Chapter 4 Restoration/Reconstruction from Natural Disasters, Disaster Prevention/Reduction and Strengthening National Resilient

1. Restoration/Reconstruction from Great East Japan Earthquake

Occurrence of the Great East Japan Earthquake

- In 2011, the Great East Japan Earthquake occurred, causing damage from the strong tremors and massive tsunami as well as the accident at the Fukushima Daiichi Nuclear Power Plant of the Tokyo Electric Power Company.

Government's policy for reconstruction efforts

- In 2011, the government formulated the "Basic Policy for Reconstruction from the Great East Japan Earthquake" and started to promote efforts for a 10-year reconstruction period.

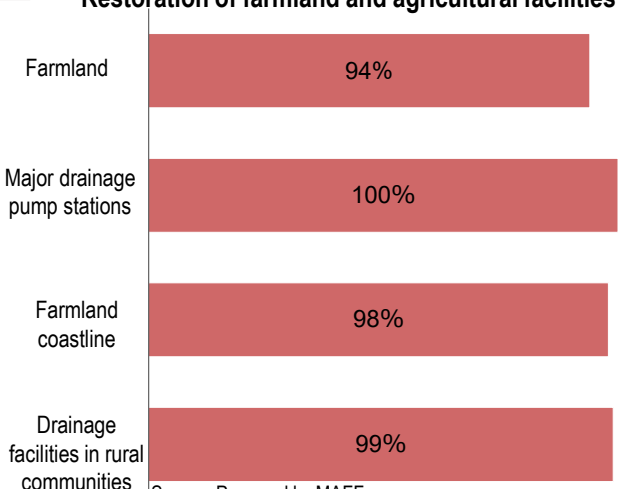
Restoration and reconstruction from the earthquake and tsunami disasters

- Salt removal, rice paddy boundary reconstruction and other restoration operations from the earthquake and tsunami disasters have made progress in 19,690 ha of farmland subjected to restoration and farming was resumed in 94% of this farmland as of the end of January 2021.
- Farmland partitions were expanded in conjunction with the restoration efforts after earthquake and tsunami disasters.

Restoration and reconstruction after the nuclear disaster

- 32% of the suspended farmlands in 12 municipalities affected by the nuclear disaster have resumed farm operations. To accelerate the resumption of farming, the government is dispatching MAFF officials to municipalities and supporting the creation of production areas that develop high value-added production through the integration of farmland use, production and processing, etc., under the Act on Special Measures for the Reconstruction and Revitalization of Fukushima.
- 8.1% of respondents are hesitant to purchase Fukushima products due to fear of radioactive materials, showing that a certain number of people are still hesitant to purchase. For this reason, the government is disseminating information based on the "Strategy for dispelling harmful rumors and strengthening risk communication".

Restoration of farmland and agricultural facilities



Source: Prepared by MAFF
Note: As of the end of January 2021

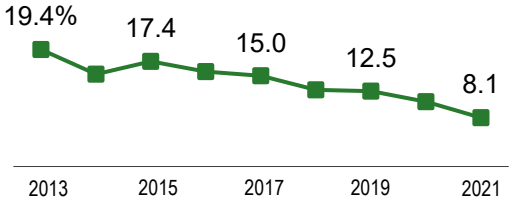
Status of resumption of farm operations in 12 municipalities affected by the nuclear accident

(Unit: ha)

	Suspended farmland area	Resumed farmland area	Resumption rate (%)
12 municipalities (Total)	17,298	5,568	32.2

Source: Prepared by MAFF
Note: The suspended farmland area is as of the end of December 2011, and the resumed farmland area is as of the end of FY2019.

Percentage of people hesitant to purchase products produced in Fukushima Prefecture due to fear of radioactive materials



Source: Prepared by MAFF based on Consumer Affairs Agency, "Survey on Consumer Awareness of Harmful Rumors"

2. Restoration from large-scale natural disasters

- In recent years, earthquakes, torrential rains, and other large-scale natural disasters occur frequently. In conjunction with strengthening its response to disasters, the government supports the early resumption of farm operations, and promotes efforts in farming areas to improve productivity through crop conversion and expansion of operation size.
- For the Kumamoto Earthquake (2016), infrastructure development such as the expansion of farmland partitions was carried out as part of a creative reconstruction effort.
- The Hokkaido Iburi Tobu Earthquake (2018) caused a mountainside collapse of and damage to pipelines. Subsequent, restoration efforts progressed, and by the end of March 2021, 137.3 ha of the 137.6 ha covered by the disaster recovery project had been restored.

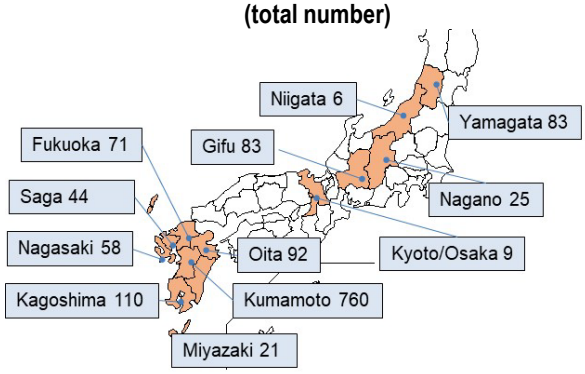
3. Status of restoration from FY2020 disasters

- During FY2020, crops and facilities related to agriculture, forestry, and fisheries were severely damaged due to the torrential rains in July 2020. The total damage related to agriculture, forestry, and fisheries in 2020 amounted to 247.3 billion yen (as of April 12, 2021).
- In response to the severe damage caused by the torrential rains in July 2020, the government provided push-type food containers, drink and infant formula support to the affected areas immediately after the disaster. In addition, government dispatched a total of 1,362 national staff (MAFF-SAT) to support early restoration and designated it as ordinance-designated severe disaster early on, so as to reduce the burden on local governments and affected farmers.
- The government has provided comprehensive support for agriculture, forestry, and fisheries farmers affected by the July 2020 torrential rains to encourage them to rebuild their businesses as quickly as possible, so as to not lose their motivation. This support included removal of soil and sand, restoration of farmland, soil preparation, pest control and fertilizer application, and restoration of agricultural machinery and greenhouses, based on the concept of restoration in addition to restoration to the original state.
- In response to the concerns of agriculture, forestry, and fisheries farmers affected by the heavy winter snowfall of 2020-2021, the government also provided the following support to help them resume operations as soon as possible. This included the reconstruction and repair of agricultural greenhouses and livestock housing, removal, restoration and replanting of fruit trees and securing of additional seeds, seedlings, and snow-melting chemicals, etc.

