Chapter 3 Taking Advantage of Local Resources to Promote and Vitalize Rural Areas

1. Present status of rural areas and regional empowerment moves

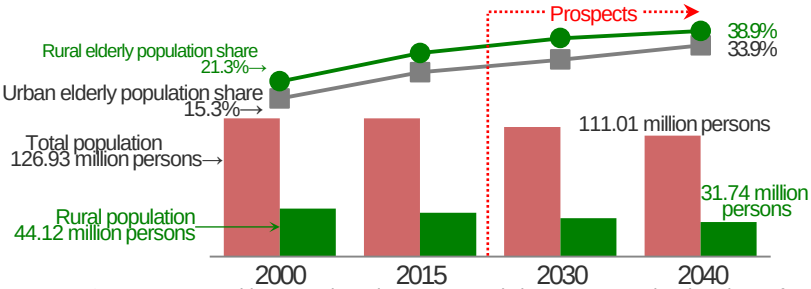
- Rural population has been declining faster than total Japanese population. The elderly population share in rural areas has been 6 to 7 points higher than those in urban areas in recent years.

  A population fall in rural areas may bring about the withdrawal of living-related services, a decrease in job-finding opportunities and a decline in convenience, leading to a further population fall.

- The government is promoting “small hubs” to allow rural residents to receive living-related services. To secure jobs, the government has enacted 2 laws to introduce businesses to rural areas and is promoting AFFrinnovation, countryside stay, and local revitalization cooperation team.
- The number of those seeking consulting services from the Furusato Kaiki Shien Center on their moves to rural areas has been increasing.

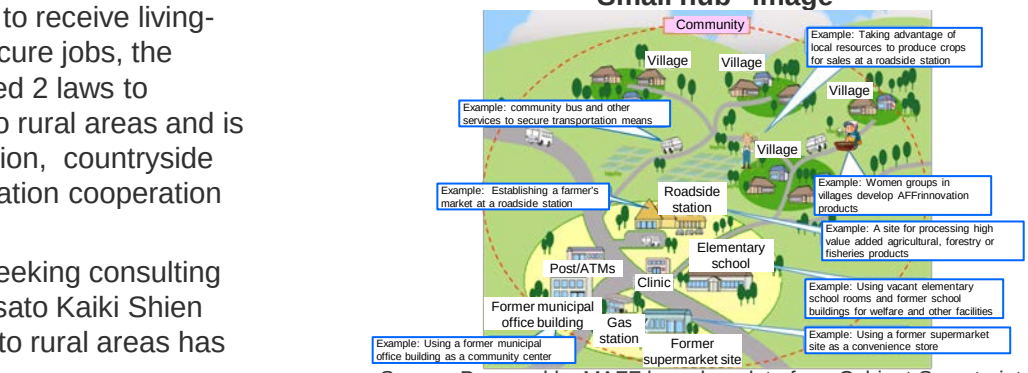
- To nurture human resources for the Regional Empowerment for Japan’s Growth initiative and local agricultural administration, the government launched an e-learning system in 2016 for local government officials to learn necessary skills and knowledge. The National Association of Towns & Villages also started its own human resources training program.

Rural population and elderly population share



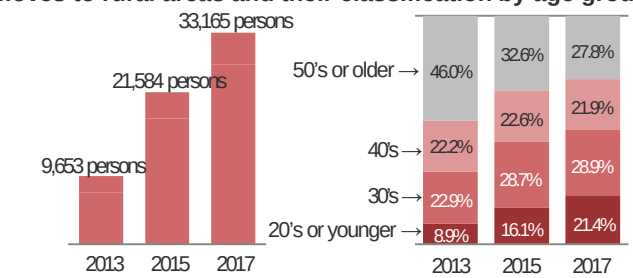
Sources: Prepared by MAFF based on MIC, Population Census; National Institute of Population and Social Security Research, Regional Population Projection for Japan (2018)

“Small hub” image



Source: Prepared by MAFF based on data from Cabinet Secretariat

Total number of people seeking consulting services in moves to rural areas and their classification by age group



Source: Survey by Furusato Kaiki Shien Center

<Case study>

Former local revitalization cooperation team member implements special rice farming (Niigata Prefecture)

- Hiroki Miyahara, a former company employee in Yokohama, joined a local revitalization cooperation team before becoming a farmer in Niigata Prefecture’s Tokamachi City at the age of 37 in 2015 to implement rice farming on paddies totaling 1.2 ha along with his wife.
- Believing that a simple message would be required, Miyahara produces rice under the keywords of “no agrichemicals,” “no chemical fertilizers,” “transplantation of rice seedlings by hand,” “harvesting by hand” and “natural drying,” selling rice to urban consumers at an average price of 900 yen per kilogram.

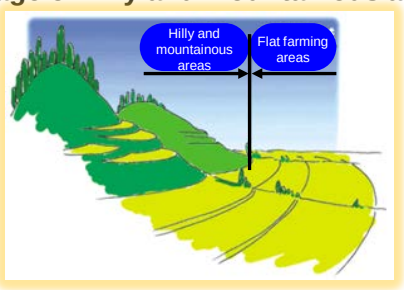
Hiroki Miyahara transplanting rice seedlings by hand

2. Vitalizing agriculture in hilly and mountainous areas

- Hilly, mountainous areas and their vicinity, accounting for certain shares of the total farmland area and output. Hilly, mountainous and rural areas in even severer geographical conditions have the potential to utilize local resources as a treasure to increase profitability.
- Excellent examples should be explored and analyzed for horizontal spreading.
- The Agriculture Renaissance Project in hilly and mountainous areas to set preferential budget and ease area requirements is implemented to support motivated farmers' new business initiatives.

  Measures to support income improvement initiatives in hilly and mountainous areas are also implemented.

