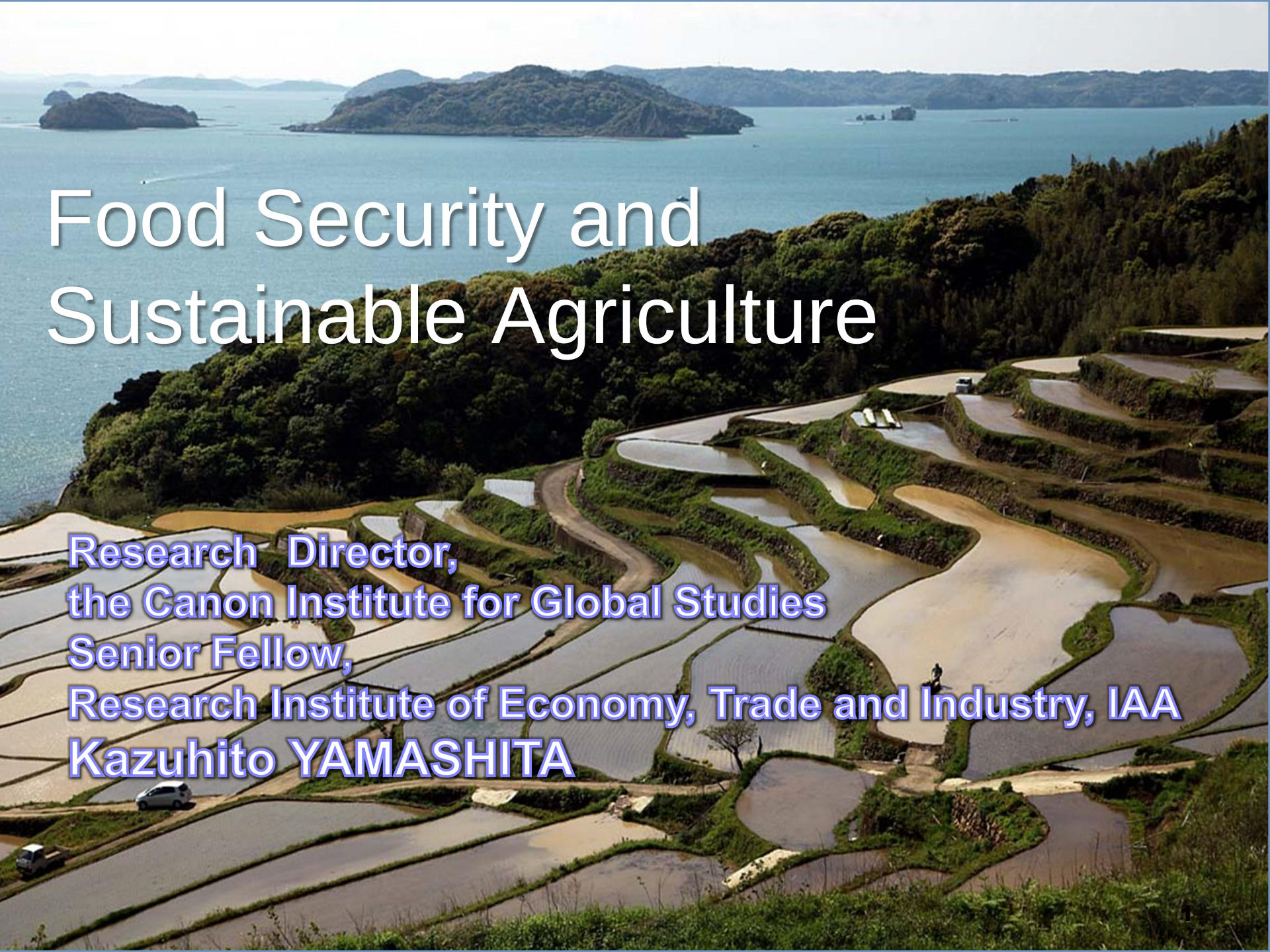


Food Security and Sustainable Agriculture

Research Director,
the Canon Institute for Global Studies
Senior Fellow,
Research Institute of Economy, Trade and Industry, IAA
Kazuhito YAMASHITA

What does food security consist of?

- Food security consists of food affordability and accessibility. Economic or physical access to food is necessary.
- Some people in developing countries

(1) cannot afford to buy food. A food crisis occurs when food prices soar as in 2008.

(2) have no access to food due to the lack of transportation or distribution infrastructure, even when food is delivered at ports.

- Economic growth and/or building infrastructure is essential for overcoming a food crisis.

Two scenarios of high food prices

- In the long run, food supply may be insufficient for the growing world population. On average, prices might be too high for the poor.

→ Investment and technological innovation

- In the short run, the issue is volatility or price pike. Suddenly food prices soar as in 2008, while ample food supply usually keep them low.

→ Stockpile

Accessibility matters for any importing country

- Japan cannot gain access to food even with plentiful monetary resources when physical disruption of imports such as strikes at the ports of exporting countries or by closure of sea-lanes by military offensives happens. This can happen to any importing country.
- In food crisis a stockpile of food works for the time being. Then domestic supply must be increased. The increase of food production needs agricultural resources for production. But by what means?

the Yellow River ?

Sustainable Agriculture? Water depletion

- The production of 1 ton of corn needs 1,000 tons of water. Irrigated land amounting to 17% of the world farmland consumes 70% of all of the water consumption including household and industrial use.
- Water under the ground or in rivers has been pumped up for irrigation. 1/5 of Ogallala Aquifer has been lost.

A small gorge or valley?

Soil erosion

- Vegetation grows in topsoil which is 30 cm deep from the surface. Creation of 1 cm of topsoil needs 200~300 years.
- Topsoil is eroded by strong rainfall and wind. The Dust Bowl let the US government create the Soil Conservation Service in USDA. Worldwide, Soil equivalent of 1.2 million land is lost every year by erosion.

