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

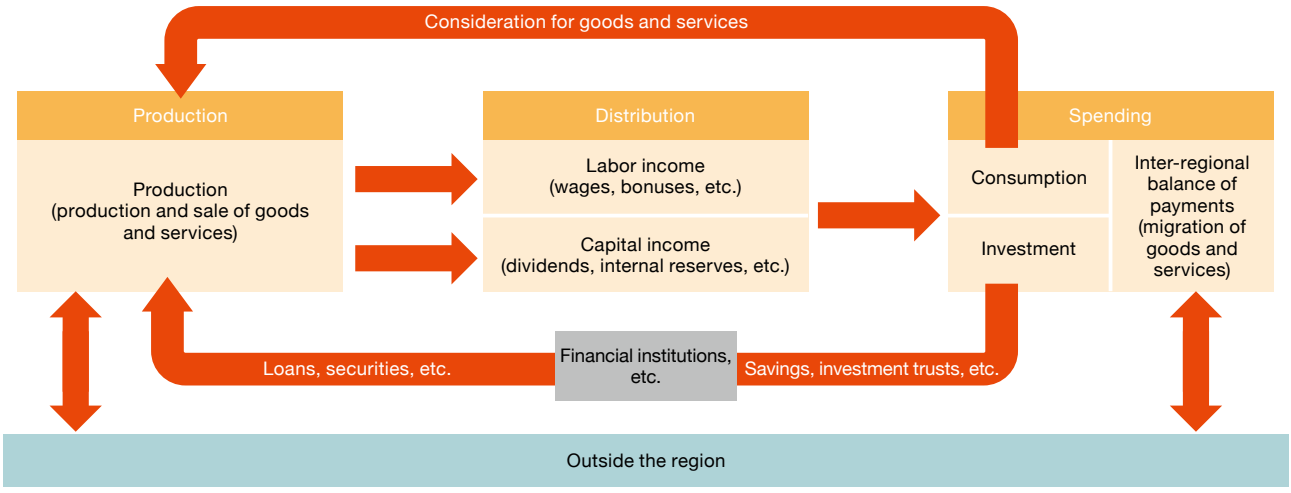
Japan is promoting regional revitalization with the goal of forming local communities that offer hope for the community's future and in which residents can lead affluent and unique lives. Combating regional economic contraction is central to this effort.

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?

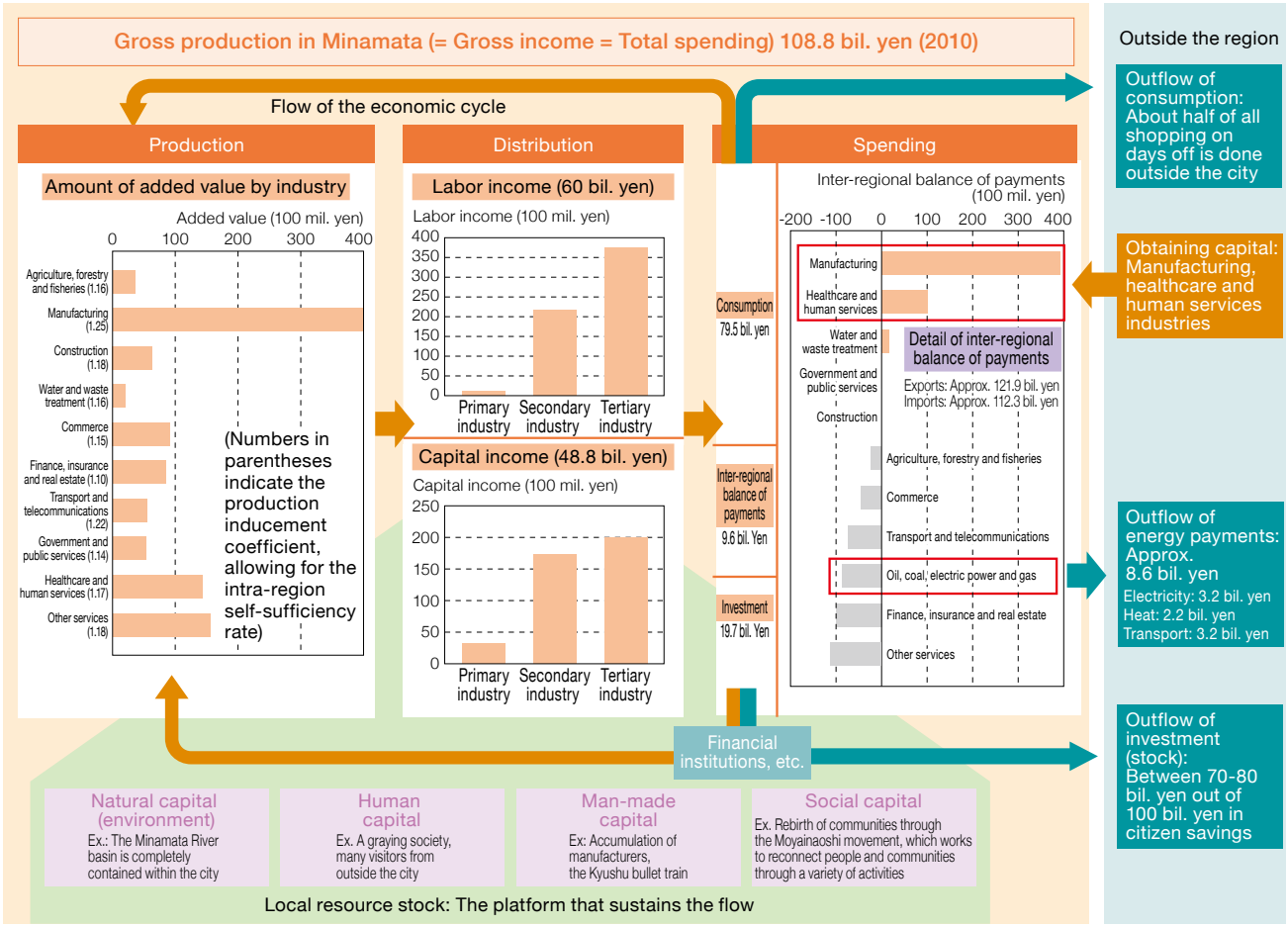
In fiscal 2010, local gross income totaled 108.8 billion yen, of which labor income represented 60.0 billion yen, or about 55%. Of that, 10.74 billion yen was related to the healthcare and nursing care industry, while the share related to Company A represented 10.67 billion yen. Company A's share of 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