Image of hilly and mountainous areas



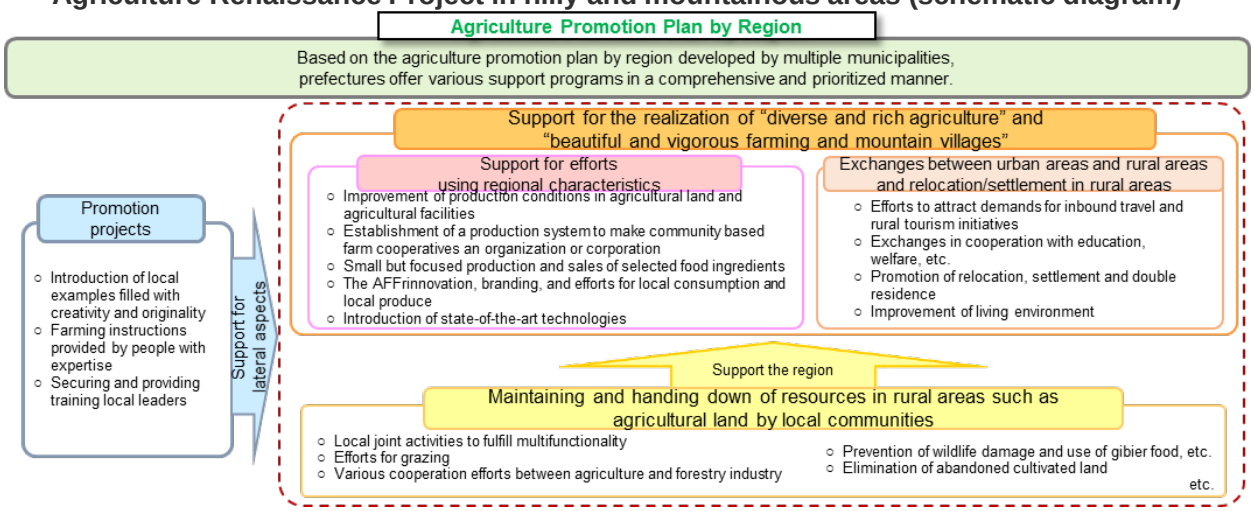
Source: MAFF

Major indicators for hilly and mountainous areas

	National total	Hilly and mountainous areas	Share
Population (2015)	127 million persons	14 million persons	11.2%
Farmland (2015)	4.50 million ha	1.82 million ha	40.6%
Agricultural output (2015)	8.86 trillion yen	3.57 trillion yen	40.3%

Sources: MIC, 2015 Population Census; MAFF, 2015 Statistics on Cultivated Land and Planted Area; Agricultural Production Income Statistics 2015
Note: Data for hilly and mountainous areas represent estimates made by MAFF based on the above sources.

Agriculture Renaissance Project in hilly and mountainous areas (schematic diagram)



Source: MAFF

<Case study>

Developing community arrangements for interaction with urban residents and AFFrinnovation (Fukushima Prefecture)

- A community named "Mine", Inawashiro Town, Fukushima Prefecture has incorporated a farming service organization as Yuinomura Nogakudan to promote interaction with urban residents and operate a farmhouse restaurant.
- The corporation attracts numerous urban residents to the village through interaction with community associations in Tokyo and a rice paddy ownership program. Its farmhouse restaurant employs two persons, contributing to expanding local food consumption.

Experiencing asparagus harvest

3. Maintaining and demonstrating multifunctional roles of agriculture and rural areas

- All Japanese citizens benefit from the effects of agriculture's and rural areas' multifunctional roles including land conservation.
- The law-based Japanese agricultural direct payment system was launched in FY2015 to maintain and demonstrate the multifunctional roles of agriculture and rural areas.
- A questionnaire survey of organizations subject to the multifunctional payment indicates that 85% of those organizations see the multifunctional roles as effective for landscape formation and life environment conservation.
- The average farmland area per agreement for the direct payment to farmers in the hilly and mountainous areas expanded from the 3rd period to the 4th one.
- The total land size for the direct payment for environmentally friendly agriculture in FY2017 is estimated at 89,778 ha, up 5,213 ha (6.2%) from the previous year.

Outline of the Japanese agricultural direct payment system

Payment for activities to enhance multi-functionality

[Farmland maintenance payment]
Supporting local resources conservation activities including mowing of farmland slopes

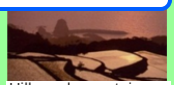

Mowing of farmland slopes

[Resource improvement payment]
Supporting simple repair of channels, agricultural roads and ponds, and other cooperative activities to qualitatively improve local resources


Repairing a channel

Direct payment to farmers in the hilly and mountainous areas

Supporting the continuation of agricultural production in hilly and mountainous areas


Hilly and mountainous area

Direct payment for environmentally friendly agriculture

Supporting agricultural production activities contributing to natural environment conservation


Cover crop

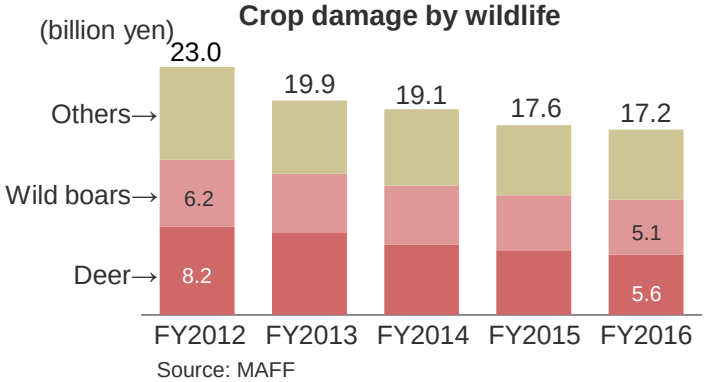
Source: MAFF

4. Wildlife damage and gibier

Present status of wildlife damage and countermeasures

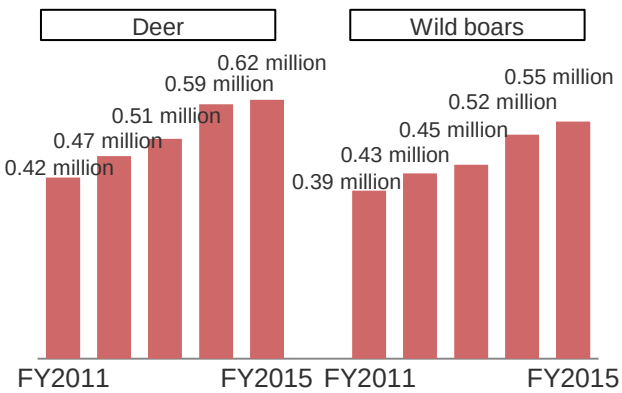
- Wildlife damage to farm products in FY2016 came to 17.2 billion yen, the lowest since such damage began to be surveyed in FY1999. Nevertheless, such damage discourages farmers from continuing agriculture, indicating more serious impacts than signaled by the damage value decline.
- The number of hunting license holders has remained almost unchanged in recent years. Among them, however, young people aged 49 or less and women have been increasing.
- The government has set a target of increasing the number of municipalities having teams for implementing wildlife damage prevention measures to 1,200 in FY2020 from 1,140 at the end of April 2017.
- While the government has set a target of halving the numbers of living deer and wild boars by FY2023, their catches have increased in recent years.

