Annual Report

on the Environment, the Sound Material-Cycle Society, and Biodiversity in Japan

2015

環境省

Ministry of the Environment

Contents

This publication is an English-language digest of parts of Japan's Annual Report on the Environment, the Sound Material-Cycle Society, and Biodiversity, which was approved by the cabinet on June 5, 2015. The statements and information included here are current as of the date of the cabinet decision. This translation is just a provisional. Please refer to the original Japanese edition.

Note: Maps in this report may not necessarily indicate Japan's territories comprehensively.

Message from the Minister of the Environment

Dear Reader,

Four years and three months have passed since the Great East Japan Earthquake, which caused enormous, widespread damage primarily along the Pacific coast in the Tohoku region. Japan has worked to recover and rebuild in the belief that there can be no real new era of Japan without the reconstruction of Fukushima and the Tohoku region. We have focused our efforts on issues including decontamination, treatment of designated waste and disaster waste, and establishment of interim storage facilities for contaminated waste. Each one of these endeavors has enabled us to lift evacuation orders in some regions. Regarding the construction of interim storage facilities, a number of local municipalities made the courageous decision to accept shipments to these facilities, with the agreement that the utmost care must be taken in building them and in transporting the waste. We continue to work with landowners by taking into account landowners' concerns and with thorough explanations about what is being conducted. Disposal of designated waste also requires taking a straightforward, honest approach with the regions involved, and close coordination is needed as efforts proceed. Going forward, we continue to bear in mind that many people are still living as evacuees and approach the issues from the standpoint of the people in the affected regions, working closely with them in committed efforts to ensure the reconstruction of their communities.

Turning to achieving a sustainable society, the importance of addressing environmental issues goes without saying, including effective measures to mitigate global warming, the preservation of biodiversity, and efforts to reduce waste. In addition, Japan is facing a steep decline in the birth rate and a rapidly aging society, along with an excessive concentration of the population in the Tokyo metropolitan area. The question of how to create independent, sustainable communities by making full use of local characteristics in all places from the smallest villages to the largest cities has thus become our fundamental concern. In September 2014, the government took a step toward addressing the issue by establishing the Headquarter for Overcoming Population Decline and Vitalizing Local Economy in Japan. Unified government efforts are now underway based on the Act on Overcoming Population Decline and Vitalizing Local Economy enacted in November of that year.

Given these circumstances, we have selected "Working with the Environment to Build Local Communities and Economies" as the theme for this year's Annual Report on the Environment, the Sound Material-Cycle Society, and Biodiversity. The report attempts to clarify how efforts to solve environmental issues can also lead to resolving difficulties faced by local communities and economies, namely by describing the regional reconstruction efforts in areas affected by the Great East Japan Earthquake, which are based on environmental policy to restore the environment. The report also discusses environmental measures being implemented in Japan and how they contribute to the revitalization of regional economies and disaster preparedness. It provides specific examples of rebuilding communities by fully using natural and other local resources as well as regional characteristics with a focus on efforts by individuals, who are willing to play a leading role toward achieving a sustainable society.

It is my sincere hope that this report will prompt further efforts to overcome our environmental problems, encourage regional revitalization, and lead to the creation of sustainable communities.

Best regards,
Yoshio Mochiduki
Minister of the Environment

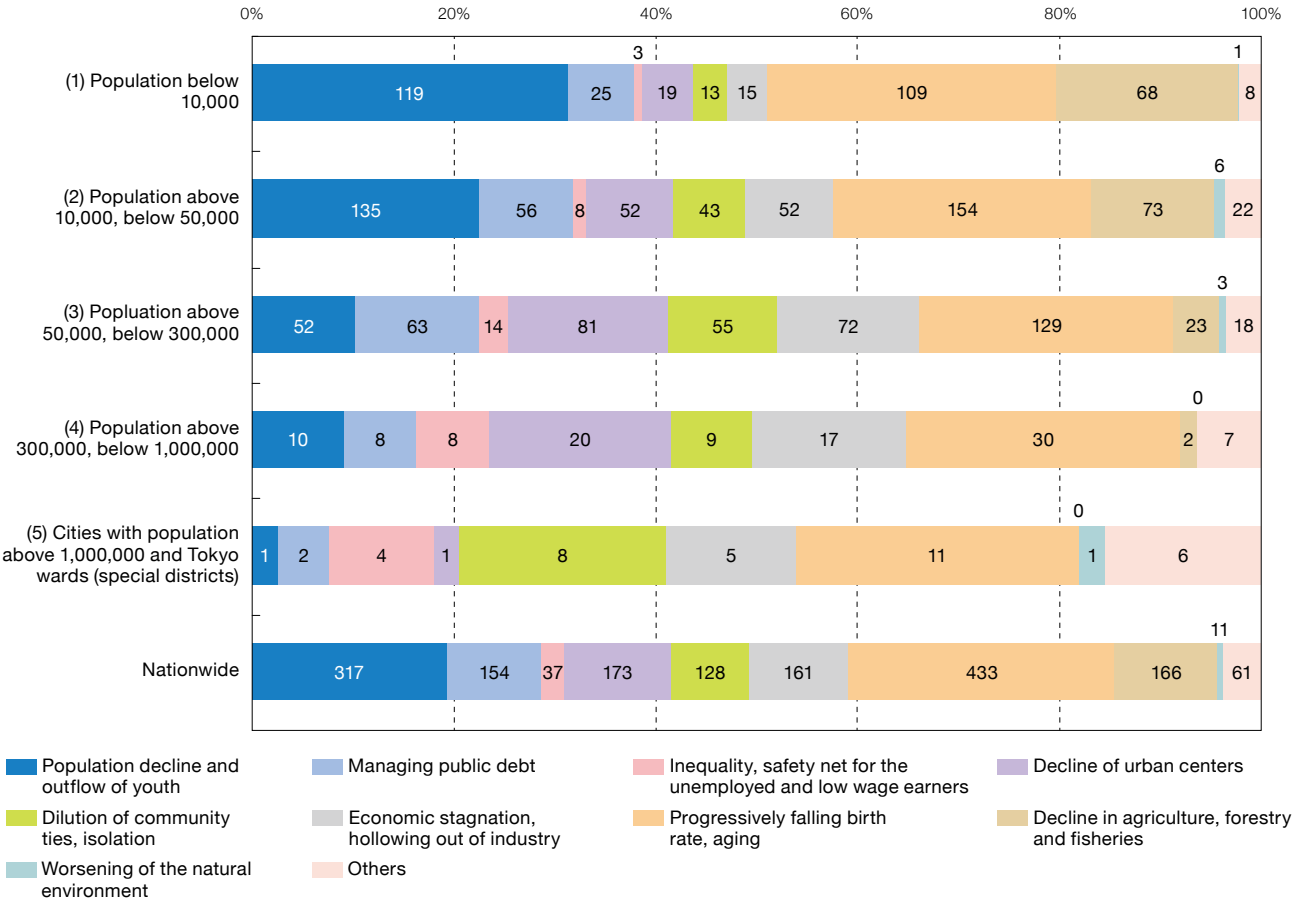
Environment, economy, and society today —building sustainability

Socioeconomic state and environmental issues in Japan

Introduction

Preserving the environment is an urgent concern for human society and prosperity. In Japan, the shrinking population, aging, and globalization have given steep rise to a number of economic and social difficulties, including ballooning social welfare costs, sharp expansion of public debt, and fierce competition on a global scale. As environmental, economic, and social issues grow in severity, systematic approaches are needed to address them in order to build sustainable communities. Integrated operations are crucial particularly in rural regions where these issues are closely interrelated. The following section presents three issues that illustrate the relationship between socioeconomic changes and the environment.

High-priority policy issues faced by regions (multiple answer allowed, by population size)



Notes: 1. Sent to a total of 986 entities, including half of municipalities nationwide (selected at random), ordinance-designated municipalities, core cities and special districts, with a 60.5% return rate (597 entities).
2. Figures shown on graph are the number of entities responding.

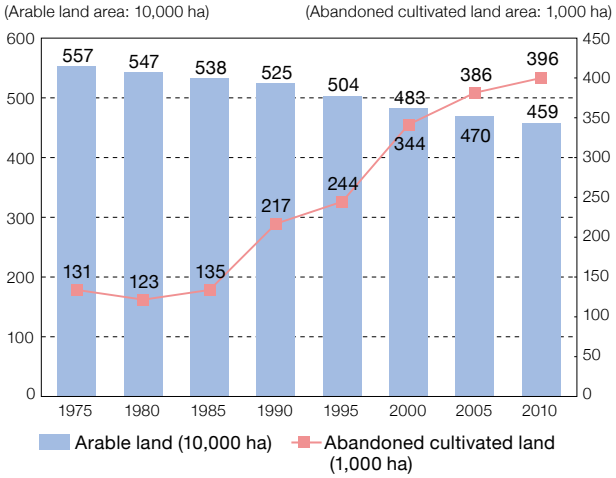
Source: "Nationwide Survey of Municipalities Regarding Regional Rebirth and Revitalization," Professor Yoshinori Hiroi, Chiba University, July 2010

Deterioration of *Satochi-Satoyama* and increase in damage from wildlife

The word *satochi-satoyama* refers to tracts of land located midway between cities and wilderness, comprising villages, secondary and planted forests that surround villages, farmland, ponds, and similar geographical areas. In Japan, these tracts represent about 40% of land nationwide and about 60% of all land where endangered species are mostly concentrated. Traditionally, local residents maintain *satochi-satoyama*, however, population decline and aging are leading to deterioration of these areas and thus triggering a related increase in damage from wildlife.

Japan's population has fallen from its peak in 2008, and population aging has also advanced. According to statistics, the country's total population will fall to 86,740,000 by 2060, when the percentage of the population 65 years of age and older is expected to reach 39.9%.

Transition of arable and abandoned cultivated land area



Note: Abandoned cultivated land refers to once-arable land on which crops have not been grown for more than the past year, and for which no clear intent to resume farming in the next several years has been indicated.

Source: "Census of Agriculture and Forestry" and "Statistics on Arable Land and Crop Acreage," Ministry of Agriculture, Forestry and Fisheries

In rural areas, population decline and aging is proceeding more rapidly than in the country as a whole. Yet a natural decline in birthrates and population aging are not the only problems for people in rural areas. There is also a social decline caused by the migration of young people out of these areas, resulting in a higher average age of the population that has been left behind. Looking at the demographic shift in the Tokyo metropolitan area and rural areas outside the three major metropolitan areas (Tokyo, Osaka, Nagoya), significant net excess migration from rural areas to the Tokyo metropolitan area—primarily of people between 15–24 years of age—has continued.

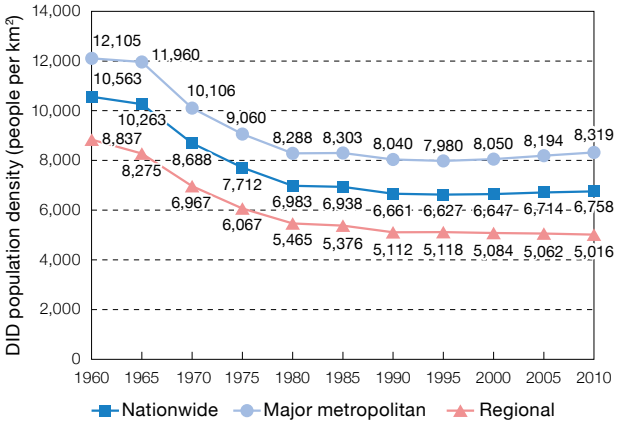
A consequence of this depopulation in rural areas is cultivated lands being abandoned at a higher rate. *Satochi-satoyama* tracts of land are not being maintained as in the past, due in part to the increase in abandoned cultivated lands that serve as shelter and feeding grounds for wildlife, a decline in human activity in *satochi-satoyama* and similar areas, and a decline in the number of hunters. These factors have led to an increase in both the population and habitat range of certain wildlife, including sika deer (*Cervus nippon*) and wild boar (*Sus scrofa*). In addition, there is concern that the falling number of people with hunting licenses as well as the aging of the hunting population will grow more acute. This is creating a vicious cycle in which damage from wildlife increases, leading to reduced motivation to engage in agriculture, which in turn results in more cultivated lands being abandoned and more damage from wildlife.

As the animals feed on and damage plants, negative impacts on the natural environment include deterioration of forests, which results in lowered capacity to purify water and air as well as alleviate flooding. As forest capacity declines, even metropolitan regions may begin to experience a variety of negative effects as the impacts ripple through the ecosystem connecting forests to the countryside, rivers, and seas as well as through the entire agricultural, forestry, and fishery fields.

Urban structure and an increase in CO_2 emission

In the past, Japan experienced rapid urbanization in the context of a growing population. The growth of cities was characterized by urban sprawl and thinning urban density in the suburbs. Today, however, the population of so-called densely inhabited districts (DID)—regions within municipal boundaries with high population densities—continues to fall. This trend is notable in cities outside the three major metropolitan areas and is a cause of social problems as well as higher CO_2 emissions.