Snow in *Uzbekistan?*

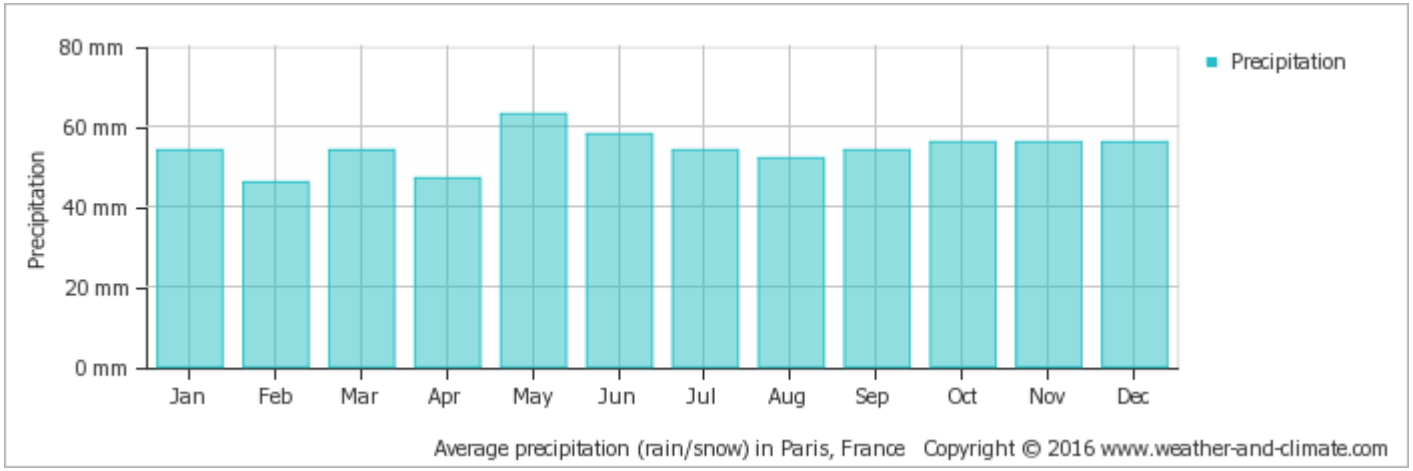
Salinization

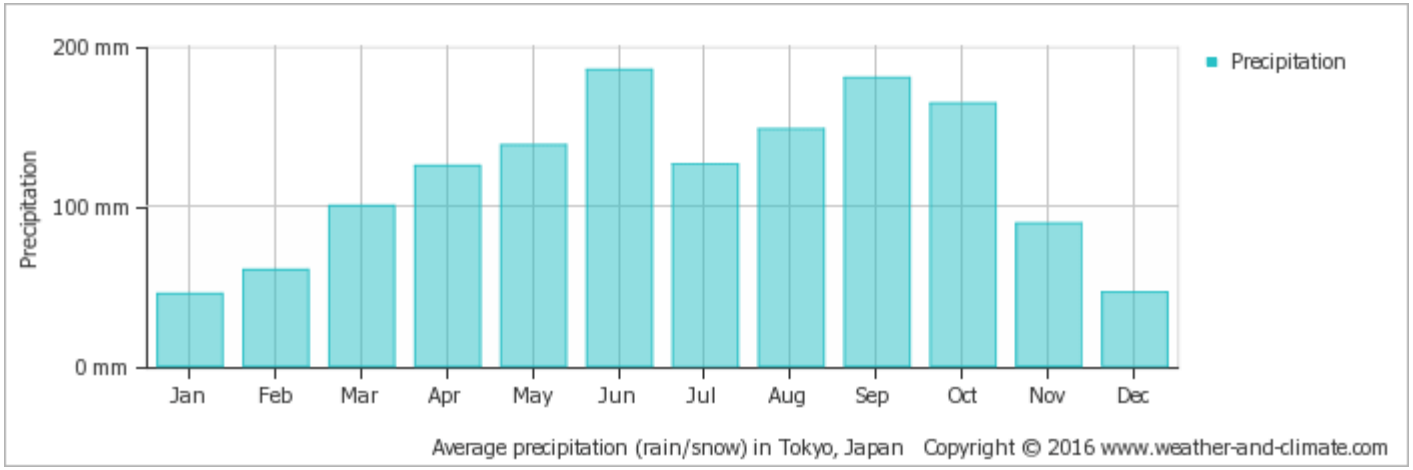
- The irrigation without proper drainage brings salt under the ground to the ground surface by capillary action.
- Mesopotamian civilization and Aral Sea, the forth largest inland sea, disappeared by salinization.
- 80 million out of 260 million irrigated land suffers from salinization.

Replant failure

- Continual planting of the same crop in dry land decreases the yield.
- In order to avoid it, traditionally crop rotation is used. Or in order to plant the most profitable crop every year, farmers increase the dose of insecticide, herbicide and fertilizer, which damages the environment.