Crop damage by wildlife



Source: MAFF

Deer and wild boar catches



Source: Ministry of the Environment "Wildlife Catches through Hunting and Harmful Wildlife Capture"

<Case study>
"Karijyonokai" linking women interested in hunting in Ishikawa and other prefectures (Ishikawa Prefecture)

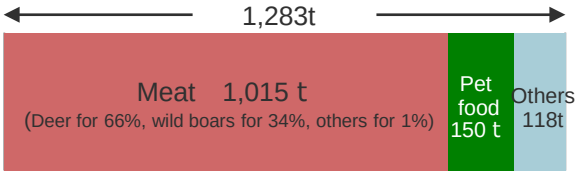
- After acquiring a hunting license, Fujiko Nagata in Hakusan City launched "Karijyonokai (women hunters' club)" along with 4 of her friends in March 2016 for communications among women hunters.
- After receiving press coverage by mass media, "Karijyonokai" now has more than 30 members from Ishikawa and other prefectures, conducting dialogue and communications through social networking services.

Fujiko Nagata in front of a café she runs

Expanding gibier use

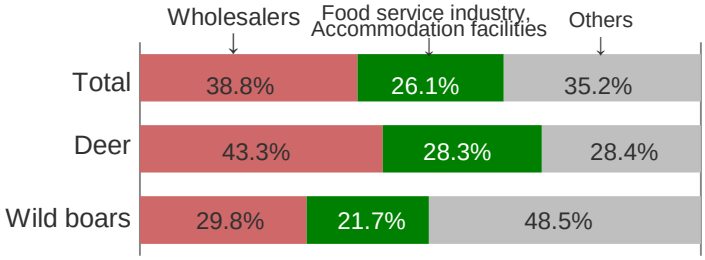
- Captured deer and wild boars, which have mostly been buried or incinerated, have been increasingly used for gibier (wild meat) in recent years.
- Gibier consumption totaled 1,283 tons in FY2016, when wholesalers accounted for the largest share of gibier purchases.
- The government has set a target of doubling gibier consumption in FY2019, designating 17 districts as gibier utilization models.
- The government has held gibier cooking contests and published prize-winning recipes. It has also opened gibier cooking seminars for cooks at various sites in Japan.
- The number of elementary and junior high schools providing gibier for school lunches stood at 320 at the end of October 2017.

Consumption of gibier from wildlife disassembled at meatpacking facilities (FY2016)



Source: MAFF "Fact-finding Survey on Wildlife Resources Utilization (FY2016)"
Note: "Others" include meat delivered to those who requested facilities to disassemble wildlife, as well as meat for home consumption.

Gibier sales from meatpacking facilities by buyer category (FY2016)



Source: MAFF "Fact-finding Survey on Wildlife Resources Utilization (FY2016)"
Note: The above percentages represent buyer categories' shares of meat subjected to wholesale and retail. Others include retailers and direct sales to consumers.

<Case study>
Gibier put into a cooking school curriculum for the first time (Kumamoto Prefecture)

- In Kumamoto Prefecture, meat processors, food service providers and municipalities launched Kumamoto Gibier Study Group in FY2012 to promote Kumamoto gibier.
- In FY2015, a cooking school in Kumamoto cooperated with the study group in putting gibier cooking into a curriculum for the first time in Japan. Graduates from the school are expected to help diffuse gibier dishes.

A gibier cooking class

5. Proactive utilization of local resources

- Rural areas' abundant local resources including water and biomass should be utilized for regional invigoration. Agriculture and rural area development projects promote the construction of small hydropower plants. Solar photovoltaics power generation above farmland, while cultivating, has increased in recent years.
- The number of biomass industrialized areas to base town development on the biomass industry stood at 79 at the end of FY2017.

Farmland used for solar power generation, while being cultivated (Image)

Source: Chiba People's Energy

6. Promotion of urban agriculture

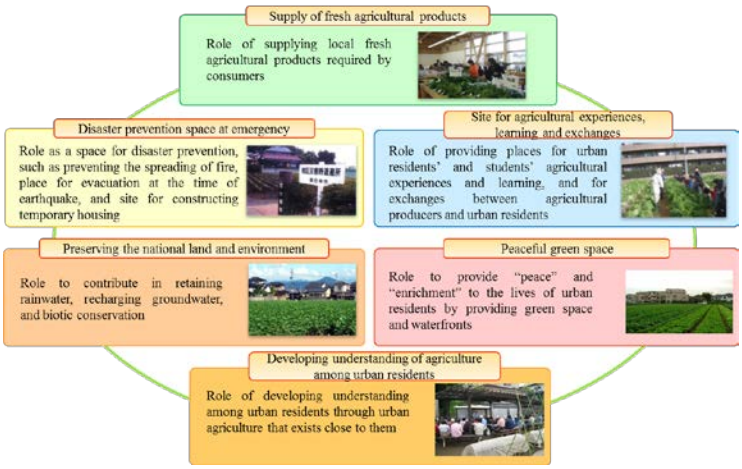
- Urban agriculture takes advantage of its proximity to consumption sites to play diverse roles.
- Urban farmland had been positioned as transitional farmland destined to be used for non-farming purposes amid urbanization.

  The Basic Plan for the Promotion of Urban Agriculture prepared in May 2016 changed urban farmland's position from a candidate site for residential land to what should be required to exist in urban areas.

  Hyogo Prefecture and other prefectural governments, and Kunitachi City in Tokyo and other municipal governments have also been preparing their respective urban agriculture promotion plans.
- As farmlands designated as productive green zones by municipalities are set to become available for their owners' sale to municipalities in 30 years, a system for farmlands to be designated as specified productive green zones for the next 10 years was launched in April 2018.
- A bill has been submitted to the National Diet to make it easier for urban farmlands to be leased for effective utilization by motivated urban farmers.
- As requested by urban residents, allotment gardens are increasing mainly in urban areas.

