st century. It came into effect in November 2016.

[10] The Sustainable Development Goals, or SDGs, are globally-shared behavioral objectives to prompt the people around the world to consider the global environment and climate change and thereby live sustainably. The SDGs, which are agreed by all the 193 member countries of the United Nations, are set in "The 2030 Agenda for Sustainable Development" adopted at the UN General Assembly in September 2015. The Agenda is comprised of 17 goals, including no poverty, environmental conservation and reduced inequalities, and 169 specific targets. The SDGs came into effect in January 2016 toward the completion by 2030.

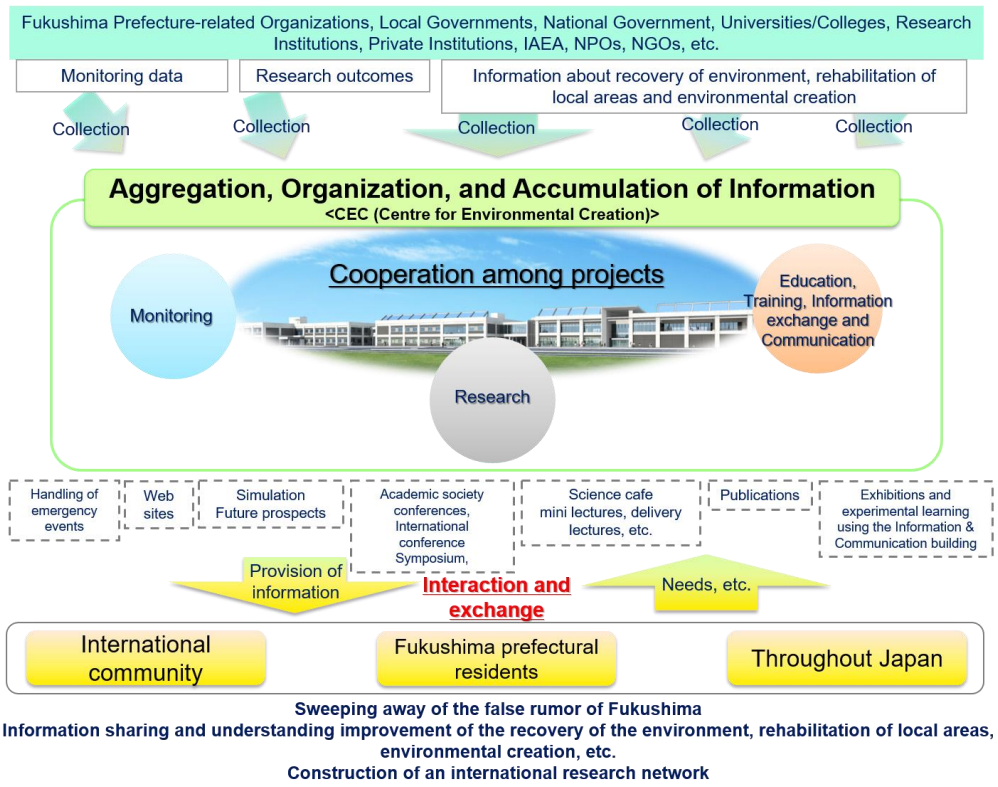


Figure 11: Collection and Provision of Information Project (Phase 2)

(4) Education, Training, Information Exchange and Communication Project

(i) Education concerning radiation, etc.:

In order to provide elementary and junior high school students with education on radiation and the environment or to support such education, the Project will upgrade the exhibits of the Outreach and Communication Building and experiential learning facilities based on the Education Guidelines on Radiation, etc. generated by the Prefecture's education board, opinions from visitors, requests from schools, progress of the decommissioning work, and rising awareness about the education on global warming and the environment. The Project will also work with the Monitoring and the Research Projects to generate new exhibit-tour programs, experiential learning programs, etc. as part of the effort to make those programs even more effective.

Also in order to more widely spread the knowledge about radiation or the environment among visitors from inside and outside the Prefecture and those from overseas countries, the Project will upgrade their activities by preparing programs by age or knowledge level or by introducing programs particularly designed for repeat visitors, in any cases based on the findings by the Research Project as to the effective dissemination of information and the results of questionnaire surveys conducted with visitors to find out their understanding and awareness levels.