Flooded greenhouses for citrus crops (July 2020 torrential rain)

Flooded combine harvester (July 2020 torrential rain)

Number of people dispatched to MAFF-SAT by prefecture (total number)



Source: Prepared by MAFF
Note: As of April 12, 2021

MAFF Minister visiting the site (heavy winter snowfall of 2020-2021)

4 Disaster prevention, disaster reduction, strengthening national resilience and preparedness for large-scale natural disasters

Promoting measures for disaster prevention/reduction and strengthening national resilience

- Based on the "3-years emergency measures package for preventing/reducing disasters and enhancing national resilience" decided by the Cabinet in December 2018, and the "5-years acceleration measures for disaster prevention, disaster reduction and strengthening national resilience" decided by the Cabinet in December 2020, the government promoted the construction of agricultural irrigation facilities, irrigation ponds, and prevention of disasters in agricultural houses.
- (See Chapter 2, Section 6 for information on the Act on Special Measures for Construction of Reservoirs, [River Basin Disaster Resilience and Sustainability by All].).

Preparing for disasters

- To prepare for disasters, farmers themselves need to make efforts, such as acquiring technical guidance for prevention of typhoon and snowfall damage, and enrollment in horticulture facility mutual aid offering a new premium discount package that covers old greenhouses up to the property value at the time of construction, and revenue insurance system.
- To encourage farmers to develop their own agricultural BCPs (Business Continuity Plans), the government prepared a checklist and a format for agricultural BCPs, and promoted their dissemination.

Brochure for agricultural BCPs

Source: Prepared by MAFF

FY2021 Measures for Food, Agriculture and Rural Areas

Summary

- Policy priorities, fiscal measures, legislative actions, tax measures, monetary measures

I Measures to maintain and improve Japan's food self-sufficiency ratio and potential

- Initiatives to maintain and improve Japan's food self-sufficiency ratio and potential
- Measures to realize the production targets for each major item

II Measures for securing a stable supply of food

- Exploration of demand through the creation of new values
- Strategic exploration of global market
- Deepening of the connection between consumers and food and agriculture
- Securing food safety compatible with international trends and securing consumer confidence
- Establishing comprehensive food security in anticipation of food supply risks
- Response to a new international environment such as TPP, and strategic international negotiations

III Measures for sustainable development of agriculture

- Development and securing of business farmers for realizing a strong and sustainable agricultural structure
- Active participation of diverse human resources and entities that support agricultural sites
- Consolidation of farmland to business farmers and securing farmland
- Promotion of initiatives towards stabilization of agricultural management
- Development of an agricultural production base that contributes to the transformation of agriculture into a growth industry and strengthening national resilience
- Strengthening of the production bases compatible with changes in the demand structure, etc., and streamlining of distribution/processing structures
- Promotion of innovations at agricultural production/distribution sites by utilizing information and communication technologies, etc.
- Promotion of environmental policy, such as responses to climate change

IV Measures for promotion of rural areas

- Securing income and employment opportunities by utilizing local resources
- Improvement of conditions necessary for people to continue to live in rural areas including hilly and mountainous areas
- Creation of new movements and vitality to support rural areas
- Development of a collaborative system of related ministries and agencies to continuously promote measures in line with the above three items

V Measures for restoration/reconstruction from the Great East Japan Earthquake and large-scale natural disasters

- Restoration/Reconstruction from Great East Japan Earthquake
- Preparedness for large-scale natural disasters
- Restoration from large-scale natural disasters

VI Measures for groups

VII Measures for forming a national consensus through the expansion of national movements on food and agriculture

VIII Response to new infectious diseases including novel coronavirus infections

IX Matters necessary for comprehensively and systematically promoting measures for food, agriculture and rural areas

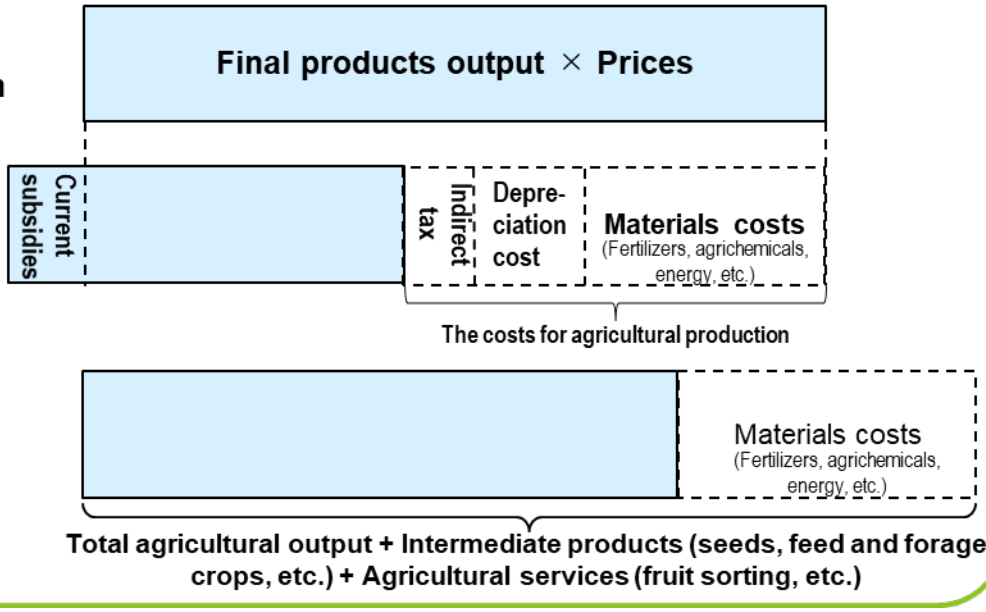
Definitions

1. Confusing terms

Production value, income

Purpose	Term	Statistical data <source>
To know the total value of sales of agricultural products produced in Japan	Total agricultural output	**8.9 trillion yen (2019)** <Statistics of Agricultural Income Produced>
To know the value added of agricultural products produced in Japan, or their sales value minus the costs for agricultural production	Agricultural production income	**3.3 trillion yen (2019)** <Statistics of Agricultural Income Produced>
To compare the value added by agriculture as part of gross domestic product (GDP) with values in other industries and foreign countries	Gross agricultural production	**4.7 trillion yen (2019)** <National accounts>

- **Total agricultural output: 8.9 trillion yen**
- **Agricultural production income: 3.3 trillion yen**
- **Gross agricultural production: 4.7 trillion yen**