Rain Precipitation : Paris & Tokyo

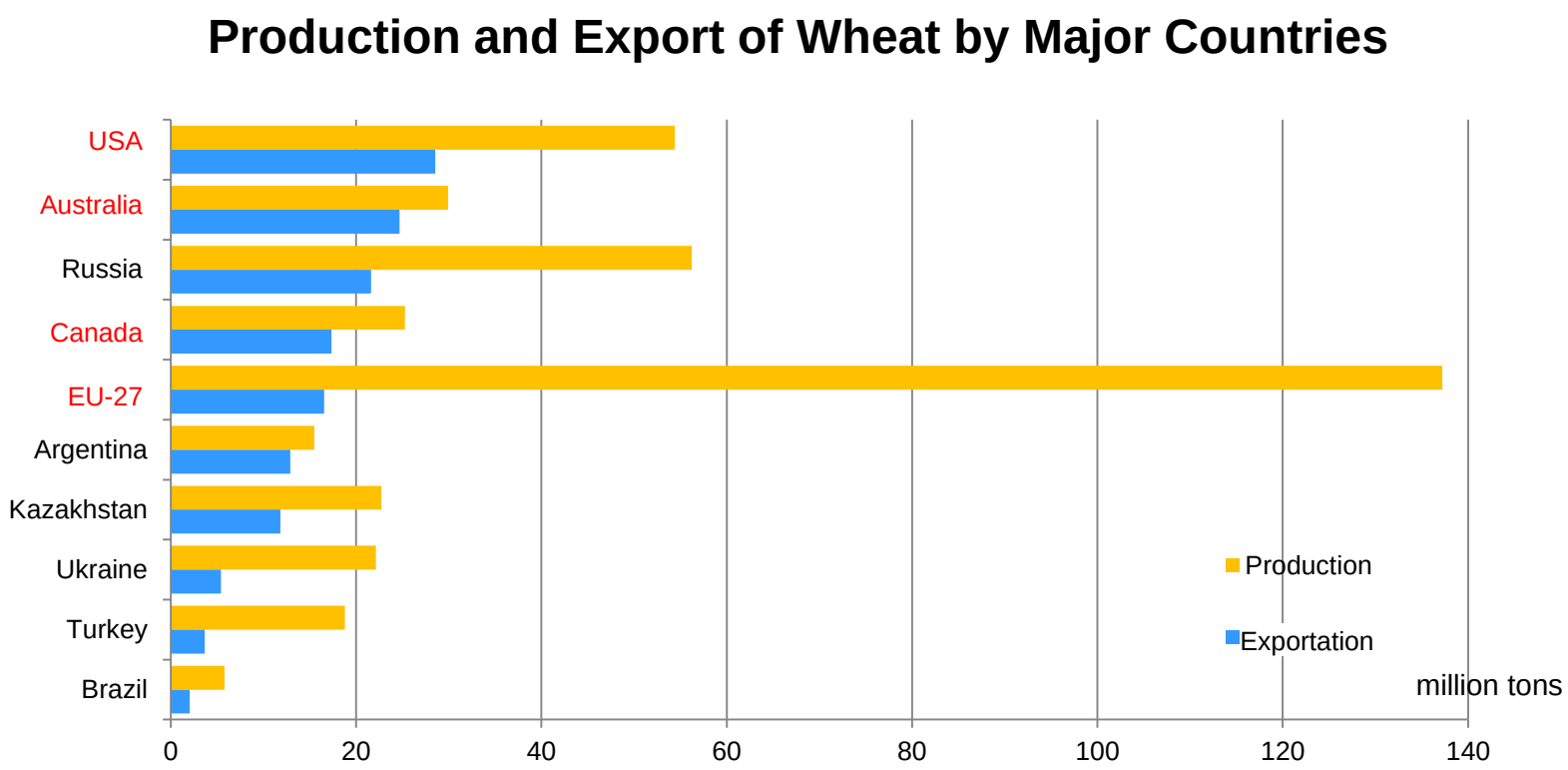




Rice vs Wheat, Paddies vs Dry Farming

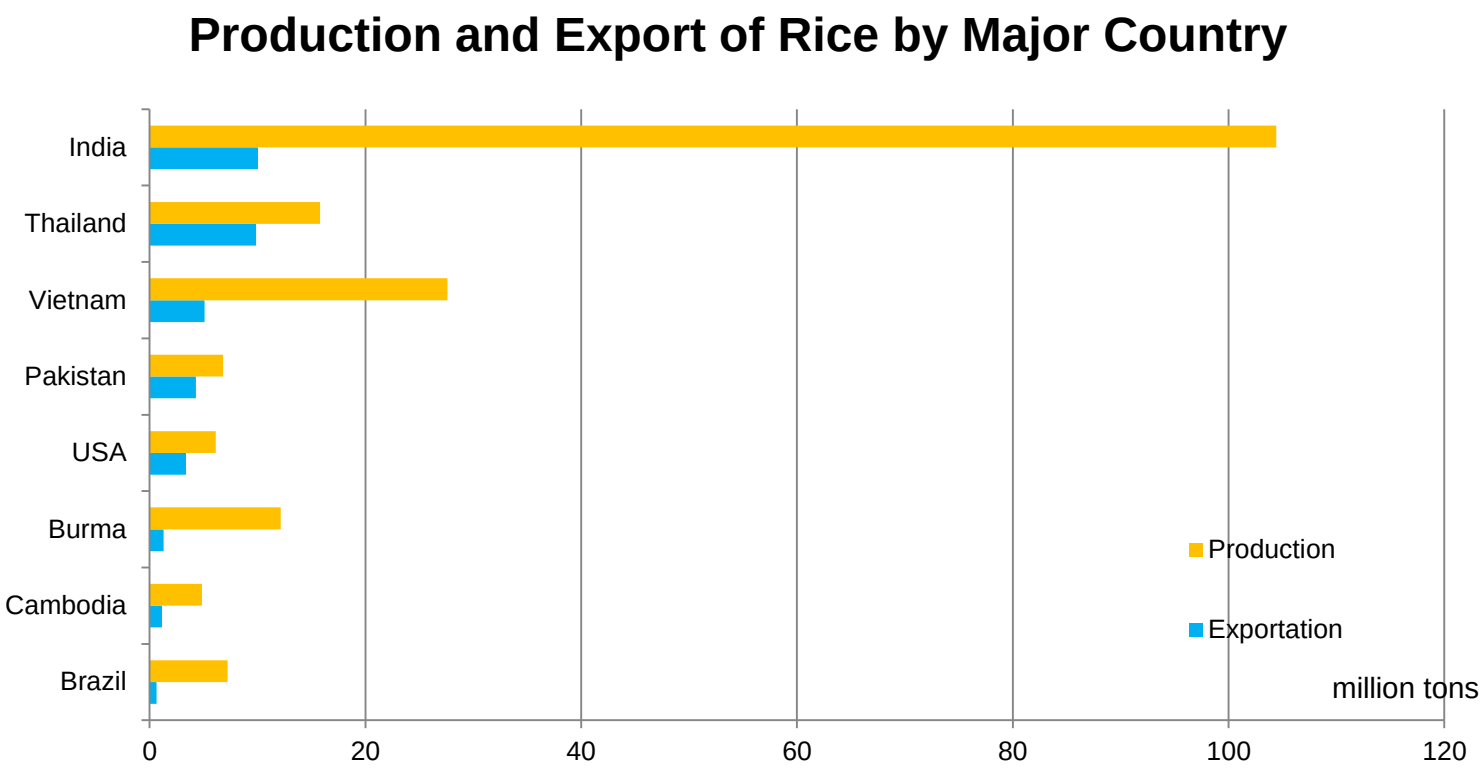
- Rice in Asia is more productive than wheat in Europe. Monsoon Asia covering nothing but 14% of the world land feeds approximately 60 % of the world population.
- Paddies are immune to water depletion, soil erosion, salinization and replant failure mostly by the function of water, humidity, forests and shape of paddies.
- Thus rice has been produced every year more than 4 thousand years without the decrease of yield. F.H. King, a professor at U of Wisconsin, published " Farmers of Forty Centuries" in 1911.