(ii) Training concerning environmental recovery and creation:

In order to spread basic and practical knowledge about radiation, prompt people to have a better understanding about the nuclear disaster (including the long-term evacuation, rumors, and other influences on the environment and society), and develop human resources into coordinators or other professionals who will work for the Prefecture's environmental recovery and creation, the Project will work in alignment with the Prefecture's government departments concerned and with the Monitoring and the Research Projects to conduct lectures and training programs for college students, local government agencies, private companies in the region, NPOs, etc.

Also in order to impart the lessons we learned from the Great East Japan Earthquake to future generations and make them well-prepared for a disaster, the Project members will conduct training programs designed to develop human resources who will work in the environmental emergency field. The Project members will also work, together with the Research Project and local universities, etc., on the development of human resources who will work and communicate for the revitalization of local communities. We believe that all those activities will also lead to the higher sharing of information among research institutions, universities, local governments, and residents.

Moreover, the Project members will conduct learning sessions about the environment at the CEC's accessory facilities to increase educational and training opportunities that are essential to raise the awareness about environmental conservation and develop human resources who will take leadership in the creation of a future for the Prefecture.

(iii) Interchanges with the Prefecture's residents, NPOs, organizations concerned, etc.:

In order to offer opportunities for residents and NPOs to think about, create and express about Fukushima's future, to spread knowledge and heighten people's understanding about the impacts of radiation, to raise people's awareness about environmental conservation and protection, and to prompt active interchanges between the CEC and residents, the Project will hold, in alignment with the Monitoring and the Research Projects, workshops, seminars, lectures (outside the CEC), learning sessions on the environment, etc.

The Project will also tie up with NPOs, universities and other research institutions to organize symposiums or academic conferences and thereby seek to establish a network that meets the needs of research subjects and researchers.

The Project will work with the National Science Museum or other organizations to jointly conduct programs, events and PR activities (e.g., a traveling exhibition inside

the Prefecture). Besides tie-up projects with relevant information service facilities such as Reprun Fukushima (established by the Ministry of the Environment and the *Reprun* means re-produce), the Project members will work on the planning of volunteer projects and organize some environmental events.

The Figure 12 below provides the overview of the Education, Training, Information Exchange and Communication Project in Phase 2.