Transition of DID population density

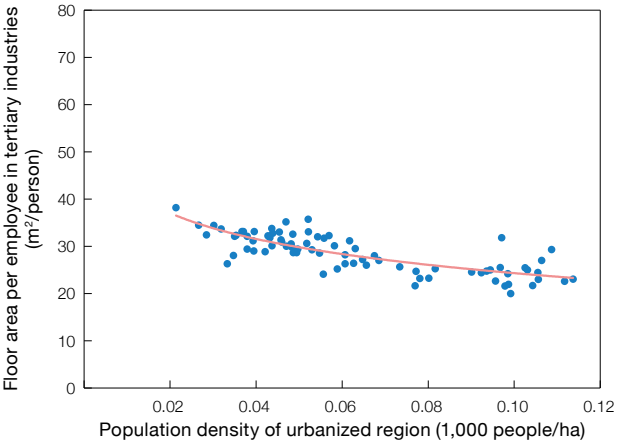


Source: "2010 National Census," Ministry of Internal Affairs and Communications

Cities with greater urban diffusion have more roads, and there is greater reliance on automobiles for transportation. As a result, stores located along roadways and other suburban businesses enjoy higher sales, while central business districts suffer from lower sales and a gradually declining economy. A characteristic of regional cities in particular is transportation lines halting their operations as local railways and private-sector bus operators face financial difficulties, which then further restricts options for the elderly to go outside the home. Nowadays, these depressed regions have the social problem of an enormous number of people with limited access to shopping facilities. Compared with more densely concentrated areas, cities with this kind of urban diffusion also need to focus more on rebuilding, maintaining, and upgrading railways, water and sewage lines, and other social infrastructure as well as on collecting and transporting waste to waste disposal facilities, which may put more burden on them.

The problems of urban diffusion go beyond those noted above to include exacerbated CO_2 emissions. Cities with diffuse urban areas tend to have a higher volume of CO_2 emissions because of higher per-resident automobile use compared with more densely concentrated cities. This stems in part from the location of suburban stores and reduced access to public transportation. As a result of the greater reliance on automobiles, the distance traveled by car per resident increases. Development on relatively inexpensive land is also possible in cities with diffuse urban areas. Those activities could make it easier to secure a larger footprint for buildings, and commercial floor space tends to become larger as a result. Since such growth correlates with greater energy consumption for lighting, air conditioning, and others, it may also have an impact on increased CO_2 emissions in the commercial sector.

Population density in urbanized regions and floor area per employee in tertiary industries (cities with population above 200,000)



Source: "2010 National Census," "2009 Economic Census" and "2012 Survey of Fixed Assets," Ministry of Internal Affairs and Communications; "2011 Annual Report on Urban Planning," Ministry of Land, Infrastructure, Transport and Tourism

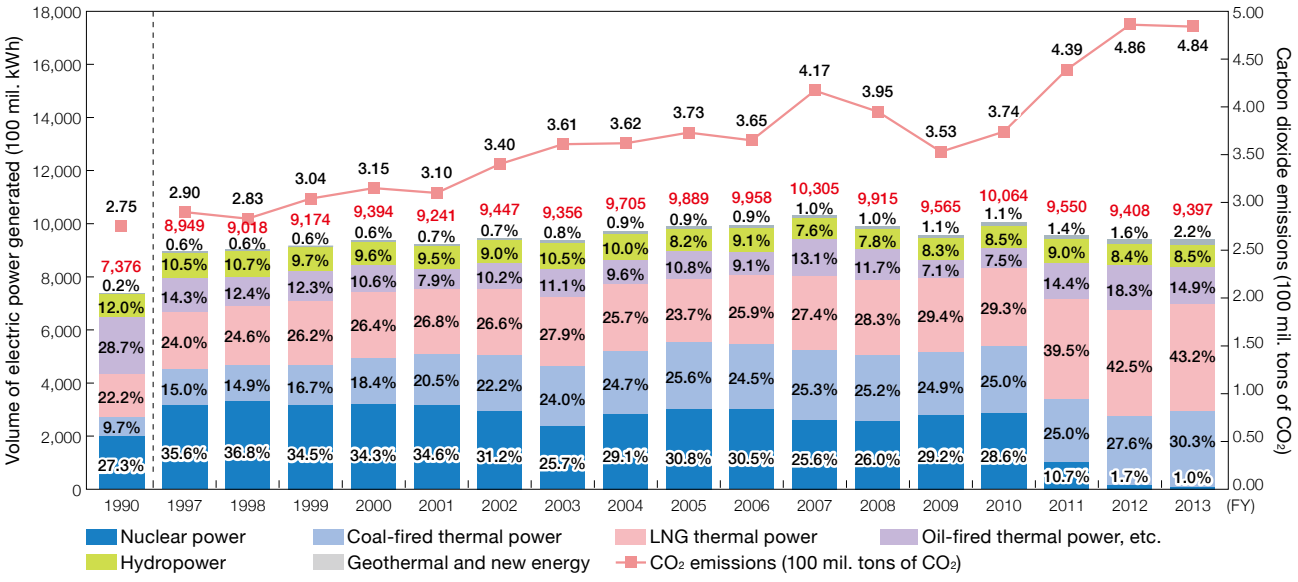
Power supply constituents and increased CO_2 emission

CO_2 emissions in Japan

Although final energy consumption in Japan has been falling since its peak in fiscal 2004, CO_2 emissions are trending upward. The primary causes are increased coal- and natural-gas-powered thermal power production as a percentage of electricity utilities' power generation mix. In particular, the increase in thermal power generation following the Great East Japan Earthquake and accident at the Fukushima Daiichi Nuclear Power Plant has resulted in a rapid increase in CO_2 emissions from energy sources.

Major countries have reduced their CO_2 emission factor (CO_2 emissions per 1 kWh of electricity generated) since 1990 (base year under the first commitment period of the Kyoto Protocol), while Japan's emission factor remained flat between 1990 and 2010. Looking at CO_2 emissions from power generation since 1990 by specific fuel type, it is evident that Japan's percentage of coal- and natural-gas-powered thermal power generation has increased as a proportion of the power generation mix. Therefore, the fact that Japan's CO_2 emission factor has not been reduced between 1990 and 2010 can be partly attributed to its higher proportion of coal-fired thermal power generation, which has higher CO_2 emissions.

Changes in volume of electric power generated by type of power source and carbon dioxide emissions

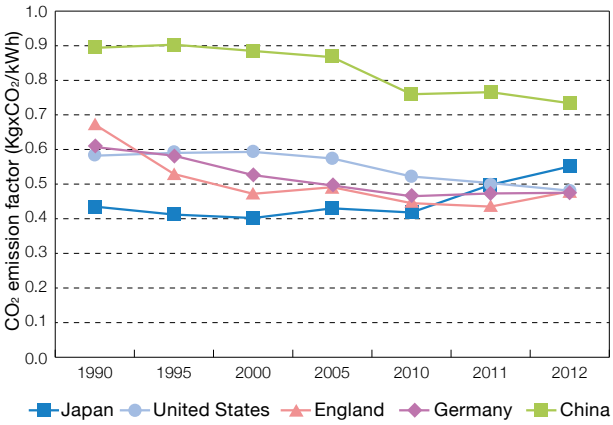


Note: Total for 10 general electricity utilities

Source: (Electric power generated by type of power) "Overview of Energy Development," Agency for Natural Resources and Energy; "Fiscal 2013 Comparison of Electric Power Generation Mix by Type of Power Source" and "Environmental Action Plan by the Electric Power Industry," the Federation of Electric Power Companies of Japan
(Carbon Dioxide Emissions) "Global Warming Countermeasures by the Electric Power Industry" and "Environmental Action Plan for the Electric Power Industry," the Federation of Electric Power Companies of Japan

Furthermore, Japan's emission factor worsened dramatically after 2011, when thermal power generation began serving as an alternative for supply shortages caused by the suspension of nuclear power plant operations nationwide following the post-earthquake accident at the Fukushima Daiichi Nuclear Power Plant.

Changes in CO_2 emission factor from electric power sector in major countries

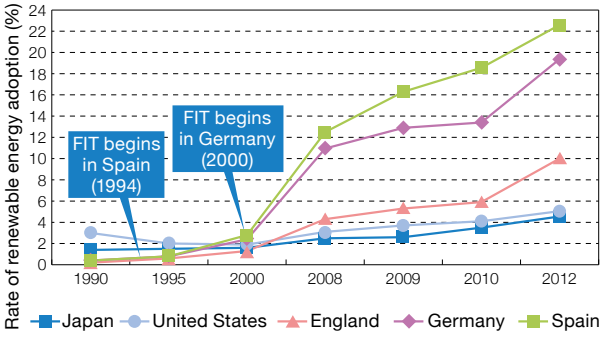


Source: "CO_2 Emissions from Fuel Combustion 2014," IEA

Renewable and coal-fired thermal power generation

According to the International Energy Agency's "Energy Balances of OECD Countries" (2014 edition), the percentage of renewable energy as a proportion of Japan's power generation mix is low relative to other major countries. While the use of renewable energy has grown with the introduction of feed-in-tariffs (FITs) in July 2012, as of fiscal 2013, renewable energy, excluding hydropower, represented just 2.2% of electric power production.

Changes in rate of renewable energy adoption in major countries



Note: Renewable energy includes geothermal, solar heat, sunlight, tidal power, wind power and biomass.

Source: "Energy Balances of OECD Countries 2014 Edition," IEA

In addition, while Japan has made advances in developing world-leading coal-fired thermal power generation technologies, including advanced ultra-supercritical (A-USC) and integrated coal gasification combined cycle (IGCC) power generation, at the level of technology in use today, even the latest coal-fired thermal power plant emits about twice the amount of CO_2 emission as the latest LNG thermal power plant. Compared to other fossil fuels, coal presents relatively low geopolitical risk and is superior in terms of the stability of supply and economic efficiency. In the event that more coal-fired thermal power plants are built and started operations, however, the CO_2 emission factor in the electric power segment will undeniably worsen. As a result, it may undermine the effects of corporate and household efforts to conserve energy by reducing power consumption.

Enhancing the environment, economy, and society

Introduction

Given the interrelated nature of environmental, economic, and social issues today, achieving a sustainable society and passing on a healthy and bountiful environment to future generations requires incorporating environmental considerations in the socioeconomic system. Environmental sustainability must be achieved at the same time as achieving robust and lasting economic and social stability. Here we discuss an approach to creating sustainable communities that pursues harmonized enhancement of the environment, economy, and society.

Promotion with local resources

As economic and social issues become severe, Japan will need to design environmental measures in terms that go beyond the traditional concept of environmental preservation to include their capacity to contribute to resolving economic and social issues. For this reason, Japan is directing its environmental policy toward an emphasis on concurrent enhancement of the environment, economy, and society, as described in the Basic Environment Plan.

Regional socioeconomic activity is built on local resources, which have a significant impact on regional characteristics. These local resources are in turn a source of local diversity. Local resources include not only local energy, natural resources, and urban infrastructure, but also a variety of other components such as community, organizations, culture, and climate. Given these factors, local resources must not be compromised by socioeconomic activity if local communities are to be sustainable. On the contrary, enhancing the quality of local resources has the potential to bring about improvements in socioeconomic activity.

Using local resources in local environmental initiatives may also help resolve economic and social issues faced by local communities. Environmental preservation efforts, including significantly reducing greenhouse gases in the medium-to-long term, ensuring proper recycling of materials and substances, and preserving biodiversity, are approaches that can achieve integrated enhancement of a region's environment, economy, and society. These environmental initiatives should contribute to resolving economic and social issues through local economic revitalization and community development. For example, introduction of independent, distributed energy systems that utilize renewable energy sources can provide an emergency power source as well as reduce the cost of that energy. In addition, selling surplus energy generated by these energy systems to other regions can be a way to obtain funds from outside sources. Another example is thermal recycling to supply electricity and heat through the waste disposal process, which can revitalize regional economies and communities through the introduction of independent, distributed energy not reliant on fossil fuels.