Major exporters of wheat seldom resort to export restriction



Source: USDA, Production, Supply and Distribution database

Major exporters of rice frequently resort to export restriction



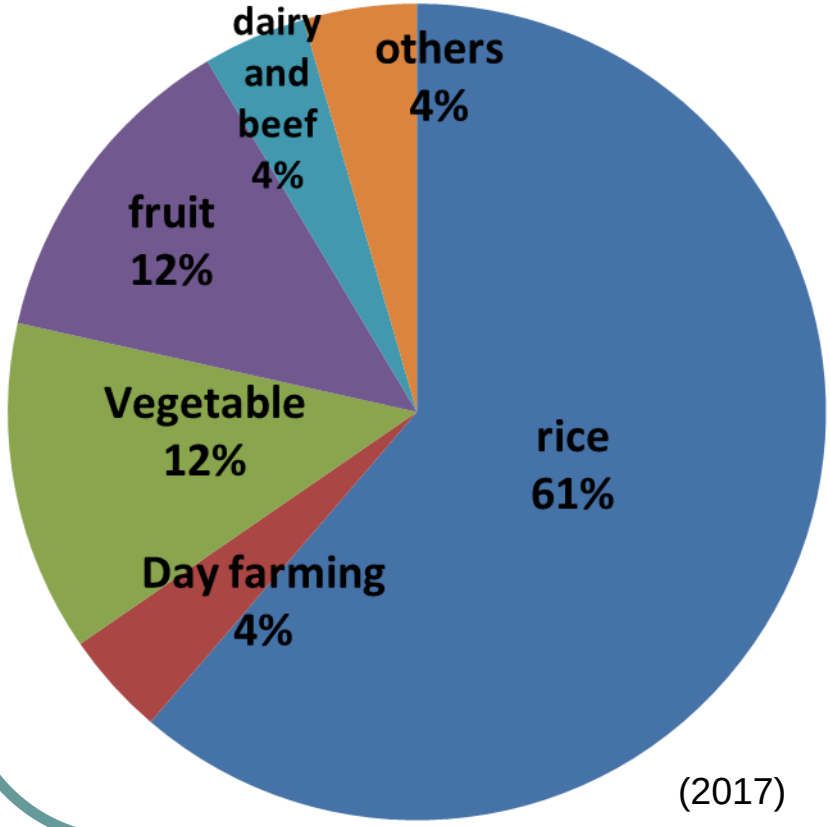
Source: USDA, Production, Supply and Distribution database

Farm policy impaired sustainability

- The government increased the rice price for farmers in 1960s. This caused the glut of rice. The government introduced the acreage reduction program in 1970 by giving farmers subsidies for reducing rice production. Now 40% of paddies are set-aside.
- The government enticed industries to install factories in rural areas so that rural people could work for those factories.
- A lot of inefficient small-scale part-time farmers remain in the rice industry.