Agriculture management entities

Purpose	Term	Statistical data <source>
To know the number of entities engaged in agricultural production or agricultural work under contract	Agriculture management entities*1	1.08 million entities (2020) <2020 Census of Agriculture and Forestry>
To know the number of individuals (households) engaged in agriculture	*1Individual management entities*1	1.04 million entities (2020) <2020 Census of Agriculture and Forestry>
To know the number of households with heads of household younger than 65 years old and whose main income is from agriculture	Business farm entities*1	0.23 million entities (2020) <2020 Census of Agriculture and Forestry>
To know the number of agriculture, community-based farm cooperatives, corporation entities, etc.	Group management entities*1	40,000 entities (2020) <2020 Census of Agriculture and Forestry>

Members of individual management farm households

Purpose	Term	Statistical data <source>
To know the number of farm household members who worked as self-employed farmers for one day or more per year	Household members engaged in own farming*2	2.49 million persons (2020) <2020 Census of Agriculture and Forestry>
To know the number of farm household members who usually worked mainly as self-employed farmers (excluding housewives engaged mainly in housework and childcare, students, etc.)	Core persons mainly engaged in farming*2	1.36 million persons (2020) <2020 Census of Agriculture and Forestry>

Employed farmers

Purpose	Term	Statistical data <source>
To know the number of persons employed as long-term farmers (seven months or more)	Permanently hired worker on farm *2	0.16 million persons (2020) <2020 Census of Agriculture and Forestry>
To know the number of persons employed as short-term farmers (temporary)	Temporary hired worker on farm*2	0.95 million persons (2020) <2020 Census of Agriculture and Forestry>

*1: See Definitions 2 (1)
*2: See Definitions 2 (5)

2.Basic statistical terminology

(1)Classification of agriculture management entities (2020 Census of Agriculture and Forestry)

Terminology	Definition
Agriculture management entities	An establishment that performs agricultural production either directly or on contract and fulfills one of the following conditions: (1) manages 30 ares or more cultivated land, (2) possesses a planted area or cultivated area or a number of livestock being raised or delivered that is equal to or greater than a predetermined standard (e.g., 15 ares for outdoor grown vegetables, 350 square meters for vegetables grown in facilities, one cow), (3) accepts farm work on contract. (Censuses from 1990, 1995 and 2000 regard agriculture management entities as the combination of commercial farm households, agricultural holdings other than a farm household, and agricultural service enterprises.)
Individual management entities	Entities that conduct business as individuals (households), not including corporate entities.
Business farming entities	Individual management entities whose main source of income (50% or more) is farming, and which have at least one family member under the age of 65 who is engaged in self-employed farming for 60 days or more per year.
Semi-business farming entities	Individual management entities whose main income (50% more than) is from sources other than agriculture, and which have at least one family member under the age of 65 who is engaged in self-employed farming for 60 days or more per year
Side-business farming entities	Individual management entities without members under the age of 65 engaged in self-employed farming for 60 days or more per year
Group management entities	Agriculture management entities that do not fall under Individual management entities.
Single farming entities	Entities whose main agricultural product sales account for 80% or more of income from all agriculture product sales.
Semi-multiple farming entities	Entities whose main agricultural product sales account for 60% to less than 80% of income from all agriculture product sales.
Multiple farming entities	Entities whose main agricultural product sales account for less than 60% of income from all agriculture product sales (excluding the management entities without any sales).

(2)Classification of agriculture management entities (Definitions from 2005 Census of Agriculture and Forestry to 2015 Census of Agriculture and Forestry)

Terminology	Definition
Agriculture management entities	Same as (1).
Family management entities	Individual management entities or a single-household corporation entity.
Organized management entities	Agriculture management entities that do not fall under family management entities.

(3) Classification of farm households

Terminology	Definition
Farm household	Household engaged in farming and managing cultivated land of 10 ares or more, or earning 150,000 yen or more per year from sales of agricultural products.
Commercial farm household	Farm household managing cultivated land of 30 ares or more, or earning 500,000 yen or more per year from sales of agricultural products.
Business farm household	Farm household whose main source of income (50% or more) is farming, and which possesses at least one family member under the age of 65 who is engaged in self-employed farming for 60 days or more a year.
Semi-business farm household	Farm household whose main income (50% or more) is from sources other than agriculture and which possess at least one family member under the age of 65 who is engaged in self-employed farming for 60 days or more a year.
Side-business farm household	Farm household without any members under the age of 65 engaged in self-employed farming for 60 days or more a year (farm households other than business and semi-business farm households).
Full-time farm household	A farm household without family members who are part-time farmers.
Part-time farm household	A farm household with one or more members who are part-time farmers.
Farm household earning main income from farming	A part-time farm household earning more income from farming than from others
Farm household earning main income from other jobs	A part-time farm household earning more income from non-farming jobs than from farming
Noncommercial farm household	A farm household managing cultivated land of less than 30 ares, and earning less than 500,000 yen per year from sales of agricultural products.
Agricultural holding other than farm household	A holding other than farm household managing cultivated land of 10 ares or more, or earning 150,000 yen or more per year from sales of agricultural products.
Agricultural services enterprise	An enterprise conducting farm work on contract (including enterprise other than agricultural holding, specializing in production and sale of seedlings).
Land tenure non-farm household	A household other than a farm household possessing 5 ares or more in cultivated land and abandoned cultivated land

Note: Definitions are based on the survey system of the 1990 Census of Agriculture and Forestry and the 2000 Census of Agriculture and Forestry.

(4)Farm household economics

Terminology	Definition
Agricultural income	Agricultural gross income (total income from farming) – Agricultural expenditures (all expenses necessary for farming)
Income of business related to agricultural production	Gross income of business related to agricultural production (gross income from businesses such as agricultural processing, farm-inns, restaurants and tourist farms, which are related to agriculture and managed by individuals engaged in farming) – Expenditures of business related to agricultural production (expenditures such as labor and material costs required for the aforementioned businesses)
Non-agricultural income	Non-agricultural gross income (e.g., gross income from independent part-time nonagricultural businesses, salaries and wages) – Non-agricultural expenditures (e.g., expenditures for independent part-time non-agricultural businesses, transportation expenditures for commuting)
Production cost	The production cost is the total cost (combining material and labor costs) for production of farm products minus by – product values.
Material cost	Liquid goods costs expended for producing agricultural products (seeding, fertilizers, agricultural chemicals, heating, lighting, power and other materials costs) +Depreciation costs for fixed goods (depreciable assets including buildings, automobiles, agricultural machines and production management equipment)
Family labor cost	The family labor cost is calculated by multiplying family working hours by an average hourly wage as computed based on wage data for business establishments with five to 29 workers in the construction, manufacturing and transportation/postal industries in the Monthly Labor Survey Report (by the Ministry of Health, Labour and Welfare).