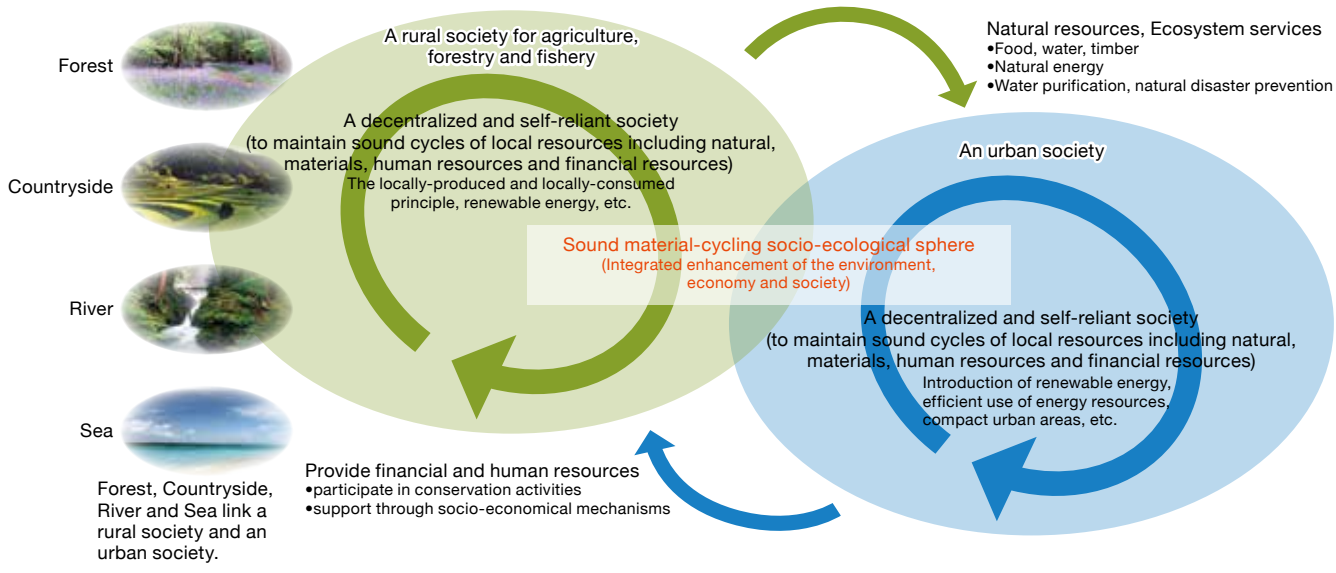
Sound material-cycling socio-ecological sphere

Creating sound material-cycling socio-ecological sphere is an approach in which different resources circulate in regions to form independent, distributed societies that are complementary and mutually supportive. Circulation and symbiosis represent Japan's long-term goals for building a sustainable society, and are incorporated in the current Fourth Basic Environment Plan. Circulation refers to achieving an economic and social system that places a smaller burden on the environment through the recycling and streamlining of resources and energy as well as efforts to curb waste at every level of socioeconomic activity. Symbiosis refers to the maintenance of a healthy ecosystem through appropriate efforts to preserve the environment in accordance with its characteristics while working to use resources wisely and engage in richer interactions.

Cities and agricultural, fishing, and mountain villages are notable for their complementary relationships. For example, since cities have limited amounts of renewable energy that can be supplied to meet local energy demand, the shortfall may be covered by supply from villages. In the same way, villages supply ecosystem services, including water and food generated from their natural abundance. And while the agricultural, fishing, and mountain villages are able to supply clean air and other ecosystem services, they lack the funds to pay for the cost of managing those resources, and thus receive the needed human and financial resources from the cities.

The complementary relationship mutually generates synergies. Creation of sound material-cycling socio-ecological sphere, in which each region conducts socioeconomic activities, is an important part of achieving sustainable communities built on the simultaneous enhancement of the environment, economy, and society.

Illustration of Sound material-cycling socio-ecological sphere



Source: An offer opinion of the Central Environment Council, "Building Society with an Integrated Approach to Low-carbon, Sound Material-cycle in Harmony with Nature"

The project on connecting and supporting Forests, Countryside, Rivers, and Sea

As we alter the forests, countryside, rivers, and sea, their responsible use gives us access to ecosystem services. The bounty generated by these forests, countryside, rivers, and sea is our shared natural capital.

Through development and overuse, however, the links between these resources have been severed and their quality has deteriorated. As climate change advances and the risk of natural disasters rises, lack of proper resource management due to population decline and aging may invite even greater deterioration.

Involving every citizen in effective management of our forests, countryside, rivers, and sea, as well as helping these areas to recover, can contribute to a more secure and abundant society sustained by the blessings of nature. This requires both repairing environmental links and support. Repairing environmental links refers to rebuilding the ties between our forests, countryside, rivers, and sea as well as managing our natural environment so that it recovers its original abundance. Support refers to having every citizen share in the cost of repairing these links. Repairing links and support of our forests, countryside, rivers, and sea are major keys to successfully building sustainable communities.

Post-earthquake reconstruction —building sustainability

Progress of reconstruction efforts

Introduction

On March 11, 2011, a magnitude 9.0 earthquake struck Japan. It was the largest earthquake ever recorded in and/or around Japan, which triggered an enormous tsunami that caused immense, widespread damage, primarily along the Pacific coast of the Tohoku region. A variety of groups continue to be involved with the massive restoration efforts with the goal of helping the affected areas recover.

Handling of contaminated pollution

The Act on Special Measures concerning the Handling of Radioactive Pollution was enacted to address the environmental pollution caused by radioactive substances released during the post-earthquake accident at Tokyo Electric Power Fukushima Daiichi Nuclear Power Plant. The Act comprises a number of special measures concerning disposal of waste contaminated with radioactive substances and decontamination of soil, vegetation, structures, and other contaminated materials. It also sets forth the responsibilities of the government, local public entities, and other parties as well as a framework for cooperation among them as they work toward reconstruction.

Disposal of radioactive waste

The Act sets forth standards for the disposal of waste material contaminated with radioactive substances. Of the contaminated waste material generated by the accident, the government is responsible for collection, transport, and storage of what the Act refers to as "Specified waste," consisting of "Waste within the management area" and "Designated waste."

Waste within the management area

The government estimates that there was, as of the end of March 2015, approximately 802,000 tons of disaster-related waste in a region encompassing 11 municipalities within Fukushima Prefecture. As of the end of February 2015, approximately 54% of that waste, or 430,000 tons, was being stored at temporary storage sites.

Going forward, there is a need to ensure the safety of workers responsible for disposing of waste from the disaster, which is scattered throughout areas where residents will have difficulties in returning for a long time. The government will review its disposal policies as it carefully assesses the outlook for lower exposure doses.

Status of Waste within the Management Area (as of the end of March, 2015)

Source: Ministry of the Environment

Designated waste

As of the end of December 2014, approximately 157,000 tons of waste has been declared "Designated waste," including incinerator ash and sewage sludge, rice straw, and compost. Currently, this waste is being temporarily stored at waste incineration and sewage treatment facilities in accordance with established guidelines.

Within Fukushima Prefecture, waste under 100,000 bq/kg is scheduled to be stored at the existing managed waste disposal site in Tomioka, while waste exceeding 100,000 bq/kg will be taken to an interim storage facility. For waste outside of Fukushima Prefecture, municipal heads from five relevant prefectures are holding meetings in an effort to share understanding regarding the safety of these facilities and how to select candidate sites to host them. The government will continue to focus attention on these initiatives, with an emphasis on constructive exchanges of opinion with prefectural and municipal governments.

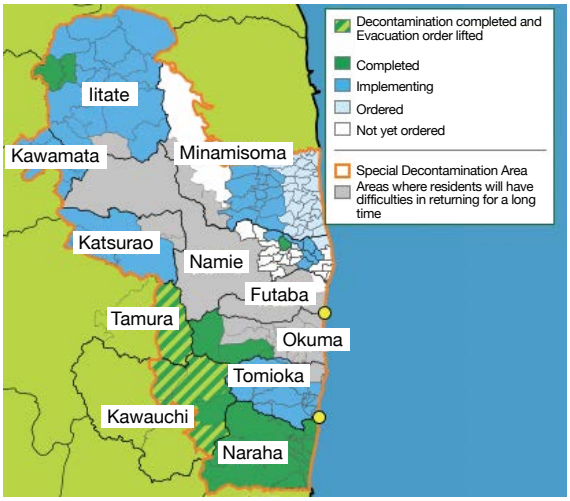
Decontamination of soil and other material

As the areas for decontamination, the Act on Special Measures concerning the Handling of Radioactive Pollution specifies two categories, the Special Decontamination Area and the Intensive Contamination Survey Area. In the Special Decontamination Areas, the government undertakes decontamination work on the basis of the decontamination implementation plans. In the Intensive Contamination Survey Area, designated municipalities establish and carry out decontamination implementation plans.

Special Decontamination Area

For all of the 11 municipalities in Fukushima Prefecture designated as the Special Decontamination Area, Ministry of the Environment (MOE) has developed decontamination plans and implemented decontamination. In the municipalities where area-wide decontamination has been completed, MOE conducts follow-up of decontamination including post-decontamination monitoring. The decontamination measures led to the lifting of evacuation orders in Tamura and parts of Kawauchi in 2014. As for the remaining area, decontamination is planned to be completed within FY 2016.

Status of progress in Special Decontamination Area (as of March, 2015)



Source: Ministry of the Environment

Progress of decontamination efforts undertaken by the national government in Special Decontamination Area

E=Executing ratio O=Ordering ratio <Unit: %>

As of February 20, 2015	Tamura		Naraha		Kawauchi		Iitate		Kawamata		Katsurao		Okuma		Minamisoma		Tomioka		Namie	
	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E	O	E	O
Residential	100	100	100	100	100	100	96	100	100	100	100	100	100	100	7	99.9	17	100	11	48
Farmland	100	100	100	100	100	100	25	100	18	100	68	100	100	100	8	65	5	100	13	35
Forest	100	100	100	100	100	100	38	100	56	100	99.9	100	100	100	34	79	28	100	14	43
Road	100	100	100	100	100	100	24	100	4	100	32	100	100	100	2	65	61	100	20	46

Notes 1: Executing ratio is calculated as follows: (1) Areas in which decontamination work (weeding, removal of sediment, and cleaning, etc.) is completed / (2) All areas to be decontaminated
2: Ordering ratio is calculated as follows: (3) Areas for which MOE has given decontamination contracts to JVs (Joint Ventures) / (2) All areas to be decontaminated
3: (1), (2), (3) might be modified with further review

Source: Ministry of the Environment

Intensive Contamination Survey Area

As of the end of February 2015, 99 municipalities in eight prefectures have been designated as the Intensive Contamination Survey Area. Ninety-four of those entities have established decontamination plans and have implemented decontamination. Significant progress has been made, with more than 80% of the planned decontamination work both in and outside of Fukushima Prefecture completed, with priority on public facilities and other locales that are part of children's everyday environment. The rest of the scheduled decontamination work is also nearing completion. More than 70% of the planned decontamination work for houses, farmlands, pastures, and roads both in and outside of Fukushima Prefecture has been commissioned, and decontamination efforts are steadily moving forward.

Status of decontamination progress in Intensive Contamination Survey Area

Within Fukushima Prefecture (As of the end of February, 2015)	Ordering Ratio (Number of ordering/ Number of planning)	Executing Ratio (Number of actual achievement/ Number of planning)
Public facilities, etc.	Almost on order	Approx. 80%
Residential houses	Almost on order	Approx. 70%
Roads	Approx. 70%	Approx. 40%
Farmland and meadows	Almost on order	Approx. 80%
Forests (living areas)	Approx. 80%	Approx. 50%

Notes 1: The table is based on the investigation result conducted by Fukushima prefecture.
2: The number of planning is the total number until the end of FY2014, which might be increased in future depending on each municipality's status.

Source: Ministry of the Environment

Outside Fukushima Prefecture (As of the end of December, 2014)	Ordering Ratio (Number of ordering/ Number of planning)	Executing Ratio (Number of actual achievement/ Number of planning)
Schools and nurseries	Ordered	Almost completed
Parks, sports facilities	Almost on order	Approx. 90%
Residential houses	Approx. 90%	Approx. 90%
Other facilities	Approx. 90%	Approx. 90%
Roads	Approx. 90%	Approx. 90%
Farmland and meadows	Ordered	Almost completed
Forests (living areas)	Almost on order	Approx. 70%

Note: The number of planning is the total number including future plan as of the end of 2014, and might be increased aftertime.

Measures to establish the Interim Storage Facility

MOE requested the local municipalities to accept the establishment of the Interim Storage Facility (ISF) for soil and wastes generated from decontamination work in Fukushima Prefecture, based on the surveys of the candidate sites and discussions of the conferences. The government also held explanatory meetings for residents and presented its proposal to local municipalities based on feedback obtained from those meetings. In September 2014, the government was informed that the governor of Fukushima Prefecture approved construction of the ISF and that the mayors of Okuma and Futaba agreed that the government would explain its proposal to the landowners. Subsequently, MOE held explanatory meetings for the landowners and began contacting residents whose contact information was available, with further efforts to explain the plan including individual, in-person visits. With the understanding of the concerned landowners, a survey of properties was conducted.

The government also revised the Japan Environmental Safety Corporation (JESCO) Law. The revision includes a change of the name of JESCO, a government-owned entity with proven expertise and experience in handling the disposal of hazardous substances, to the Japan Environmental Storage and Safety Corporation (the acronym remains the same). It stipulates that JESCO shall operate the ISF on consignment from the government until the final disposal of that waste is determined. It also prescribes the government's responsibility with regards to the ISF and stipulates that the government will take the necessary measures to complete final disposal of the waste outside of Fukushima Prefecture within 30 years from the commencement of interim storage.

Regarding the transfer of soil to the ISF, based on opinions from local and municipal governments, a plan was drawn up that drafts a pilot project lasting about a year to test transport methods in preparation for full-scale transfer of waste to the ISF. With both the towns of Okuma and Futaba indicating acceptance of construction of the ISF, in February 2015, the government explained the status of efforts concerning the five conditions that Fukushima Prefecture wanted to be met before it would accept transportation of soil to the ISF, after which Fukushima

Prefecture and Okuma and Futaba informed the government that it accepted transportation. MOE, Fukushima Prefecture, and Okuma and Futaba also entered into a safety agreement. Work began on construction of stock yards at the interim storage sites in February, and in March, MOE began pilot transportation of decontamination soil in Okuma, and then in Futaba.