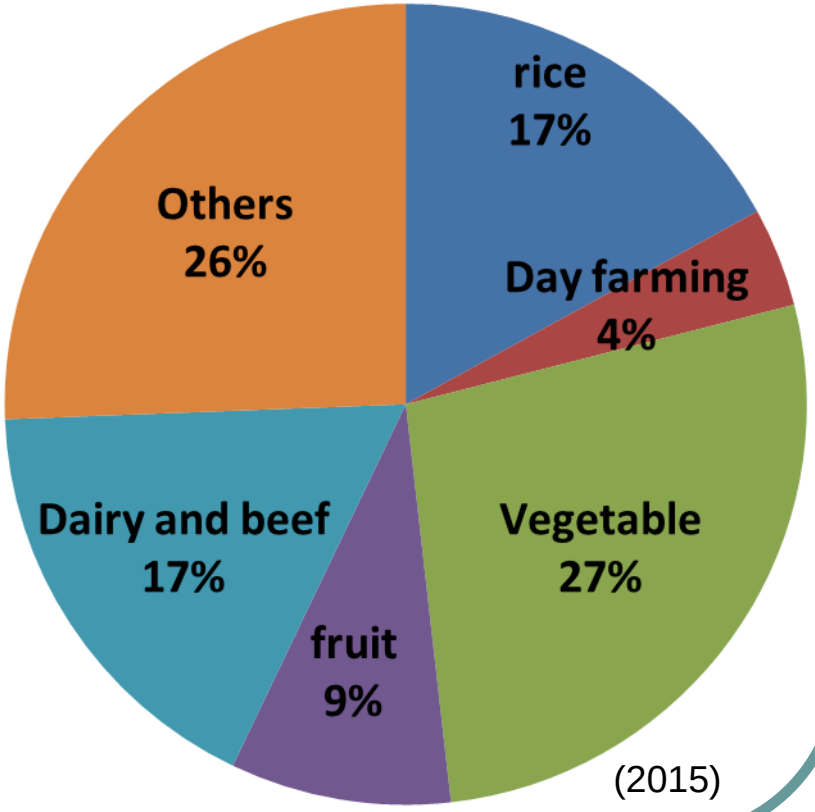
How inefficient the Japanese rice industry is!

The number of farmers



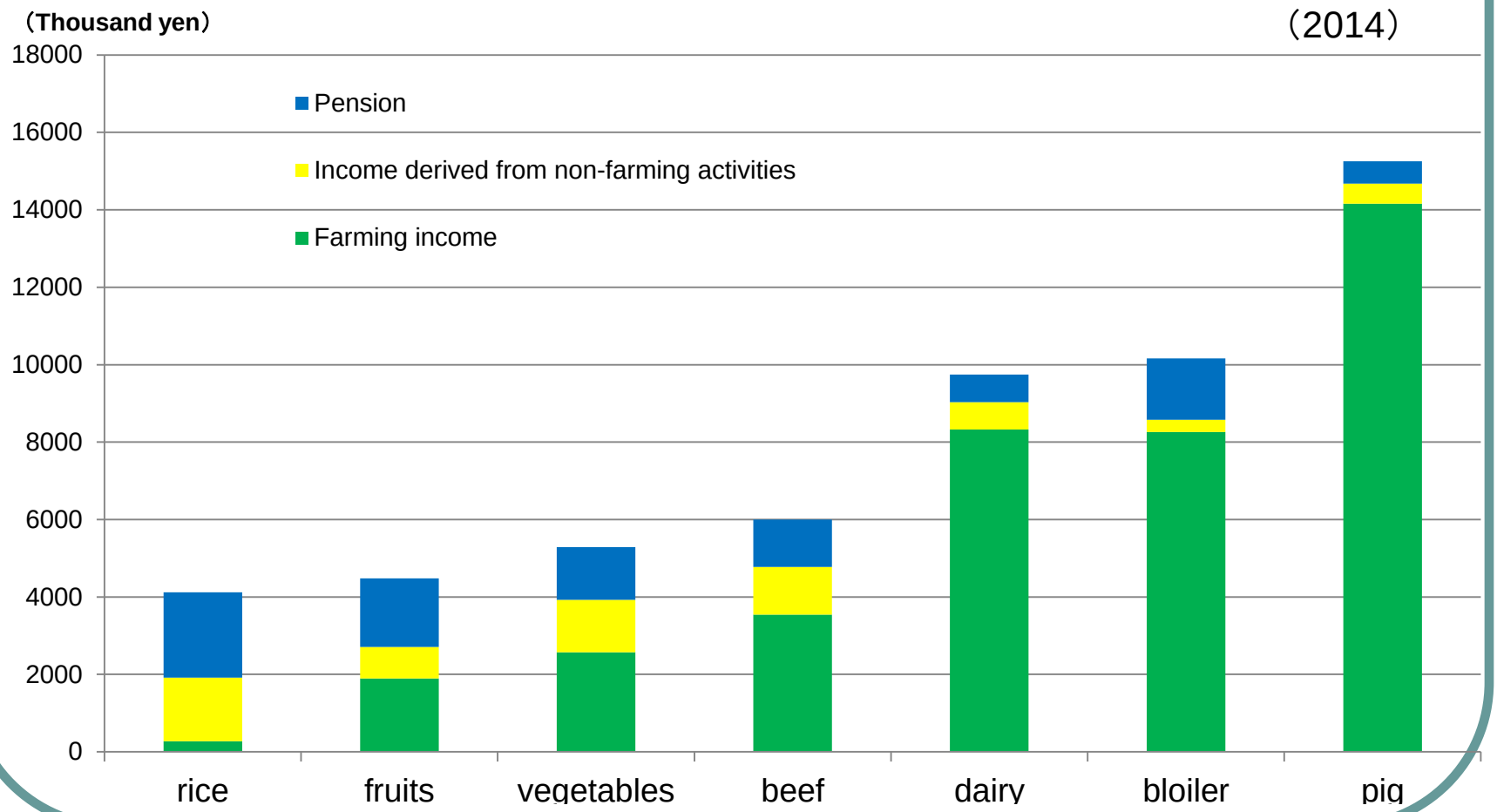
(2017)