(5)Agricultural labor by household members in individual management entities

<table>
<tr><th colspan="3" rowspan="2"></th><th colspan="3">Involvement in farming</th><th>Household member</th></tr>
<tr><th colspan="2">Engaged in farming</th><th rowspan="2">Not engaged in farming</th><td rowspan="3">As a rule, people who live and earn a living together
(1) Core persons mainly engaged in farming
Household members 15 years old and over who are working mainly in agriculture during regular hours.
(2) Household members engaged in own farming
Household members 15 years old and over who are engaged in self-employed farming for one day or more per year.</td></tr>
<tr><th rowspan="2">Status during regular hours</th><th>Engaged mainly in work</th><th>Mainly farming</th><th>Mainly other</th></tr>
<tr><th>Other (housework, school, etc.)</th><td colspan="3">Core persons mainly engaged in farming
(1)
(2)
Household members engaged in own farming</td></tr>
<tr><td colspan="3">Permanently hired worker on farm</td><td colspan="4">Refers to workers hired mainly for farm management with an employment agreement (including verbal agreement) covering a period of seven months or more (including the workers hired regardless of an employment period).</td></tr>
<tr><td colspan="3">Temporary hired worker on farm</td><td colspan="4">Refers to day and/or seasonal workers hired on a temporary basis for farm management (including mutual help among farm households (labor exchange) and assistants (labor accepted for free)), but not including the laborers employed under a partial farm work contract.
It includes cases in which workers are hired mainly for non-farm management work but engaged in farm management during the busy season, as well as those who had an employment agreement for seven months or longer but quit before reaching seven months.</td></tr>
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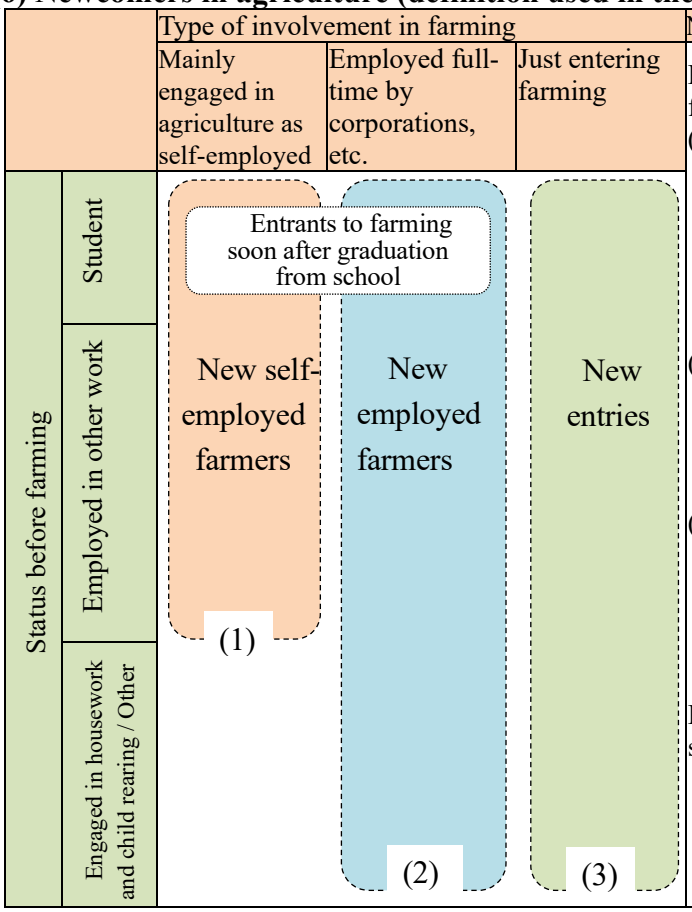
(6) Newcomers in agriculture (definition used in the survey on Newcomers in Agriculture)



Newcomers in agriculture

Defined as individuals who fulfill one of the following conditions:

(1) New self-employed farmers
Members of family management entities whose living status has changed anytime within a year of the survey date from "student" or "employed in other work" to "new graduate who has become a farmer" or "a new farmer who changed occupations".

(2) New employed farmers
Persons engaged in farming who have been hired by corporations anytime within a year of the survey date and work for their employers for 7 months or more a year.

(3) New entries
Persons responsible for farming started anytime within a year of the survey date by securing land and funds on their own, and their partners

Entrants to farming soon after graduation from school
New self-employed farmers who have changed their status from "student" to "engaged mainly in farming", as well as new employed farmers who were recently students.

(7) Classification of agriculture area

Terminology		Definition
Classification of agriculture area		Classification of present and former cities, wards, towns, and villages (hereinafter referred to as "municipalities") based on fundamental conditions (e.g., cultivated, forest and grazing land shares, farmland gradients) that define the structure of regional agriculture
	Category	Standard index (fulfills one of the following conditions)
	Urban area	- Present and former municipalities where the DID's share of habitable land is 5% or more with a population density of 500 persons per square kilometer or more or a DID population of 20,000 or more. - Present and former municipalities where the residential area's share of habitable land is 60% or more with a population density of 500 persons per square kilometer or more. Regions with forest and grazing land's share of 80% or more are excluded.
	Flat farming area	- Present and former municipalities where cultivated land accounts for 20% or more of the total area with forest and grazing land accounting for less than 50% of the total area. However, areas where all paddy fields with gradients of 1/20 or more and all upland fields with gradients of 8° or more account for 90% or more of the total area are excluded. - Present and former municipalities where cultivated land accounts for 20% or more of the total area, with forest and grazing land accounting for 50% or more of the total area and with all paddy fields with gradients of 1/20 or more and all upland fields with gradients of 8° or more accounting for less than 10% of the total area.
	Hilly farming area	- Present and former municipalities where cultivated land accounts for less than 20% of the total area, other than urban and mountainous farming areas. - Present and former municipalities where cultivated land accounts for 20% or more of the total area, other than urban and flat farming areas.
	Mountainous farming area	- Present and former municipalities where forest and grazing land accounts for 80% or more of the total area, with cultivated land accounting for less than 10% of the total area.

Notes: 1) Order of priority: Urban area → Mountainous farming area → Flat and hilly farming area
2) As a rule, DID (Densely Inhabited Districts) are defined as areas where basic district units, as defined by the national census, with populations densities of 4,000 per km^2 or more are adjacent to each other and the total population of these conjoined districts is 5,000 or more.
3) Gradient refers not to the gradient of cultivated land per parcel, but to the main topographical gradient as grouped land.
4) The combination of the hilly and mountainous farming area categories is referred to as hilly and mountainous area.
5) Former municipalities are those that were classified as municipalities as of February 1, 1950.