The government will continue to make the utmost effort to provide the local communities with clear explanations, gain their understanding, and move forward on the establishment of the ISF and transportation of soil in the safest manner possible.

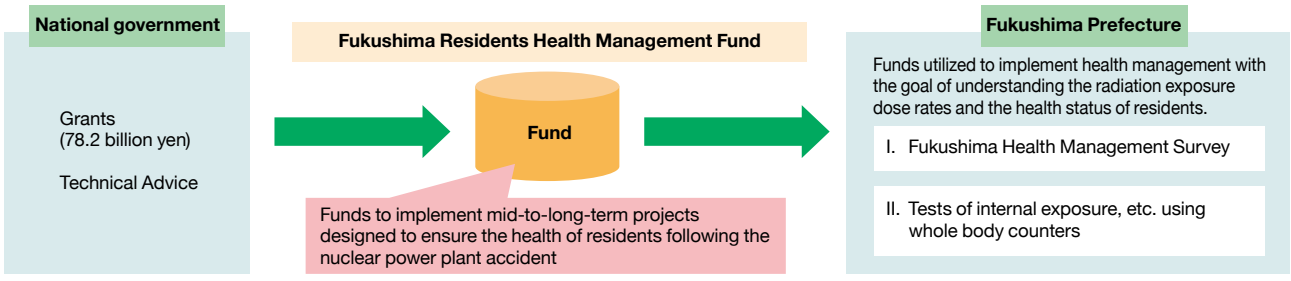
Health concerns in Fukushima Prefecture

To ensure appropriate management of the mid-to-long-term health of Fukushima residents, the government is providing both technical and financial support to Fukushima Prefecture, including contributions to Fukushima Residents Health Management Fund, established by Fukushima Prefecture in 2011.

Fukushima Prefecture has conducted the Fukushima Health Management Survey since June 2011. The objective of the survey is to ascertain health of residents, to contribute to the prevention, early detection, and treatment of disease, and to support maintenance and improvement of health into the future. Specifically, the survey includes (1) a basic survey that plots records of individual residents' movements against a map of dose rates in order to estimate external exposure doses, and (2) a detailed survey covering four areas, including health check-ups, a survey of lifestyle habits and mental health, a thyroid examination and a survey amongst pregnant women. Fukushima Prefecture also distributes health management files to residents so that they can log and maintain records of the results of their own health status.

The government also convened an expert meeting for the health management of the public following TEPCO's Fukushima Daiichi Nuclear Power Station accident, and to review health management options both in scientific and medical terms. An interim report on those discussions was compiled in December 2014. The government is now moving forward with necessary measures based on a subsequent report on the direction of policies for the immediate future released in February 2015. It is also promoting risk communication, including efforts to develop personnel trained to ensure communication of accurate information able to alleviate public concern. Other initiatives include distribution of personal dosimeters to those residents choosing to return to their homes, providing them with information about individual exposure doses, and assigning experts to offer in-depth explanations about the results of exposure measurements.

National government's support for initiatives in Fukushima Prefecture (overview)



Source: Ministry of the Environment

Redevelopment with the environment

Introduction

In the areas affected by the Great East Japan Earthquake, environmental measures are part of integrated efforts to overcome a variety of issues from economic ones to revitalization of aging communities. Numerous examples can be found of regional redevelopment aimed at effective utilization of each region's unique characteristics to encourage recovery and provide residents with hope for their future life.

Promoting renewable energy for affected areas

The use of renewable energy to spur rebuilding in areas affected by the Great East Japan Earthquake is the focus of significant attention in Japan. Through Green New Deal funding designed to promote adoption of renewable and other clean energy sources, Japan is supporting rebuilding of the affected areas through adoption of independent, distributed energy resources. In FY 2014, 463 renewable energy facilities were introduced in the Tohoku region.

In July 2012, the Cabinet approved the Basic Guidelines for Fukushima Reconstruction and Revitalization, intended in part to promote the introduction of renewable energy in Fukushima Prefecture. The government of Fukushima Prefecture has advanced its own vision for renewable energy, with the goal to meet 100% of the prefecture's energy needs through renewable energy by 2040.

The government of Japan has designated Fukushima Prefecture in its project to promote adoption of renewable energy through citizen-based exchanges. This project provides subsidies not only for power generation equipment, but also for the establishment of facilities and spaces where citizens can learn about and observe firsthand power generation using renewable energy. Fourteen locations were selected for the project in FY 2014 with the goal of promoting revitalization and making Fukushima Prefecture a leader in renewable energy. In parts of Fukushima Prefecture where evacuation orders have been lifted, the government is conducting a project to support rebuilding through subsidies for installing renewable power generation facilities. The goal of this project is to utilize a portion of the profits from the electric power generation to help residents return home and contribute to the rebuilding of local communities. The project is now underway in 20 locations throughout Fukushima Prefecture.

In January 2015, Japan announced three special measures in support of these efforts in Fukushima Prefecture, including (1) reuse of TEPCO transmission lines in Fukushima Prefecture; (2) support for installation of renewable energy power generation equipment; and (3) securing of priority access to renewable energy sources in areas where evacuation orders have been lifted. Through these measures, Japan will continue to provide backing to promote renewable energy power generation.

Hand-in-hand with Tohoku's Michinoku Coastal Trail

The Pacific coast of Japan's Tohoku (northeastern) region was devastated by the Great East Japan Earthquake. To contribute to the region's restoration, the national government is working to utilize Tohoku's rich natural environment to promote green reconstruction projects based around Sanriku Fukko (reconstruction) National Park. On March 31, 2015, the park was enlarged through incorporation of Minami Sanriku Kinkasan Quasi-National Park.

In addition, the Michinoku Coastal Trail project established a natural hiking attraction that stretches from Hachinohe, Aomori Prefecture, almost 700 km to Soma, Fukushima Prefecture, to take advantage of the appeal of the region's natural environment, primarily the national park. About 150 km of the trail's full length is now open. By offering visitors a new way to enjoy the natural beauty of the Tohoku region at a walking pace, the trail will encourage overnight sightseeing and generate other exchanges between visitors and local residents. The government believes this project will greatly contribute to regional rebuilding and revitalization.

Trail completion progress

Source: Ministry of the Environment

Between July 2014 and March 2015, a total of 1,022 people enjoyed hiking on the trail. Locally, voluntary efforts to welcome visitors have begun to spread, including greetings, descriptions of local attractions, restrooms made available to visitors, and discounted services for trail hikers. Looking at the change in the number of overnight visitors in Hachinohe, the figure rose from about 490,000 visitors in FY 2012 to about 510,000 in FY 2013. The rise is attributed to synergistic effects from the extension of Sanriku Fukko National Park. According to a survey of trail users, the rich natural environment of the Tohoku coastline and the warm hospitality of local residents garner high marks, and exchanges between trail visitors and local residents are beginning to increase, which is one of the goals of the project.

The national government is working with residents to explore optional routes for the trail. For example, in the section between Hachinohe and Kuji, a route was established to make it easy for visitors to stop at local shops and other facilities. Efforts have also been implemented to offer visitors certificates and souvenirs of their walk, with shops acting as resting points between sections of the trail. Work will continue toward the early completion of the entire trail, and by encouraging local, independent initiatives toward ongoing revitalization even after regional construction is completed.

Souvenirs certifying trail walk

Photo: Ministry of the Environment

Regional efforts—building sustainability

Significance of the environment

Introduction

As noted earlier, Japan faces a variety of economic and social issues, which are growing in severity and complexity as well as in number. It is therefore important that Japan takes a consistent approach to enhancing its economy, society, and environment to achieve progress toward building sustainable, diverse, and attractive communities. This section introduces some examples of field-oriented efforts, namely how environmental preservation projects can contribute to regional development.

Regional economy and the environment

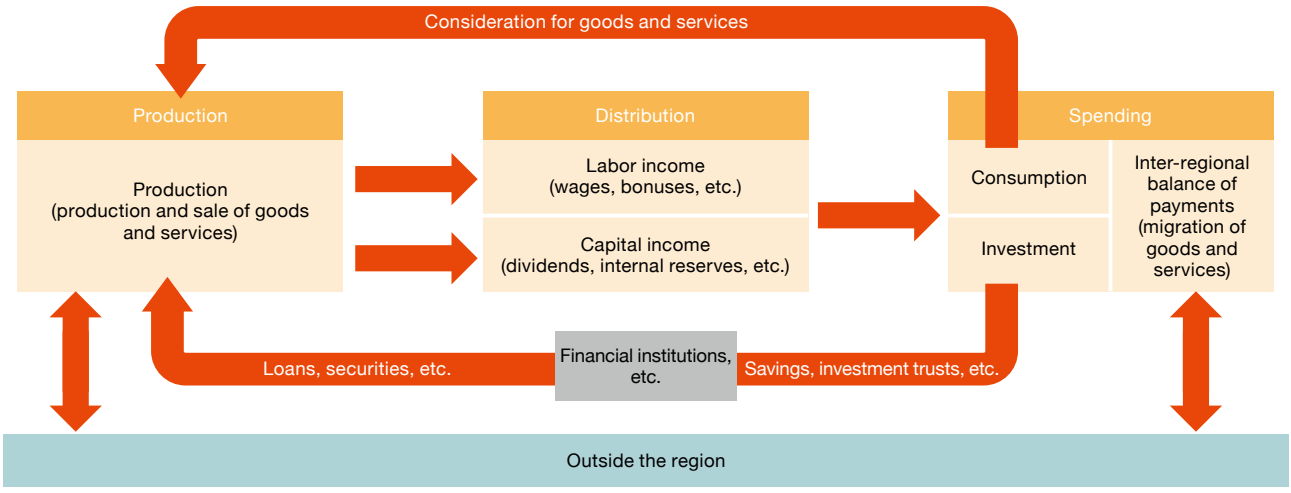
Japan is promoting regional revitalization with the goal of forming local communities that offer hope for the community's future and in which residents can lead affluent and unique lives. Combating regional economic contraction is central to this effort.

In terms of regional revitalization that contributes to environmental preservation, one diagnostic method is to identify a community's strengths and issues with regard to greenhouse gas emissions. The example below illustrates the idea through analysis of the Regional Economic Cycle, with the goal of regional economic revitalization through use of local resources.

Regional Economic Cycle Analysis

In this analysis, economic cycle refers to the circulation of assets through economic activity, including production, distribution, and spending. Spending can be further categorized into consumption, investment, and interregional balance of payments, which refers to the difference between the amounts flowing into and out of a region. At the national level, this is what we call the balance on goods and services or more simply, the balance of trade.

Example of a Regional Economic Cycle



Source: Ministry of the Environment

In this analysis, the region's economic activity is divided into five parts: production, distribution, consumption, investment, and interregional balance of payments. Specifically, on the production side, this analysis involves looking at which industries have an edge and are capable of obtaining funding from outside the region. In distribution, the analysis looks at whether the earnings of local companies translate into income for local residents. In consumption, the question is whether the income of local residents is being consumed locally, and in investment, whether residents' savings are being reinvested in the local community. Finally, the interregional balance of payments is analyzed to determine whether there are local fund outflows to other regions.

Various statistics are necessary to analyze these five parts of Regional Economic Cycles. The most important statistics are GDP by prefecture and municipality and inter-industry input–output tables by municipality, which provide a detailed understanding of the flow of goods and services into and out of regions. When existing statistics fail to provide a complete understanding, they are supplemented with interviews and surveys.

Use of Regional Economic Cycle Analysis

With support from national and prefectural governments, the city of Minamata in Kumamoto Prefecture conducted Regional Economic Cycle Analysis to implement initiatives aimed at using environmental policies to achieve regional revitalization, secure employment, and other goals. The following examples of revitalization initiatives by the city of Minamata illustrate the approach of using this analysis as a specific means of creating a diverse, attractive community. The examples also show how the analysis was conducted and how the results contributed to resolving regional economic issues through implementation of environmental policies.

Identifying issues through Regional Economic Cycle Analysis

The local economy in Minamata was being battered by the impacts of a falling and progressively aging population, and the city sought to address the issue of how to revive its economy through environmental policies. Using calculations of civic economic benefit and a survey of all businesses in the city, in 2010 the city prepared an inter-industry table for Minamata along with a variety of other statistics. Using this data, it conducted a "health check" of the local economy based on the approach of Regional Economic Cycle Analysis, which yielded the results shown below and highlighted certain issues.

(Viewpoint 1) Production: Which local industries have an edge?

Industries in Minamata capable of attracting funding from outside the region included manufacturing, such as chemical manufacturers, as well as the healthcare and human services industries. At the same time, a certain company in the city (Company A) did business with other companies in Minamata in the area of capital investment, but procured nearly 100% of its raw materials from outside the city. In other words, expansion of Company A's production in the city was limited to its existing equipment, which also limited the economic ripple effect within the city.

(Viewpoint 2) Distribution: Do the earnings of local companies translate into income for local residents?