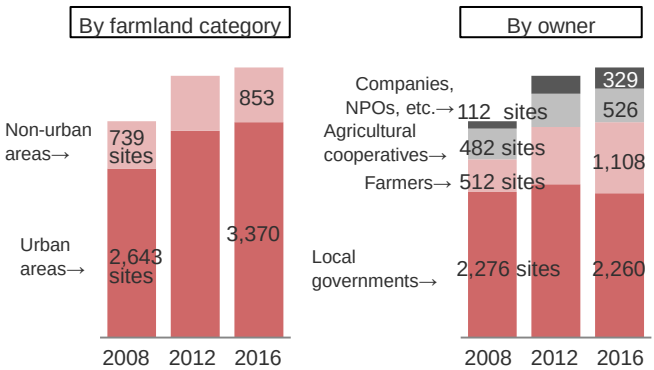
  In recent years, farmers have increasingly opened allotment gardens.

Multifunctional roles of urban agriculture



Source: MAFF

Number of allotment garden sites by farmland category and owner



Source: MAFF

7. Coordination between agriculture and various other areas

Cooperation with the education field

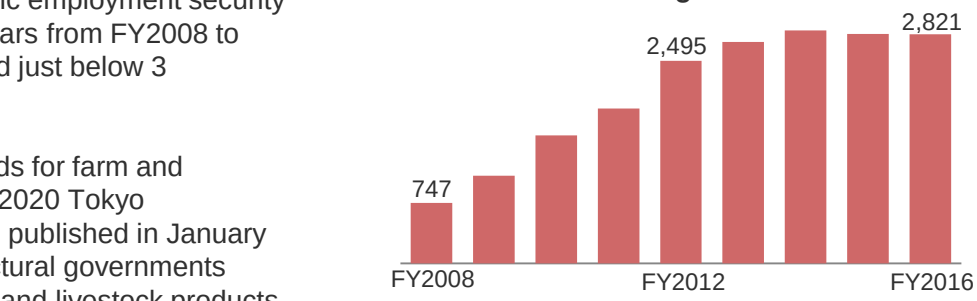
- MAFF, MEXT (Ministry of Education, Culture, Sports, Science and Technology) and MIC (Ministry of Internal Affairs and Communications) launched an exchange project for children to experience farming and rural lives in FY2008.
- The number of model areas having accepted children under the project stood at 185 at the end of FY2016.
- As educational tour facilities are difficult to develop due to the low profitability of educational tours put under time limits, an increasing number of rural communities are tackling countryside stay in addition to educational tours.

Children experiencing apple harvest under an exchange project for children to experience farming and rural lives

Cooperation with the welfare field

- The annual number of persons with disabilities finding jobs in agriculture, forestry and fisheries through “Hello Work” public employment security offices quadrupled in 5 years from FY2008 to FY2013 and has remained just below 3 thousand.
- The procurement standards for farm and livestock products for the 2020 Tokyo Olympics/Paralympics, as published in January 2018, explains that prefectural governments would confirm some farm and livestock products as produced mainly by persons with disabilities.
- Kyoto Prefecture created a system in FY2017 to assess and certify farming knowledge and skills to encourage persons with disabilities to work.

Annual number of persons with disabilities finding jobs in agriculture, forestry and fisheries through “Hello Work”



Source: Ministry of Health, Labour and Welfare “Hello Work Job Placements for Persons with Disabilities”

<Case study>
A stable sales channel leading to far higher wages than average (Hokkaido)

- At Kyujinfarm Co. founded as a Type A business establishment for supporting continuous employment in Memuro, Hokkaido, 19 persons with disabilities are engaged in potato production and primary potato processing operations including peeling.
- As a prepared food production and sales company serves as a stable sales channel by purchasing all primary processed products from Kyujinfarm, the wages for these persons with disabilities reaches 115 thousand yen, far above the national average in a 65–70 thousand yen range.

Potato peeling

1. Restoration/Reconstruction from Great East Japan Earthquake

Earthquake and tsunami damage and restoration/reconstruction

- Salt removal, rice paddy boundary reconstruction and other restoration operations have made progress in tsunami-damaged farmlands, making 89% of the affected farmlands available for farming resumption.
- Farmland partitions have been expanded in line with the restoration of tsunami-damaged farmlands. Farmland development projects were implemented at 16 sites of 10 municipalities by the end of January 2018 in conjunction with residents' collective relocation for disaster prevention.
- From FY2011 to FY2017, a total of 34 large-scale industry-academia-government demonstration studies involving agriculture and rural areas were conducted.
  In the future, initiatives to diffuse and utilize the fruits of these studies should be developed and enhanced.

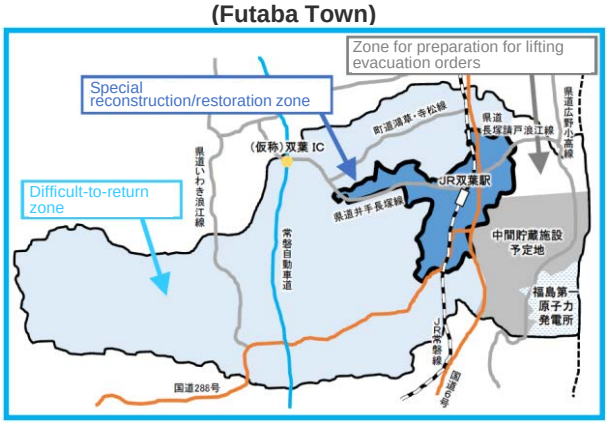
Fruits of advanced technology development projects for restoring food production regions

<Iwate Prefecture> **Demonstration research for farming technology for small and medium-sized farmland partitions** Direct water seeding of rice costs 22-24% less than transplanting culture.	 Sowing using a power granule applicator
<Miyagi Prefecture> **Demonstration research for land-extensive farming technology** A 2-year, 3-crop rotation system for large farmland partitions was established, covering rice, wheat or barley, and soybeans for dry seeding.	 Sowing using a grain drill
<Fukushima Prefecture> **Demonstration research for stable year-round flower production technology** The stable shipment of summer and autumn small chrysanthemum based on outdoor light culture increased income per unit area in August and September by 16%.	 Small chrysanthemum for outdoor light culture

Impacts of the accident at Tokyo Electric Power's Fukushima Daiichi Nuclear Power Station and restoration/reconstruction

- By April 2017, the government lifted evacuation orders for all accident-affected areas other than difficult-to-return zones, for which the revised Fukushima Special Measures Act has created reconstruction and restoration plans* and systems. 4 municipalities have prepared such plans under the act.
  **Reconstruction/restoration plans for special reconstruction/restoration zones*
- The rice production resumption area in 2017 expanded from about 2,500 ha in the previous year to about 3,000 ha.
- To enhance initiatives to eliminate harmful rumors:
  ① The Fukushima Special Measures Act provides for a fact-finding survey on slack sales, and instructions and advice based on the survey.
  ② Comprehensive assistance covering from production to distribution and sales started in FY2017.
  ③ A strategy to enhance harmful rumor elimination and risk communications was put in place in December 2017.
- Fukushima Prefecture in May 2017 proclaimed "Fukushima GAP Challenge Declaration" with the aim of achieving the largest number of GAP certified producers among Japanese prefectures.

