The Biodiversity Strategy of the Ministry of Agriculture, Forestry and Fisheries

Adopted on July 6, 2007
Revised on February 2, 2012
<Background of the strategy review>

Domestic movements

- Increasing interest in biodiversity
  - The enactments of the Basic Act on Biodiversity (June 2008) and the Act on the Promotion of Regional Cooperation for Biodiversity (December 2010)

The Great East Japan Earthquake occurred on March 11, 2011.

International movements

- COP10 and MOP5 convened in October 2010 (in Nagoya)
  - Adopted the “Nagoya Protocol” on access to genetic resources and benefit sharing, the “Strategic Plan for Biodiversity 2011-2020 and Aichi Targets”, resolution on “agricultural biodiversity” describing the importance of paddy fields as wetlands, and the “Nagoya - Kuala Lumpur Supplementary Protocol” on liability and redress to the Cartagena Protocol
  - Published TEEB (The Economics of Ecosystem and Biodiversity): Recognized the importance of economic assessment of activities related to biodiversity including agriculture, forestry and fisheries

<Review points>

- Promote sustainable agriculture, forestry and fisheries placing more emphasis on biodiversity and revitalization of rural areas
- Promote policy measures based on the COP10 resolutions: the “Strategic Plan for Biodiversity 2011-2020 (Aichi Biodiversity Target)” and “Agricultural Biodiversity,” etc.
- Start discussion on economic evaluation of roles of agriculture, forestry and fisheries in biodiversity
- Contribute to the biodiversity conservation by reconstructing sustainable agriculture, forestry and fisheries in significant disaster-affected areas

- Direct support for farming activities that are effective for biodiversity conservation by direct payment for environmentally friendly agriculture (since FY2011)
- Promote efforts by various actors based on the Act on the Promotion of Regional Cooperation for Biodiversity

- Promote appropriate thinning and the development of diverse forests based on the Basic Plan for Forest and Forestry (formulated in July 2011)
- Promote conservation and management of forests which have high-quality natural environments
- Promote adaptive management based on uncertainties of forest ecosystems (implement monitoring of forest ecosystems)

- Promote resource management, regulating fishing gear and fishing methods under resource management and fishery income compensation programs
- Appropriately promote the management and establishment of marine protected areas for the conservation and sustainable use of biodiversity
- Maintain and improve a fishing ground to increase the productivity of the entire ecosystems

- Promote efforts by various actors based on the Act on the Promotion of Regional Cooperation for Biodiversity

- Contribution to global environment conservation in agriculture, forestry and fisheries: Participation in international discussion on biodiversity including the IPBES, etc.

- Evaluation of biodiversity in agriculture, forestry and fisheries: Development of biodiversity indicators and discussion of economic evaluation

- Recovery from the Great East Japan Earthquake and biodiversity: Recovery of farmlands, forests and fishing grounds, and reconstruction of agriculture, forestry and fisheries
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I. Introduction

Agriculture, forestry and fisheries are essential activities for supplying the food and materials required for human survival. In addition, in Japan, agricultural, forestry and fishery activities have played an important role for generations in the creation of natural environments close to where people live, which enabled the inhabitation of diverse species.

The Japanese archipelago extends over a wide range of climatic zones from the subtropical zone to the subarctic zone. Diverse agriculture, forestry and fisheries as well as extensive local biodiversity have developed in each area, adapting to the local climate and characteristics. For the conservation of this biodiversity, agriculture, forestry and fisheries activities in the relevant area and their roles are of significant importance. Benefits which we receive through biodiversity conservation are not confined to agriculture, forestry and fisheries products. Benefits such as stable climate, clean water, pollination, soil formation and nutrient cycling can stabilize agriculture, forestry and fisheries production. Moreover, rural areas and communities can be revitalized through the creation of culture and beautiful scenery. These all make up the foundation for the development of the nation’s economy and the well-being of its citizens.

In July 2007, the MAFF formulated the Biodiversity Strategy of the Ministry of Agriculture, Forestry and Fisheries to address this challenge and further promote agriculture, forestry and fisheries activities focused on the conservation of biodiversity.

In October 2010, at the Tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) convened in Japan, the Nagoya Protocol was adopted, and important decisions were made, including the Strategic Plan for Biodiversity 2011-2020 which contains new global targets for the years from 2010 (Aichi Biodiversity Targets) and decisions on biodiversity relating to agriculture. At the Meeting of the Parties to the Cartagena Protocol on Biosafety (COP-MOP 5) that precedes COP10, the Nagoya-Kuala Lumpur Supplementary Protocol was adopted. Further, at the initiative of Japan, the UN General Assembly in December 2010 adopted the "United Nations Decade on Biodiversity" project for the period from 2011 to 2020. Meanwhile, in the domestic context, Japan enacted or revised the applicable laws, including the Basic Act on Biodiversity (promulgated in May 2008) and the Act on the Promotion of Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors (promulgated in December 2010; hereinafter referred to as the "Act on the Promotion of Regional Cooperation for Biodiversity"). Japan also revised the relevant policy measures. Against the backdrop of such domestic and international development, the MAFF decided to make necessary revisions to the Strategy.

This Strategy aims to identify challenges relating to biodiversity in the Japanese agriculture, forestry and fisheries and directions for policy measures, based on the perspective for the next
ten years, and to promote biodiversity conservation in a comprehensive manner by presenting specific policy measures for the next five years, by methods such as assisting biodiversity conservation initiatives currently underway by local communities. This Strategy is subject to further review and updating as necessary.

II. Agriculture, Forestry and Fisheries Sector and Biodiversity

(1) Benefits for agriculture, forestry and fisheries sector derived from biodiversity

Products indispensable for our daily lives, such as rice, vegetables, fish and meat which we eat every day and the wood from which our houses are made, are supplied from agriculture, forestry and fisheries sector activities in paddy fields, forests and oceans.

Unlike other sectors such as the manufacturing industry, agriculture, forestry and fisheries sector gains products from nature by interacting with and effectively utilizing nature by means in harmony with nature, rather than conflicting with nature, and promoting circulation. Thus, the agriculture, forestry and fisheries sector relies on the appropriate conservation of biodiversity and natural material circulation.

Japan has about of 0.38 million km² of land, stretching from north to south. Forests constitute about 67% of the land, and farmland about 13%.¹ In addition, Japan has a 4.47 million km² exclusive economic zone, amounting to about 12 times the size of the land, which ranks 6th in the world.² These are the areas where Japanese agriculture, forestry and fisheries sector are conducting activities. Fishing activities are also conducted in the high seas and the exclusive economic zones of other nations based on fishing agreements.

In Japan, primeval natural forests are distributed in limited areas, mainly in national forests, including Forest Ecosystem Reserves registered as World Natural Heritage Sites such as Yakushima, Shirakami Mountains, Shiretoko and Ogasawara Islands, as well as remote backbone mountain ranges, peninsulas and remote islands. These natural forests have served as stores of diverse species and genes, playing an important role in building networks of forest ecosystems and have prevented extermination of rare wild forest species.

Areas where people have engaged in agriculture, forestry and fisheries sector activities, as places of productive activities and lives of people, have formulated enriched rural areas and communities cultivated by diverse cultures distinctive to each area, through coexistence with diverse organisms. There are many organisms in these areas such as red dragonflies which fly in the autumn evening sky and schools of Japanese medaka which swim in the streams, in

¹ MAFF Website
² Japan Cost Guard Website
addition to organisms directly useful for production, and all of them have been subject to direct human interaction. As Japanese people have lived on rice, festivals and rituals have been developed for each important seasonal period related to rice farming such as rice planting and harvesting. Fisheries products have also taken root in Japanese life, for example, grilled sea bream served whole with its head at festive events such as the coming-of-age ceremony and weddings and the carp banner (koinobori) decoration on Boy’s Day.

Modern agriculture has contributed to stabilized production through selective breeding that allows increase of yield and resistance to pests. Such selective breeding has been made possible by combining various species from around the world, supported by biodiversity. Thanks to biodiversity, we can enjoy enriched dietary patterns while experiencing a sense of the seasons, picking wild vegetables in spring and wild mushrooms in autumn, or eating grilled skipper in autumn.

(2) Positive effect of agriculture, forestry and fisheries on biodiversity

In the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, paddy fields which make up a large area of our nation land is categorized as wetland. Likewise, in the COP10 resolution on agricultural biodiversity, it was understood that paddy fields have maintained a distinctive ecosystem, providing habitats to various organism over the centuries. It has been reported that 5,668 species of organisms have been found in a Japanese paddy field. Further, in the farmland, planted forests of Japanese cedar, etc., Satoyama (forests nearby human habitat) and grassland utilized for collecting fuelwood and weeds, as well as seagrass beds and tidal flats, people have engaged in agriculture, forestry and fisheries in a stable, repeated and sustainable manner for a long time, adapting to the seasonal climate and effectively using knowledge and technology developed in each area. Thus, agriculture, forestry and fisheries has played an important role in the creation and maintenance of distinctive scenery and natural environments for each area, in particular, providing valuable growing and living environments for a variety of organisms so that they can create and maintain ecosystems.

(3) Negative impact of agriculture, forestry and fisheries on biodiversity

Human activities conducted without due consideration to biodiversity, such as development of farmland and waterways prioritized on economic performance and efficiency, inappropriate

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3 Keiji Kiritani ed. Tanho no ikimono zenshu list (list of organisms living in a paddy field) (No to Shizen no Kenkyujo: 2010). “Living organisms” include animals (2,791 species), plants (2,075 species), protists and blue algae (597 species), and viruses/bacteria/filamentous fungi (205 species).
use of agricultural chemicals and fertilizers, decrease in seagrass beds and tidal flats caused by water pollution from domestic wastewater and land reclamation, overfishing, and destruction of ecosystems caused by alien species, have deteriorated growing and living environments for wild species and exerted significant impacts on biodiversity.

Recently, the agriculture, forestry and fisheries sector is making efforts for environmentally friendly agriculture and environment-friendly production infrastructure. Meanwhile, depopulation of rural areas and communities and decrease in people engaged in the agriculture, forestry and fisheries sector has posed the challenge of a slowdown in agriculture, forestry and fisheries activities. With such factors, due to the decline in the use of Satoyama forests and the increase in abandoned cultivated land, organisms which had been commonly seen in Satochi-Satoyama areas rich in biodiversity decreased. Further, slowdown in human activities has caused a serious problem of damage due to wildlife.

(4) Modalities of agriculture, forestry and fisheries and biodiversity

As mentioned above, agriculture, forestry and fisheries and biodiversity are closely related, and it is important to recognize that: (1) agriculture, forestry and fisheries has generated biodiversity; (2) agriculture, forestry and fisheries has been supported by biodiversity; and (3) biodiversity must be conserved in order to maintain and develop agriculture, forestry and fisheries in a sustainable manner.

III. Basic Policy on Biodiversity in Agriculture, Forestry and Fisheries

In order to maintain and develop rural areas and communities rich in biodiversity through interaction between nature and humankind and to leave a stable country to our future children, it is essential to preserve and utilize in a sustainable manner biodiversity through sustainable agriculture, forestry and fisheries and related activities.

To this end, efforts relating to biodiversity in agriculture, forestry and fisheries are to be promoted in accordance with the following basic policies.

(1) Promotion of agriculture, forestry and fisheries policy measures with more focus on biodiversity

In order to live up to the expectations of citizens and consumers, which need a stable supply of safe food, it is necessary to promote sustainable agriculture, forestry and fisheries maintaining a good production environment considering biodiversity conservation and to revitalize rural areas and communities supporting such agriculture, forestry and fisheries. Aichi Biodiversity Target 7 adopted at COP10 also requires that areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
Meanwhile, in recent years, rural areas and communities are depopulating, causing a decrease in people engaged in agriculture, forestry and fisheries. Against this backdrop, the revitalization of rural areas and communities is necessary as such situation may prevent sustainable management of rural areas, leading to negative impact on the biodiversity which has been created and conserved by the agriculture, forestry and fisheries sector.

Aichi Biodiversity Target 3 provides that "incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied." For incentives to be introduced in the future, efforts are to be made so as to be consistent with this goal.

Likewise, in relation to terrestrial and marine protected areas, Aichi Biodiversity Target 11 provides that: "at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved." In this connection, the relevant ministries and agencies will hold discussions to further consider this issue.

Aichi Biodiversity Target 14 requires that ecosystems that provide essential services, including services related to water, and contribute to health, livelihood and well-being, are restored and safeguarded. As the ecosystem surrounding agriculture, forestry and fisheries provides many services for agriculture, forestry and fisheries as well as the water recharging function and soil creation, it is important to use this ecosystem in a sustainable way.

In addition, COP10 adopted the Nagoya Protocol on access to genetic resources and benefit sharing. Various genetic resources existing in Japan and other countries continue to be essential for the agriculture, forestry and fisheries sector, such as materials for crop breeding, and it is necessary to develop sustainable agriculture, forestry and fisheries by gathering and using genetic resources in compliance with the Nagoya Protocol. For that purpose, the government will promote sustainable agriculture, forestry and fisheries that upgrade the quality of the habitats of living organisms, as well as assist in the revitalization of agricultural, mountain and fishing communities, considering the importance of biodiversity conservation in implementing measures related to agriculture, forestry and fisheries.

(2) Citizens' awareness raising for agriculture, forestry and fisheries and biodiversity

Amid urbanization and industrialization, the relationship between human lives and nature is becoming weaker. In such situation, it is important to ensure opportunity for all citizens, including adults and children, to have contact with various animals and plants and feel the richness of nature. The process for establishing Satochi-Satoyama (countryside) areas, where people can come into contact with various animals and plants in rich nature, is closely related
to agricultural, forestry and fishery activities. It is important to afford different groups of people a better understanding of the roles that these industries have in conserving biodiversity.