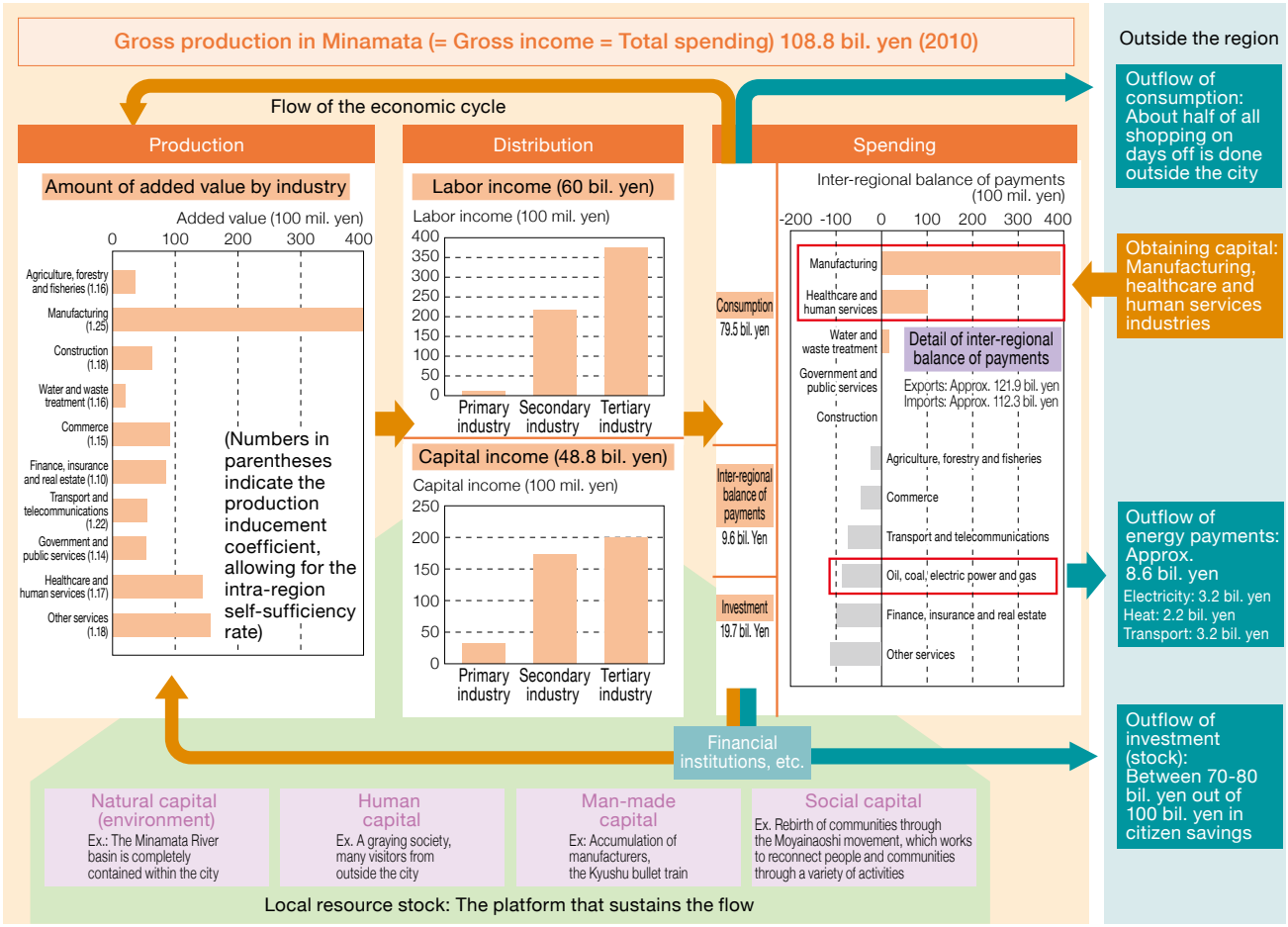
In fiscal 2010, local gross income totaled 108.8 billion yen, of which labor income represented 60.0 billion yen, or about 55%. Of that, 10.74 billion yen was related to the healthcare and nursing care industry, while the share related to Company A represented 10.67 billion yen. Company A's share of the total was lower than expected, and this was attributed to changes in its business model and other factors that left it with only about one-fifth of the number of employees it had at its peak.

(Viewpoint 3) Consumption: Is the income of local residents being consumed locally?
From data on the movement of residents and looking at where Minamata residents traveled to for personal business, it was found that nearly half of residents went shopping outside the city on their days off. In addition, while retail sales fell nearly 5.0 billion yen in the 10-year period from 1997, roadside commercial districts in adjacent cities saw retail sales increase by 8.5 billion yen over the same period. This indicates an outflow of consumption from income within the city to areas outside the city.

(Viewpoint 4) Investment: Are residents' savings being reinvested in the local community?
An analysis of savings deposited at financial institutions in Minamata and totaling more than 100 billion yen revealed that only 20–30% of the amount was being reinvested in the city, while the remainder was used to purchase government bonds and for lending outside the city.

(Viewpoint 5) Interregional balance of payments: Is there an outflow of funds to other regions?
According to the above analysis, while the manufacturing and healthcare industries brought in capital from outside the city, the service and commercial industries were unable to meet local demand, and capital in these industries was flowing outside the city. In addition, due to energy-related payments for electricity, gas, and petroleum products such as gasoline and coal-based products, approximately 8% of total regional production, equivalent to about 8.6 billion yen, was also going to payments outside the city.

Overview of Minamata's Regional Economic Cycle



Source: "FY 2011 Minamata City Environmental Community Building Summary Report," Minamata City, Kumamoto Prefecture; "Interim Report of the Committee to Review Circulating Symbiosis in Building Communities," Ministry of the Environment

Utilization of Regional Economic Cycle Analysis in environmental policies

Based on this analysis, Minamata began moving forward with specific initiatives to expand its regional economic cycle beginning in fiscal 2012. Following is a sampling of some of those efforts.

Initiative 1: Promotion of high added-value, low-carbon tourism utilizing local natural resources

The city of Minamata believed that one issue it needed to address was the cultivation of industries that could stimulate consumption and demand both within and outside the region. The city went to a local railway company with a proposal to promote low-carbon tourism utilizing public transportation. The company agreed, and after converting some of its existing rolling stock, introduced a sightseeing train. This train gave passengers the opportunity to enjoy the rehabilitated scenery of the Shiranui Sea, once the locus of Minamata disease, and to enjoy meals in the dining car made from local ingredients supplied along the route. While fares were set higher than normal, the train attracted many tourists from various outside regions.

Initiative 2: Reduction in energy costs through introduction of renewable energy

At the Minamata Industrial Complex, core local businesses nowadays are participating in a plan to invest a total of between four and five billion yen in photovoltaic and biomass power generation businesses. The biomass power generation business is attracting particular attention, as the initiative is expected to generate employment related to the local forestry industry and power plant operations while also reducing the outflow of energy expenditures.

Initiative 3: Expansion of environmental investment

Minamata introduced a program that allowed civic funds to be used for loans within the city for designated environmental investment. Small businesses in Minamata made active use of the program for purposes such as installing high-efficiency lighting and air conditioning systems and introducing recycling-related equipment and renewable energy facilities.

Disaster preparedness and mitigation

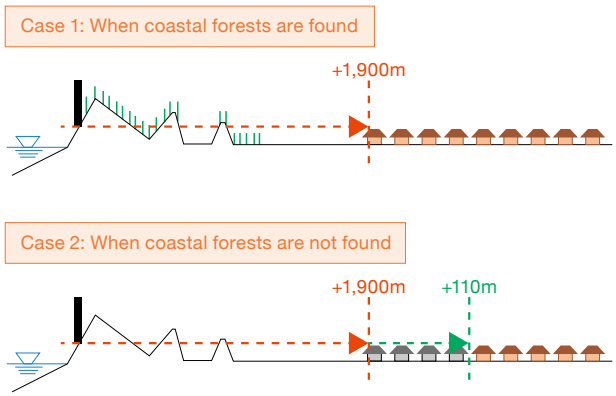
Building on the lessons learned in the Great East Japan Earthquake, Japan is working to prepare for large-scale natural disasters by enhancing community resiliency. To this end, the government announced and enacted the Basic Act for National Resilience in December 2013. In June 2014, the Cabinet approved the Fundamental Plan for National Resilience based on the Act. The following example clarifies policies set forth in the Fundamental Plan for National Resilience that promote environmental preservation, in particular utilization of the natural ecosystem and waste treatment facilities, as well as the role each of these policies plays in disaster preparedness and mitigation.

Utilizing the natural ecosystem

Ecosystem-based disaster risk reduction (Eco-DRR) is an effective way to utilize the natural ecosystem available locally that also offers the benefits of lower initial outlays and maintenance costs. As such, actively mobilizing Eco-DRR is growing in importance. Examples of Eco-DRR include using coastal forests to reduce tsunami damage and using coral reefs to reduce damage from storm surges. Other examples include using wetlands to modulate flooding risk and using forests to prevent landslides.

The effectiveness of Eco-DRR in reducing the impact of disasters was the subject of research on the capacity of coastal forests to reduce damage during the Great East Japan Earthquake. The research, which focused on the city of Sendai in Miyagi Prefecture, calculated the capacity, under certain conditions, of the coastal forest to reduce the distance houses were carried away in the tsunami. Scientists confirmed that, in addition to the use of coastal levees, the use of coastal forests may also be effective in mitigating disaster risk under certain conditions.

Effect of coastal forests in reducing tsunami disasters



Note: Results of an analytical model regarding the distance houses are washed out in the event of a 10 m tsunami in Sendai breaching a 6 m levee and surging against a coastal forest 600 m wide. Topographical conditions, including levees, and conditions for washout of houses, are based on data from actual local measurements.

Source: "Effect of coastal forest and washout houses on the damage to houses by a tsunami," Norio Tanaka, Junji Yagisawa, Kosuke Iimura, and Kota Kondo

Given its potential efficacy, the movement to utilize Eco-DRR has spread worldwide. At the 12th meeting of the Conference of the Parties to the Convention on Biological Diversity, held in South Korea in October 2014, the conference adopted a resolution proposed by Japan calling on the parties to the convention to utilize ecosystems to reduce the risk of damage from natural disasters. In March 2015, the Third UN World Conference on Disaster Risk Reduction was held in Sendai, Miyagi Prefecture, and attended by government delegations including leaders and cabinet ministers from the 193 members of the United Nations along with representatives of international organizations, NGOs, and other entities. The World Conference adopted the Sendai Framework for Disaster Risk Reduction 2015–2030, a set of global targets for disaster prevention that specify the importance of the role played by ecosystem management in preventing and mitigating disasters.

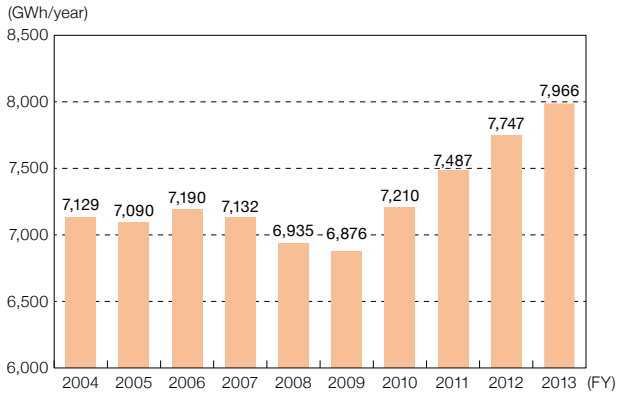
Because Eco-DRR involves utilizing the natural ecosystem available locally, it can offer a variety of interconnected benefits, including lower costs, reduced impacts on local biodiversity, and the potential use of the ecosystem in tourism and recreation during normal times.

Waste treatment facilities

As part of building national resilience, Japan is aiming to utilize regional waste treatment facilities to assist in disaster preparedness and mitigation in addition to store waste disposal. Waste treatment facilities operate independently even when energy supplies are cut off in the event of a disaster. In case of emergency, they are expected to contribute to ensuring safety and security in terms of both hygiene and the environment by accepting regional disaster waste and preventing the release of hazardous substances as well as noxious odors. Because some waste treatment facilities are also capable of high-efficiency recovery of heat energy for use in generating electric, thermal, and steam energy, they have the potential to supply power to nearby public facilities, gymnasiums, and other emergency shelter locations during a disaster.

Looking more closely at the power generation capacity of these waste treatment facilities, 328 facilities, or 28% of the total number of waste incineration facilities in Japan equipped for power generation, offered a combined power generation capacity of 1,770 MW as of the end of fiscal 2013 (March 31, 2014). The total power generated by these facilities in fiscal 2013 was as much as 7,966 GWh, equivalent to the volume of electricity used by 2.4 million households in one year. Amid this backdrop, Japan has set up a fund for establishing a sound material-cycle society, intended to support municipal efforts to develop waste treatment and recycling facilities. Beginning in fiscal 2014, the system for processing hazardous waste was reinforced, and a new set of funds was created to increase subsidies for waste treatment facilities equipped with high-efficiency energy recovery systems. Japan will continue to promote these initiatives so that they contribute to making waste treatment facilities regional energy centers in normal times as well as in times of disaster.