Example of special reconstruction/restoration zones (Futaba Town)



Rice harvesting at a paddy where rice planting was restarted (Katsurao Village)

2. Restoration/Reconstruction from Kumamoto Earthquake

- In August 2016, Kumamoto Prefecture came up with a plan for reconstruction/restoration from the Kumamoto Earthquake to be completed by FY2019.
- At the end of FY2017, 40.2% of farm restoration under prefectural and other organizational projects was completed.

  3 districts in the prefecture have launched infrastructure development projects to expand farmland partitions and consolidate farmlands.
- Soybeans have been planted at about 660 ha out of some 1,000 ha of paddies forced to switch to non-rice crops due to water channel losses. Large farms undertake most of the soybean production, making progress in the enhancement of farming arrangements.
- At the end of FY2017, 24 of 33 projects for livestock farmers' reintroduction of livestock and construction of livestock barns were completed.
- The restoration of fruit sorting and other joint use facilities with national government subsidies was almost completed at the end of FY2017.
- The Kumamoto Prefectural Union of Agricultural Cooperatives plans to expand a project for supporting farming labor supply in model areas to cover the whole of the prefecture by FY2019.

Farmland/farming facility restoration conditions

(Unit: plans, %)

	Restoration plans	Implemented plans		Completed plans	
			Implementation rate		Completion rate
Total	2,239	1,975	88.2	901	40.2
Prefectural	183	152	83.1	10	5.5
Other organizational	2,056	1,823	88.7	891	43.3

Note: As of the end of FY2017

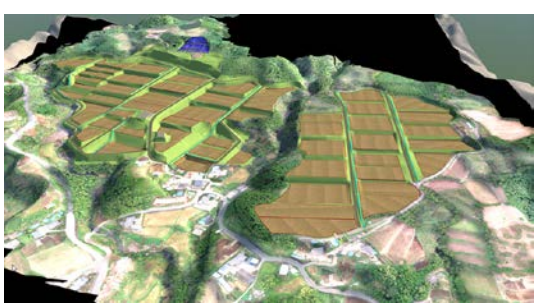
Soybean harvesting at a vast farm (Kashima Town)

A furbished barn (Kikuchi City)

A restored country elevator (Kashima Town)

<Case study>
Creative reconstruction through readjustment of rice paddies including destroyed sites (Kumamoto Prefecture)

- In Minami Aso Village's Otogase district, massive sediments flooded farmlands when a mountainside collapsed due to the Kumamoto Earthquake.
- Farmland readjustment will be implemented in 2 years from FY2018 to raise business farmers' share of farmlands to 71% and produce napa cabbage, takana and satoimo potatoes as well as rice.



A rendering of farmland readjustment

Summary of FY2018 Measures for Food, Agriculture and Rural Areas

Summary

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

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

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

II. Measures for securing a stable supply of food

- Securing food safety compatible with international trends and securing consumer confidence
- Promotion of food and nutrition education by various people concerned, expansion of consumption of domestic agricultural products, and the preservation/succession of WASHOKU (traditional dietary cultures of Japanese people)
- Exploration of demand through the creation of new values through production, processing and distribution stages
- Strategic exploration of global market
- Establishment of comprehensive food security compatible with various risks
- Strategic reactions to international negotiations

III. Measures for sustainable development of agriculture

- Development of/securing business farmers for realizing a strong and sustainable agricultural structure
- Development of an environment wherein female farmers can fully exert their potential capacity
- Consolidation of farmland to business farmers and securing farmland through full-capacity operation of the Public Corporations for Farmland Consolidation to Core Farmers through Renting and Subleasing (Farmland Banks)
- Promotion of the Farming Income Stabilization Measures for business farmers and implementation of the income insurance, etc.
- Development of an agricultural production base that contributes to the acceleration of structural reform and building national resilience
- Reform of production/supply systems compatible with changes in the demand structure, etc.
- Technological innovation, etc. at production/distribution sites for realizing cost reduction and high added value
- Promotion of environmental policy such as responses to climate change

IV. Measures for promotion of rural areas

- Maintenance/succession of local resources through steady promotion of the payment for activities to enhance multi-functionality, promotion of agriculture in hilly and mountainous areas, and performance of local community functions
- Creation of employment and income through active utilization of various local resources
- Exchanges between urban and rural areas and migration/settlement to rural areas through collaboration with various sectors

V. Measures for restoration/reconstruction from the Great East Japan Earthquake

VI. Measures for reorganization/restructuring of relevant bodies

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

[Definitions]