However, most citizens live in urban areas where they have little chance to get in touch with nature, and they are removed from agriculture, forestry and fisheries sites. In older days, children used to play in paddy fields, Satoyamas and the sea: places where they experienced biodiversity, but the situation has changed. Nowadays, it has become difficult for people to understand the agriculture, forestry and fisheries activities and how they interact with organisms. In such situation, as an initiative for deeper understanding of the agriculture, forestry and fisheries sector and biodiversity, the government will promote programs for experiencing agriculture, forestry and fisheries and feeling nature in rural areas and communities, forest development activities involving citizens, a program named "Kizukai Undo" (an initiative to disseminate the importance of wood use to consumers) that facilitates utilization of domestic wood products, and the Shokuiku (food and nutrition education) program for reducing food loss and waste, etc.

In addition, as agricultural initiatives focused on biodiversity conservation, the government is implementing a program for promoting environmental education through research of organisms living in paddy fields in collaboration with local farmers and community residents and the "Ikimono Mark" program for agriculture, forestry and fisheries activities considering biodiversity conservation and communication using products from such activities. The government intends to further promote these initiatives, as they are expected to provide opportunities for general consumers to gain understanding of biodiversity through their daily activities such as eating rice, vegetables and fish. Further, the government also intends to promote initiatives for fishery people relating to the fisheries eco labels which assure that the fishery products were caught by methods taking into account ecosystem and resource sustainability.

Meanwhile, the government is developing a biological indicator on biodiversity so as to grasp and measure contributive effects of agriculture, forestry and fisheries activities on biodiversity conservation.

It is also important to discuss methodologies for understanding biodiversity from new aspects by establishing the value of biodiversity, based on the economic assessment of biodiversity conservation activities through agriculture, forestry and fisheries, while taking into consideration the studies on The Economics of Ecosystems and Biodiversity (TEEB).

(3) Promotion of efforts by various entities effectively using creative ideas of communities

Various activities are implemented with a view to preserving biodiversity in rural areas and communities. Such activities include the practicing of community-wide organic agriculture for
restoration of indigenous species, a program for preservation of an irrigation pond for a biotope for farmland development, preservation of water for farmland and agriculture, a program for creation of paddy field fishways, a program for providing a biotope for migratory birds, a program for improving Satomi-Satoyama areas for mitigating damage due to wildlife, a project to grow forests, and activities for maintenance and management of seagrass beds and tidal flats for conservation of fishing grounds.

These efforts for biodiversity conservation through agriculture, forestry and fisheries in different regions contribute to the conservation of biodiversity, and lead to revitalization of agriculture, forestry and fisheries and rural areas and communities through the increased sale of agriculture, forestry and fisheries products derived from these efforts.

For such diverse biodiversity conservation efforts, in addition to production activities by people engaged in agriculture, forestry and fisheries, it is important that these efforts are implemented through collaboration among various entities based on the characteristics of communities, including local governments, NPOs, community residents, companies and educational institutions. Along with the enactment of the Act on the Promotion of Regional Cooperation for Biodiversity, it is important to further strengthen these efforts.

To this end, the government will promote biodiversity conservation in a comprehensive manner with the understanding and participation of a wide range of citizens, by further strengthening collaboration among various entities, assisting biodiversity conservation activities effectively using the knowledge and technologies of respective participants and securing human resources leveraging the experience of producers and citizens capable of identifying organisms found through surveys of living creatures of paddy fields.

(4) Contribution to global environmental conservation through agriculture, forestry and fisheries

For biodiversity at global level, the Sixth Ordinary Meeting of the Conference of the Parties to the Convention on Biological Diversity held on 2002 adopted a goal "to achieve by 2010 a significant reduction of the current rate of biodiversity loss"; however, the Global Biodiversity Outlook 3 published by the CBD Secretariat points out the continuous decline in biodiversity.

From a global perspective, biodiversity is under pressure due to such factors as deforestation from expansion of farmland, illegal logging and desertification as well as the decline in seagrass beds and tidal flats. In addition, impacts of global warming on the ecosystem are a strong concern. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) suggests that 20 to 30 percent of species would be at increased risk of extinction if the global mean air temperature increase caused by global warming is between 1.5 and 2.5 degrees C, and if the increase exceeds 3.5 degrees C, there would be more serious extinctions at a global
scale.

At COP10, Strategic Plan for Biodiversity 2011 – 2020 and Aichi Biodiversity Targets including a short-term target "by 2020, effective and urgent actions should be taken so that the ecosystem will be able to provide resilient and basic services and a loss of biodiversity and is prevented" was adopted. In addition, a Satoyama Initiative, which aims to achieve both the conservation and sustainable use of biodiversity in natural environments that people have developed and maintained through agriculture, forestry and fisheries and other human activities, was proposed.

Considering the above, the government will engage in international cooperation, sharing with other nations our experience and technologies relating to conservation and sustainable use of biodiversity as well as measures against desertification and global warming and building deeper collaborative relationships.

From the standpoint of the conservation of biodiversity at a global level, import of agriculture, forestry and fisheries products may involve damage to other nations' conservation and sustainable use of biodiversity. Bearing this in mind, Japan needs to continue its efforts to actively engage in biodiversity conservation, promote the agriculture, forestry and fisheries sector, conserve and manage forests and use them in a sustainable way.

**IV. Biodiversity Conservation by Region**

In order to adequately cope with the situation faced by the Agriculture, Forestry and Fisheries, rural areas, rural communities, and biodiversity, the following measures to conserve biodiversity are promoted comprehensively.

**1. Conservation of rural and Satoshi-Satoyama areas**

In rural and Satoshi-Satoyama areas, a diversified environment made through adequate maintenance by humans, including wooded areas, groves of shrines, homestead woodlands, and hedges, in addition to paddy fields, channels, and irrigation ponds, forms a network, and makes up a space with enriched biodiversity, which various species of wildlife inhabit, through people's continuous efforts in agriculture and forestry.

In such rural and Satoshi-Satoyama areas, which are familiar natural environments created by human hands, inappropriate use of agricultural chemicals and fertilizers, or implementation of projects by means of construction methods focusing only on economic performance and efficiency, may have impact on biodiversity. In addition, with the recent decreased use of Satoyama forests, or increase in abandoned cultivated land due to shortage of those engaged in agriculture and forestry, it is found that the number of organism species that are familiar to
people is decreasing, and damage to agriculture and forestry due to wildlife is becoming serious due to the expansion of the habitat ranges of certain wild animals.

Therefore, as reported in the Satoyama Initiative, the development and conservation of agricultural production and rural and Satoshi-Satoyama areas focusing more on biodiversity conservation is promoted, so that biodiversity is conserved to ensure secure provision of food to people, or to provide nature with rich biodiversity, through the conservation and recovery of the natural environment that has been created through human activities including agriculture, forestry and fisheries.

(1) Promotion of agricultural production focusing more on biodiversity conservation

With adequate agricultural production activities, functions such as biodiversity conservation and the creation of favorable scenery can be manifested. On the other hand, inappropriate use of agricultural chemicals and fertilizers in rural and Satoshi-Satoyama areas not only has direct impacts on natural environments but also may have other impacts such as affecting the environment of fishing grounds due to the deterioration of river water quality. Therefore, also in order to contribute in Aichi Biodiversity Target 8, "To hold down the level of contamination due to overnutrition and other reasons so that it is not harmful to ecosystem function and biodiversity," the following measures are promoted.

In order to promote the adequate use of agricultural chemicals and fertilizers, attempts should be made to diffuse and firmly establish the use of the Code for Agricultural Practice in Harmonization with the Environment (Agricultural Environment Code), which should at a minimum be abided by each farmer to realize environment conservation, and to promote the diffusion of Good Agricultural Practice (GAP), which includes the specific content of the Code.

In particular, agricultural chemicals are registered by the results of evaluation of their toxicity, residue, environmental fate, and adverse effects on aquatic animals and plants, etc. The government sets standards for use of each agricultural chemical to avoid adverse effects on the environment and ensures the appropriate use of agricultural chemicals by requiring users to follow the standards.

In addition to such efforts, sustainable agriculture focusing on the reduction of environmental burden on rural and Satoshi-Satoyama areas is further required. Specifically, the introduction of highly environmentally friendly agricultural production systems that intend to reduce the use of chemical fertilizers and agricultural chemicals is promoted, and the networking of farmers engaged in such efforts is encouraged to expand activities.

Further, the government will promote organic agriculture, which aims to significantly reduce the environmental impacts attributed to agricultural production activities and facilitate the growth of diverse living organisms. As part of this effort, the government will promote the
establishment of technological systems for organic farming, improvement in the frameworks for education and guidance on these systems for farmers, and will seek to deepen understanding about and interest in organic farming among consumers. Thus, the government will promote the creation of conditions which encourage farmers to engage in organic farming.

Further, from FY 2011, the government has offered direct support to farmers engaged in farming that is highly effective for biodiversity conservation, including farming practices which seek to reduce the use of chemical fertilizers and agricultural chemicals to less than half of the amount typically used in local farming practices, combined with winter flooding of paddy fields, and efforts in organic agriculture.

In the future, in addition to the promotion of environmentally friendly agriculture, study on the various styles of farming will be implemented from the perspective of the promotion of agricultural production coexisting with wildlife. At the same time, it is also important to try to diffuse and expand activities highly effective for biodiversity conservation, including the utilization of indices.

(2) Development and diffusion of agricultural production technology focusing more on biodiversity conservation

A decrease in the activities for soil productivity improvement and inappropriate use of agricultural chemicals and fertilizers may lead to the disturbance of the ecosystem of the region, including the degradation of soil and deterioration of soil fertility, as well as impact on soil microbes and indigenous natural enemies. There is also a danger of posing a problem due to continuous agricultural production. Therefore, it is necessary to encourage activities for soil productivity improvement, effective and efficient manuring, and pest control, and to implement agricultural production focusing more on biodiversity conservation.

Therefore, as part of efforts to promote appropriate soil cultivation and fertilization, the government will promote the use of compost derived from livestock excreta or food refuse through enhanced cooperation between farming and livestock raising businesses. The government will also promote rational fertilization, based on soil and crop assessments, while paying attention to fertilizing elements contained in organic materials such as compost, with the aim of maintaining or improving soil fertility through the maintenance or improvement of the biological properties of soil such as the population and diversity of soil microbes.

Further, with regard to soil microbes which have a strong association with soil fertility, the outbreak or control of soil-borne diseases and the material cycle, it is important to utilize their functions in agricultural production. Recently, technology development for grasping the biota of soil microbes is progressing. For example, a method to utilize the difference in organic decomposition ability of microbes, or a method to ensure the diversity by analyzing the genes of
soil microbes, is being developed. In the future, by developing technologies to diagnose the biota of soil microbes utilizing the fundamental technologies developed so far, agricultural production compatible with the conservation of the diversity of soil microbe biota will be promoted.

As for pest control, the government strives to develop an environment to reduce the emergence of pest and weeds. While actively promoting the Integrated Pest Management (IPM) where pest control through various measures based on the judgment of adequate timing for control stemming from the utilization of plant pest forecasting information and the observation of the situation of agricultural land, the use of agricultural chemicals that have less impact on natural enemies will be promoted. Through these efforts, pest control focusing more on biodiversity conservation, including soil microbes and natural enemies, is promoted in the agricultural production environment.

Further, as for alien species used in agricultural production, it is required in Aichi Biodiversity Target 9 to take measures to prevent the introduction and entrenchment of invasive alien species. For example, regarding the buff-tailed bumblebee used for pollination of farm crops, transformation to an indigenous species is encouraged. When using it out of necessity, adequate management will be required with measures such as setting double doors for the entrance to the facility so as not to make an impact on the surrounding environment.

In addition to the above, as eco-friendly water management technologies including the postponement of the winter flooding of paddy fields and midsummer drainage are being carried out, the government strives to collect and provide information on these technologies and case examples of efforts being made.

Development and diffusion of such agricultural production technology focusing more on biodiversity conservation are being implemented.

(3) Promotion of the reduction of damage due to wildlife and the development and conservation of Satochi-Satoyama areas

Much wildlife inhabits Satochi-Satoyama areas, each of them having an important role in the ecosystem. They have been closely related to human living and been used as necessary resources. In addition, humans have been in contact with living nature through activities such as wildlife observation.

On the other hand, as symbolized by the boar embankment (shishi-dote) or boar hedge (shishi-gaki) used from ancient times by farmers to protect harvests, there have been agricultural damages caused by wild boars and other animals.

Recently, with the decline of human activities in Satochi-Satoyama areas, increase in abandoned cultivated lands, decrease in the number of hunters, and the expansion of suitable habitat due to less snow, damage to field crops caused by animals including wild boars, Sika
Alien species like raccoons not only cause damage to agricultural, forestry and fisheries products, but are also posing threats to the ecosystems of Satōchi-Satoyama areas. Therefore, regarding these invasive alien species, which are indigenously not a part of the ecosystem in Japan, it is important to promote their capture, with the intention of eradicating them, through the confirmation and approval of the pest control implementation plan made in accordance with the Invasive Alien Species Act (Aichi Biodiversity Target 9).

Basically, wild animals are timid and are afraid of humans. They tend to hide in places like neighboring bushes in order to enter agricultural lands. Therefore, it is important to build an adequate relationship between human and beasts and birds, and it is necessary to implement comprehensive measures to manage habitats, to regulate wildlife population sizes, and to prevent damage, in order to prevent damage due to wildlife.

Therefore, a regional system should be developed with the promotion of the preparation of a damage prevention plan by municipalities based on the Act on Special Measures for the Prevention of Damage due to Wildlife enacted in 2008. Further, based on this Act, the government will comprehensively support measures jointly implemented by the community, such as habitat management through the improvement and conservation of Satōchi-Satoyama areas, including bush cutting in areas neighboring agricultural land, prevention of damages by installing guard fences, and the regulation of wildlife population sizes in order to keep adequate habitat density. Further, the government will also encourage activities for the management and conservation of forests, including the management and conservation of forests such as the transition to mixed forests with coniferous and broad-leaved tree species or broad-leaved forests, and make widely known the current situation of and countermeasures against wildlife damages to agriculture, forestry and fisheries.