Change in total volume of electric power produced in Japan from waste power



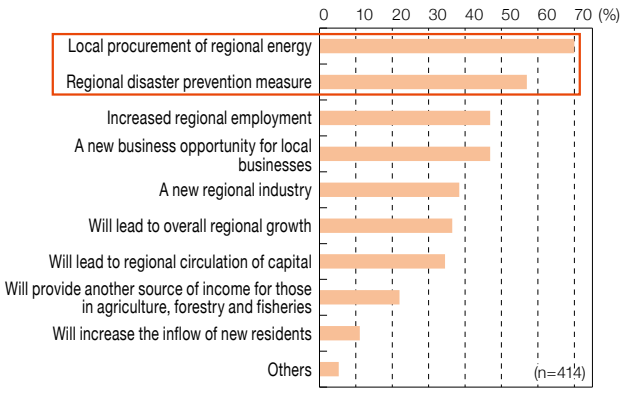
Source: "Waste Treatment in Japan (2013)," Ministry of the Environment

Distributed renewable energy

Following the Great East Japan Earthquake, efforts have been gradually spreading to secure independent, distributed energy through the local use of renewable energy in buildings and other energy consumers.

According to a survey of regional governments conducted in 2014, local perceptions of renewable energy have changed since the March 2011 earthquake, and governments now appear to view renewable energy as more disaster resistant.

Expectations of local governments for renewable energy



Source: "State of Renewable Energy Introduction and Poll of Municipal Opinion," the Emerging and Collaborative Regional Innovation Center, et al.

Land use amid depopulation and aging

As noted earlier, Japan is facing progressive depopulation and aging, resulting in the endangerment of *satochi-satoyama* tracts of land, including an increase in abandoned cultivated lands and damage from wildlife as well as a declining interest in farming. As depopulation advances coupled with increased urban sprawl, there is concern over higher municipal costs and lower access to transportation among the elderly. Because these economic and social issues are closely linked to environmental problems, environmental policy has the potential to contribute to tackling them.

Building compact cities

Urban sprawl has emerged as a characteristic urban structure in Japan and leads not only to economic and social issues, but to environmental problems as well.

Looking at cities in Japan, suburban development continues to increase, and in many cities, efforts to create higher-density urban areas are making little progress. Between 2005 and 2010, 107 cities outside the major metropolises (Tokyo, Osaka, Nagoya) actually expanded their urbanized area and 15 cities reduced their urban centers, while 106 cities maintained the status quo. Of the cities that expanded their urbanized area, 54 saw their populations decline in inverse proportion to the increase in urbanized land area. Additionally, in over half of all regions outside the major metropolises, population density in urbanized areas has fallen. It is important for cities to better optimize their urbanized areas, limit roadside development along suburban roads, and make other efforts to maintain and increase urban population density so that they can work toward solving environmental, economic, and social issues in light of future depopulation.

Japan believes that the creation of more compact urban areas can contribute to solving economic and social issues, including revitalization of urban centers and ensuring access to transportation for the elderly. Because these moves can also enable integrated enhancement of the environment, economy, and society, the government is promoting a variety of related initiatives. Specifically, these include medium-to-long-term efforts to significantly reduce greenhouse gas emissions by encouraging the creation of more compact urban areas and by optimizing automobile travel distances and the footprint of retail businesses and other facilities. Another example is systematically locating facilities with high heat demand within a defined area, reducing the distance between buildings and, through introduction of a local heat supply system, more effective use of energy. Encouraging the creation of more compact urban areas also makes it possible to revive forests and pasture land through the natural restoration of land that was once urbanized and to utilize the newly available land in other ways, such as installing photovoltaic and other renewable energy generation equipment.

Electric trams can also play a role in preventing urban sprawl. Expansion and new development of electric trams and light-rail transit (LRT) are anticipated to provide a variety of benefits, including the creation of more compact cities, reduced CO_2 emissions and municipal costs, and less reliance on automobiles in cities. Many cities in Japan today are considering extending or newly developing electric tram or LRT systems amid deepening discussions regarding introduction of such services.

Along with *Satochi-Satoyama*

Satochi-satoyama tracts of land are diverse ecosystems that have been shaped and maintained by human intervention through agriculture and forest management. However, with changes in industrial structures and the use of resources, an increase in abandoned land, and a decrease in human activity in these lands, management of *satochi-satoyama* has decreased and their deterioration is ongoing and expanding.

Given the difficulty of trying to maintain and manage all *satochi-satoyama* tracts of land where abandoned land is expanding, a vision for the future of Japan's national lands is needed based on comprehensive decisions that classify which regions should continue to be maintained and protected and which should be allowed to transition to their natural state.

Since fiscal 2012, Japan has been working to review *satochi-satoyama* tracts of land and identify targets for conservation with the goal of preserving biodiversity. The selected *satochi-satoyama* lands will be announced in 2015, and management of these lands needs to be encouraged through specific measures. At the same time, efforts toward construction of an ecosystem network at the national level that connects marine areas with wetlands, both crucial to preserving biodiversity, also need to be considered. The goals of these efforts are to support sustainability in Japan's *satochi-satoyama* lands and to use national lands to contribute to the preservation of biodiversity.

Meanwhile, issues that need to be addressed in regions left to transition to their natural state include how to prevent and resolve plagiosere, a process in which the transition of plant communities is disrupted by external factors, based on the region's natural environment and the distribution of *satochi-satoyama* tracts of land in the area.

Depiction of *Satochi-Satoyama* for the future

Source: "Satoyama: the traditional rural landscape of Japan," Kazuhiko Takeuchi, Izumi Washitani, Atsushi Tsunekawa, editors; Cover art by Chizuru Matsumura

Local characteristics and sustainability

Introduction—utilizing local resources

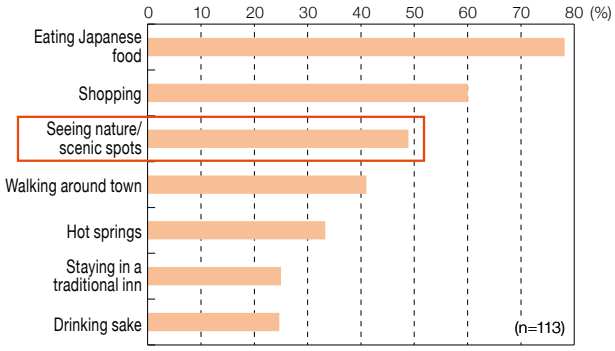
To achieve regions of circulating symbiosis, it is important to work toward regional revitalization by understanding and taking advantage of each region's unique characteristics. These include the regional topography, the natural environment, the traditional culture, and the residents who sustain the community.

This section presents four potential ways to effectively and efficiently utilize local resources in various combinations to contribute to regional revitalization.

The promotion of Ecotourism

Ecotourism is an initiative intended to treat the natural environment of a region and the conventions, customs, and other traditional aspects of life and culture that are closely tied to that environment as important resources, leading to the creation of vibrant, sustainable communities as these natural and cultural resources become more widely known.
In Japan, the Basic Policies for Promoting Ecotourism defines the virtuous cycle of promoting ecotourism as arising from the mutual impact of three distinct effects: (1) preserving the natural environment and experiencing nature through tourism, (2) reassessment of the region's intrinsic appeal, and (3) building vibrant, sustainable communities. Looking at examples of ecotourism in Japan, a wide variety of features are utilized as tourism resources, from traditional culture, such as the *shishimai* (lion dance), to topographical and geological features such as columnar joints, and animals and plants such as flying squirrels.

Expectations of Foreign Tourists Prior to Visiting Japan



Source: "Consumption Trend Survey for Foreigners Visiting Japan (Oct.–Dec. 2014)," Japan Tourism Agency

According to an awareness and fact-finding survey conducted in Japan by the Keizai Koho Center, an incorporated foundation, many respondents cited the richness of nature as a decisive factor in choosing a place to visit in Japan. Looking at a government survey on consumption trends among foreign visitors to Japan, when asked what aspects of Japan they expected to find most appealing, nature and scenic beauty lagged behind only food and shopping in popularity. These results indicate significant interest among tourists, both Japanese and foreign, in the rich and diverse natural environment found throughout Japan and point to the local environment's value as a resource for regional revitalization.

In addition, gaining the approval of local residents to use ecotourism as part of community redevelopment is typically easy to obtain. According to a 2014 opinion poll, 58.2% of respondents agreed that they would like to see ecotourism used to rebuild the community where they live. The smaller the municipality, the higher this proportion grew, indicating just how high the expectations are for ecotourism as a means of regional revitalization. By age, younger respondents also showed greater interest.

According to a survey conducted by the Japan Ecotourism Society, an NPO, the most common goals of ecotourism initiatives were regional revitalization and the promotion of tourism, followed by effective use of local resources and promotion of environmental preservation. A high number of survey respondents considered ecotourism favorable for contributing to environmental preservation, handing down traditions, higher interest in the environment among local governments and residents, and a greater sense of community vitality. Ecotourism is thus garnering increasing attention as a means of generating a wide variety of social benefits, including regional revitalization.

There are a growing number of examples of municipalities throughout Japan forming advisory councils, comprised of businesses involved in ecotourism, local residents, experts, administrative agencies, and a diverse range of other groups. They are working to create overall concepts for promoting ecotourism that establish rules and guidelines on the use of natural resources in tourism activity. The government certifies these concepts when they are submitted by local governments and publicizes their content.

Strategic use of national parks

In Japan, areas with outstanding natural scenery are designated national parks under the Natural Parks Act. In March 2015, Myoko-Togakushi renzan National Park became the latest such designation, bringing the number of national parks to 32.

National parks represent about 5.6% of Japan's total land area and offer a diverse range of natural attractions depending on changes in latitude, elevation, and topography. A unique characteristic of Japan's national park system is that it encompasses not only state-owned and public lands, but private lands as well. Therefore, some state and publicly owned lands have areas of virtually untouched nature, while on private land nature and people often exist side by side. Here, there are opportunities to experience *satochi-satoyama* lands interwoven with local history and culture, grasslands, and other natural surroundings that have been maintained through human intervention. This is a major appeal of these parks. Japan's national parks are visited by a cumulative total of more than 300 million people annually.

Given Japan's goal of becoming a tourism-oriented country, attracting travelers from outside Japan is a target issue. Inbound visitors to Japan numbered 10.36 million in 2013, and as many as 2.56 million of these foreign travelers visited Japan's national parks. When national park visits are analyzed, about 40% of foreign travelers who went to a national park in 2013 visited Fuji-Hakone-Izu National Park. This is attributed to the high international profile of places such as Hakone and Mount Fuji, which was named a UNESCO World Heritage Site in 2013. At the same time, given that other national parks also offer outstanding scenery representative of Japan's remarkable natural surroundings and have a high potential as a tourism resource, it is hoped that actively promoting the appeal of these parks both in and outside Japan will further increase the number of park explorers.

As Japan works to strategically utilize its national parks, it is engaging in a variety of efforts to broadly publicize their appeal through Internet-based advertising and publication of calendars featuring colorful scenes across the changing seasons. A higher number of inbound visitors is expected when Tokyo hosts the 32nd Olympic Games and the 16th Paralympic Games in 2020, and Japan is taking steps to be better prepared to receive travelers from abroad. Specifically, Japan is working to develop programs that take advantage of the symbiosis between people and nature, one of the unique characteristics of Japan's national parks; to build regional networks and prepare local communities to welcome visitors; and to host a variety of events. Efforts are also underway to enhance multilingual services, including comprehensive signage at national parks and visitor centers.

Website introducing national parks to foreigners

www.env.go.jp/park/expedition

Creating a brand from destructive animals

In Japan, there is enormous concern about the destruction of crops by wild animals such as sika deer and wild boar, particularly in mountainous areas. The estimated population of wild boar in Japan has grown from about 250,000 in 1989 to as many as 890,000 as of the end of fiscal 2012 (March 31, 2013). At the same time, because individuals are not permitted to sell the meat of wild boar they have hunted, the majority of the meat aside from what hunters consume themselves must be treated as waste. There has also been little progress in the use of hunting to reduce the wild boar population.

Yama-Kujira Brand

Source: Misato Town, Shimane Prefecture

It was under these circumstances that in 2004, residents of the town of Misato Town in Ohchi, Shimane Prefecture, took the initiative of working with hunting clubs, farmers, and local government officials to form the Ohchi Yama-kujira (literally, "Ohchi mountain whale") Producers' Association. The association works to create a framework, a so-called "sixth industry," in cooperation with a diverse range of local entities for hunting, processing, and selling wild boar. The association butchers and processes hunted boar under sanitary conditions, then labels the fresh meat with the Ohchi Yama-kujira brand before selling it as wild game. In addition, a women's collective in the town is leading an effort to produce and sell leather goods made from boar hide, which have proven to be popular items. As a result of these efforts, the percentage of captured boar that are being utilized (the resource utilization rate) has begun to trend upward.

Officials in Misato state that in addition to economic effects, these efforts have produced a change in residents' attitudes, and they are now taking the initiative to address other issues their town faces. Misato's use of reverse thinking to effectively turn an otherwise destructive animal into a brand is contributing to community revitalization.

Resilient sacred grove

Sacred forests and groves are found throughout Japan, nurtured through centuries of coexistence between humans and the natural environment. In the Japanese belief system, gods are pacified by the presence of mountains, forests, and groves, and over the ages people have consequently taken an approach of fear and restraint in their use of these places. Traditionally, sacred groves have served as gathering places and places of autonomy, offering economic activity through markets that are held in surrounding areas and educational settings for Buddhist temple schools. Religious ceremonies and festivals are regularly held in these groves, which also function to generate a spirit of community and unify local residents. These places have long sustained their communities in a variety of ways.