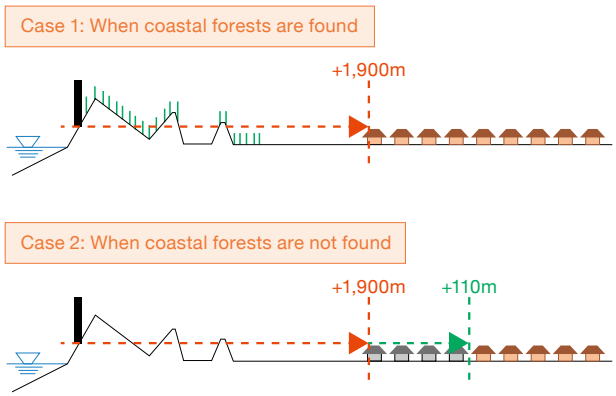
Building on the lessons learned in the Great East Japan Earthquake, Japan is working to prepare for large-scale natural disasters by enhancing community resiliency. To this end, the government announced and enacted the Basic Act for National Resilience in December 2013. In June 2014, the Cabinet approved 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.

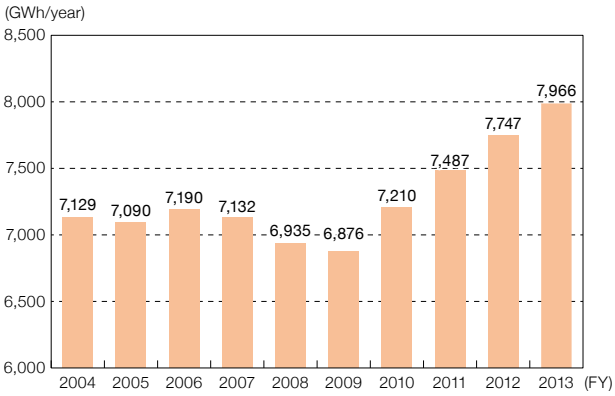
Because Eco-DRR involves utilizing the natural ecosystem available locally, it can offer a variety of interconnected benefits, including lower costs, reduced impacts on local biodiversity, and the potential use of the ecosystem in tourism and recreation during normal times.

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



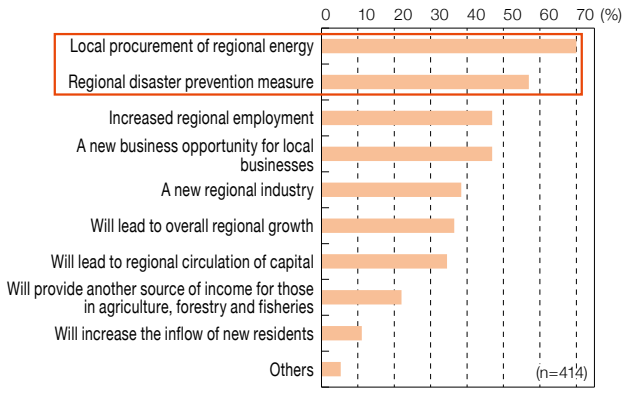
Source: "Waste Treatment in Japan (2013)," Ministry of the Environment

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

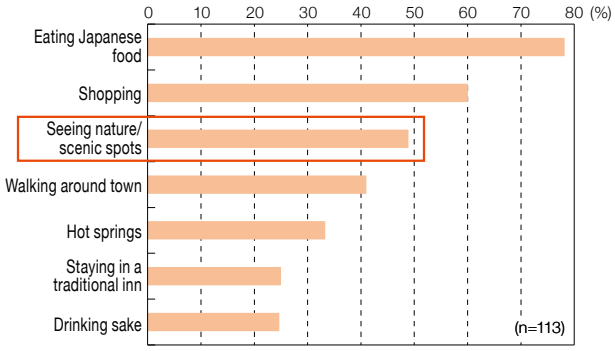
To achieve regions of circulating symbiosis, it is important to work toward regional revitalization by understanding and taking advantage of each region's unique characteristics. These include the regional topography, the natural environment, the traditional culture, and the residents who sustain the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