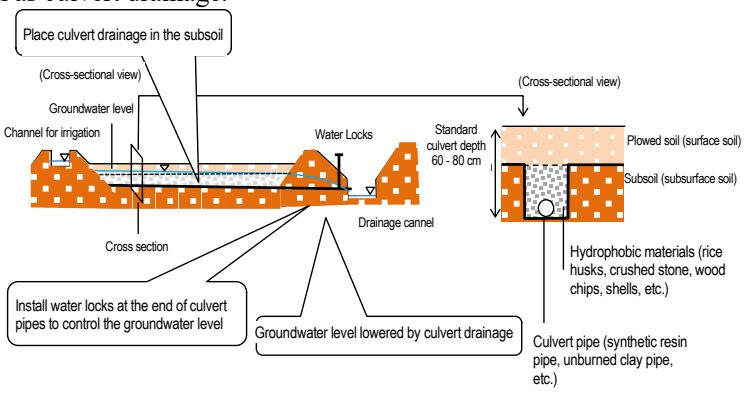
(8) Agricultural regions nationwide

Agricultural region	Prefecture	Agricultural region	Prefecture
Hokkaido	Hokkaido	Kinki	Shiga, Kyoto, Osaka, Hyogo, Nara, Wakayama
Tohoku	Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima	Chugoku Sanin Sanyo	 Tottori, Shimane Okayama, Hiroshima, Yamaguchi
Hokuriku	Niigata, Toyama, Ishikawa, Fukui	Shikoku	Tokushima, Kagawa, Ehime, Kochi
Kanto/Tosan Northern Kanto Southern Kanto Tosan	 Ibaraki, Tochigi, Gunma Saitama, Chiba, Tokyo, Kanagawa Yamanashi, Nagano	Kyushu Northern Kyushu Southern Kyushu	 Fukuoka, Saga, Nagasaki, Kumamoto, Oita Miyazaki, Kagoshima
Tokai	Gifu, Shizuoka, Aichi, Mie	Okinawa	Okinawa

3.Basic terminology

A	
AFFrinnovation	AFFrinnovation which means initiatives for agriculture, forestry and fisheries operators to voluntarily cooperate with others to comprehensively and integrally promote agriculture, forestry and fisheries as the primary industry, manufacturing as the secondary industry and retailing as the tertiary industry to utilize regional resources for producing new added value.
African swine fever	African swine fever is an infectious disease caused by African swine fever (ASF) virus for swine and wild boars. It is a highly fatal disease featuring fever and whole-body hemorrhagic lesions. There is no effective vaccine or therapy for this disease. It is seen chronically in Africa and has been identified in Russia and its vicinity. In August 2018, China became the first Asian country to identify an African swine fever epidemic. Since then, the disease spread in Asia. Japan has remained free from the disease, having identified no epidemic. This disease is endemic to swine and wild boars and is not contagious to humans.
Agricultural irrigation facilities	These facilities are roughly divided into two types: irrigation facilities for providing irrigation water for farmlands and sewerage facilities for discharging surplus surface and soil water in farmlands. Irrigation facilities include dams and other water storage facilities, water intake facilities such as weirs, drains, pumping facilities, circular tank diversion works, farm ponds and other water supply and distribution facilities. Sewerage facilities include drainage canals and drainage pump stations. In addition, there are water control facilities to monitor, control and operate irrigation and sewerage facilities.
AI	AI stands for artificial intelligence, referring to computer systems that have human intelligence functions including learning, inference and judgment.
ASEAN	ASEAN stands for the Association of Southeast Asian Nations. ASEAN was established in the Thai capital of Bangkok in 1967 for cooperation in addressing the promotion of economic growth, and social and cultural development, the achievement of political and economic stability and other challenges in Southeast Asia. Upon its establishment, it consisted of five countries – Indonesia, Malaysia, the Philippines, Singapore and Thailand. Brunei acceded to ASEAN in 1984, Vietnam in 1995, Laos and

	Myanmar in 1997 and Cambodia in 1999. ASEAN now thus comprises 10 countries. Prompted by the 1997 Asian currency crisis, Japan, China, South Korea and ASEAN have formed the ASEAN+3 framework for cooperation in East Asia.
ASIAGAP	Refer to JGAP/ASIAGAP.
B	
BCP	BCP stands for business continuity plan, meaning a plan to secure the continuation of key operations even in the event of risks such as disasters. It is also a peacetime plan to strategically prepare for restoring key operations within a target time and minimizing risks even if business operations are suspended.
Big data	Big data represent a massive, structurally complex data group that has the potential to produce new values through analysis of relationships between data.
Biomass	Biomass means organic resources of flora and fauna origin, excluding fossil resources. Biomass is made by organisms that create organic matter from inorganic water and CO_2 through photosynthesis using solar energy falling on the earth. These types of resources are renewable throughout its life cycle as long as there are organisms and solar energy.
Business plan approved under the AFFrinnovation act	These business plans are for agriculture, forestry and fishery business operators to integrate the production of agriculture, forestry and fisheries products and by-products (including biomass) with their processing or sales to improve their operations under the Act on Promotion of the "Sixth Industry" to Create New Value Added Using Agricultural Products in Rural Areas (AFFrinnovation Act).
C	
Calorie supply (Calorie intake)	Calorie supply refers to the total amount of calories from food that is supplied to the public, and calorie intake refers to the total amount of calories actually consumed by the public. As a rule, the value for calorie supply is taken from the Food Balance Sheet issued by the Ministry of Agriculture, Forestry and Fisheries, while the value for calorie intake is taken from the National Health and Nutrition Examination Survey issued by the Ministry of Health, Labour and Welfare. It is necessary to keep in mind that calculations for both values are entirely different, since the calorie supply value includes food residue emerging inevitably in food industry processes, home food leftovers, etc.
Certified farmer (system)	The certified farmer system certifies plans for improving agricultural management drafted by farmers to attain targets for efficient and stable farm management in basic plans prepared by municipal governments to meet their respective conditions under the Agricultural Management Framework Reinforcement Act. For certified farmers, or those whose plans have been certified, various measures are primarily implemented, including low interest financing from the Super L loan system and other programs, measures to facilitate farmland consolidation and infrastructure improvement efforts to support business farmers.
Classical swine fever	Classical swine fever is an infectious disease caused by classical swine fever (CSF) virus for swine and wild boars. It develops symptoms such as fever, anorexia and prostration, featuring strong propagation and high fatality. The disease is still seen throughout the world including Asia. Japan eliminated the disease in 2007 before encountering its first epidemic in 26 years in September 2018. The disease infects swine and wild boars but not humans.
Codex Alimentarius Commission	The Codex Alimentarius Commission is an international intergovernmental organization created by the United Nations Food and Agriculture Organization (FAO) and the World Health Organization (WHO) in 1963 to secure the protection of consumer health and fair food trade. It develops the Codex Alimentarius. Japan joined the commission in 1966.
Community-based farm cooperatives	Farm cooperatives consist of farming households in certain regions that have developed relations through local communities or other geographical bases. Cooperative member households conduct joint agricultural production. These cooperatives' forms and operations vary depending on regional conditions. Their operations range from the aggregation of diverted paddy fields and the communal use of communally purchased machines to joint production and sales in which farming leaders play a central role.
Crop condition index	The index indicates rice crop conditions, taking the form of a percentage ratio of a (forecast) yield per 10 ares to a standard yield per 10 ares. The standard yield per 10 ares is a yield per 10 ares anticipated before annual planting, based on average-year meteorological conditions and disaster incidence, the recent advancement of cultivation technologies and the recent actual yield trend.