Overlooking Tadasu-no-mori

Crowds enjoying the Aoi Matsuri

Photos: Tadasu-no-Mori Foundation

Tadasu-no-mori, a sacred grove on the grounds of Shimogamo Shrine in Kyoto, is a primeval forest that developed at the point where the Kamogawa (Kamo River) and the Takanogawa (Takano River) merge. In 1994, it was designated a World Cultural Heritage Site as part of Shimogamo Shrine. The Aoi Matsuri (festival), held each May by the Kamigamo and Shimogamo shrines, is considered one of Kyoto's three major festivals along with the Gion Matsuri and the Jidai Matsuri and attracts about 80,000 people every year. According to research, the value of the social capital generated by the Aoi Matsuri is estimated to be as high as 93.1 billion yen; Tadasu-no-mori and the Aoi Matsuri have become irreplaceable local resources for the Kyoto region.

In recent years, greater attention is being focused on the various other functions these sacred groves perform. In addition to maintaining biodiversity by serving as a habitat for plants and animals, and because trees growing in these groves typically store larger amounts of CO_2 compared with trees of similar size growing in ordinary forests, they are said to be instrumental in the fight against global warming. Taking advantage of the unique ambiance of these sacred forests, research is also being conducted on forest therapy as a beneficial health and welfare tool for the elderly.

Local citizen and entity participation

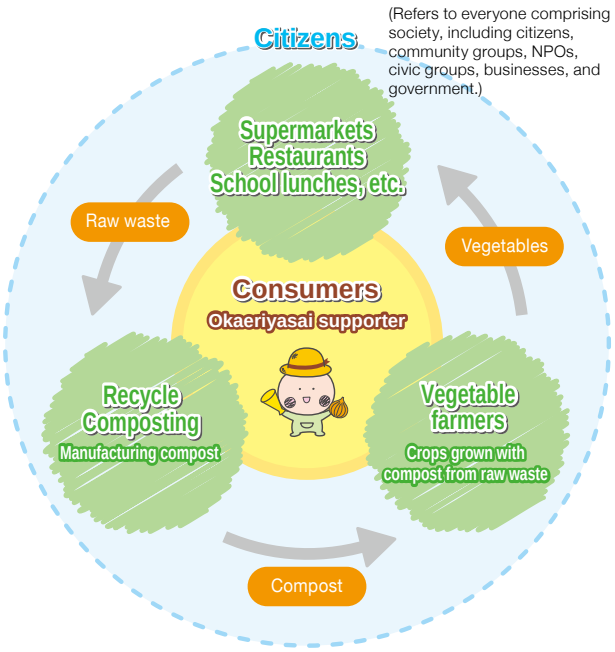
Local communities are an essential factor in building sustainable communities. The following describes several examples that illustrate how the participation of local citizens and entities in environmental activities can contribute to regional revitalization.

Recycling food scraps

The City of Nagoya in Aichi Prefecture is implementing the Okaeriyasai (literally, "Welcome back vegetables") Project, a joint effort among schools, industry, and the public and private sectors to recycle food scraps.

This project involves having waste collection and transport companies collect food scraps from schools, supermarkets, restaurants, hotels, and other locations, which are taken to a facility and turned into compost. Nearby farmers use that compost to grow vegetables, which are sold to supermarkets, restaurants, schools, and hotels under the name of the Okaeriyasai brand. By connecting all of the players in this food scrap cycle and making the process visible, the project promotes consumer understanding of how the food resource cycle works and fosters greater awareness of the need to reduce food waste.

Diagram of the Okaeriyasai Project



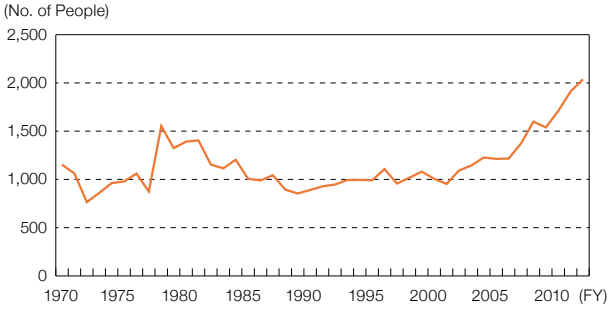
Source: The Okaeriyasai Project

This effort to reduce and recycle food scraps through the cooperation of a diverse group of entities is an example of effective use of local resources. Utilizing the human resources that are part of the region's local resources and making use of waste has successfully contributed to a sound material-recycling local community.

Participation of youth and women in hunting

As noted earlier, the population of certain wild animals, including sika deer and wild boar, has increased in recent years, causing enormous damage to Japan's natural environment, agriculture, and forests. While strengthening efforts to control populations through hunting is one effective measure, the decline in the number of hunters and their increasing age are serious problems, and developing a new generation of hunters has been a challenge. To address these difficulties, Japan revised its Wildlife Protection and Hunting Management Law in 2014 to allow people older than 18 but younger than 20 years of age to obtain net and trap hunting licenses. This revision also established a system that allows prefectural governors to certify businesses that conduct safe and effective hunting. People who had previously hunted on a voluntary basis can now be involved in hunting as a job, with the hope that this will lead to an increase in hunters, including among the younger generations.

Change in number of female hunting license holders nationwide



Source: Ministry of the Environment

In recent years, a growing interest in hunting among women can also be seen in Japan, with books published by and about young women hunters and an online magazine running a series featuring a woman hunter as its main character. The number of women holding hunting licenses is trending upward. Now the participation of citizens, including young women like these, has become increasingly important in the effort to bring overgrown wildlife populations back down to reasonable numbers.

Urban and regional cooperation

In areas outside of the major metropolises, population decline, both natural and socially driven, and aging continue to advance. This makes cooperation among various entities in different regions more important, so that synergies can be created from the mutual use of each other's human, capital, and other related resources. The same can be said of cooperation between urban and rural areas.

In urban areas for example, while it is relatively easy to attract people and capital, the majority of the food, water, and electricity is obtained from rural areas and regions outside the city. For urban and rural areas to build sustainable communities, they need to strengthen the natural links—the chain connecting forests, the countryside, rivers, and seas—as well as the economic and human links between them, with each link supplementing the needs of the other, and connect those links to regional revitalization. Following are some examples.

Links through ecosystem services

Since 2008, the Mitsubishi Estate Group has been working with NPO Egao Tsunagete (literally "Connecting smiles"), based in Hokuto City, Yamanashi Prefecture, on a project to enable urban and rural communities to help one another. This "Experience Nature" Project—Sora to Tsuchi Project (literally, "Sky and earth") includes a program to reclaim wilderness land for terraced rice paddy development and offers "thinning" tours in which participants can experience the work of thinning out woodlands. The project targets Mitsubishi Estate Group employees and their families, workers in the Marunouchi district of Tokyo, and customers of Mitsubishi's residential properties. The crops, timber, and other local resources produced through the project are utilized in urban areas through efforts such as a cooperative project to commercialize a *junmai* pure rice sake developed by a local sake brewer using rice grown in the reclaimed terraced paddies. Since 2013, a portion of the profits from sales of the product have been donated to the NPO, thereby making their way back to the local community to support activities there.

Participants in the "Experience Nature" terraced paddy rebuilding program.

Source: Mitsubishi Estate Co., Ltd.

In August 2011, Yamanashi Prefecture, Mitsubishi Estate Company, Mitsubishi Estate Home Company, and NPO Egao Tsunagete entered into a formal agreement to promote the use of timber grown in Yamanashi Prefecture. Under this agreement, Mitsubishi Estate Home has adopted laminated veneer lumber (LVL) from FSC-certified timber as well as structural joists produced using certified Yamanashi-Prefecture-grown timber as a standard component in its custom-built homes. This and other efforts to enhance the brand strength of Yamanashi-Prefecture-grown timber and expand its use continue, with the result that in 2011 the proportion of domestically produced timber used in the company's custom homes grew to more than 50% from 35% in 2010.

Change in Sales of Pure Rice Sake Developed by the "Experience Nature" Project.

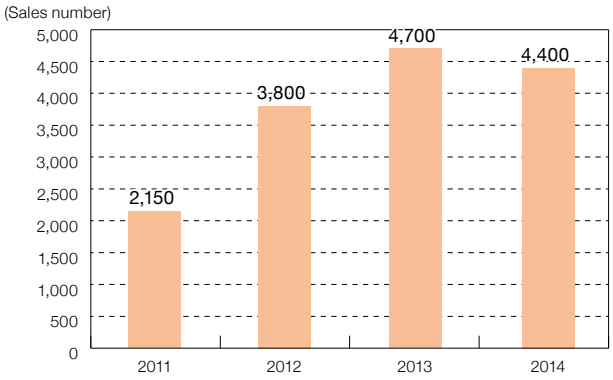


Photo: Mitsubishi Estate Co., Ltd.

Links through energy supply

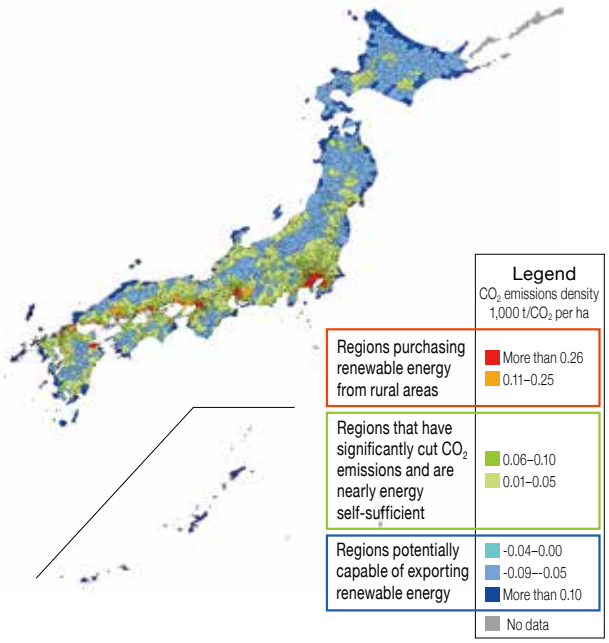
As part of efforts to promote measures to tackle global warming, Japan included in its Fourth Basic Environment Plan of 2012 the long-term target of reducing greenhouse gas emissions by 80% by 2050 and is working toward this goal. Achieving the goal will require significant energy conservation and maximum adoption of renewable energy as well as development of innovative technologies. In addition, even if every region in the country were to utilize locally generated renewable energy, it would still be difficult to attain a major reduction in greenhouse gases. However, a major reduction in greenhouse gases on a nationwide level is considered possible if regions where energy demand is low supplied renewable energy to regions where demand is high.

Sources of renewable energy include sunlight, wind power, hydropower, geothermal heat, and other natural energy sources, but the potential for utilizing natural energy differs from one region to another. Looking at a comparison of CO_2 emissions per land area by municipality, it is evident that CO_2 emissions are generally higher in urban areas.

The map to the right illustrates what would happen if every municipality were to adopt renewable energy utilizing the full potential of their local natural energy resources, assuming energy demand remains unchanged from current levels. Municipalities indicated in the red and orange areas on the map have high energy demand density and would be unable to meet their required supply of energy solely from locally generated renewable energy. Municipalities indicated in the yellow and green areas would be able to fulfill their energy needs from renewable energy alone. Finally, the light and dark blue areas indicate municipalities where energy supply would significantly exceed demand, giving them the capacity to export, or sell, energy outside the region. Because they are capable of independently meeting their own energy demands, they may be able to acquire capital from outside the region by exporting renewable energy to regions where demand for energy is high.

Japan devoted approximately 28 trillion yen to payments for fossil fuels in 2014. This means that through a combination of intensive adoption of renewable energy and a significant effort to conserve energy, these funds could be reallocated domestically, contributing to both regional economies and the economy of Japan as a whole.

CO_2 emissions per land area with the adoption of renewable energy



Note: Annual electrical power output by municipality obtained from potential (equipment capacity) for electrical energy (residential and public photovoltaic systems), land-based wind power, small-scale hydropower (rivers), geothermal power, converted to CO_2. Heat energy output by municipality (solar heat, geothermal heat) potential converted to CO_2 on a heat volume basis. Offshore wind power assumes power will be sent to the coastal municipality closest to the offshore wind speed measurement point; annual electrical power output obtained from the potential (equipment capacity) for each municipality by wind speed band, and converted to CO_2. (Municipal CO_2 emission) - (Capacity of renewable energy power generation) in preparing the map. CO_2 conversions from electrical energy are based on power provider electrical power CO_2 emission factor (ton of CO2/kWh), and from heat power on the crude oil CO_2 emission factor (ton of C/GJ).

Source: Ministry of the Environment CO_2 conversions from electrical energy are based on power provider electrical power CO_2 emission factor (ton of CO_2/kWh), and from heat power on the crude oil CO_2 emission factor (ton of C/GJ).