In particular, damages to agriculture and forestry caused by overpopulated wild animals like Sika deer is becoming serious, posing a threat to biodiversity conservation. In order to ensure the effectiveness of regulating wildlife population size, the government will improve and reinforce countermeasures against the expansion and worsening of damages, including the development and securing of hunters who capture wild animals through the establishment and promotion of teams for implementing measures to prevent damage due to wildlife, reinforcement of the animal capture system through support for activities, and the promotion of adequate utilization of captured beasts and birds as edible meat through the development of sales channels and new products.

(4) Promotion of the conservation of networks of water and ecosystems, including paddy fields and irrigation ponds
The waterside environment in rural areas including paddy fields, channels, and irrigation ponds forms an organic network of water and the ecosystem. For instance, medaka and loach living in small rivers swim up to paddy fields and agricultural water canals during the spawning season and spawn in paddy fields and waterweeds in shallow waters. As such, various creatures use different environments for growth and inhabitation habitats and development environments according to their life history. Such networks of water and ecosystems are conserved by production and maintenance activities of farms and local residents, contributing largely to biodiversity conservation. In particular, it is important to form the networks of water and ecosystems that not only link forests with the ocean through rivers, but also seamlessly link between rivers, paddy fields, waterways, irrigation ponds, and local units formed by the community.

Because maintenance and renewal are necessary for paddy fields and water channels that form the waterside environment in rural districts in order to improve the efficiency of production or for disaster-prevention reasons, a perspective to consider biodiversity conservation becomes necessary for the improvement and renewal of agricultural lands and facilities.

Specifically, upon infrastructure improvement including farmland consolidation, the government will take into consideration the entire area and specify the species to be conserved in order to conserve local endemic ecosystems, in order to conserve the networks of water and ecosystems including paddy fields, water channels, and irrigation ponds. Through obtaining the understanding and participation of local residents, the government will systematically promote infrastructure improvement in a way that pays close attention to the life cycle and migration routes of respective specified species. It will also assist with efforts to secure water for conserving ecosystems such as water for the winter flooding of paddy fields.

(5) Promotion of the improvement, conservation and use of pasture and grassland

Pasture and grassland make up a precious ecosystem, providing a place to live for many species. Most pastures and grasslands are managed artificially with purposes such as grazing and mowing, and a peculiar natural environment is being formed and maintained by preventing the incursion of bushes. This contributes to the conservation of biodiversity, the conservation of genetic resources, and the conservation of diversity of species favoring pastures and grasslands. For example, pasture and grassland in Aso Kuju Highland is maintained as the habitat of plants like Polemoniaceae and Echinops setifer, or rare species of butterfly like Shijimiaeoides divina, through human intervention like agricultural production activities including grazing and mowing, or activities participated in by citizens.

On the other hand, in pastures and grasslands, the material cycle of soil, grass and pasture
plants, and livestock is established. Therefore, to improve the capacity for food self-sufficiency / food self-sufficiency ratio through the improvement of the feed self-sufficiency ratio, to effectively use national land, and to establish cyclical livestock farming are being promoted. At the same time, it also becomes possible to maintain sustainable production of livestock, and to maintain livestock farming. Therefore, it is continuously important to carry out adequate maintenance.

Therefore, the government assists activities such as community-based efforts of grazing in order to maintain the productivity and function of pastures and grasslands, promotion of simplified pasture and grassland renewal technology, and the improvement of pastures and grasslands.

(6) Promotion of activities for the improvement, conservation, and utilization of Satoyama forests

With adequate intervention from local residents such as the collection of fallen leaves and fuelwood, Satoyama forests are important places in terms of the conservation of biodiversity, inhabited by various kinds of wildlife adapted to the environments of them. At the same time, they are also expected to be places for feeling nature for humans and for education, utilizing their locations. Further, adequate management can be realized with the increasingly active use of charcoal and firewood.

However, such use of forests is declining with the recent depopulation and aging of mountainous villages and changes in lifestyles. It is necessary to promote new approaches to Satoyama forests by various actors.

Therefore, the multilateral and continuous use of Satoyama forests is promoted through support for activities for fostering forests such as planting trees, weeding, brush cutting, and thinning through cooperation among the local community, companies and NPOs, as well as the consideration of measures to utilize them.

It is also necessary to promote these measures together with the securing of wood demand, including using wood for biomass energy.

(7) Conservation and the use of the environment in rural areas and the promotion of rural areas through the utilization of regional resources

The environment in rural areas is a natural environment maintained through human approaches including agricultural production activities. The promotion of agriculture and rural areas is important also from the perspectives of the fulfilment of multifunctional roles such as the conservation of a rich natural environment and biodiversity, and the formation of beautiful landscapes.
However, with the decline in the functions of rural communities due to depopulation, aging, and mixed-living of farm and nonfarm households, it is now becoming difficult to appropriately conserve and maintain resources including agricultural land and irrigation water systems. With concerns regarding the risks of disrupting the fulfilment of these multifunctional roles, it is necessary to implement measures based on such situation.

Therefore, the government will promote the prevention of the generation of abandoned cultivated land through the continuous agricultural production activities and support the hilly and mountainous areas from the perspective of securing multifunctional roles. At the same time, from the point of view of ensuring good conservation and qualitative improvement of local resources like agricultural land and irrigation water systems and the environment, highly effective cooperative activities are also supported. Further, the government will also support joint efforts by local units formed by the community, private companies, and governments to utilize the environments of agricultural areas, as can be seen in activities including ground work, and support the efforts of local communities to make local agricultural products brands and utilize local communities for education and tourism by capitalizing on their rich resources including biodiversity. Through these supports, the government will encourage people to understand the role of agriculture and rural communities on biodiversity and promote the interaction between urban and rural areas such as green tourism and settlement.

In addition, systems to evaluate regional efforts regarding biodiversity conservation, including the Globally Important Agricultural Heritage Systems (GIAHS) of the Food and Agriculture Organization of the United Nations (FAO), are utilized to show the world the environmental harmony of the agriculture of Japan, as well as to invigorate rural areas.

(8) Promotion of creating a space where humans can interact with nature, including rare species of wildlife

While the crested ibis and Oriental stork used to live commonly in agricultural villages in Japan and live with people, they disappeared due to artificial changes in habitat environments such as overhunting, the development of wetlands, and decrease in nesting trees.

Currently, efforts to aim for returning artificially bred Oriental stork and crested ibis to the wild are carried out in different regions. Also, because Japan is one of the most important landing zones for migrating birds in the world, it is important to improve the environment of agricultural villages in order to maintain the habitat environment for these birds in the future as well.

Therefore, the improvement of the winter flooding of paddy fields, which is a farming method that improves the biodiversity of paddy fields, which are important wetlands serving as the habitat for various creatures including water birds, and paddy field fishways that secure
continuity from the water channels where creatures go to and from to paddy fields, is being implemented. In addition, there are also efforts using sustainable agriculture, such as organic agriculture and other farming methods using less agricultural chemicals. Children utilize such waterside environments including paddy fields and water channels as places for learning and play.

Aichi Biodiversity Target 12 requires the prevention of the extinction and decrease of endangered species. Efforts as explained above not only protect the habitat environments of very rare creatures like the Oriental stork and crested ibis, but also expand the space where various creatures familiar to the region live, which leads to biodiversity conservation throughout Japan. Therefore, it is important to evaluate and support such regional efforts.

Thus, also considering Aichi Biodiversity Target 15, which requires contribution to the mitigation of and adaptation to climate change through the conservation and restoration of degraded ecosystems, improving infrastructure coping with biodiversity conservation based on the formation of consensus on it in the regional community, and improving the environment of rural and Satōchi-Satoyama areas, including the creation of space to communicate with nature, are also being promoted.

In addition, considering biodiversity conservation, organic agriculture and other types of environmentally friendly agriculture are promoted, and support for farmers in terms of establishing and diffusing cultivation technology from the perspective of biodiversity conservation is provided. The government will promote diffusion activities in the region in order to advance efforts on biodiversity conservation. For instance, it will promote activities to build awareness on agriculture, forestry and fisheries, and biodiversity, by utilizing the waterfront environment as a place for learning and play, for instance, by implementing surveys on creatures in paddy fields and water channels, and by increasing occasions where people can have contact with nature.

Further, agriculture in urban and peripheral areas not only supplies fresh field crops to city residents, but it is also recognized as having roles like maintaining the environment and scenery by providing water, green and natural space to providing relaxation and enjoyment, and providing space where anyone from children to adults can experience agriculture in the form of allotment gardens or have close contact with creatures. Based on such roles, it is promoted to create spaces where people can have close contact with creatures, through the promotion of urban agriculture.

2. The conservation of forests

Japan is a forest-rich country, where forests account for two-thirds of its total land area and
are a key element for the conservation of biodiversity as habitats of diverse wild plant and animal species. There are diverse types of forests, ranging from planted forests developed after the war for the greening of degraded national land to primeval natural forests that are registered as World Heritage sites such as Yakushima Island, Shirakami Mountains, and Shiretoko Peninsula.

On the other hand, the current forest resources, especially the planted forests that have been developed after the war, are entering the stage of being available to be used. With the global increase in wood demand, it is necessary to revive domestic forests, forestry, and the wood products industry by promoting adequate improvement and conservation of forests such as thinning, through increase in the use of domestic woods.

In addition, while the development of forests requires a long period, usually some decades, various environments are formed during their growth, consisting of grass plants, low to medium height trees, and high trees, and biodiversity in the forests changes accordingly, as well as the habitat environment for wild life. Particularly in planted forests, biodiversity is conserved, together with the development of sound forests, by adequately implementing improvement of the forest, such as thinning, according to the stage of growth, as well as by creating forests with different forest ages through cutting and replanting.

On the other hand, the effective use of timber, which is friendly to both humans and the environment, in multi-stages will contribute to the creation of a recycling-oriented society, actions against global warming and vitalization of mountainous villages. Its use is further promoted, while it is also necessary that wide public including city residents foster greater understanding on forests, forestry, and wood use, by being involved in fostering forests according to their situations. In addition, it is important to try to conserve and manage primeval natural forests given that public expectations on forests including the conservation of the natural environment have become significantly higher.

Considering these issues, the government will comprehensively develop measures for the management and conservation of forests, which are an important component of biodiversity, and will encourage the fulfilment of various functions of forests, including biodiversity conservation.

Further, in order to promote adequate management and conservation of forests through participation by various parties, the Forest Biodiversity Working Group composed of external experts was established in December 2008. The Working Group considers the forest and forestry measures for the conservation and the sustainable use of biodiversity in forests in the future and proposed the forest management direction for the conservation of forest biodiversity in July 2009.
Also, the Forest and Forestry Revitalization Plan was developed in December 2009 as a guideline for promptly revitalizing the forests and forestry of Japan. In order to realize this plan, the Forest Act was revised, and the Forest and Forestry Basic Plan was reviewed. This Forest and Forestry Revitalization Plan has fundamental principles: to revitalize forestry and the wood products industry fully utilizing regional planted forest resources, to contribute to the realization of a “low-carbon society” through expanding wood use, and to provide and sustain multifunctional roles of forests including biodiversity conservation through adequate improvement and conservation of forests. In the future, while also based on the proposal of the Working Group explained above, gaining understanding on biodiversity among the public, including those who are related to forests and forestry, will be promoted. At the same time, for the conservation and sustainable use of biodiversity, adaptable forestry management is promoted by taking into consideration the uncertainty of forestry ecosystems, conducting the monitoring on forestry ecosystems, and comprehensively implementing forest and forestry measures. Further, in order to implement thinning and promote the development of diverse forests, the efforts of the National Campaign for the Promotion of “Utsukushii Mori Zukuri (Fostering Beautiful Forests)”, which comprehensively promotes the management and conservation of forests, use of domestic woods, and the development of forestry-engaged personnel and community, are facilitated under the understanding and cooperation among a wide range of parties.

At the same time, Japan imports about 70% of its domestic wood supply.4 The import of forest products means that the country uses the biodiversity of other countries. Also, from the perspective that the domestic forest resources are ready for harvest, the sustainable use of forest resources within the country and abroad is required. Thus, revitalization of domestic forestry is encouraged mainly concerning the promotion of the use of domestic woods to effectively utilize forest resources within the country. At the same time, through support for the conservation of forests and sustainable forest management abroad, the government contributes to biodiversity conservation in forests globally.

(1) Promotion of development of ecologically diversified forests

Insufficient implementation of forestry practices like thinning of planted forests, as well as not ensuring reforestation after harvesting in some cases gives rise to concerns regarding risks concerning securing the multifunctional roles of forests, including biodiversity conservation. Therefore, improvement of diverse and sound forests envisaging 100 years into the future

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4 Forestry Agency "Balance Sheet on Wood"
becomes necessary.

Consequently, to allocate various types of forests in a well-balanced manner in accordance with local natural and geographical conditions, taking into account the use of forest resources and the frequency of nature disturbance, the government will promote not only the implementation of thinning, but also the development of diverse forests through developing broad-leaf and mixed forests and promoting long-term management. The government will promote forest improvement projects, including the introduction of the Forest Management and Environmental Conservation Direct Support System, in order to directly support those who conduct consolidated forest practices stably, from FY2011.

In natural forests, where primeval forest ecosystems are maintained, and in forests with low regeneration and restoration power, the protection of the regional endemic forest ecosystems and biodiversity will be the basic policy. Natural forests are conserved through adequate practices, holding down excessive disturbance of ecosystems, since they had been used for the production of wood within the limitation of the productivity of forest ecosystems while trying to conserve natural environments. In addition, efforts will be made to ensure the continuity of forests and harmonize the conservation and sustainable use of biodiversity in forests.

(2) Promotion of appropriate forest conservation and management

Forests have functions to conserve national land, including water resource conservation and disaster prevention and a function to conserve environment, as well as publicly beneficial functions including the conservation of biodiversity.