D	
Developing multipurpose paddy fields	To enable farming through crop rotations between rice and crops by implementing measures such as culvert drainage. 
Dilapidated farmland	A dilapidated farmland is a farmland that has been left uncultivated and dilapidated due to the abandonment of cultivation and is viewed objectively as unable to be used for growing crops with conventional farming methods.
Direct seeding (paddy rice)	Direct seeding, where rice seeds are directly scattered into paddies, can skip seedling-raising and transplanting steps required for the conventional practices including transplanting. There are various direct seeding methods, which are roughly divided into two groups – flooded direct seeding where seeds are scattered into flooded paddies after plowing and soil puddling, and dry direct seeding where seeds are scattered into non-flooded paddies.
E	
Ecofeed	Ecofeed is feed that makes effective use of food residual, etc., representing a combination of ecological or economical and feed.
EPA/FTA	EPA stands for Economic Partnership Agreement and FTA for Free Trade Agreement. An FTA is a treaty between particular countries or regions created for the purpose of reducing and repealing tariffs on goods and services trade barriers. An EPA is a treaty that adds rules on investment and protection of intellectual property to the basic contents of an FTA in order to enhance a wider range of economic relations. Under the General Agreement on Tariffs and Trade (GATT), member countries are allowed to liberalize trade with EPA or FTA partners as an exception to most-favored nation status on the following conditions: (1) “abolishment of tariffs and other restrictive trade regulations” for “essentially all trade”, (2) abolishing such practices within a reasonable time frame (as a rule, within 10 years), and (3) refraining from enhancing tariffs and other trade barriers for nations other than EPA or FTA partners (under Article 24 and other sections of GATT).
Externalization of diet	Against the backdrop of increasing double-income and single-member households, population aging and diversified lifestyles, people have tended to depend on non-home cooking and meals. Amid this tendency, the food industry has provided home-meal replacements such as prepared food, ready-made dishes and boxed lunches and explored their markets. This trend is called the externalization of diet. → See “home meal replacement.”
F	
Family business agreement	A family business agreement is a written arrangement that clarifies business plans, each family member’s role, working conditions, etc., for a farming family based on talks between family members. This agreement clarifies the roles of farming family members including women and successors, allowing a farming family to become subject to the preferential treatment of farmer annuity insurance premiums and file joint applications for the certified farmer system.
Farmland concentration and intensification	Farmland concentration means owning or leasing farmland to expand farmland for utilization. Farmland intensification means exchanging farmland use rights to eliminate farmland dispersion and allow farming to be conducted continuously without difficulty.
FGAP	FGAP (Fukushima GAP) is a system developed by Fukushima Prefecture in conformity with MAFF’s guideline on a common GAP (Good Agricultural Practices) base, providing details of radioactive material measures as the prefecture’s original standard.
Food bank	Food bank is an organization that receives donations of unused and other still edible

	foods from food-related businesses and other entities, and provides it free of charge to those who are unable to obtain sufficient food due to poverty, disasters, etc.
Food domestic production ratio	Food domestic production ratio is the percentage share of domestic production in food provided in the country. It is an index used for evaluating the situations of domestic production, reflecting the activities of the domestic livestock industry regardless of the origin of the feed, whether the feed is produced domestically or imported from overseas. The ratio is calculated including the portions domestically produced using imported feed in domestic production.
Food security	As for food security in Japan, the Food, Agriculture and Rural Areas Basic Act states, "Even in the case that domestic supply is insufficient to meet demand or is likely to be for a certain period, due to unexpected situations such as a bad harvest or interrupted imports, the minimum food supply required for the people shall be secured in order not to be a hindrance to the stability of peoples' lives and smooth operation of the national economy." As for global food security, meanwhile, the Food and Agriculture Organization (FAO) states, "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life." This widely accepted definition points to the following four dimensions of food security: the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports (food availability), the legal, political, economic and social entitlements of individuals to access foods for a nutritious diet (food access), utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met (utilization), and stable access to adequate food at all times for a population household or individual (stability).
Food self-sufficiency potential	This concept expresses the potential capacity of food production in the Japanese agriculture, forestry and fisheries sectors. The components of the food self-sufficiency potential for agricultural production are agricultural resources such as farmland and irrigation systems, agricultural technology, and people engaged in farming. The components of the food self-sufficiency potential for fishery production are potential production volume and people engaged in fishery. - Food self-sufficiency potential indicator This indicator shows the amount of calories supplied from food by fully utilizing the potential production capacity of Japan such as agricultural resources, people engaged in farming, and agricultural technology. Based on the premise that calorie efficiency is maximized, this indicator shows the amount of calories which could be supplied per person per day in the Japanese agriculture, forestry and fisheries sector. The indicator is comprised of the two patterns below. It also expresses the amount of calories which could be supplied that reflects the ratio of the total working hours of existing workforce to the working hours necessary for the production in each pattern (labor fill rate). (Pattern A) When rice and wheat are mainly cultivated by maximizing the calorie efficiency with consideration to nutritional balance (Pattern B) When potatoes are mainly cultivated by maximizing the calorie efficiency with consideration to nutritional balance
Food self-sufficiency ratio	This index indicates the percentage share of domestic production in the total supply of food in Japan. - Self-sufficiency ratio for individual items: The following formula is used to calculate the self-sufficiency ratio on a weight basis for individual items