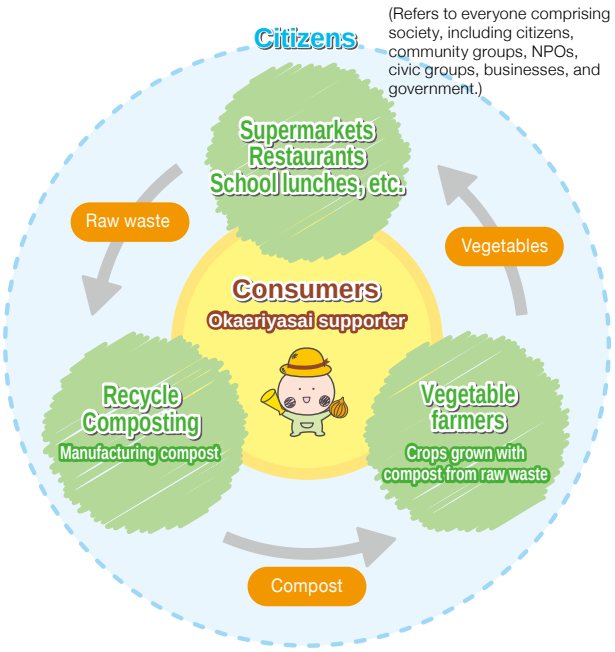
Local communities are an essential factor in building sustainable communities. The following describes several examples that illustrate how the participation of local citizens and entities in environmental activities can contribute to regional revitalization.

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



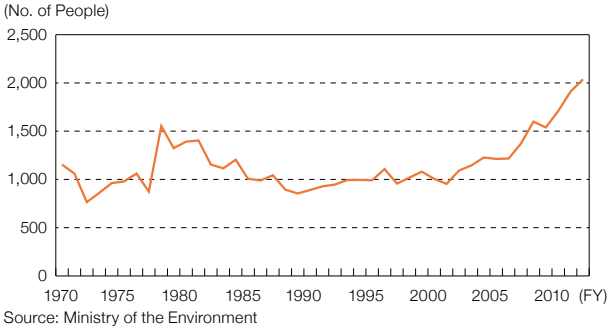
Source: The Okaeriyasai Project

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.

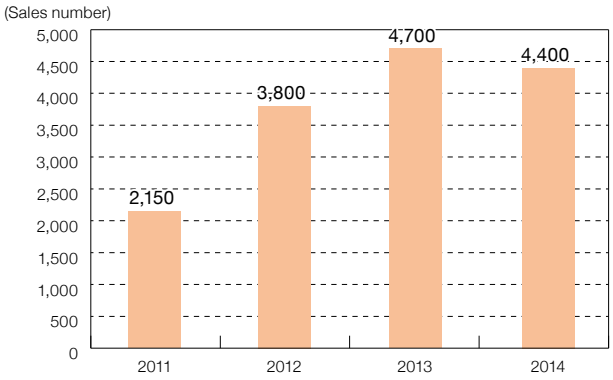


Photo: Mitsubishi Estate Co., Ltd.

Links through energy supply

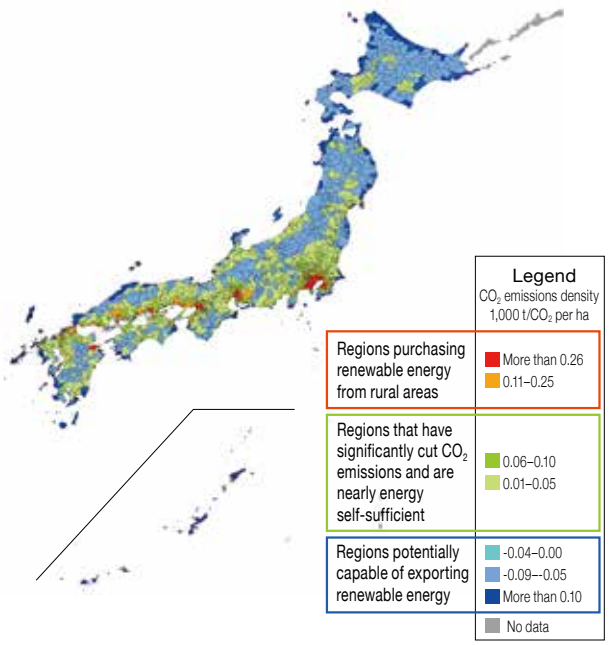
As part of efforts to promote measures to tackle global warming, Japan included in its Fourth Basic Environment Plan of 2012 the long-term target of reducing greenhouse gas emissions by 80% by 2050 and is working toward this goal. Achieving the goal will require significant energy conservation and maximum 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.