Aichi Biodiversity Target 14 requires the restoration or conservation of the ecosystems that provide basic services, including those related to water.

In order to ensure the fulfilment of these public functions, it is necessary to implement appropriate forest conservation and management. Therefore, forests that are especially expected to fulfil their publicly beneficial functions are designated as protection forests to control harvesting and conversion to other land use. At the same time, installation of forest conservation facilities in devastated land and improvement of forests where their conservation functions have deteriorated are being promoted.

As for forest owners residing outside the village, whose ownership represents about one-fourth of the area of private forest,⁵ it is important to make an active approach to them concerning forestry practices. Therefore, we will reach the forest owners in urban areas to encourage them to implement forestry practices and promote forest improvement.

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⁵ 2005 Census of Agriculture and Forestry
(3) Promotion of controlling the damage to forests caused by wildlife

Regarding the damage to forests caused by wildlife, including Sika deer, impact on the multifunctional roles of forest is recently a cause of concern: for example, the feeding damage of understory vegetation, runoff of soil due to trampling, and the disappearance of precious alpine plants, which requires effective countermeasures.

Consequently, the government promotes countermeasures against the damage to forests widely and effectively including active population control and damage prevention, based on the situation of damages caused by wildlife and the inhabitation of them, while aiming for coordination with policies for wildlife conservation and management. Further, it is necessary to adequately promote countermeasures that take coexistence with wildlife into consideration, including the creation of broad-leaf forests and multi-storied forests with treatment, by introducing broad-leaf trees, which provide habitat environments for wildlife, based on the actual local situations.

(4) Consideration on biodiversity in forestry practices

Upon ensuring biodiversity conservation in forests, it is an important factor that forestry contractors who are actually engaged in the management and conservation of forests take actions not only from the perspective of wood production but also from the perspective of biodiversity conservation. Therefore, under the forest planning system, Regional Forest Plans show guidelines on practices taking into consideration the protection of rare wildlife species. As for forest certification, where private third-party organizations evaluate and certify sustainable forest management, biodiversity conservation is one of the important requirements for obtaining certification. As such, various efforts for the conservation of wildlife species are being initiated also in the actual working sites, including the establishment of buffer forest zones.

The government continuously tries to adequately operate forest planning systems, while further promoting the consideration on biodiversity conservation at the actual working sites of forestry operations, by introducing specific case examples of efforts made.

In addition, adequate forestry practices will be promoted by training foresters who support establishment of Municipality’s Forest Improvement Plan, and Forest Management Planners, who play the central role in formulation of Forest Management Plans in line with such Municipality’s Forest Improvement Plans.

(5) Efforts on biodiversity conservation in national forests

With public expectations on forests including the conservation of the natural environment and the safety and security of people’s living being raised further, the basic policy regarding the national forests that account for about 30% the total forest area, and about 20% of the entire
national land area in Japan, is to implement adequate management and conservation of forests by utilizing means such as developing various types of forests, and carrying forward management with the principle of the maintenance and improvement of publicly beneficial functions, including biodiversity conservation.

Regarding national forests existing widely in remote backbone mountain ranges, there are many forests having beautiful landscapes including world natural heritage sites like Yakushima Island, Shirakami Mountains, Shiretoko Peninsula, and Ogasawara Islands, and world cultural heritage sites, inhabited by precious wildlife species and where rich ecosystems are maintained, and forming favorable environments together with waterfalls such as mountain streams or other landscapes. They are also connected with various ecosystems other than forests, including agricultural land, rivers, and seas. Also, from the perspective of biodiversity conservation, it is necessary to promote the conservation and management of all these forests.

Aichi Biodiversity Target 7 requests to manage areas under forestry sustainably, ensuring conservation of biodiversity. Therefore, upon formulating forest plans that make up the base for forestry practices, consideration should be given so that diverse forest type structures, such as differences of tree species and forest ages is secured in forest landscapes, such as certain areas in the major river basins. Adequate forestry practices should be promoted including the thinning and long-term management of planted forests, and the development of multi-storied forests with treatment through the introduction of broad-leaf trees, while inhibiting excessive disturbance of forest ecosystems when implementing the practices.

Also considering the fact that Aichi Biodiversity Target 12 requires to prevent the extinction of known threatened species, national forests, which serve an important role in maintaining the natural environment, protecting species, and reserving genetic resources, will be appropriately protected and managed by promoting the systematic designation of “Protected Forests” such as “forestry tree genetic resource conservation forests,” “plant community protected forests,” and “specific animal habitat protected forests,” while cooperating with research institutions and also taking into consideration the diversity of gene lineages depending on the habitat. Natural forests other than those designated as “Protected Forests” will also be managed by focusing on the publicly beneficial functions including the function to conserve the natural environment. Also, endangered species of wild flora and fauna in national forests will be protected taking into account the perspective of biodiversity conservation, in cooperation with local residents,

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volunteers, and NPOs. Because feeding damages by Sika deer disrupt the balance of forest ecosystems, posing a threat to the habitat environment of other wildlife species, efforts will be promoted including active population control such as capturing them in cooperation with the local concerned governmental agencies, based on the monitoring surveys of Sika deer inhabitation and damage, and also regeneration and restoration of forests will be promoted as needed.

Regarding that Aichi Biodiversity Target 9 requests to control or eradicate high priority invasive alien species, measures taken to remove adaptable alien species and to prevent their inhabitation expansion, are constantly reviewed and revised while considering the impact on the current ecosystem. Also, local endemic ecosystem will be maintained and regenerated by promoting measures to prevent the invasion of new alien species.

Taking into consideration that Aichi Biodiversity Target 5 requests to at least halve the rate of the loss of all natural habitats, including forests, and significantly reduce degradation and fragmentation of them, national forests that require special conservation and management, such as forests that have primeval forest ecosystems or are the habitats of precious species, are actively designated as “Protected Forests,” while expanding their area, and promoting appropriate conservation and management through monitoring surveys. Further, in order to promote exchange among populations and conserve species and genetic diversity by securing the migratory path connecting the habitats of wildlife species, national forests will set “Green Corridors” forming an ecosystem network mutually connecting the “Protected Forests” by also asking for cooperation by neighboring privately owned forests. Also, for forests along mountain streams and other water bodies that are not designated as “Protected Forests” or “Green Corridors,” natural forests are maintained as the migratory path of wildlife species and the supply source of seeds, and planted forests are developed into broad-leaf forests with the active introduction of broad-leaf trees. By securing the continuity from primeval natural forests in the upper river basins formed around the core of “Protected Forests” to downstream basins through these measures, efforts are made to conserve and manage more extensive and elaborate forest ecological networks.

(6) Securing and developing those engaged in the industry and the promotion of exchange between cities and mountainous villages and supporting the settlement through the utilization of resources in mountainous villages

While the population of mountainous villages in Japan accounts for only 3% of the total population, they take up about 50% of the national land, in terms of area, and about 60% of
In addition to the supply of agriculture and forestry products and publicly beneficial functions including watershed conservation and the prevention of global warming, they also serve an important role in the improvement of people’s living, such as forming rich unique local cultures in involvement with diverse natural environments.

On the other hand, because depopulation and aging of society is progressing in mountainous villages and living standards in these villages are still lower than in urban areas, in order to adequately maintain and conserve forests and conserve their biodiversity, it is necessary to maintain the vitality of mountainous villages, the places in which these activities are actually implemented.

Therefore, in addition to securing those who will newly be engaged in the industry through the "Green Employment Program," exchange between cities and agricultural villages is promoted and settlement in those villages is supported through the development of attractive local communities utilizing resources, such as rich biodiverse nature, culture and landscapes, to promote the revitalization of mountainous villages.

(7) Promotion of forest development activities involving citizens and the diversified use of forests

Recently, with the activities of companies and NPOs engaged in forest development and environmental education becoming more energetic and an increasing number of citizens utilizing forests for healthcare, cultural and educational activities, it is necessary to respond to citizens’ needs regarding forests.

Therefore, upon promoting forest development activities involving citizens and diversified use of forests, the government tries to promote extension and awareness raising among citizens through holding greening events, promotion through different media, and information provision, while also provides an environment where companies and NPOs can easily participate in forest development. As for national forests, activities related to the management and conservation of forests implemented by companies and NPOs are promoted by providing fields for forest development activities by companies.

In addition, the Act on the Promotion of Regional Cooperation for Biodiversity newly stipulated special measures including the framework for cooperation among different parties and the exemption from submitting notification on the cutting of standing trees under the Forest Act, in order to promote activities on forest biodiversity conservation.

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7 Ministry of Internal Affairs and Communications “Population Census,” Geospatial Information Authority of Japan “Areas of Prefectures and Municipalities in Japan,” Ministry of Agriculture, Forestry and Fisheries “Mountain and Forests Survey Card”
From now on, the government will support the preparation of the “Plans for the Promotion of Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors” by municipalities, coordination of various parties upon the implementation of the “Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors,” technical guidance on forest activities, and the development of human resources, and further promote activities on the management and conservation of forests.

(8) Improvement of forest environmental education and opportunity to feel forests

In order to develop understanding and interest in the multifunctional roles of forests including biodiversity conservation, in forestry, and in the significance of the use of woods, it is necessary to provide forest environmental education, wood education (educational activities for learning the benefits of woods and the significance of the use of woods), and occasions for feeling forests, widely among children and other citizens.

Therefore, provision of information on forest experience activities and practical activities on wood education will be promoted. Further, provision of fields for implementing experimental activities in national forests will be encouraged.

(9) Development of forestry and wood products industry mainstreaming the expanding the use of domestic woods

In order to fulfill the multifunctional roles of forest including biodiversity conservation, it is necessary to conduct proper management of forests, and to this end, it is important that wood supplied through adequate production activities is used by end consumers and that forests owners can collect the expenses they incurred from the profits.

Also, from the perspective that the import of forest products is the use of the biodiversity of other countries, it is important that forest resources in Japan are effectively utilized in a sustainable manner.

Therefore, the government will move forward the structural reform focused mainly on the reduction of costs for log production, distribution, and processing, and the development of a stable supply system for products with quality and strength performance, while also trying to develop the forestry and wood products industries mainstreaming the use of domestic wood in public buildings, residences, and woody biomass, to aim for achieving a timber self-sufficiency ratio of 50% or more within ten years.

(10) Promotion of the monitoring of forest resources

With people’s recently increased interest regarding global-scale environmental issues, it is now recognized that the promotion of "sustainable forest management" is an important issue, and efforts are being started by different countries in the world to monitor and evaluate the
state of forests within their countries using the criteria and indicators of the Sustainable Forest Management agreed through an international process. Japan is also required to continuously understand and evaluate the state of forests including biodiversity and trends in their changes, and reflect the results in the establishment of regional forest plans, in order to promote sustainable forest management within the country. Aichi Biodiversity Target 7 also requests to manage areas under forestry sustainably, ensuring conservation of biodiversity.

Consequently, in the forest resources survey conducted in Japan, it is necessary to fully understand data also on non-commercial tree species and biodiversity. The government will promote monitoring not only on timber production but also on forest resources, to collect and analyze data on the internationally-agreed criteria and indicators such as biodiversity, global warming prevention, and the conservation of water resources in basins, in a unified approach.

(11) Promotion of sustainable forest management throughout the world

Forests throughout the world, especially tropical forests where most of the species on earth have their habitats, are rapidly decreasing and being degrading due to conversion to agricultural land, illegal logging, wildfires, and over-grazing. From 2000 to 2010, about 13 million ha (about 5.2 million ha, or 1/7 of the national land of Japan, deducting the increase by forestation, etc.) of forest is decreasing every year.8 Because such large-scale deforestation and forest degradation is one of the factors causing the global-scale biodiversity crisis, it is necessary to promote cooperation on the conservation and development of forests in the developing countries and active participation and contribution in international dialogue.

Therefore, through the conservation and recovery of degraded ecosystems, and by also considering Aichi Biodiversity Target 15, which requests contribution to climate change mitigation and adaptation, through measures including contribution in the United Nations Forum on Forests (UNFF), efforts on developing criteria and indicators through the Montreal Process, bilateral technical and financial cooperation on forest conservation and afforestation in developing countries, and bilateral international cooperation and multilateral aids through international organizations on countermeasures against illegal logging, which is one of the major causes of deforestation and forest degradation, the government will contribute to global-scale biodiversity conservation by promoting sustainable forest management that internationally conserves the environment.

3. Conservation of Satoumi and the ocean

Japan, an island archipelago country with complicated coastlines lying north and south, has

8 Food and Agriculture Organization "Forest Resources Assessment 2010"
the world’s sixth largest Exclusive Economic Zone, and the seas surrounding the country are the converging point of cold and warm currents. Therefore, the surrounding ocean area forms a fishing ground with high productivity and rich biodiversity.

Because the fisheries industry uses natural resources, it is an environment-dependent industry relying on the bounties of the sea. Therefore, it is especially important to keep the soundness of the entire ecosystem that supports productivity, including not only conserving the organism species caught but also those that are not caught such as their feed species.

In particular, the coastal area of Japan has been closely involved with human activities from ancient days. People have been continuously conducting fishing activities including shellfish and seaweed gathering, while managing their resources. A sea area, where high productivity and biodiversity conservation are ensured with human intervention harmonized with the natural ecosystem, is now recognized as "Satoumi" and such areas should be conserved appropriately.

On the other hand, from offshore to the high seas, it is important to ensure appropriate management and sustainable use of marine resources based on scientific evidence through a framework such as regional fisheries management organizations.

As shown above, it is necessary to secure stable supply of fishery products that support the healthy dietary pattern of people into the future, as well as to promote the establishment of a strong fisheries industry and affluent and vigorous fishing villages.