The 2020 Tokyo Olympic and Paralympic Games

Japan has set 2020 as a target for reducing greenhouse gases. The year is also the scheduled start of a new international climate change framework for 2020 and beyond as well as the target year for implementing effective, urgent action to stop the loss of biodiversity under the Aichi Biodiversity Targets adopted at the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity, held in Nagoya in 2010. With the goal of leading the world in tackling environmental problems by mobilizing the Olympic Games held in this key year of 2020, Japan prepared a report titled "The Tokyo 2020 Olympic and Paralympic Games as an Opportunity to Promote Consideration of the Environment" in August 2014. Following are some of the initiatives that appeared in the report.

Promotion of a low-carbon society

For the Olympics, Japan will work to ensure further adoption of green purchasing by encouraging businesses to voluntarily adopt purchasing standards that are stricter than existing standards while also providing technological support.

Energy demand density in Tokyo is currently about 50–60 times that of regions such as Hokkaido and Tohoku. On the occasion of the Olympic Games, it may also be possible to consider procuring renewable energy from regions with greater potential for renewable energy. Through this kind of interregional cooperation, it is hoped that capital will flow from cities to rural regions, generating employment and leading to economic revitalization in those regions, including the areas affected by the Great East Japan Earthquake.

Countermeasures against urban heat island effects

Because the Olympic Games will be held in extremely hot and humid time of the year in Tokyo, countermeasures against urban heat island effect is important for enabling athletes to show their best performance. Especially, measures that can reduce heat-related stress need to be put in place where many people gather for the Olympic Games.

In addition, it is important to provide information how to avoid heat stress to foreign spectators who may not be accustomed to the heat of the Japanese summer.

The 3R campaign (Reduce, Reuse, Recycle)

Japan believes that encouraging adoption of the 3R is necessary as part of the Olympic Games. These efforts include developing technologies and implementing demonstration projects involving the 3R at facilities related to the Olympics; reduction of food waste; promotion of the 2R (reduce, reuse) in the Tokyo metropolitan area; and steps to encourage spectators and others to separate their waste and recycle, including the introduction of labels to facilitate consistent waste separation.

Communicating information about the environment

By using the Olympic Games as an opportunity to show spectators from abroad and the foreign media Japan's recovery from the Great East Japan Earthquake, and by proactively communicating information outside Japan about Japan's national parks, World Natural Heritage Sites, and other attractions, Japan also hopes that the Olympic Games will contribute to realizing rural revitalization.

Individual approaches —building nationwide sustainability

Education for Sustainable Development (ESD)

Introduction

Sustainable Development cannot be achieved without the awareness and actions of each of us as individuals, in our daily lives and economic activity. This requires that each of us be aware that we have interdependent relationships with people around the world, with future generations, and with the environment. Education for Sustainable Development creates opportunities for us to change our behavior through education that fosters an awareness of the issues and leads to action.

Given the importance of human resource development in achieving sustainable development at the Johannesburg Summit in 2002, Japan put forward a proposal that the 10 years between 2005 and 2014 be declared the "United Nations Decade of Education for Sustainable Development" (UNDESD). As a result, the proposal was adopted at the 57th General Assembly of the United Nations. Since then, ESD initiatives have been implemented by a variety of entities in Japan and other nations/regions around the world.

In 2005, UNESCO formulated the International Implementation Scheme, which set out policies for ESD promotion by individual countries, the United Nations, and other international organizations in DESD. Based on this, Japan formulated Japan's Action Plan for the UNDESD in 2006 (revised in 2011) as part of government efforts to promote ESD.

UNESCO World Conference on ESD

Meeting overview

In November 2014, the final year of the UNDESD, the UNESCO World Conference on ESD was held in Japan, which had originally proposed establishing the UNDESD. During the conference, stakeholders including international organizations, researchers, and educators came together to exchange opinions at Stakeholder Meetings, which were held in the Okayama City, Okayama Prefecture, from November 4 to 8. The outcome of these discussions were later reflected in the Ministerial Round Table and in Plenaries hosted by Japan and UNESCO in the City of Nagoya, Aichi Prefecture, from November 10 to 12.

During the Ministerial Round Table and Plenaries, these representatives vigorously discussed how to promote the Global Action Programme on ESD (GAP), a set of policies for promoting ESD in 2015 and beyond. Following the discussions at both of these meetings, on November 12, the final day of the conference, participants adopted the Aichi-Nagoya Declaration on Education for Sustainable Development, which calls on individual countries to promote GAP and to incorporate ESD in the policies they establish in 2015 and beyond. It was officially announced that GAP would commence in 2015.

Japan's initiatives on ESD

Following the World Conference on ESD, GAP was passed by a resolution at the 69th General Assembly of the United Nations. Based on the achievements of the World Conference on ESD and GAP, Japan has now added momentum to its ESD initiatives for 2015 and beyond. The Ministry of the Environment is doing even more to promote ESD based on GAP, bringing both global and local perspectives to key initiatives including development of human resources, development of educational materials and programs, and creation of a structure for cooperation and support. By streamlining and implementing Japan's Action Plan for the UNDESD, also based on GAP, the government of Japan is working to build a sustainable society.

The power of ESD

As was seen in Chapter 3, in the process of regional revitalization, people are once again recognizing the core value of local resources, including unique historical, natural, cultural, and social resources, and are moving to build attractive future communities that make maximum use of these local resources. Incorporating the ESD perspective in their activities, which are already underway in areas around Japan, will enable these regions to expand the scope of their activities to include efforts to build sustainable communities.

The following two examples describe how individuals, NPOs, students, and various other entities are working to build sustainable communities through ESD.

The "Mori wa Umi no Koibito" movement

The NPO Mori wa Umi no Koibito (literally, "the forest is longing for the sea, the sea is longing for the forest") was founded by Shigeatsu Hatakeyama and is located in Kesennuma City, Miyagi Prefecture.

Rivers flowing from the mountains to the sea supply nutrients that are essential for nourishing phytoplankton, which serves as food for oysters. However, the environment in Kesennuma Bay, a precious breeding ground for oysters, deteriorated in the years between 1960–1970. Hatakeyama started a movement to plant broadleaf trees in the mountains along the upper reaches of rivers feeding into Kesennuma Bay and thereby improve the marine environment.

The NPO has since expanded its activities and is putting ESD into practice in the tidelands that emerged following the March 2011 earthquake, raising awareness of environmental issues among local residents through disaster preparedness and environmental education.

Elementary school students surveying tideland clams as part of environmental education

Photo: NPO Mori wa Umi no Koibito

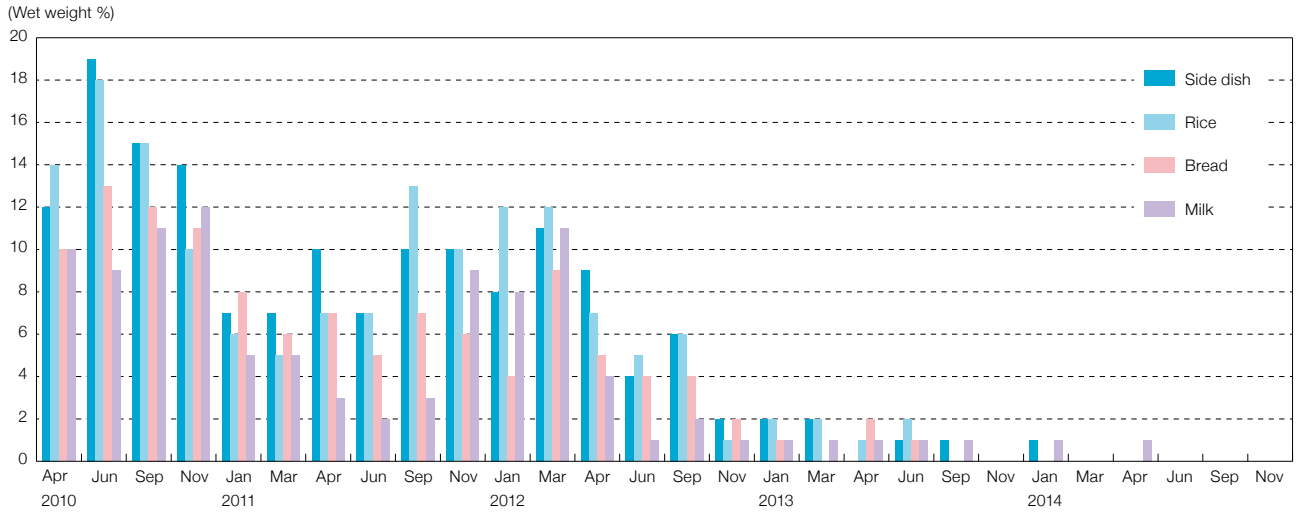
The “Takabe Misoshiru Genki-Ippai” project

At Takabedai Elementary School in Osaka Prefecture, approximately 200 people from university clubs and a diverse range of other local entities are working together to teach children how to plant crops and make miso (fermented soybean paste). Every February, the children make soup from the miso they make and the crops they raise, and enjoy the soup together with local residents.

Since the start of the Takabe Misoshiru Genki-Ippai project (literally, “Takabe’s empowerment project through miso soup”), the amount of food wasted in school lunches has declined. The project’s achievements are being communicated to local residents, university students, and others, and have become a driving force in further promoting the project.

Through this project, promoted not only by the children of Takabedai Elementary School but by diverse local entities, citizens have become more aware of the significance of building a sustainable society through food education, with the result that the community has succeeded in reducing food waste, an excellent example of an ESD initiative driven by community cooperation.

Transition of food leftovers for school lunch at Takebedai Elementary School



Source: Takebedai Elementary School

Myoko-Togakushi renzan National Park

Designation: March 27, 2015; Area: 39,772 ha; Prefectures: Niigata, Nagano

Myoko-Togakushi renzan National Park consists of concentrated chain of volcanos such as Mt. Myoko and Mt. Iizuna and non-volcanic mountains such as Mt. Amakazari. Lake Nojiri, dammed lake, is famous for fossil excavation of Palaeoloxodon naunmanni. The park also has interesting cultural sites such as Togakushi Shrine famous for Japanese Amanoiwato myth.

Mt. Amakazari

Hokushingogaku

Hokushingogaku is the collective name given to a group of individual mountains located in the northern part of Nagano Prefecture and the southern part of Niigata Prefecture as seen from the Nagano side of the border. These mountains are: Mt. Iizuna (1,917 m), Mt. Togakushi (1,904 m), Mt. Kurohime (2,053 m), Mt. Myoko (2,454 m), and Mt. Madarao (1,382 m). These mountains (with the exception of Mt. Madarao) constitute the dominant peaks of Myoko-Togakushi renzan National Park and draw countless visitors to an alpine environment where the landscape changes constantly with the seasons.

Lake Nojiri

Lake Nojiri was dammed up as a result of volcanic activity and the subsequent upheavals that occurred. A promontory that was thrust into this area by complex means helps to create a fantastic landscape as it blends well with the surrounding forests. A site with a large number of fossils of Palaeoloxodon naumanni was discovered at this location. All year round, visitors can engage in fishing and water sports, admire the surrounding landscape from sightseeing boats on the lake, take nature walks, or use the area as a summer resort.

Front cover: Lake Nojiri, Mt. Kurohime and Mt. Myoko
Back cover: Kagami Pond

Marks of Ministry of the Environment on the back cover page

3R

In 1995, to promote the use of recycled paper and raise public awareness, the Waste Reduction Promotion National Council, predecessor of the 3R Promotion Forum, created the R mark as a logo to show the percentage of recycled pulp contained in paper at a glance. Using recycled paper raises the percentage of used paper contained in paper materials, thereby promoting the effective use of valuable resources.

The 3R mark was designed by the 3R Promotion Council with the aim of making 3R activities better known by creating an easy-to-understand image of the three Rs and promoting the active participation and cooperation of as many people as possible. The 3R mark can be freely used by companies, NPOs and local government organizations in their 3R programs as well as PR activities and campaigns.

JECS — Japan Environment and Children's Study

The Japan Environment and Children's Study (JECS), a birth cohort study involving 100,000 parent- child pairs, was launched in 2011 in order to evaluate the impact of various environmental factors on children's health and development. The concept plan of JECS was published in March 2010 after three years of development within expert groups and public discussions about the research hypotheses and aims. Pilot studies started in 2008 in four universities, and samples from two preceding cohorts (Hokkaido and Tohoku) are also used for establishing exposure measurement protocols. The recruitment of hundred thousand pregnant women was achieved in March 2014. Health outcomes and exposure measurements will continue until the participating children become 13 years old.

Japan Committee for UNDB

UNDB-J has been established with the aim of mainstreaming biodiversity through promoting the participation of all stakeholders and their collaboration towards the achievement of the Aichi Targets.

FOR ALL THE LIFE ON EARTH

Some say we are facing the sixth wave of mass extinction in the history of the earth, and biodiversity is being lost at an unprecedented rate. Let us save the ecosystems that exist on a most delicate balance. Let us hand over the abundantly diverse forms of life to our future generations. To convey the essence of biodiversity to the public, we have chosen "For all the life on earth" as our motto, with our fervent hope for the future of this planet. Each color in the spectrum represents a different form of life. Various colors come together to form a rainbow, just as diverse forms of life are interwoven and create the texture of our world.

Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan 2015

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FOR ALL THE LIFE ON EARTH

Biodiversity

Ministry of the Environment
Government of Japan

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