1. Confusing terms

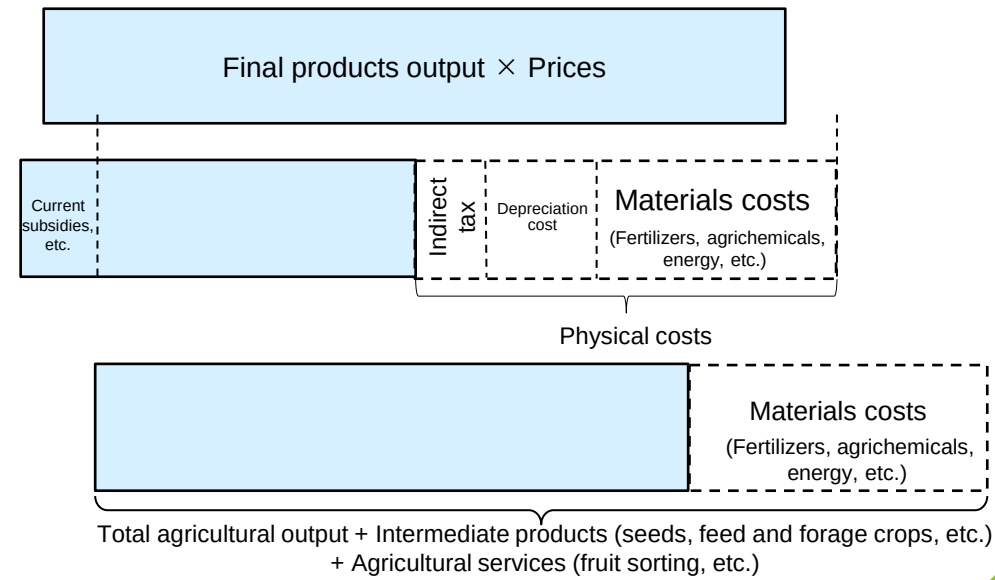
Production value, income

Purpose	Term	Statistical data <source>
To know the value of sales of agricultural products produced in Japan	Total agricultural output *1	**9.2 trillion yen (2016)** <Agricultural production income statistics>
To know the value added of agricultural products produced in Japan, or their sales value minus physical costs	Agricultural production income	**3.8 trillion yen (2016)** <Agricultural production income statistics>
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	**5.2 trillion yen (2016)** <National accounts>

・Total agricultural output: 9.2 trillion yen

・Agricultural production income: 3.8 trillion yen

・Total agricultural output: 5.2 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*2	**1.26 million entities (2017)** < Survey on Movement of Agricultural Structure >
To know the number of households engaged in agriculture	Farm households*2	**1.22 million households (2017)** <Survey on Movement of Agricultural Structure>
To know the number of households producing mainly agricultural products for sales out of farm households	Commercial farm households*3	**1.2 million households (2017)** <Survey on Movement of Agricultural Structure>
To know the number of agriculture business companies, community-based farm cooperatives, etc.	Organized farms*2	**0.03 million entities (2017)** <Survey on Movement of Agricultural Structure>

*1: See Definitions 3 (1)
*2: See Definitions 2 (1)
*3: See Definitions 2 (2)

Farm households

Purpose	Term	Statistical data <Source>
To know the number of all farm households including those producing agricultural products for their own consumption	Farm households*1	**2.16 million households (2015)** <Census of Agriculture and Forestry 2015>
To know the number of households producing agricultural products mainly for sales	Commercial farm households *1	**1.2 million households (2017)** <Survey on Movement of Agricultural Structure >
To know the number of households headed by less than 65-year-old persons whose main income is from agriculture	Business farm households*1	**0.27 million households (2017)** <Survey on Movement of Agricultural Structure >
To know the number of farm households having no non-agricultural job holders (without any age limit)	Full-time farm households*1	**0.38 million households (2017)** <Survey on Movement of Agricultural Structure >
To know the number of farm households including non-agricultural job holders (without any age limit)	Part-time farm households*1	**0.82 million (2017)** <Survey on Movement of Agricultural Structure >
To know the number of farm households producing agricultural products mainly for their own consumption	Noncommercial farm households*1	**0.83 million (2015)** <Census of Agriculture and Forestry 2015>

Members of commercial 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	Farm household members engaged in own farming*2	**3 million persons (2017)** <Survey on Movement of Agricultural Structure >
To know the number of farm household members who worked mainly as self-employed farmers (including housewives engaged mainly in housework and childcare, students, etc.)	Population engaged mainly in farming*2	**1.82 million persons (2017)** <Survey on Movement of Agricultural Structure >
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 engaged mainly in farming*2	**1.51 million persons (2017)** <Survey on Movement of Agricultural Structure >

Employed farmers

Purpose	Term	Statistical data <source>
To know the number of persons employed as farmers for a long term (seven months or more)	Permanently hired workers *2	**0.24 million persons (2017)** <Survey on Movement of Agricultural Structure >
To know the number of persons employed as farmers for a short term (temporarily)	Temporary hired workers *2	**2.46 million (2017)** <Survey on Movement of Agricultural Structure >

*1: See Definitions 2 (2)
*2: See Definitions 2 (4)

2. Basic statistical terminology

(1) Classification of agriculture management entities (definitions used since the 2005 Census of Agriculture and Forestry)

Terminology	Definition
Agriculture management entities*	An establishment that either performs agricultural production 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 to 2000 regard agriculture management entities as the combination of commercial farm households, agricultural holdings other than a farm household, and agricultural service enterprises.)
Family management entities	Individual management entities (farm household) or a single-household corporation (a farm household that is incorporated).
Organized management entities	Agriculture management entities that do not fall under family management entities.
Single farming entities	Entities whose main agricultural product sales account for more than 80% 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).

*"Agriculture management entities" is described as "Farms" in this annual report

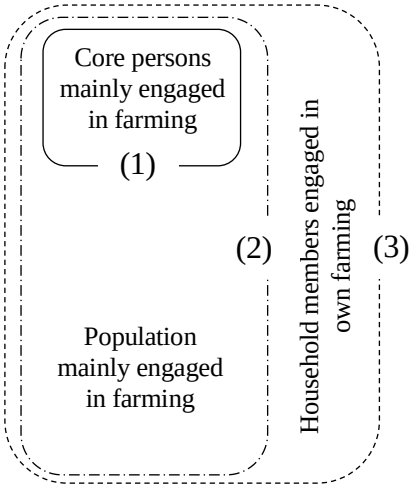
(2) Classification of farm households (definitions used since the 1990 World Census of Agriculture and Forestry)

Terminology	Definition
Farm household	Household engaged in farming and managing cultivated land of 10 ares or more, or earning more than 150,000 yen per year from sales of agricultural products.
Commercial farm household	Farm household managing cultivated land of 30 ares or more, or earning more than 500,000 yen per year from sales of agricultural products.
Business farm household	Farm household whose main source of income (50% or more) is farming, and which possess at least one family member under the age of 65 who is engaged in self-employed farming for more than 60 days 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 more than 60 days a year.
Side-business farm household	Farm household without any members under the age of 65 engaged in self-employed farming for more than 60 days 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
Non-commercial 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 service 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 households	A household other than a farm household possessing 5 ares or more in cultivated land and abandoned cultivated land