The value of production

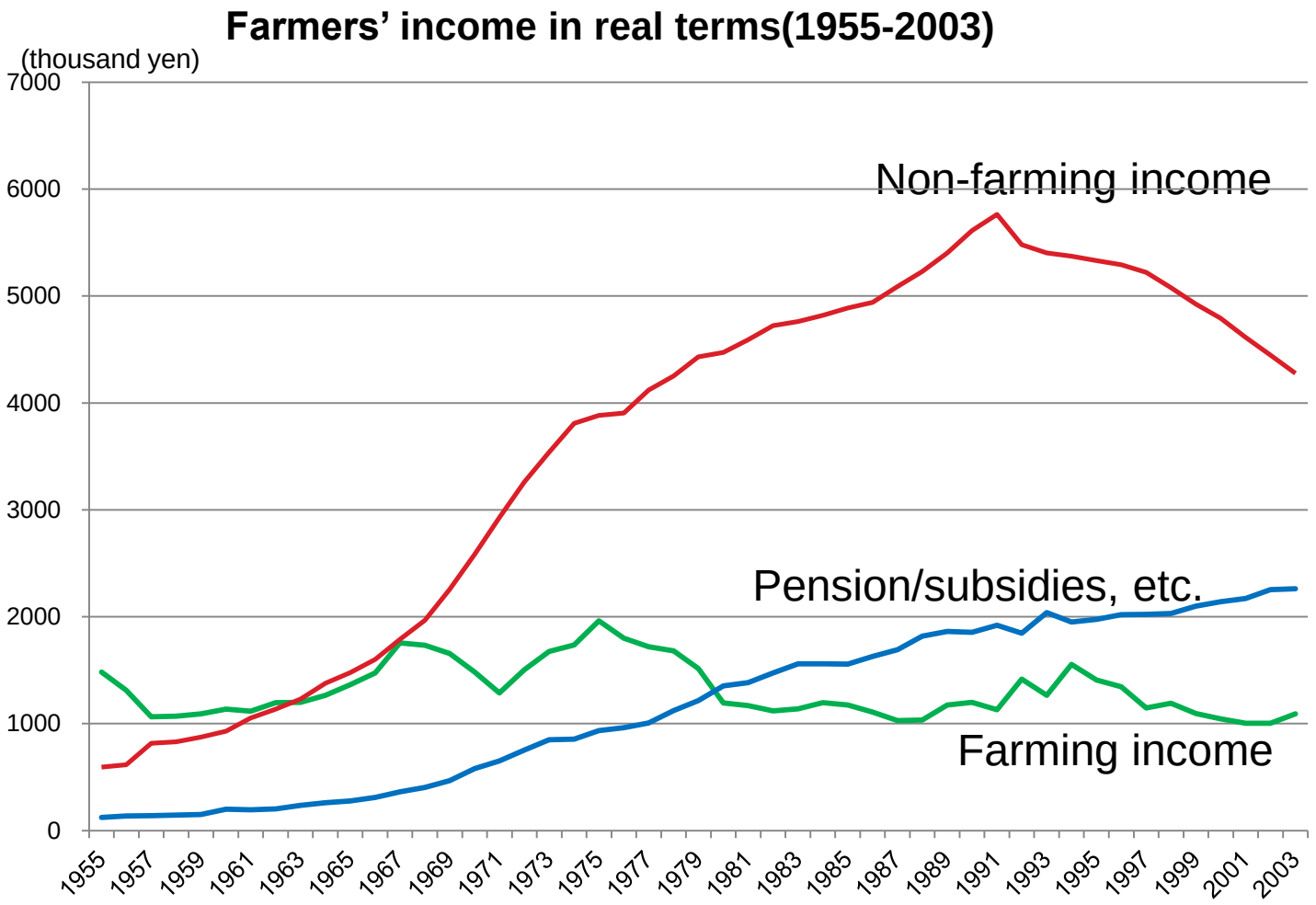


(2015)

Farming income is small for rice farmers



Non-farming income and pension is much greater than farming income in the farm sector as a whole



Who favors high rice price?

- JA (agricultural cooperative) is the only legal person in Japan which can make any kind of business including sales of farm inputs and products, insurance, and banking.
- By pegging the rice price high, JA could maintain a lot of small-scale part-time farmers who have been the sources of JA's political power and have deposited their earned income or pension in JA. The deposit at JA Bank amounts to 1 trillion US$. JA Bank is the second largest in terms of deposit in Japan.
- High rice price is indispensable for JA's prosperity.
  JA collected 11 million signatures against TPP.

Comparison of agricultural policies

Country	Japan	US	EU
Decoupled direct payments	No	Yes/No	Yes
Environmental direct payments	Partial	Yes	Yes
Direct payments for less favorable regions	Yes	No	Yes
Production restriction program for price maintenance	Yes	No	No
Tariffs* over 1000%	1 (tubers of konnyaku)	None	None
Tariffs of 500-1000%	2 (rice, peanuts)	None	None
Tariffs 300-500%	2 (butter, pork)	None	None
Tariffs of 200-300%	6 (wheat, barley, skim milk powder, starch, beans and raw milk)	None	None

* Specific tariffs are applied to tariffed products in Japan. Here, these specific tariffs are estimated as their equivalents of ad valorem tariff rates, taking into account international prices.