	Food self-sufficiency ratio calculation formula $\text{Self}-\text{sufficiency ratio for individual items} = \frac{\text{Domestic production volume}}{\text{Supply for domestic consumption}}$ $= \frac{\text{Domestic production volume}}{\text{Domestic production volume} + \text{Import volume} - \text{Export volume} \pm \text{Fluctuations in inventory}}$ - Total food self-sufficiency ratio: This ratio is an index for the total volume of food, and is expressed in both calorie basis and production value basis. Products made from domestic livestock raised with imported feed are not included in calculations. The food self-sufficiency ratio for FY2018 and beyond is adjusted for changes in food consumption due to inbound (outbound) consumption. ・ Total food self-sufficiency ratio on calorie supply basis: Calculated by dividing the value for the sum of the domestic calorie supply per person per day by the value for the calorie supply per person per day. In deriving the calorie supply, weight values for each item are converted to calories using the Standard Tables of Food Composition in Japan - 2015 - (Seventh Revised Edition), after which the calories of all items are totaled. ・ Total food self-sufficiency ratio on production value basis: Calculated by dividing the sum of the domestic production value of food by the total food supply value for domestic consumption. In deriving the monetary values, weight values are converted to production values using farm gate prices and import prices from domestic agricultural price and trade statistics, after which all production values are totaled. Feed self-sufficiency rate: This index indicates the percentage share of domestic feed (excluding feed produced with imported materials used) in feed supplied to livestock, calculated in terms of total digestible nutrients (TDN) based on the Standard Tables of Feed Composition in Japan (2009).
G	
GAP	Good Agricultural Practices (GAP) are management activities in the agricultural production process to ensure various components of sustainability including food safety, environmental conservation and worker safety.
Genetic resources	"Genetic resources" means materials derived from plant, animal, microbial or other sources containing functional units of heredity that possess actual or potential value. In the case of plants, "Genetic resources" include seeds, tubers, and saplings of registered varieties, landrace, and wild crop relatives.
Genome editing	A technique to efficiently modify the genes of a living organism by using enzymes.
GFSI	GFSI stands for Global Food Safety Initiative, referring to an organization of globally operating food companies for implementing various initiatives to improve food safety and enhance consumer confidence in food products. It was established in May 2000 as a subsidiary of the Consumer Goods Forum (CGF), an international organization of about 400 manufacturers, retailers and service providers from 70 countries.
GLOBALG.A.P.	GLOBALG.A.P. is a GAP certification program with third-party audit established by Germany's FoodPLUS GmbH. Its fruit and vegetables standard and aquaculture standard are GFSI-recognized. This program has been diffused mainly in Europe.
Greenhouse gas (GHG)	Greenhouse gases heat the earth's surface by absorbing and radiating a portion of infrared radiation reflected from the ground. The Kyoto Protocol designates carbon dioxide (CO_2), methane (CH_4, generated from rice paddies and final waste disposal sites), dinitrogen monoxide (N_2O, generated during the process of manufacturing some raw ingredients for chemical products and from livestock waste), hydrofluorocarbons (HFCs, used as coolants for air conditioning devices), perfluorocarbons (PFCs, used in the production of semiconductors), sulfur hexafluoride (SF_6, used in the production of semiconductors) and nitrogen trifluoride (NF_3, used in the production of semiconductors; added in the second commitment period) as greenhouse gases that should be reduced.
H	
HACCP	HACCP (Hazard Analysis and Critical Control Point) is a process management system

	in which food safety for each process is addressed through the analysis and control of biological, chemical and physical hazards by continually monitoring and recording to guarantee the CCPs in control.
Highly Pathogenic Avian Influenza (HPAI)	Highly Pathogenic Avian Influenza (HPAI) is a kind of Avian Influenza that is highly fatal to poultry. When poultry are infected with HPAI, they show general symptoms such as neurological, respiratory and digestive ones, and many of them die. In Japan, there has not been any case reported where humans were infected with HPAI through eating chicken eggs or meat.
Home meal replacement	Home meal replacements are between eating out at restaurants and preparing meals at home. They include commercially sold lunch boxes, ready-to-eat dishes and foods cooked and processed outside home that are consumed at home, school, workplace, etc., without cooking. These meals are perishable.
I	
ICT	ICT stands for Information and Communication Technology, which is a collective term for technologies related to information and communication.
Idle farmland	Farmland that falls under either of the following ① or ②: ① The first item cites a farmland that is unused for cultivation and is expected to remain unused for the purpose. ② The second cites a farmland that is used far less than other farmlands in the vicinity. (excluding farmland listed in ①)
IoT	IoT stands for Internet of Things, meaning that various things in the world are connected through the Internet to exchange information for automatic recognition, automatic control, remote control, etc.
J	
JFS	The JFS standards are food safety management standards with third-party audit developed by the Japan Food Safety Management Association (JFSM). JFS was recognized by GFSI in October 2018.
JGAP/ASIAGAP	Both JGAP and ASIAGAP are GAP certification programs established by the Japan GAP Foundation with third-party audit. JGAP covers fruit and vegetables, grains, tea, and livestock, while ASIAGAP covers fruit and vegetables, grains and tea. ASIAGAP was recognized by GFSI in October 2018.
L	
Local consumption of local products	This is an initiative for agriculture, forestry or fishery products (limited to food products) produced in domestic regions to be consumed in those regions. The initiative contributes to improving the food self-sufficiency ratio and to promoting AFFrinnovation through farmers' markets and processing operations.
N	
NPO	NPO stands for non-profit organization. These organizations perform various activities to contribute to society and do not distribute profits to their members. NPOs are expected to play an important role in responding to diversified needs of society in various areas (including welfare, education, culture, community building, ecology and international cooperation). Organizations that have been incorporated through the Act to Promote Specified Nonprofit Activities are called corporations engaging in specified non-profit activities and are allowed to open bank accounts and lease office spaces under their respective organization titles.
O	
OIE	OIE stands for Office International des Epizooties in French, which is currently called the World Organisation for Animal Health. It is an intergovernmental organization founded in 1924 to improve animal health. As of the end of May 2019, the number of OIE member countries and regions stands at 182. Japan acceded to the OIE in 1930. OIE's activities include provision of technical support for animal health-related issues (e.g., prevention of animal diseases such as ASF, measures against drug resistance) and establishment of international standards on animal/livestock products trading and animal welfare.
R	
Replotted land	Replotted land is land deemed as land before readjustment or development (traditional land) under the allocation of replotted land for a project to readjust land or develop farmland to change farmland boundaries and shapes. The allocation of replotted land is