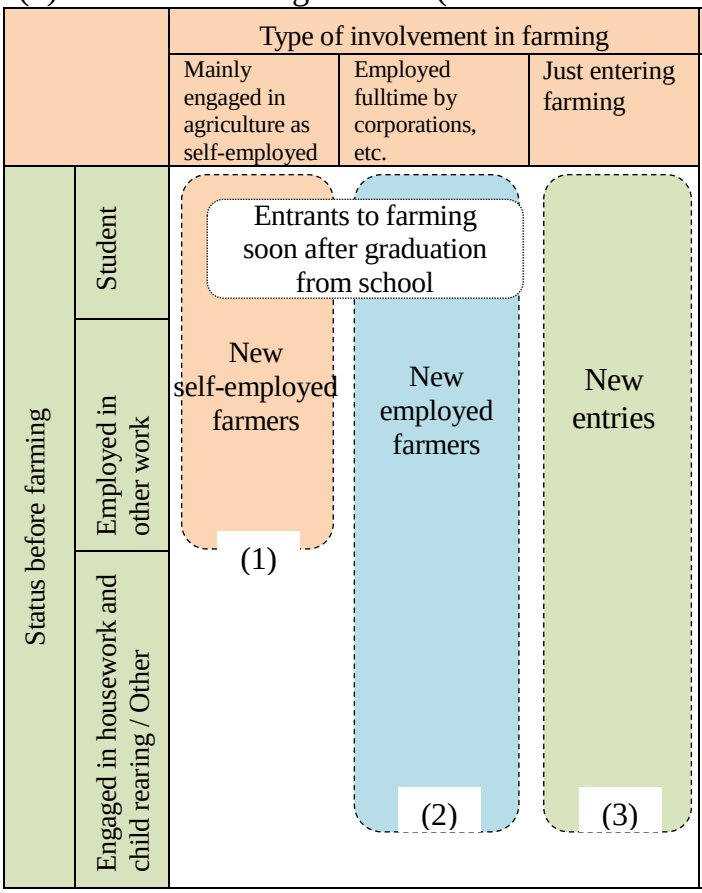
(3) Farm household economics

Terminology	Definition
Total income	Agricultural income + Income from agriculture-related production + Nonagricultural income + Income from pensions, etc.
Agriculture income	Gross agricultural income (total income from farming) – Agricultural expenditures (all expenses necessary for farming)
Income from agriculture-related production	Earnings from agriculture-related production (earnings 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 from agriculture-related production (expenditures such as labor and material costs required for the aforementioned businesses)
Non-agriculture income	Non-agriculture earnings (e.g. earnings from independent part-time nonagricultural businesses, salaries and wages) – Non-agriculture expenses (e.g. expenses for independent part-time non-agricultural businesses, transportation expenses for commuting)
Production cost	The production cost is the total cost (combining property and labor costs) for production of farm products minus by-product values
Material cost	Liquid goods costs (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, Labor and Welfare).
Equity capital interest	The equity capital interest is calculated by multiplying equity capital – gross capital minus debt capital – by an annual interest rate of 4%.
Rent for owned land	The rent for owned land is based on a rent for similar farmlands (having capabilities similar to the farmland for a crop subject to the survey) within the same region.

(4) Agricultural labor by farm household members

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="3">Involvement in farming</td><td>Household member</td></tr>
<tr><td>Engaged only in farming</td><td>Engaged in both farming and other
Mainly farming | Mainly other</td><td>Not engaged in farming</td><td rowspan="3">As a rule, people who live and earn a living together
(1) Core persons mainly engaged in farming
Among household members involved in self-employed farming (population engaged mainly in farming), those who are working mainly in agriculture during regular hours.
(2) Population mainly engaged in farming
Persons engaged only in self-employed farming, or persons who are also engaged in work other than farming but spend more time engaged in farming on a yearly basis.
(3) Household members engaged in own farming
Household members 15 years old and over who are engaged in self-employed farming for more than one day per year.
- Full-time farmers
Among persons engaged in mainly farming, those who are engaged in self-employed farming for more than 150 days per year</td></tr>
<tr><td rowspan="2">Status during regular hours</td><td>Engaged mainly in work</td><td colspan="3" rowspan="2"> 
</td></tr>
<tr><td>Other (housework and school, etc.)</td></tr>
<tr><td colspan="2">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="2">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 longer than seven months but quit before reaching seven months.</td></tr>
</table>

(5) 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 a year or more.

(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.

(6) 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 of February 1, 1950.

(7) 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.
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 at 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.
Associated income in rural regions	Associated income in rural regions is calculated for seven growth-promising fields (processing and direct sales, export, exchanges between urban and rural areas, collaboration between medical care, welfare, food and agricultural sectors, local consumption of local products (facility food services, etc.), ICT utilization and distribution, and biomass/renewable energy) for initiatives for agriculture, forestry and fisheries business operators' integration of production, processing and sales using rural resources and their collaboration with secondary and tertiary industries (including food, medical care and welfare, and tourism).
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 refers to huge data collected in real-time from location information, action history, etc. through the internet, etc. In recent years, technologies have been developed to analyze big data faster and more easily, indicating that big data is expected to be used for gaining knowledge useful for business and society and producing new mechanisms and systems. Open data held by the government sector and public organizations are part of big 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 CO2 through photosynthesis using solar energy falling on the earth. This type of resources is 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, Labor and Welfare. Although it is necessary to keep in mind that calculations for both values are entirely different, since the calorie supply value includes leftovers and food destroyed in the distribution stage, the difference between this value and calorie intake can be used as an approximate measure of food wastes including food residue emerging inevitably in food industry processes, home food leftovers, etc.
Cattle breeding station (CBS)	A cattle breeding station is an organization to intensively undertake breeding cow deliveries and settlements and calf incubation and nurturing that consume much time in breeding operations. A cattle station (CS) is an organization to intensively undertake the incubation and nurturing of calves produced in breeding operations and occasionally take care of breeding cows.
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.
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 is a yield 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.
Cross-ministerial Strategic Innovation Promotion Program (SIP)	This is a program for the Council for Science, Technology and Innovation established at the Cabinet Office to allocate budgets for initiatives covering from basic research to exits (practical application or commercialization) beyond the bounds of ministries and fields and promote them. SIP stands for Cross-ministerial Strategic Innovation Promotion Program.
D	
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 (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 pudding, and dry direct seeding where seeds are scattered into non-flooded paddies.