Overview of wasteful rice policy

One trillion JPY burden on Japanese

Reduced supply from acreage reduction

400 billion JPY fiscal burden

High price of rice

600 billion JPY consumer burden

High cost structure of rice

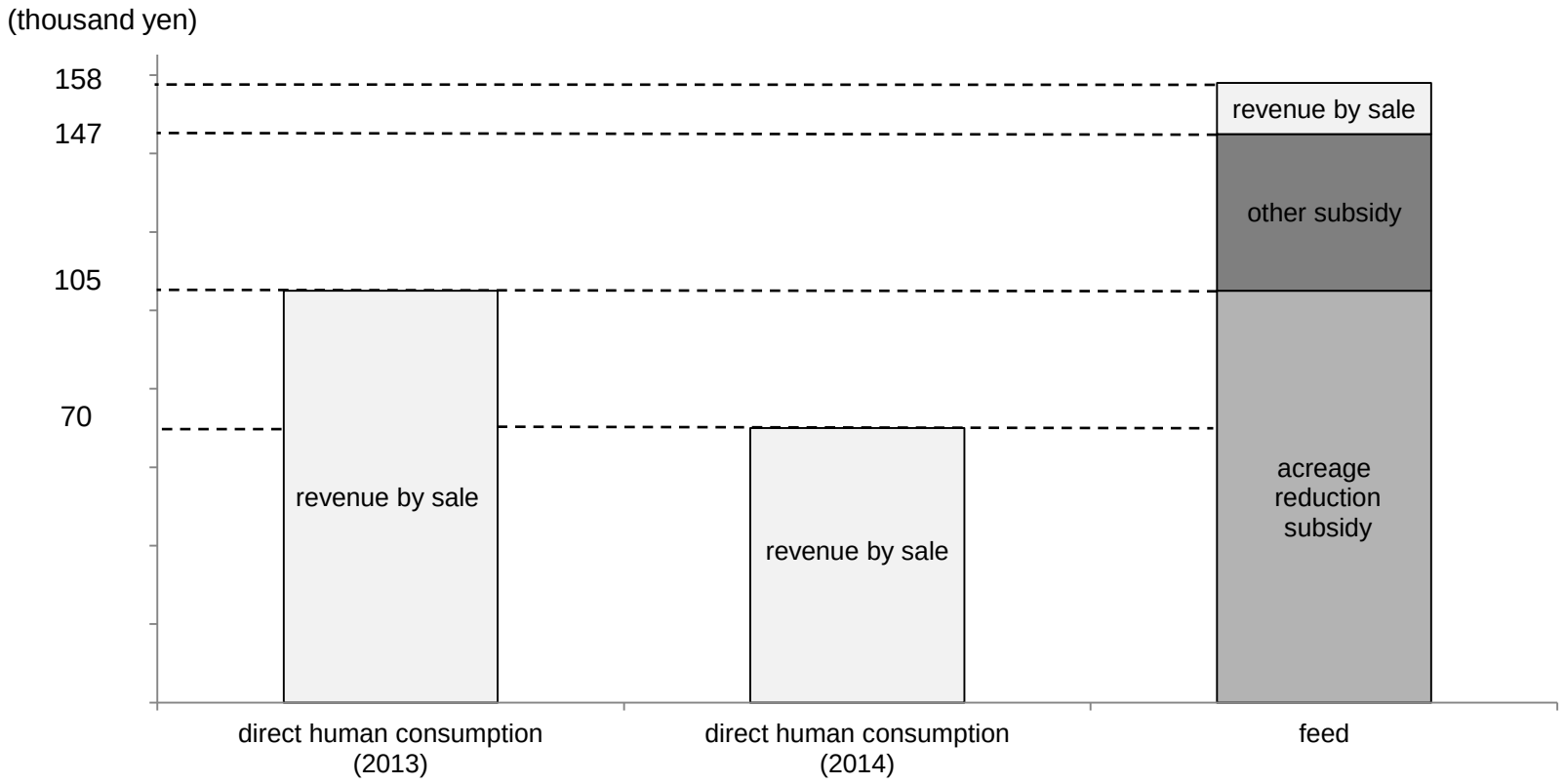
・High rice price encourages small part-time famers, the scale of full-time farming does not increase

・The yield by area does not increase (40% less than yield in California)

Negative influence on food security assurance

1 million ha out of 3.5 million ha of paddy field has been lost for good due to less demand caused by high rice price

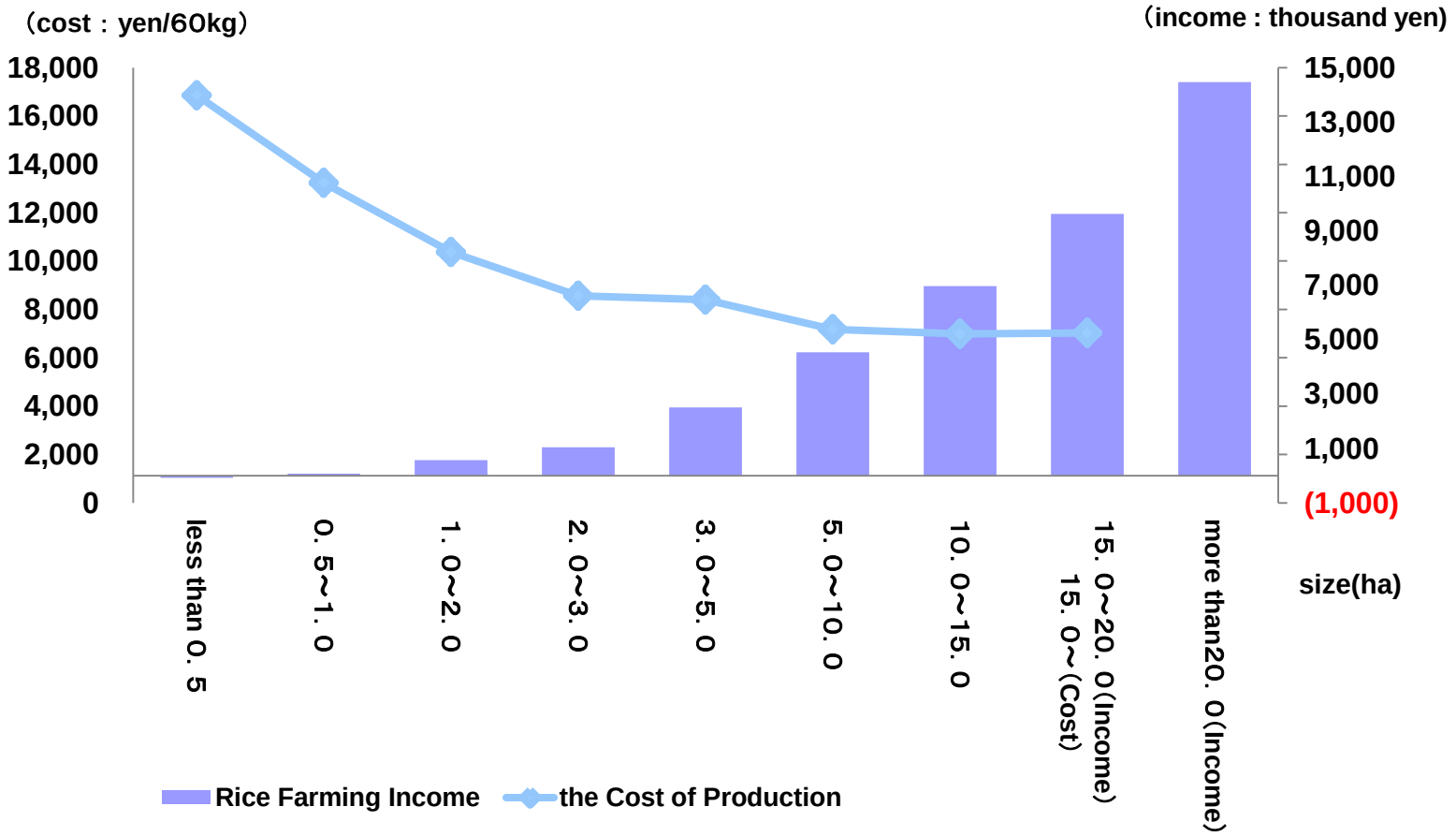
the revenue of rice for direct human consumption and that for feed use under the set-aside program