	an administrative action to fix new land after readjustment or development (replotted land) replacing land before readjustment or development (traditional land) and take some legal procedures to deem the replotted land as land before readjustment or development (traditional land).
Rural community	The rural community is a fundamental regional unit where households are connected by local and family ties for farming or utilization of farming water in some municipal localities. These communities have close relationships for a wide range of activities including maintenance and management of irrigation facilities, use of farming equipment, and marriages and funerals. They have developed many characteristic traditions and function as autonomous or administrative units.
S	
Sustainable development goals (SDGs)	SDGs stands for Sustainable Development Goals. Sustainable Development Goals (SDGs) are the entire international community's development goals for 2030, adopted unanimously at a United Nations Summit in September 2015. There are 17 SDGs including those for the eradication of famine and poverty, economic growth and employment, and climate change countermeasures. The SDGs are non-binding goals urging each country to take voluntary actions commensurate with its conditions. Japan created the SDGs Promotion Headquarters under a Cabinet decision in May 2016 to implement the SDGs. The headquarters decided on the SDGs Implementation Guideline spelling out Japan's vision and priorities for implementing the SDGs in December 2016 and the SDGs Action Plan 2018 including the direction and major initiatives for providing Japan's SDGs models in December 2017.
V	
Value chain	A value chain is a process of adding value at each step of production, processing, distribution and sales that are organically connected to each other.
W	
"WASHOKU; traditional dietary cultures of the Japanese"	In December 2013, the United Nations Education, Scientific and Cultural Organization (UNESCO) registered "WASHOKU; traditional dietary cultures of the Japanese" as a UNESCO Intangible Cultural Heritage. "WASHOKU" is the Japanese diet practice based on the Japanese people's spirit of "respecting nature," featuring (1) various fresh ingredients and respect for their natural flavors, (2) a nutritional balance that supports healthy diets, (3) emphasis on the beauty of nature and seasonal changes in the presentation, and (4) deep ties to New Year's and other regular annual events.
WCS rice	WCS stands for whole crop silage, meaning a feed that is made by harvesting berries, stems and leaves integrally for lactic fermentation. WCS rice is produced for WCS for livestock, contributing to the effective utilization of rice paddies and the improvement of the feed self-sufficiency ratio.
WTO	The World Trade Organization (WTO) is an international organization established in January 1995 as a result of the Uruguay Round negotiations, which has dealt with the global rules of trade. The WTO is aimed at securing that trade flows as smoothly as possible by lowering trade barriers through negotiations among member governments. The WTO is a forum for governments to negotiate trade agreements and settle trade disputes. The headquarters is located in Geneva, Switzerland.

4. Multifunctional roles of agriculture, forestry and fisheries

(1) Agriculture

Flood prevention by retention and storage of rainwater	Function to prevent/alleviate flood by temporarily collecting rainwater in paddy fields surrounded by ridges and cultivated field soil.
Landslide prevention	Function to prevent slope failure by detecting and repairing the failure of farmlands at an early stage through agricultural production activities in sloping farmlands, or to prevent landslides by holding down sudden rises in the groundwater level by allowing rainwater to permeate slowly underground through the cultivation of fields.
Soil erosion prevention	Function to prevent the erosion of soil caused by rainwater and wind, with the surface of water covering paddy fields or with the foliage and stems of crops in fields.
Watershed capabilities	Rainwater and agricultural water for paddy fields seep underground and over time returns to the river, and water that seeps further below cultivates underground watersheds.
Water purification	Water purification is achieved by the decomposition of organic material in paddy and dry fields, the absorption of nitrogen by crops, and the removal of nitrogen by microorganisms.
Decomposition of organic waste	Microorganisms within paddy and dry fields such as bacteria decompose livestock waste and compost made from household waste. The decomposed material is eventually reabsorbed by crops.
Climate change mitigation	Crops growing on cropland absorb heat through transpiration and paddy fields absorb heat through water evaporation, resulting in lower climate temperatures.
Conservation of biodiversity	Rice paddies and upland fields are properly and sustainably managed to form and maintain a secondary natural environment with ecosystems rich in plants, insects and animals, etc., to secure biodiversity.
Formation of a good landscape	Agricultural activities combined with farmland, old farmhouses, surrounding water sources and mountains create attractive natural landscapes.
Maintenance of cultural tradition	Japan features many annual events and festivals which trace their origins to prayers for rich harvests. Agriculture plays a role in passing on these traditions to future generations.

(2) Forestry

Conservation of biodiversity	Forests inhabited by a wide variety of plants and animals contribute to conserving the diversity of genes, species and ecosystems.
Conservation of the global environment	Forests can adjust the natural environment on a global scale through transpiration and absorption of CO_2 which causes global warming.
Prevention of landslide disasters and conservation of soil	Brush, fallen leaves and branches suppress soil erosion, and the network of roots from forest trees prevents landslides.
Watershed capabilities	Forest soil mitigates floods and stabilizes river flow by storing rainwater and moderating the volume of water running into rivers.
Formation of comfortable environments	Forests help form comfortable environments by moderating climate through transpiration, reducing wind shear and noise, adsorbing dust through tree crowns and alleviating the heat island phenomenon.
Benefits for health and recreation	Trees release volatile substances such as phytoncides that are known to directly improve health, and forests provide areas for sports and leisure.
Culture	As a foundation for the succession of culture and traditions, forest scenery plays a vital role in the shaping of the traditional Japanese outlook on nature, and they also provide a place for forest environment education and practical learning.
Material production	The ability of forests to produce a wide variety of materials including wood, extracts and various types of fungi

(3) Fisheries

Supplementary contributions of fishery to the nitrogen and phosphorus cycle	An appropriate level of fishery can help recycle nitrogen and phosphorus absorbed by marine wildlife through the food chain to land.
Conservation of coastal environments	Bivalve shellfish such as oysters and clams filter and purify seawater by feeding on organic suspension such as plankton.
Water purification	Mudflats and seaweed beds, and plants and animals that inhabit them purify seawater by decomposing organic matter, absorbing nutrient salts and carbon dioxide gas, and supplying oxygen.
Preservation of ecosystems	Appropriate fishery operations can contribute to preserving mudflats, seaweed beds and other ecosystems that provide inhabitation environments for a wide variety of water creatures.
Transfer of cultural assets such as traditional fishing practices	Cultural assets such as traditional fishing practices are passed down to future generations through the activities of people living in fishing villages.
Rescue operations in the event of marine emergencies	Fishery workers help emergency rescue operations when ships sink, capsize, become stranded, go adrift, collide or catch fire.
Rescue operations in the event of disasters	Fishery workers conduct emergency operations such as supply transportation and oil recovery during natural catastrophes, oil tanker accidents and other disasters.
Monitoring of coastal environments	The fisheries monitor abnormalities in coastal environments. For example, fishery workers assist in early detection of red tides, blue tides and jellyfish outbreaks.
Border monitoring	Activities to monitor illegal poaching of precious marine resources also protect the national interest by preventing smuggling and illegal immigration.
Functions related to providing places for exchange	The marine industry can provide places for leisure such as marine recreation facilities and places to learn the importance of nature.