DMO	DMO stands for destination management organization. At the helm of regional tourism development, the organization cooperates with various stakeholders to work out regional strategies based on clear concepts and coordinate between stakeholders for implementing those strategies.
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 the General Agreement on Tariffs and Trade).
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. In family farming, it is important to clarify each family member’s role, working conditions, etc. to pursue effective, stable business management. This agreement clarifies the roles of farming family members including women and successors, allowing a farming family to become subject to farmer annuity schemes and utilize 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 allow farming to be conducted continuously without difficulty.
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 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" Based on the premise that farmlands are fully utilized and 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 following four patterns. (Pattern A) When major grains such as rice, wheat and soybeans are mainly cultivated by maximizing the calorie efficiency with certain consideration to nutritional balance (Patten B) When major grains such as rice, wheat and soybeans are mainly cultivated by maximizing the calorie efficiency (Pattern C) When potatoes are mainly cultivated by maximizing the calorie efficiency with certain consideration to nutritional balance (Pattern D) When potatoes are mainly cultivated by maximizing the calorie efficiency
Food self-sufficiency ratio	This index indicates how much food for domestic consumption is being supplied by domestic sources. - Self-sufficiency ratio for individual items: The following equation is used to calculate the self-sufficiency ratio on a weight basis for individual items. Food self-sufficiency ratio calculation equation $\text{Self-sufficiency ratio for individual items} = \frac{\text{Domestic production volume}}{\text{Supply for domestic consumption}}$ $= \frac{\text{Domestic production volume}}{\text{Domestic production volume} + \text{Import volume} - \text{Export volume} \pm \text{Fluctuations in inventory}}$ - 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. - Total food self-sufficiency ratio on calorie supply basis: Weight values for each item are converted to calories using the *Standard Tables of Food Composition in Japan* (2015), after which the calories of all items are totaled. This is equivalent to the ratio 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. - Total food self-sufficiency ratio on production value basis: 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. This is equivalent to the ratio calculated by dividing the sum of the domestic production value of food by the total food supply value for domestic consumption. - Feed self-sufficiency ratio: This index indicates how much feed is being supplied by domestic sources, calculated in terms of total digestible nutrients (TDN) using the *Standard Tables of Feed Composition*.
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 are materials from all living things including plants, animals, and microorganisms that have actual or potential value. For example, they include crops used as materials for breeding (including not only the latest varieties but also old varieties and those that are not clearly useful but considered potentially useful.)

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 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.
GPS	GPS stands for global positioning system, referring to a positioning system that uses satellites to accurately locate any position in the world. In the agriculture field, unmanned tractors and other equipment using the GPS are being developed.
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 by 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.
Gross domestic product (GDP)	GDP refers to the total of value added for all goods and services produced in a country within a designated time frame, which is usually one year. It is used as an index to measure domestic economic activity levels. GDP stands for gross domestic product.
H	
HACCP	HACCP (Hazard Analysis and Critical Control Point) is a 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.
Halal Certification	The Halal Certification System certifies food products as allowed to be eaten under traditional Islamic Law.
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 hasn't been any case where humans were infected with HPAI through eating of eggs or chicken 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 of the home that are consumed without being cooked or heated at school or at the workplace. These meals are perishable.
I	
Idle farmland	An idled farmland meets either of two provisions in Item 1, Article 32, Agricultural Land Act. The first provision cites a farmland that is unused for cultivation and is expected to remain unused for the purpose. The second cites a farmland that is used far less than other farmlands in the vicinity.
Import tolerance	Import tolerance is the maximum residue limit set for importing agricultural products using chemicals for which countries or regions importing the products have no such limit in the absence of their domestic registration.
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	
JGAP/ASIAGAP	Both JGAP and ASIAGAP are GAP 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. The Japan GAP Foundation applied to GFSI for recognition of ASIAGAP in November 2017 so that ASIAGAP could become a GFSI-recognized international certification program.
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 farmer's market and processing operations.
Livestock industry cluster	This is an initiative for livestock farms and local livestock stakeholders (including contractors and other outside supporters, distribution and processing business operators, agricultural organizations and the administration sector) to enhance profitability of livestock industry in a region, working together in close coordination (based on a plan).
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. In English, it is called the World Organization for Animal Health. It is an intergovernmental organization founded in 1924 to improve animal health. As of 2018, the number of OIE member countries and regions stands at 181. Japan acceded to the OIE in 1930. The OIE conducts animal health, food safety, animal welfare and other operations, handling mammals, avian species, bees, fishes, shellfishes, mollusks, amphibian species and reptiles.
P	
People and Farmland Plan	The plan compiles the results of thorough talks between regional farmers to solve regional agriculture challenges. It is updated annually and used as a blueprint for the future of regional agriculture.
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)	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. SDGs stands for "sustainable development goals."
T	
TMR center	TMR stands for total mixed ration, a cow feed into which roughage, concentrated feed and additives are mixed in a well-balanced manner. A TMR center is an organization that produces TMR for supply to livestock farms.
Total agricultural output	In agricultural production, the total agricultural output is the total output of all finally completed agricultural goods. It is the amount of the item-based production volume of agricultural products minus intermediate products such as seeds and fodder to prevent overlapping calculations, multiplied by the price of each item when delivered from the farms.
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 registered "WASHOKU; traditional dietary cultures of the Japanese" as a UNESCO Intangible Cultural Heritage. "WASHOKU" is a social practice associated with food, embodying the Japanese people's spirit of "respect for nature" with characteristics such as (1) various fresh ingredients and respect for their natural flavors, (2) nutritional balance that supports healthy diets, (3) emphasis on the beauty of nature and changing of seasons in the presentation and (4) deep ties to New Year's and other regular annual events. It is considered that Japanese people as a whole promote its protection and succession
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 set a wide variety of multilateral trade rules. The WTO not only addresses new trade agenda but also implements and operates these current trade rules through a dispute settlement mechanism. The headquarters is located in Geneva, Switzerland.

4. Multifunctional roles of agriculture, forestry and the 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.
Water recharge	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 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 mitigation	Crops growing on farmland 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 CO2 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 matters, 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 monitors 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 protects the national interest by preventing smuggling and illegal immigration.
Functions related to providing places for exchange	The mariner industry can provide places for leisure such as marine recreation facilities and places to learn the importance of nature.