Also, the Basic Act on Ocean Policy promulgated in April 2007 sets as its basic principle the harmonization between the marine development and use and the conservation of the marine environment. The Act sets forth the securing of marine biodiversity and conservation of other favorable marine environments as the basis for the existence of mankind. Further, the Marine Biodiversity Conservation Strategy formulated by the Ministry of the Environment in March 2011, considering the results of the Tenth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10), aims to conserve biodiversity that ensures a sound structure and functions of the marine ecosystem, and to use marine ecosystem services (bounties of the sea) in a sustainable manner. Conservation of Satoumi and the Ocean conforms with such concept.

(1) Promotion of the conservation and restoration of seagrass beds and tidal flats
In order to realize sound Satoumi with abundant biodiversity and high productivity, the conservation and restoration of seagrass beds and tidal flats are one of the important objectives to be achieved.

Seagrass beds are also called the "forest of the ocean," where eelgrass and konbu beds can be found. Tidal flats are areas where various benthic species live, and many migratory birds arrive
for feed and rest, while also serving as a place for people to come close to water. Coastal waters including these are the grounds for the spawning and growth of a wide variety of species. Also, with their function to purify water quality by absorbing and degrading organic matter, nitrogen, and phosphorus which are contained in onshore domestic effluent, they largely contribute to biodiversity conservation. Further, coral reefs in subtropical waters serve as the spawning grounds, feeding grounds and nurturing grounds for living fishery resources.

However, the seagrass beds and tidal flats are decreasing significantly as the result of the coastal development and land reclamation occurring during the high economic growth period. In addition, "shore-burning," a phenomenon where seagrass beds disappear on a large scale due to various causes such as changes in sea conditions, lack of nutritive salt, and feeding damage by phytophagous fish, is expanding throughout the country. Additionally, as for tidal flats, the population of species that prey on clams such as the longheaded eagle ray is increasing, with growing concerns on affecting the maintenance of a sound ecosystem. In order to address those situations, and to realize sustainable fisheries production, it is necessary to conserve and restore the environments of the fishing grounds including seagrass beds and tidal flats.

In this context, the government promotes the maintenance and management activities by fishery people and other various parties using methods appropriate to the environment of the water, such as the removal of species causing feeding damage in seagrass beds and tidal flats, transporting of seagrass and clams while securing genetic diversity and local endemism, and tilling of fishing grounds. It will also promote the regeneration, restoration, and creation of seagrass beds and tidal flats in collaboration with the activities above.

As for the deterioration of the growing environment for aquatic flora and fauna due to domestic effluent, etc., efforts to reduce negative impact on water quality from onshore will be continuously promoted, through measures such as the promotion of environmentally friendly agriculture and the development of septic tanks and community sewerage systems (rural community sewerage). In addition, the adverse effect on fisheries activities due to increase in wastes drifting or washed ashore will be alleviated by promoting countermeasures such as the diffusion of fisheries material cycle technology.

In addition, in order to prevent damages to the fisheries industry due to red tide and dysoxic water masses, their monitoring system will be reinforced.

(2) Promotion of the development or maintenance of fishing ports and fishing grounds taking consideration on biodiversity

Fishing ports and fishing grounds are not only the production base for fisheries, but also contribute largely to the formulation of an environment that serves as the spawning grounds for marine species including species other than those targeted, and as the nurturing grounds
for larvae and juveniles. It is necessary to develop or maintain fishing ports and fishing grounds taking due consideration to biodiversity.

Therefore, upon the development of fishing ports and fishing grounds, utilization of various natural materials should be considered by giving full consideration to the impact on the natural environment of the site at each stage of planning, designing and construction. It is also necessary to understand the impact as far as possible through monitoring, and to promote the development or maintenance of fishing ports and fishing grounds taking into consideration the natural environment including biodiversity.

Particularly when developing or maintaining fishing ports, effort should be made so that changes in the surrounding natural environment be minimal. When implementing the project, creating fishing ports harmonized with the surrounding natural environment is also actively being promoted. For instance, the fishing port facilities have a structure which offers habitats for fish and shellfish, including dikes wherein seagrass beds are formed that aquatic fauna and flora can inhabit and propagate. Development of fisheries community sewerage systems in fishing villages to alleviate the loads of foul water inflow to the nearby waters of fishing ports, and measures to conserve the quality of waters near fishing ports such as removing sludge within the fishing port, are also enhanced.

Regarding the improvement of fishing grounds, the increase of productivity of the entire ecosystem is pursued so that living aquatic resources are recovered and increased, while a rich ecosystem is maintained and recovered. For those purposes, the creation of a favorable growing environment in accordance with the dynamics and life history of aquatic resources (growing environment including the material cycle mainly focusing on aquatic resources) will be promoted.

(3) Promotion of the conservation and utilization of environment in fisheries villages

Fisheries villages are places not only for fishing activities, but also for learning the importance of nature, having multifunctional roles including the formulation of favorable natural environments and landscapes, succession of traditional culture in the region, and providing of relaxing spaces for people. It is necessary to encourage the conservation and utilization of the environment in fisheries villages.

Therefore, the government will promote the development and maintenance of fisheries villages utilizing attractive resources in rural areas including rich biodiversity. Also, it will promote reutilization of fishing villages, by improving people’s understanding of and interest in the fisheries industry and fisheries villages by encouraging exchange between urban areas and fishing villages and people’s settlement in those villages through experiencing learning and communication with nature. Further, the government will also promote the conservation and
formulation of favorable fishing village landscapes with which citizens can feel familiar, and the succession of historical and cultural legacies.

(4) Promotion of the conservation and management of marine bioresources taking consideration on biodiversity

Conservation of a favorable water environment including the maintenance of the ecosystems of aquatic species is critical also from the perspective of the sound development of fisheries. The Aichi Biodiversity Targets set forth the promotion of measures regarding vulnerable ecosystems (Target 10) and the promotion of establishment of marine protected areas (Target 11).

Some concerns are raised regarding bycatch of sharks, seabirds, and sea turtles, as well as the impact of fisheries on biodiversity in deep waters. There are also trends to control the international trade of marine species under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Therefore, the government will promote fishery management which takes the ecosystem into consideration such as the establishment of protected waters, and develop and improve measures to mitigate bycatch such as tori-poles (bird scaring lines on poles) and circle hooks, and raise awareness of fishery people to apply the measures. In addition, the government will present scientific evidence that the sustainable use of marine bioresources under adequate management can be achieved at the same time as the conservation of biodiversity, as well as to form international consensus. Further, scientific knowledge of rare wild aquatic species is accumulated in order to maintain a sound ecosystem through the protection of rare wildlife aquatic species, and conservation and management methods are also developed.

Further, balance of the conservation of vulnerable ecosystems in seamounts and sustainable fisheries will be ensured, by evaluating the impact of demersal fisheries on vulnerable ecosystems in high seas and by introducing appropriate measures in cooperation with relevant countries which operate in the same areas.

Regarding the marine protected areas, it was defined in the Marine Biodiversity Conservation Strategy formulated by the Ministry of the Environment in March 2011 as "marine areas designated and managed by law or other effective means, in consideration of use modalities, aimed at the conservation of marine biodiversity supporting the sound structure and function of marine ecosystems and ensuring the sustainable use of marine ecosystem services." This definition was also approved in the 8th meeting of the Headquarters for Ocean Policy held on May 27, 2011. Areas fulfilling this definition include protected waters established by legislative measures and fisheries management designation areas by prefectures and fisheries organizations. There are also areas where voluntary conservation and management measures are being implemented by relevant fishery people throughout Japan.
Aichi Biodiversity Target 11 aims to conserve 10% of coastal areas and marine areas through the protected areas system by 2020. In order to achieve this target, the establishment of marine protected areas will be promoted appropriately, including the improvement of their management by effectively utilizing existing legislation, in order to ensure the conservation of biodiversity and the sustainable use of ecosystem services in marine areas. As clarified in the definition above, marine protected areas are not necessarily areas prohibiting human activities. Under the basic understanding that marine areas where biodiversity is conserved while being continuously used through voluntary co-management by fishery people can also be an effective form of protected area, our Japanese-style marine protected areas will be promoted.

(5) Strengthening fishery resources management

Conservation and management of fishery resources, resources that can be used sustainably, is a responsibility of coastal nations mandated by the United Nations (UN) Convention on the Law of the Sea (UNCLOS). It is also important from the perspective of securing a stable supply of fishery products to the people and ensuring biodiversity conservation. Aichi Biodiversity Target 6 also require the sustainable management and use of living fisheries resources. On the other hand, in the surrounding waters of Japan, about 40% of resources for which stock assessment has recently been implemented remain at a low level.9 It is necessary to further promote the maintenance and restoration of resources through fisheries resources management taking into account the stock statuses of resources.

Therefore, the government will implement various research on living fisheries resources using research vessels in close cooperation with research institutions of local governments, and promote the understanding of trends in the status of resources evaluation thereof.

Regarding the sustainable use and management of highly migratory fish including tuna, for which the deterioration of the resource is concerned, the government tries to set forth conservation and management measures based on scientific grounds and to eliminate illegal, unreported, and unregulated (IUU) fishing through regional fisheries management organizations. It also tries to internationally establish conservation and sustainable use of whale resources based on scientific knowledge.

In order to ensure conservation and management of living fisheries resources, some measures are implemented including input controls such as restriction on the number and size of fishing vessels and technical controls such as closed seasons, regulation of fishing gear and management of fishing grounds. In addition, total allowable catch (TAC) has been set for major

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9 Assessment of Fishery Resources in Japan’s Surrounding Waters 2010
fish species since 1997.

Since 2002, resources recovery plans have been promoted as a policy to comprehensively encourage measures like the reduction of the "fishing effort" (the amount of fishing inputs such as capital, labor, etc.), the release of fish seeds, and the improvement of fishing grounds, which are targeted for fish species that require urgent resources recovery and types of fishery catching such species. For example, the large-medium sized purse seine fishery operating in northern waters of the Pacific Ocean is trying to reduce fishing pressure by protecting immature fish of the Pacific stock of chub mackerel.

The government introduced resource management and fishery income compensation measures in FY2011. Under these systems and measures, it is necessary to further promote appropriate and systematic voluntary resource management measures in accordance with the stock status, such as the suspension of fishing activities, the control of the "fishing effort" (the amount of fishing inputs such as capital, labor, etc.) through regulating fishing gear and fishing methods, the release of fish seeds and the improvement of fishing grounds. For their implementations, the government will develop a framework for implementing the resource management guidelines and the resource management plans as a united effort by fishery people, research institutes and the government. It will also encourage all fishery people to participate in resource management that is implemented based on the resource management plans.

In addition, efforts by fishery people are promoted, regarding fisheries eco labels which assure that the fishery products were caught by methods taking into account ecosystems and resource sustainability.

(6) Promotion of the conservation of propagation that takes biodiversity into consideration and inland water fisheries

As explained above, since the recent stock statuses of some fisheries resources in the surrounding waters of Japan are at a low level, it is necessary to recover and increase resources by carrying out stock enhancement measures, including release of fish seeds in a sustainable manner, and improvement of the growth environment for small larvae and juveniles, while also taking into consideration biodiversity, as also specified in Aichi Biodiversity Target 7.

As for release of fish seeds, efforts are made to secure genetic diversity of species in the marine area, such as obtaining the parent fish from the stock in the marine area where the seeds will be released. The government will continuously promote efforts taking due consideration on biodiversity.

Regarding aquaculture, the formulation of regional plans of fishing ground improvement for the proactive improvement of aquaculture area is promoted, in order to reduce environmental
loads and realize sustainable aquaculture production that does not degrade the environment of fishing grounds, by reducing the residues of input prey or their sedimentation at water bottom. Also, in addition to the establishment of combined aquatic technology comprised of fish and shellfish aquaculture and algaculture allowing for stable material cycle of carbon and nitrogen, development of feed with less environmental load is promoted.

The government will implement salmon and trout propagation projects while ensuring harmony with ecosystems in the North Pacific and by taking into consideration the maintenance of the species characteristics and diversity between and within the species, envisaging the maintenance and sustainable use of salmon and trout resources. It will also strive to develop advanced techniques for releasing artificially developed fish seeds in a way which enables coexistence with wild fish. Thus, the government will promote a project for developing a technique of artificially developed seeds of salmon and trout while taking into consideration ecosystems in rivers and their surroundings.

Inland water fisheries in rivers and lakes are indispensable for people’s living, not only providing fish and shellfish to the people as production sites for fisheries and aquaculture, but also creating opportunity to have contact with nature through providing places for recreation such as fishing and outdoor activities. However, recently, in addition to the deterioration of habitats and growth environments for aquatic flora and fauna caused by the decrease in water quality and by establishments in rivers, due to the proliferation of alien species such as black bass, expansion of feeding damage by Great Cormorant, and the diffusion of bacterial cold-water disease in Ayu, the environment surrounding inland water fishery and aquaculture is becoming less favorable. Particularly regarding the invasive alien species, Aichi Biodiversity Target 9 specifies the necessity of taking countermeasures. Thus, as for alien species that may affect the ecosystem and fisheries of inland water, the government will investigate the relationship between the situation of its habitation and the effect of elimination, develop and conduct effective elimination methods according to the habitation situation of alien species, and further promote the conservation of biodiversity in inland water fisheries.

The habitats and growing environment of aquatic flora and fauna will be improved with the tilling of fishing grounds and the utilization of paddy fields. At the same time, disease control is promoted against bacterial cold-water disease in Ayu and Koi herpesvirus disease. Further, the region-specific genetic variation among freshwater fish in each water system is surveyed, and through the development of stock enhancement methods maintaining the gene diversity as well as the improvement of spawning grounds and fry nurseries, the government will promote efforts of stock enhancement while taking into consideration the conservation of biodiversity in inland water fisheries.
(7) Promoting measures to prevent fishery damage caused by wildlife

It is pointed out that the mass generation of some wildlife such as giant jellyfish that may bring significant damage to fisheries production is caused by changes in habitation environment due to marine pollution and overexploitation of living fisheries resources.