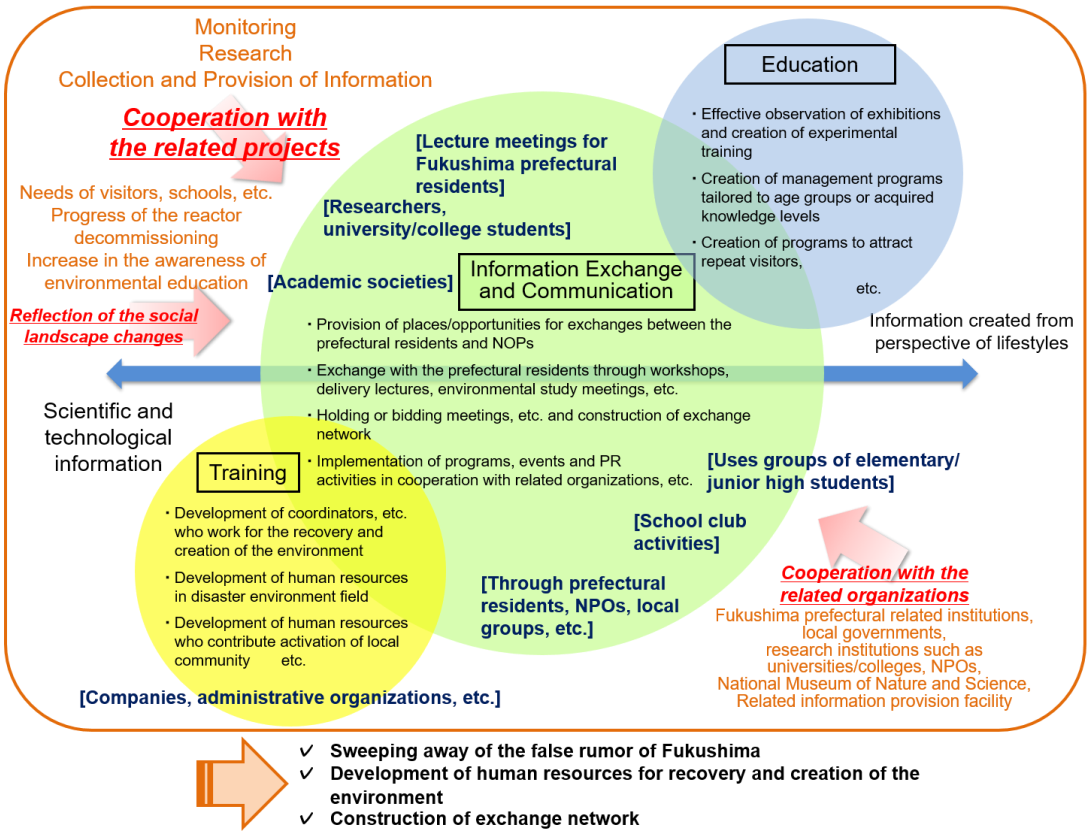


Figure 12: Education, Training, Information Exchange and Communication Project (Phase 2)

9. Path toward Phase 3 and Beyond (FY2022 and thereafter)

While the restoration and rebirth process for Fukushima is underway, efforts need to be continuously paid to eliminate residents' concerns over the impacts of the decommissioning process on the surrounding environment and the influences of heavy rains or forest fires on radiation, given the fact that the decommissioning of the nuclear power plant and the operation of the interim storage facilities take a long time even after the restoration and rebirth process is completed. For the Difficult-to-Return Zones, particularly-intense efforts need to be made to rebuilt communities and address their

aging and decreasing populations and ensuing weak economies.

Rumors concerning the nuclear power plant accident will persistently stay outside the Prefecture, but other information about the Prefecture will eventually disappear as less and less people outside the Prefecture remember the accident and its aftermath.

It is our task to help realize a beautiful, safe, secure, and comfortable living environment that is also sustainable and rich in natural resources for residents. In order to fulfil the task, we need to: accumulate scientific knowledge; release correct information constantly and effectively to residents and other people inside and outside Japan; educate, train and exchange with residents and other people to heighten their understanding about the environment; and develop human resources who will lead the future-creation process for Fukushima.

In Phase 3 and thereafter, therefore, we will maintain the close collaboration among the Prefectural government, the JAEA and the NIES to collect the wisdom inside and outside the country and implement the initiatives of the Monitoring, Research, Collection and Provision of Information, and Education, Training, Information Exchange and Communication Projects, although we may have to make some changes to those approaches depending on the progress of our Phase 2 initiatives or due to changes to the social landscape, etc. during the phase.

10. Assessment of Project Performance

For effective and efficient operation of the Projects (Monitoring, Research, Collection and Provision of Information, and Education, Training, Information Exchange and Communication), the performance of the Projects must be properly assessed in terms of the rationality of targets and plans, the results, the rationality of future plans, etc.

We, therefore, assess the performance of our Projects based on the Action Policies and report the assessment results to the Prefecture Residents Committee and the CEC Management Strategy Committee and seek advice or opinions from the members of the Committees.

Based on assessment results, we make no or some appropriate changes to the Projects.

(1) Project Assessment

The progress, outcome, etc. of the Research Project activities are assessed by the heads of Divisions in charge.

The progress, outcome, etc. of other Project activities are mainly assessed by the FPCEC.

The overall performance is assessed by the Liaison and Coordination Committee based on the aforementioned assessment results.

(2) Reporting to Prefecture Residents Committee and CEC Management Strategy Committee

The Liaison and Coordination Committee reports the results of the overall performance assessment to the Prefecture Residents Committee and the CEC Management Strategy Committee and also seeks advice or opinions from the latter two Committees. The Liaison and Coordination Committee discloses the related materials to residents.

11. Revision to Action Policies

The Action Policies are three-phased because the CEC's activities are unprecedented and also because we need to consider changes in the background or other social landscape that will occur over the passage of time.

The Action Policies are therefore revised, at the completion of one phase, based on the overall assessment results and on the changes that have occurred in the background or other social landscape.

The Action Policies are also occasionally reviewed (and revised) by the CEC Management Strategy Committee, etc. when such necessity arises due to the progress of the Project activities, social situation, changes in the needs of residents, etc.