As for giant jellyfish that appear in wide areas, survey on the generation mechanism is being conducted and appropriate measures such as effective elimination will be taken.

The Great Cormorant, which migrates and increases in a wide range, is considered to have negative impact on useful fish species in inland water fisheries and the native ecosystems due to preying on native species and the competition of the habitation environment. Therefore, efforts related to population management such as elimination activities, replacement with dummy eggs, and control to stop the generation of eggs using dry ice, are promoted.

Steller Sea Lions, also known as a rare species, is causing damage to fisheries. The government will promote damage prevention measures based on scientific knowledge such as the number of Steller Sea Lions visiting relevant areas, while taking biodiversity into consideration.

Further, the state of the prey of useful living fisheries resources by large creatures including cetaceans is investigated and efforts to alleviate its impact are promoted.

V. Promotion of Biodiversity Conservation through Forests, Rivers and Seas

As they say, "Forests are Lovers of the Sea." Forests have a watershed conservation function and soil erosion prevention function. Forests also contribute to the biodiversity of the sea, by supplying nutrient salts to the sea through a river running through rural and Satochi-Satoyama areas (socio-ecological production landscapes) and feeding seaweeds and phytoplankton living in Satoumi (a coastal area where biological productivity and biodiversity have increased through human interaction).

It has also been old knowledge among fishery people that forests near the sea attract fish. Fishery people restricted entry into the forests by building a shrine. A "han" (feudal territory in the Edo period) restricted access to such forests and prohibited tree cutting. In this way, from the old times, people have preserved forests near the sea. Currently, these forests are designated as "protection forests for fish breeding" under the Forest Act.\textsuperscript{10} 580,000 ha of land is designated as such forest and protected by such means as restriction of cutting trees. More recently, against the backdrop of emerging environmental issues of coastal areas including  

\textsuperscript{10} Business document of the Forestry Agency
rocky-shore denudation, people came to know that nutrient salts produced in the mountains are brought to the seas through rivers, feeding fish, shellfish and seaweeds. Fishery people begun to make efforts toward planting forests upstream in the rivers. In particular, for coastal sea areas, the Basic Plan on Ocean Policy created in March 2008 mentions the necessity to promote policy measures for these areas as those requiring consideration as both land and sea areas.

For the residents and producers in rural and Satochi-Satoyama areas, the water resource conservation function of forests is important. They have been engaged in efforts for the conservation of forests providing water sources. For producing activities, it is also possible to mitigate the impact on biodiversity of Satoumi by means of appropriate use of agricultural chemicals and fertilizers. Further, it would also be possible to preserve the biodiversity of forests, rivers and seas by developing infrastructure considering the life history and migration of living organisms in water channels, etc., focusing on networks of water and ecosystems. Forests, rural and Satochi-Satoyama areas and Satoumi are interrelated, and these are places for people to live and engage in agricultural, forestry and fishery activities. As forests, rivers and seas are mutually connected, biodiversity conservation through the entire ecosystem is necessary.

To this end, programs for biodiversity conservation of forests, rivers and seas should be carried out in a proactive way. Such programs include, among others, assisting agricultural production placing priority on biodiversity conservation in rural and Satochi-Satoyama areas, broad-leaf tree-planting activities by fishery people, designation and preservation of protection forests for fish breeding, and forest improvement with a view to preserving fishing grounds. Among these programs is a "Noto Satoyama and Satoumi" project for the promotion of a sustainable agricultural production system and the preservation of Satoyama and Satoumi, supported by traditional rural culture centered on Satoyama and Satoumi and combining agriculture, forestry and fisheries.

VI. Promotion of Preservation and Sustainable Use of Genetic Resources

Since the very beginning of its agriculture, Japan has introduced and developed various cultivated plants suited to different environments to feed its citizens. The citizens' lives rely on various biological resources used as food, pharmaceuticals and fuels. However, from a global perspective, the diversity of genetic resources is at risk of decrease and loss due to such factors as the deteriorated environment caused by climate change and development, rapid decrease of tropical rainforests and the progression of desertification.

These genetic resources are essential for the development of new varieties to address needs for the increased food production, resistance to pests and global warming temperature. Recently,
amid the development of scientific technology including biotechnology, the use of genetic resources is expected to contribute to solving the problems of food, environment and energy.

It is important also from the international context to collect and preserve these valuable genetic resources and also to pass them on to the next generation and use them in a sustainable way. Further, as the Convention on Biological Diversity came into effect, a nation's sovereign rights over its own genetic resources were recognized, and access to and use of genetic resources requires prior informed consent from the nation providing genetic resources. At COP10, after a protracted negotiation, the Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization was adopted. The effectuation of this Protocol is expected to lead to the future promotion of conservation and sustainable use of biodiversity through improved access to genetic resources and proper benefit sharing for their utilization. Meanwhile, as an international framework for plant genetic resources (PGRs), the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR) came into force in 2004, aimed at building a multilateral system facilitating access to and use of PGRs under the international common rules, Japan will make efforts to join these international instruments as early as possible.

Further, for genetically modified crops, Japan currently has systems to ensure that the effects of these crops on biodiversity are assessed by scientific methods so that only crops verified as being free from such effects will be used, considering the potential risk of effect of these crops on biodiversity in Japan.

(1) Promotion of conservation and sustainable use of genetic resources useful for agriculture, forestry and fisheries

Use of genetic resources is expected to contribute to the solution of problems concerning food, environment and energy challenges, by such means as growing high-yield crops with less production cost, pest and disease-resistant crops eliminating the need for agricultural chemicals, and resource crops for energy production. So, it is necessary to promote the collection and conservation of useful genetic resources and their sustainable use.

Policy measures are to be implemented to achieve this purpose, including the strengthening of collection, preservation, characterization and evaluation of genetic resources for the study of breeding new varieties, efficient preservation of resources by ultra-low temperature technology, and strengthened assistance for research by providing research materials. In addition, policies for the study of gene functions in plants, animals and insect genome research, development of genome use technology, breeding of new varieties and creation of new industry will be implemented.
Further, as there are growing requests relating to forests, such as for countermeasures against pollinosis and scenery preservation, in order to secure good seeds and seedlings required for the improvement and preservation of forests in Japan towards the future, policies are to be implemented for the collection and storage of forestry wood genetic resources and the development of new varieties of woods.

Meanwhile, landraces original to the regions, seeded and cultivated over generations by farmers from old times, are becoming popular for enriched dietary culture, and preservation and proactive use of these varieties are becoming important.

In addition, regarding genetic resources useful for agriculture, forestry and fisheries, use for the purpose of research and technological development combined with strengthened industry-academia-government collaboration initiatives will be promoted.

(2) Securing biodiversity by means of regulating genetically modified crops

Use of genetic recombination technology is expected to lead to the development of new field crops which would contribute to the solution of various problems. On the other hand, genetically modified crops have a potential risk of affecting biodiversity in Japan through such means as intercrossing with wild plants. Therefore, it is necessary to secure biodiversity in Japan through regulating genetically modified crops.

For this purpose, Japan put into effect the Act on the Conservation and Sustainable Use of Biological Diversity through Regulations on the Use of Living Modified Organisms (Cartagena Act) in 2004, in accordance with the Cartagena Protocol on Biosafety (an international framework for the regulation of genetically modified organisms). Under the Cartagena Act, Japan has created a mechanism to require scientific assessment of the effect each species of genetically modified crop may pose on biodiversity, depending on the stage of development, and to confirm that only the use of crops verified as being free from any potential effect on biodiversity of Japan, even carried under unsealed conditions or grown in natural environment will be allowed to be cultivated or transported.

Further, under the Cartagena Act, border inspection is to be implemented for seeds and seedlings so as to prevent any plant for which the potential effect on biodiversity of Japan is unidentified from being imported into Japan, along with the accumulation of new scientific knowledge required for the assessment of impact on biodiversity and making information available to public. In addition, measures shall be taken in an appropriate way in case of circulation in Japan of any plant for which the potential effect on biodiversity of Japan is unidentified, by, for example, collection of such plant and ordering prohibition of use thereof.

At the 5th Meeting of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety (COP-MOP5) held in October 2010, the Nagoya-Kuala
Lumpur Supplementary Protocol relating to liability and redress for damage to conservation or sustainable use of biodiversity caused by a cross-border movement of genetically modified organisms was adopted. It is important for Japan to make efforts towards the early ratification of the Supplementary Protocol and to advance the Strategic Plan on Cartagena Protocol on Biosafety, which was also adopted at the meeting, in an appropriate manner.

VII. Contribution to Global Environmental Conservation in Agriculture, Forestry and Fisheries Sector

In developing countries, global-scale environmental issues including desertification are on the rise as a result of deterioration in land and water resources due to resource-exhaustive production such as excessive cultivation and over-grazing to increase production and income so as to cope with increasing population and poverty, causing concerns over deprivation of biodiversity. Further, there is a growing concern over the potential effect of global warming on the ecosystem. These global-scale environmental problems are posing cross-border threats to the existence of individual human beings, which need to be addressed through the cooperation of international society.

Further, Japan has a concern over the possibility of negative impact on growth of agriculture, forestry and fisheries products and change in places for growing agriculture, forestry and fisheries products that may be caused by global warming.

To this end, it is necessary to leverage Japan’s international and domestic experience and insight to advance international cooperative efforts for sustainable agriculture, forestry and fisheries, and to proactively contribute to the conservation of the global environment by such means as prevention of desertification, sustainable use of water resources and global warming countermeasures.

Forests contribute to the prevention of global warming by absorbing carbon dioxide which is a greenhouse gas by photosynthesis and storing carbon for a long time. However, in developing countries, deforestation and forest degradation of tropical forests is rapidly spreading. Greenhouse gas caused by deforestation and forest degradation is reported to account for 20% of the global total emission,\textsuperscript{11} and reduction of such emission is an important issue in global warming countermeasures. Therefore, further assistance is needed for the technological development and human resources training to contribute to the prevention of deforestation and forest degradation, with a view to improving efforts for reduction of emission caused by deforestation and forest degradation as well as conservation of forests (REDD+).

\textsuperscript{11} The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)
Further, Japan will actively participate in and contribute to international discussion on biodiversity, including the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services to be newly established.

VIII. Promotion of Development and Promotion of Use of Assessment Methods of Biodiversity in Agriculture, Forestry and Fisheries

The conservation of the biodiversity which lays the foundation of agriculture, forestry and fisheries is essential for securing the stable supply of safe and good quality agriculture, forestry and fisheries products to citizens.

Thanks to projects including "Development of management technology in harmony with nature for the hydrologic cycle and agriculture, forestry and fisheries ecosystem in watershed sphere" implemented for five years from 2002, technologies and fundamental data for appropriately managing ecosystems created by agriculture, forestry and fisheries activities from the standpoint of coexistence with nature, including a new technology for Satoyama management, a method of estimating habitats of insects and technology for maintaining environment for fish by a riffle-pool structure, have been made possible. These technologies are used for biodiversity-friendly policy measures, for example, conservation and use of Satoyama forests and networks of water and ecosystems.

However, although the measures related to agriculture, forestry and fisheries including environmentally friendly agriculture are implemented while paying due consideration to biodiversity, a science-based indicator has not been developed which would enable quantitative assessment of the effect. Therefore, in order to effectively implement these measures related to agriculture, forestry and fisheries, it would be necessary to develop such indicator.

For this purpose, the government will study and grasp what kind of organisms are living on and in farms, forest, seagrass beds and tidal flats and develop a science-based indicator for identifying positive and negative effects of agriculture, forestry and fisheries activities on biodiversity and an indicator for effectively promoting the related policy measures by leveraging the fundamental data acquired by MAFF in the past, including characteristics of biota specific to the ecosystems and investigation methods. By these efforts, the government will promote further efforts so as to identify agriculture, forestry and fisheries' roles in relation to biodiversity and to achieve deeper understanding among Japanese nationals and the international community.

1. Development and promotion of use of biodiversity indicator for agriculture, forestry and fisheries activities
For a biodiversity indicator related to agriculture, in order to grasp the effect of agricultural methodologies contributing to biodiversity conservation, such as the difference between environmentally friendly agriculture and conventional agriculture, the government has been developing assessment methods by dividing the nation into eight districts according to their natural conditions and choosing a representative organism species such as an insect for each category of main crops in the relevant region. In the future, collaboration and cooperation with prefectural and other local governments would be important for putting this assessment method into practice. For this purpose, the government will make efforts for communicating assessment methods to be put into practical operation at the relevant sites by such means as preparing manuals detailing the methods of studying and assessment of indicator insects in an easy-to-understand manner, with assistance from volunteering farmers. Further, the government will develop and publicize the database system for collection and provision of organism distribution data derived at the time of choosing indicator insects and the actual assessment in the future. In addition, agricultural production technologies fully exploiting the ecosystem functions of the relevant regions are to be developed based on the assessment methods, such as pest control technologies targeting indigenous natural enemies. In the future, the developed assessment method will be utilized as an indicator for the progress of biodiversity-related policy measures.

For forests, with a view to grasping the status of biodiversity conservation through forest management, and reflecting such status in policy measures, efforts are underway for the development and verification of an objective indicator of forest biodiversity, with a view to completing the project in FY2012, targeting planted forests for which human involvement is essential. Recognizing the importance of a concept of adaptive management taking into account uncertainty surrounding forest ecosystems, the government will promote appropriate development and conservation of forests adapted to the change in vegetation structures by the promotion of use of indicators linked to the monitoring of forest resources.

For the ocean, the government will continue study and research of trends in stock statuses of major fish species caught in coastal areas and the high seas and their variable factors, and will continue to accumulate the relevant data. In addition, seagrass beds and tidal flats in coastal areas, which are declining to a significant degree, greatly contribute to fishing and ecosystem services by decomposing organisms supplied from the land area and providing spawning grounds for marine species, and also affect the increase and decrease of living aquatic resources. For sustainable fishery while maintaining a good fishing environment and biodiversity, it is critical to maintain the diversity and function of decomposing organisms which play important roles in the ecosystems of seagrass beds and tidal flats. In this context,
the government will compile technologies for developing a simple biodiversity indicator focused on the carbon degradation ability of bacteria and genetic diversity of meiobenthos such as caenorhabditis, targeting the completion in FY2012.

2. Economic assessment of biodiversity in agriculture, forestry and fisheries Sector

The economics of ecosystems and biodiversity (TEEB) study indicates various methods of economic assessment of the value of biodiversity and ecosystem services, as well as the economic value of ecosystem services using these methods and magnitude of loss of biodiversity and effect of deterioration in ecosystems. Further, TEEB emphasizes the importance of the conservation of biodiversity and sustaining ecosystem services based on the economic assessment and recognition of the value of biodiversity and ecosystem services to policy decision makers and companies.

In particular, agriculture, forestry and fisheries have the characteristics of benefitting from nature ecosystems and at the same time nurturing biodiversity through activities. Bearing this in mind, the government will make efforts in assessing the economic value of agriculture, forestry and fisheries products as well as the biodiversity cultivated by the agriculture, forestry and fisheries sector, so as to make the role played by agriculture, forestry and fisheries widely understood. Further, the government will discuss the ways to utilize this assessment so as to facilitate activities for the conservation and use of biodiversity, in addition to economic assessment.

It should be kept in mind that the roles played by agriculture, forestry and fisheries include aspects which are difficult to assess in numerical terms, including cultural aspects as discussed in Chapter II, in addition to the aspects which are capable of being assessed from an economic standpoint.

IX. Restoration from Great East Japan Earthquake and Biodiversity

The Great East Japan Earthquake that occurred in March 2011 caused significant damage to wide areas, including damage to the fisheries industry, farmland and agricultural facilities due to the tsunami, contamination by radioactive materials, and evacuation from high-risk areas due to a nuclear power plant accident. The effect caused by the nuclear power plant accident has not been eliminated. In these areas, biodiversity protected by the community over generations and the natural environment created through agriculture, forestry and fisheries were also greatly damaged.

Recovery and reconstruction of farmland, forests and fishing grounds including coastal
areas located in these disaster-struck areas are the issues of utmost urgency, and the first priority is the recovery of production and distribution infrastructure for the agriculture, forestry and fisheries sector which had supported the community's life and economy. Further, response to radioactive contamination also needs urgent response. Studies on the effect of radioactive materials on biodiversity is an issue which requires long-term commitment.

As sustainable agriculture, forestry and fisheries contributes to the conservation of biodiversity, it is important to recognize that recovery of agriculture, forestry and fisheries leads to restoration and maintenance of the biodiversity and natural environment destroyed by the earthquake.

In the regions which need restoration, farmland, Satoyama, Satochi and Satoumi will be newly developed or recovered. In the course of the restoration process, it should not be forgotten that recovery of nature takes a long time. The Great East Japan Earthquake occurred in agriculture, forestry and fisheries areas, so it is also important to recognize that different considerations from those for an earthquake that occurred in urban areas, such as the Great Hanshin-Awaji Earthquake, are necessary for the recovery. Further, in order to tackle the unprecedented nuclear power plant accident that resulted in radioactive contamination of agriculture, forestry and fisheries products, government-private collaborative efforts are needed.

In these areas, local units formed by the community have cherished various traditions and heritages for a long time, and people are strongly attached to the communities in which they live. Recovery of rural areas leveraging resources in rural areas so as to bring back people's ways of living and culture while valuing people's affection to their regions will lead to early recovery of prosperity of organisms and biodiversity.

In the Sanriku area, forests, rivers and the sea are closely connected, with many narrow inlets and inlands along ria coasts, as well as rivers flowing into these inlets. In this area, for early recovery of biodiversity and improvement of ecosystem services, restoration efforts paying due consideration to the connection between forests and rivers and the sea are important.
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<tr>
<th>Terms</th>
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<tr>
<td>activities for biodiversity conservation through the cooperation among regional diversified actors</td>
<td>Biodiversity conservation activities conducted through collaboration among various actors in the community according to the Plans for the Promotion of Activities for Biodiversity Conservation through the Cooperation among Regional Diversified Actors developed by municipal governments under the Act on the Promotion of Regional Cooperation for Biodiversity. It also encompasses agriculture, forestry and fisheries focused on biodiversity conservation, conservation and creation of green areas, protection of ecosystems and rare wild flora and fauna species and protection against alien species that may affect ecosystems and agriculture, forestry and fisheries.</td>
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<tr>
<td>Act on the Promotion of Regional Cooperation for Biodiversity</td>
<td>A shortened title of the Act on the Promotion of Conservation for Biodiversity Activities through Cooperation among Regional Diversified Actors. This Act was promulgated in December 2010, setting a framework for the promotion of biodiversity conservation activities through the cooperation of various actors including community residents, people engaged in FAA and NPOs.</td>
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<tr>
<td>adaptive management</td>
<td>This is an approach for dealing with uncertain subject matter, namely a flexible management method incorporating the possibility of occurrence of unexpected incidents into the management system. Responses are adapted to the results of ongoing monitoring. This is also called adaptive environmental assessment and management. As biodiversity has many elements not scientifically identified, the adaptive management approach is important in addition to research and study to reduce uncertainty.</td>
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<td>Aichi Biodiversity Targets</td>
<td>Twenty specific targets for around 2020 included in the new global target strategy plan for years after 2011, adopted at COP10 together with medium to long-term targets (achievement of a world of &quot;living in harmony with nature&quot;: 2050) and short-term targets (take effective and urgent actions to halt the loss of biodiversity: 2020).</td>
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<td>alien species</td>
<td>This means organisms transferred outside their original habitats by being imported into Japan from abroad.</td>
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<td>bacterial cold-water disease in Ayu</td>
<td>An infectious disease of ayu fish caused by a bacteria (<em>flavobacterium psychrophilum</em>). In Japan, since it was first found in Tokushima Prefecture in 1987, this disease has caused significant damage to ayu fishing. The state and prefectural governments, the Fisheries Research Agency, the National Federation of Inlandwater Fisheries Cooperatives and other organizations are collaborating to promote guidance under a disease control policy, research and study of this disease.</td>
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<tr>
<td><strong>Basic Act on Biodiversity</strong></td>
<td>An Act aimed at conserving rich biodiversity and realizing a society in which human beings can coexist with nature and continue enjoying benefits from biodiversity in the future by the promotion of conservation and sustainable use of biodiversity in a comprehensive and well-planned manner. This Act sets forth a basic approach on the promotion of biodiversity-related policy measures, such as basic principles of conservation and use of biodiversity and creation of a national strategy for biodiversity.</td>
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<tr>
<td><strong>Basic Act on Ocean Policy</strong></td>
<td>This is a basic act governing marine-related area enacted in 2007, based on the considerations of the new order at sea under the United Nations Convention on the Law of the Sea (UNCLOS). This Act aims to promote marine-related policies in a comprehensive and well-planned manner, and sets six basic principles including &quot;harmonization of the development and use of the oceans with the conservation of marine environment,&quot; &quot;comprehensive governance of the oceans&quot; and &quot;sound development of ocean industries&quot; as well as 12 basic policies.</td>
</tr>
<tr>
<td><strong>boar embankment</strong></td>
<td>Protective wall made of earth mounds and built around crop land for preventing boars and other animals from entering.</td>
</tr>
<tr>
<td><strong>boar hedge</strong></td>
<td>A stone wall built around crop land for preventing boars and other animals from entering.</td>
</tr>
<tr>
<td><strong>buffer forest zones</strong></td>
<td>A forest zone conserved at the time of clear cutting of the trees in another zone, so as to protect new forest and to secure its public welfare functions.</td>
</tr>
<tr>
<td><strong>circle hook</strong></td>
<td>A fishing hook with its tip bent inside, formerly called &quot;kuebari,&quot; was used to prevent demersal fish such as epinephelus bruneus from getting away. This hook is effective for reducing the bycatch of sea turtles and is used for such purpose in long line fishery of tuna.</td>
</tr>
<tr>
<td><strong>Convention on Biological Diversity</strong></td>
<td>In 1992, the Convention on Biological Diversity (CBD) was adopted at the United Nations Conference on Environment and Development, together with the United Nations Framework Convention on Climate Change (UNFCCC). The CBD, which took effect and was signed by Japan in 1993, was created with a view to creating a general framework for the conservation of living organisms in general, motivated by the rapid decline of tropical rainforests, a sense of crisis concerning progression of species extinctions, and a sense of crisis concerning loss of biological resources essential for the survival of human beings. CBD's aims are: (i) the conservation of the variety of living organisms on earth; (ii) the sustainable use of biological resources; and (iii) the fair and equitable distribution of benefits derived from the utilization of genetic resources.</td>
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<tr>
<td>Term</td>
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<tr>
<td>cooperation between farming and livestock raising businesses</td>
<td>This means cooperation between crop farmers and livestock farmers for the purpose of soil cultivation and securing feed, by such way as livestock farmers providing manure to rice and vegetable farmers, rice farmers providing rice straw to livestock farmers, and rice farmers producing rice and other crops for feed and providing them to livestock farmers.</td>
</tr>
<tr>
<td>criteria and indicator</td>
<td>The term &quot;criteria&quot; here relates to areas and categories relating to sustainability of forest management, for example, conservation of biodiversity and maintenance of productivity of forest ecosystems. The term &quot;indicator&quot; here means an indicator for periodically measuring these criteria. An indicator for &quot;conservation of biodiversity&quot; includes, for example, a forest acreage per forest category and the number of species living in the forest.</td>
</tr>
<tr>
<td>dysoxic water masses</td>
<td>Water masses with extremely low levels of oxygen, which occurs when decomposition of organisms of bottom sediment is activated by water temperature rise in summer and oxygen is consumed, preventing oxygen from being supplied from the water surface.</td>
</tr>
<tr>
<td>ecosystem services</td>
<td>Benefits which human beings can obtain from ecosystems. According to the Millennium Ecosystem Assessment, ecosystem services are divided into four categories, namely provisioning services (e.g., food, water, wood), regulating services (e.g., control and regulation of climate), cultural services (e.g., recreation and education), and supporting services (services supporting other ecosystem services, such as generation of oxygen by photosynthesis, nutrient cycling).</td>
</tr>
<tr>
<td>environmentally friendly agriculture</td>
<td>This means environmentally friendly agriculture paying due consideration for mitigating the burden on the environment caused by chemical fertilizers and agricultural chemicals, by such means as soil cultivation leveraging the material circulation function of agriculture, while also considering productivity.</td>
</tr>
<tr>
<td>Exclusive Economic Zone</td>
<td>A sea zone stretching from the baseline of territorial water out to two hundred nautical miles (about 370km) from the coast (excluding territorial water), within which the coastal state has sovereign right over exploitation and management of biological and marine resources.</td>
</tr>
<tr>
<td>FAO</td>
<td>An acronym for the Food and Agriculture Organization of the United Nations, one of the United Nations' organizations aimed at making sure people have regular access to sufficient and high-quality food to lead active, healthy lives and achieving food security for all people.</td>
</tr>
<tr>
<td>fisheries material</td>
<td>Fishing equipment such as fishing nets, styrene foam fishing buoys and plastic baskets.</td>
</tr>
<tr>
<td>forest age</td>
<td>This means the age of the forest. For a planted forest, the year in which seedlings were planted is the 1st year, and the subsequent years are called the 2nd year, 3rd year, etc.</td>
</tr>
<tr>
<td><strong>Forest and Forestry Revitalization Plan</strong></td>
<td>A policy announced by MAFF on December 25, 2009, to rapidly revitalize Japanese forests and forestry within the next ten years or so through the promotion of building infrastructure for efficient and stable forestry management, including development of road networks, coordination and consolidation of forestry practices and necessary human resource development, and the creation of a framework necessary for the stable supply and use of timber. It sets basic principles including providing and sustaining the multi-functional roles of forests including biodiversity conservation through the appropriate forest development and conservation.</td>
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<tr>
<td><strong>forest environmental education</strong></td>
<td>A program for children to develop their understanding of the multi-functionality of forests such as prevention of global warming and the needs of forest management and recycling of forest resources and to foster their &quot;ability to lead a successful life&quot; by providing them with the opportunity to learn about the relationship among people's lives, the environment and forests through various hands-on activities.</td>
</tr>
<tr>
<td><strong>forestry practices</strong></td>
<td>Implementation of a series of human activities for growing forests, such as afforestation, tending and harvesting.</td>
</tr>
<tr>
<td><strong>genome</strong></td>
<td>Originated by combining gene and chromosome, meaning total genetic information of a living organism.</td>
</tr>
<tr>
<td><strong>GIAHS</strong></td>
<td>An acronym for Globally Important Agricultural Heritage Systems, a project started by the Food and Agriculture Organization in 2002 for designation of sustainable agricultural system that should be succeeded to next generations, such as agricultural methods contributing to the conservation of biodiversity.</td>
</tr>
<tr>
<td><strong>Good Agricultural Practice (GAP)</strong></td>
<td>Continual improvement activities through the accurate implementation, recording, checking and assessment of each process of agricultural production, in accordance with the check items to be specified according to the laws and regulations applicable to agricultural production.</td>
</tr>
<tr>
<td><strong>green corridors</strong></td>
<td>A forest to be developed for the purpose of creation of a network connecting protected forests, so as to promote interactions among genotypes, conserve species and secure genetic diversity.</td>
</tr>
<tr>
<td><strong>green employment program</strong></td>
<td>A project for securing and training human resources for forest management necessary for the steady implementation of the 10 Years Action Plan on the Mitigation of Global Warming by Forest Carbon-sink, against the backdrop of the decrease and aging of people engaged in forestry.</td>
</tr>
<tr>
<td><strong>green tourism</strong></td>
<td>This means a long-stay leisure activity for enjoying nature, culture and communication with community residents in rural areas. This also includes a variety of urban-rural interaction programs, such as purchasing agricultural, forestry and fishery products at farm stands on one-day trips, and agricultural, forestry and fishery experience in short-stay or long-stay at a certified minshuku.</td>
</tr>
<tr>
<td><strong>groundwork</strong></td>
<td>This means an initiative to actively engage residents in the implementation of regional environment programs. This replaces government-initiated planning and implementation, and is also participated in by businesses from the standpoint of contribution to the local community. Under this initiative, a groundwork (a creative activity at the site of living systems) is conducted through a trilateral partnership among residents, government and companies.</td>
</tr>
<tr>
<td><strong>habitat management</strong></td>
<td>Management of breeding, foraging and sleeping environments suitable for the habitats of wild animals and birds so as to maintain species of wild animals and birds in a stable manner for a long time and to mitigate damages caused by them.</td>
</tr>
<tr>
<td><strong>highly migratory fish</strong></td>
<td>Species of fish migrating in wide areas of water, inside and outside the exclusive economic zone, such as bonitos and tunas.</td>
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<tr>
<td><strong>Ikimono Mark</strong></td>
<td>A term which generally refers to biodiversity-friendly agriculture, forestry and fisheries activities throughout Japan using a distinctive mark and focusing on interactive communication with consumers.</td>
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<tr>
<td><strong>International Treaty on Plant Genetic Resources for Food and Agriculture</strong></td>
<td>A treaty adopted at the Food and Agriculture Organization of the United Nations (FAO) general assembly in 2001 that took effect in 2004 for sustainable agriculture and food security, with a view to establishing a multilateral system for member states to set common rules for the provision of plant genetic resources to use for food and agriculture-related research, breeding and training and conservation and to facilitate access to plant genetic resources, in harmony with the Convention on Biological Diversity.</td>
</tr>
<tr>
<td><strong>invasive alien species</strong></td>
<td>A living organism not indigenous to a region but brought into the region through human activities, which has the potential of exerting significant impact on the natural environment and threatening the biodiversity of the region.</td>
</tr>
<tr>
<td><strong>IPBES</strong></td>
<td>An acronym for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, an inter-governmental organization whose establishment is being discussed for the purpose of strengthening the connection between science and policy measures relating to biodiversity and reflecting scientific knowledge in policy measures.</td>
</tr>
<tr>
<td><strong>IPM</strong></td>
<td>An acronym for Integrated Pest Management. In Japan, this term refers to a general management method for controlling pests and weeds. More concretely, IPM is a pest/weed control method for reducing and maintaining pests below the level causing economic damage by using a control measure combining cultural weed control (e.g., elimination of sources of prevalence and use of rotation cropping), biological control (e.g., use of natural enemies of pests) and physical control (e.g., adhesive sheets, solar disinfection), according to the situations of prevalence of pests (i.e., pest forecast information). IPM is expected to become a method for reducing pesticides while mitigating burden on the environment.</td>
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<tr>
<td>IUU Fishing</td>
<td>IUU is an acronym for &quot;Illegal, Unreported and Unregulated.&quot; This term is used in such ways as IUU fishing boat, IUU fishing and IUU fish. IUU fishing refers to fishing circumventing regulations under international resource management frameworks.</td>
</tr>
<tr>
<td>koi herpesvirus disease</td>
<td>A virus disease of a koi carp often abbreviated as KHV disease. It has a high mortality rate, and is designated as a specific disease for anti-infection measures under the Act to Ensure Sustainable Aquaculture Production. In Japan, since it was first found in Kasumigaura in November 2003, prefectural governments have taken anti-infection measures such as restriction of transfer and incineration or burying.</td>
</tr>
<tr>
<td>larvae and juveniles</td>
<td>This refers to a growing stage of fish before adulthood. More precisely, larval fish after hatching, or juvenile fish before adulthood.</td>
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<tr>
<td>log production</td>
<td>A process of producing timber by harvesting trees and removing branches and leaves.</td>
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<tr>
<td>meioibenthos</td>
<td>Benthonic organisms which are about 0.1 - 1mm in size, such as eelworms and small-sized shellfish.</td>
</tr>
<tr>
<td>midsummer drainage</td>
<td>Draining and drying paddy fields so as to supply oxygen to earth and to eliminate hazardous gas in the earth. As a result of midsummer drainage, if a paddy field is dried up, tadpoles and dragonfly larvae cannot live as they need water to grow. Such negative impact on biodiversity can be avoided by making adjustments such as delaying midsummer drainage.</td>
</tr>
<tr>
<td>mixed forests with coniferous and broad-leaf tree species</td>
<td>A forest combining coniferous and broad-leaf trees.</td>
</tr>
<tr>
<td>Montreal Process</td>
<td>A project for creation and application of criteria and indicators for the identification, analysis and assessment of sustainability of forest management, participated in by 12 non-European countries having temperate forests, namely Argentina, Australia, Canada, Chile, China, Japan, South Korea, Mexico, New Zealand, Russia, Uruguay and the United States. In 1995, seven criteria and 67 indicators were agreed upon. After the revision of an indicator for Criterion 7 in 2008, it currently has seven criteria and 54 indicators.</td>
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</table>
| **multifunctional roles** | Multifunctional roles of agriculture means a variety of functions other than a function to supply food and other agricultural products through agricultural production in rural areas, such as preservation of national land, water resources recharging, conservation of the natural environment, formation of a good landscape and maintenance of cultural tradition.  
Multifunctional roles of forests means a variety of forest functions, such as prevention of global warming, preservation of national land, watershed conservation, conservation of the natural environment, creation of good scenery, preservation of culture and timber production.  
Multifunctional roles of fisheries and fishing villages means a variety of functions other than the original function of the fisheries industry and fishing villages to secure stable supply of fisheries product, such as preservation of lives and properties, supplementing the material cycle, preservation of ecosystems, creation of communication between people, and maintenance and development of communities. |
<p>| <strong>multi-storied forests with treatment</strong> | Forests under human management, composed of trees of different ages and heights. |
| <strong>Nagoya-Kuala Lumpur Supplementary Protocol</strong> | This refers to the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety adopted at MOP5, providing for measures to be implemented by member states for responsibilities and redress against damage to the conservation and sustainable use of biodiversity due to transboundary movement of living modified organisms (LMO). |
| <strong>Nagoya Protocol</strong> | This refers to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity. The Protocol was adopted at COP10, providing rules for smooth international access to genetic resources, including those necessary for the development of new varieties of crops, and distribution of benefits from use thereof to the providing country of such genetic resources. |
| <strong>organic agriculture</strong> | Agriculture using a production method based on non-use of chemical fertilizer and pesticides and genetic recombination technologies, so as to reduce the burden on the environment associated with agricultural production to the maximum extent possible. |
| <strong>paddy field fishway</strong> | A facility enabling running of fish from drainage canals to paddy fields, in cases where fish cannot run up to a paddy field due to differences in heights of the drainage canals and paddy fields. |</p>
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<tr>
<td>plans for the promotion of activities for biodiversity conservation through cooperation among regional diversified actors</td>
<td>A plan that can be developed by a single municipal government or a collaboration of municipal governments for the implementation of regional cooperative conservation activities under the Act on the Promotion of Regional Cooperation for Biodiversity. It sets details for the areas covered by the activity, goals, and organization, locations, timing and methods of implementation.</td>
</tr>
<tr>
<td>protected forests</td>
<td>A region designated within national forests for the purpose of protection of wild forest ecosystems and forests with valuable species and conservation of genetic resources. Since being established in 1915 as a part of the National Forest Management Program, it has served as a pioneering system for conservation of the natural environment. There are seven categories including forest ecosystem reserves, forest organisms’ genetic resources reserves, and forest vegetation reserves, etc.</td>
</tr>
<tr>
<td>protection forests</td>
<td>Forest designated by a prefectural governor or the Minister of Agriculture, Forestry and Fisheries to achieve a specific public-interest purpose such as watershed conservation. In this forest, activities such as harvesting trees and changing the shape or nature of the land are restricted.</td>
</tr>
<tr>
<td>protected waters</td>
<td>Waters suitable for spawning of aquatic animals, growing juvenile fish and seeds of aquatic plants, which are designated by a prefectural governor or the Minister of Agriculture, Forestry and Fisheries as those requiring necessary measures for protection and cultivation.</td>
</tr>
<tr>
<td>propagation project</td>
<td>Meaning a program for the improvement, development and management of cultivation environments for the maintenance and increase of resources, including the development of spawning grounds and cultivation facilities for assisting breeding and growth of living organisms, and a program for implanting or stocking of seeds and seedlings of living organisms.</td>
</tr>
<tr>
<td>publicly beneficial functions (of forests)</td>
<td>Multi-functionality of a forest, such as the watershed conservation function, mountain disaster prevention function and living environment maintenance function, but not including timber production functions.</td>
</tr>
<tr>
<td>REDD+</td>
<td>An approach combining an initiative for reducing emission of greenhouses gases from deforestation and forest degradation in developing countries and other activities such as conservation of forest carbon stocks in developing countries.</td>
</tr>
<tr>
<td>regional fisheries management organization</td>
<td>An international organization established under an international treaty for fishing management within a certain range of waters, relating to the management of fish widely migrating in the sea, such as tuna and bonito. Measures for the conservation and management of regulated resources within the designated waters are determined by the participation of related states.</td>
</tr>
<tr>
<td><strong>Regulation of wildlife population sizes</strong></td>
<td>Regulation of capturing or catching of wild birds and animals by setting a target population of species depending on the status of inhabitation and damage to agriculture, forestry and fisheries, so as to ensure long-term survival of the relevant species and mitigate damages.</td>
</tr>
<tr>
<td><strong>Release of fish seeds</strong></td>
<td>Fish lay a large number of eggs; however, most of them die between the period from birth to becoming juvenile fish due to such reasons as predation by other fish. A method of growing living aquatic resources utilizing the production ability of nature, namely managing fish for this period and growing fish into youths with strong survival ability (juvenile fish) and releasing them to natural water, is called &quot;release of fish seeds.&quot;</td>
</tr>
<tr>
<td><strong>Resource management guidelines and the resource management plan</strong></td>
<td>A new framework for the promotion of well-planned resource management with a view to improving voluntary resource management efforts by fishery people, in which the state and prefectural governments develop a resource management policy setting forth the approach and specific measures for resource management, and all fishing cooperatives and fishery people engaged in coastal, offshore and far-seas fishing prepare resource management plans according to such policy (started from FY2011).</td>
</tr>
<tr>
<td><strong>Satoyama Forest</strong></td>
<td>Meaning forests nearby residential areas which are being used or were used in such ways as cutting trees for fuelwood and gathering fallen leaves.</td>
</tr>
<tr>
<td><strong>Seamount</strong></td>
<td>This means mountain-like, elevated area under the sea, which is 1,000 meters or higher above the surrounding seabed.</td>
</tr>
<tr>
<td><strong>Stock</strong></td>
<td>A migration unit of resources. The same subgroup of organism often has specific biological features, such as spawning season, spawning grounds, distribution, migration, growth, maturation and survival, without regard to the possibility of genetically distinguishing such subgroup from other groups.</td>
</tr>
<tr>
<td><strong>Sustainable forest management</strong></td>
<td>The stewardship and use of forests to meet the needs of present and future generations in a way that maintains their biodiversity and vitality.</td>
</tr>
<tr>
<td><strong>TEEB</strong></td>
<td>An acronym for the Economics of Ecosystems and Biodiversity, an international initiative to promote policymaking and planning by governments and businesses oriented to sustainable use of biodiversity and ecosystem service, focusing on the economic value of biodiversity at a global level and measuring the magnitude of the effect caused by loss of biodiversity and degradation of ecosystem biodiversity.</td>
</tr>
<tr>
<td><strong>Thinning</strong></td>
<td>The selective removal of a part of growing trees so as to stimulate growth of the remaining trees, depending on the density of trees. Thinned woods are produced from this work. In general, thinning is done several times between the improvement cutting and harvesting, depending on the growing purpose of the forests.</td>
</tr>
<tr>
<td><strong>Total Allowable Catch (TAC)</strong></td>
<td>A framework setting annual total allowable catch (TAC) by fish type, based on scientific data such as the current status of resources and considering social circumstances including fishery management.</td>
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<td>Term</td>
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<tr>
<td>tori-poles (bird-scaring lines on poles)</td>
<td>Device for longline fishing used to keep sea birds away from bait attached to a fish hook, by installing a rod with a long string and streamers astern the boat.</td>
</tr>
<tr>
<td>United Nations Convention on the Law of the Sea (UNCLOS)</td>
<td>A comprehensive treaty on international order of the seas which was adopted at the United Nations in 1982 and took effect in 1994. The treaty provides for categories of waters such as the territorial seas, exclusive economic zones, continental shelves, the high seas, sea floors and other areas. It also provides for a coastal state's sovereign right over resources within its exclusive economic zone and requires such state to take measures for conservation and optimum utilization of living resources.</td>
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<tr>
<td>United Nations Forum on Forests (UNFF)</td>
<td>Meaning an intergovernmental forum for discussing forest issues in general, established under the Economic and Social Council of the United Nations for discussing sustainable forest management in the world.</td>
</tr>
<tr>
<td>winter flooding of paddy fields</td>
<td>A farming method whereby a paddy field is filled with water even after harvesting rice. This is effective for prevention of weeds, as well as conservation of the ecosystem of the region as it provides a growing environment for water birds.</td>
</tr>
<tr>
<td>world heritage sites</td>
<td>Sites registered in a world heritage list prepared under the Convention Concerning the Protection of the World Cultural and Natural Heritage. The sites are divided into three categories: cultural property including buildings, natural property including natural landscapes and mixed property combining the values of both. The Convention was adopted at the United Nations Educational Scientific, and Cultural Organization (UNESCO) general assembly in 1972 for the purpose of establishing an international cooperation and assistance framework for the protection of world cultural and nature properties against threats of damage and destruction as a world heritage for all human beings.</td>
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