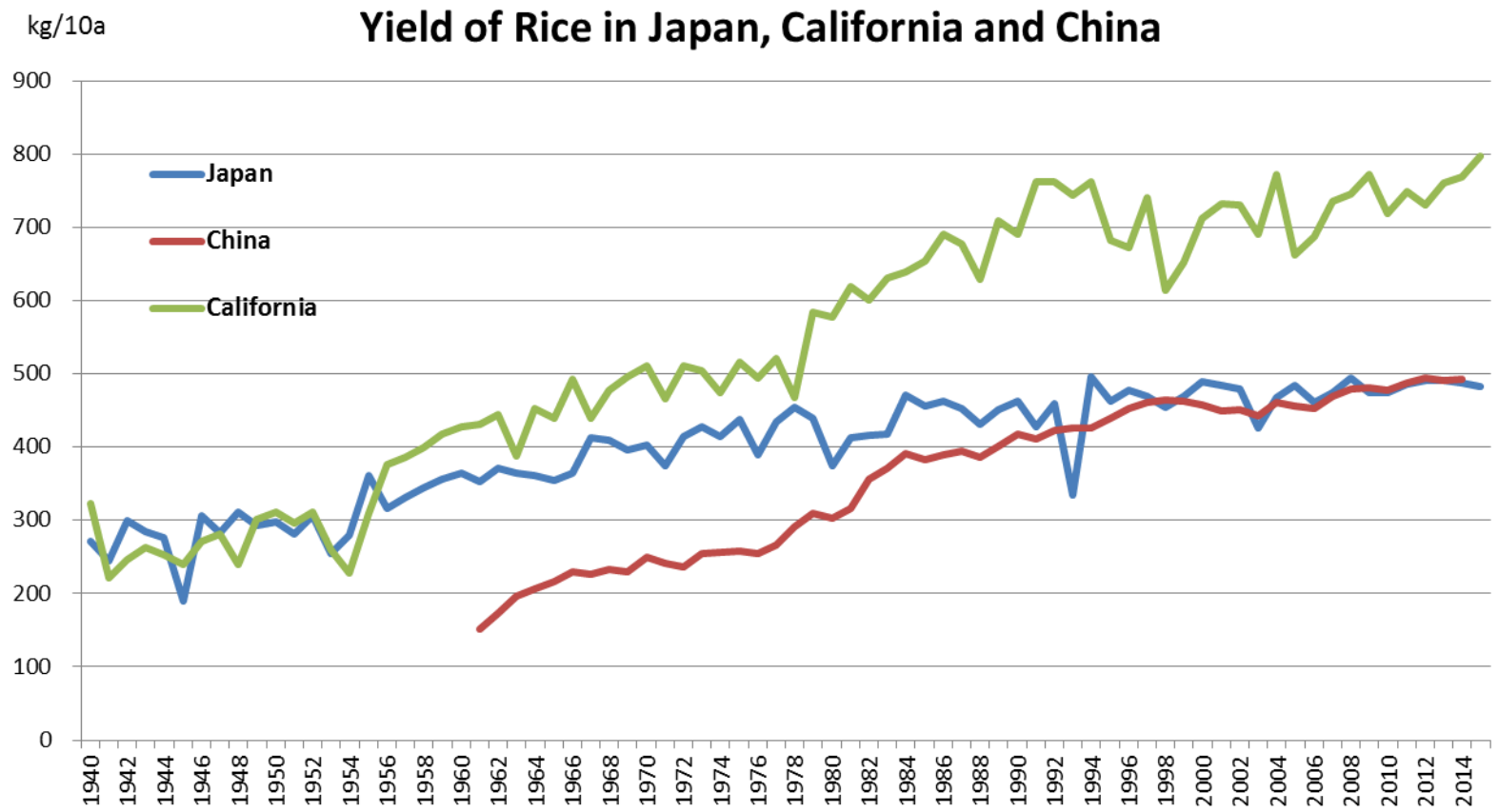
What might happen？

- The increase of rice for feed replaces substantial corn import from U.S.
- This subsidy can be subject to countermeasures according to the WTO's SCM Agreement. U.S. could lawfully retaliate on Japan by imposing high tariffs on imported industrial products such as automobiles from Japan.

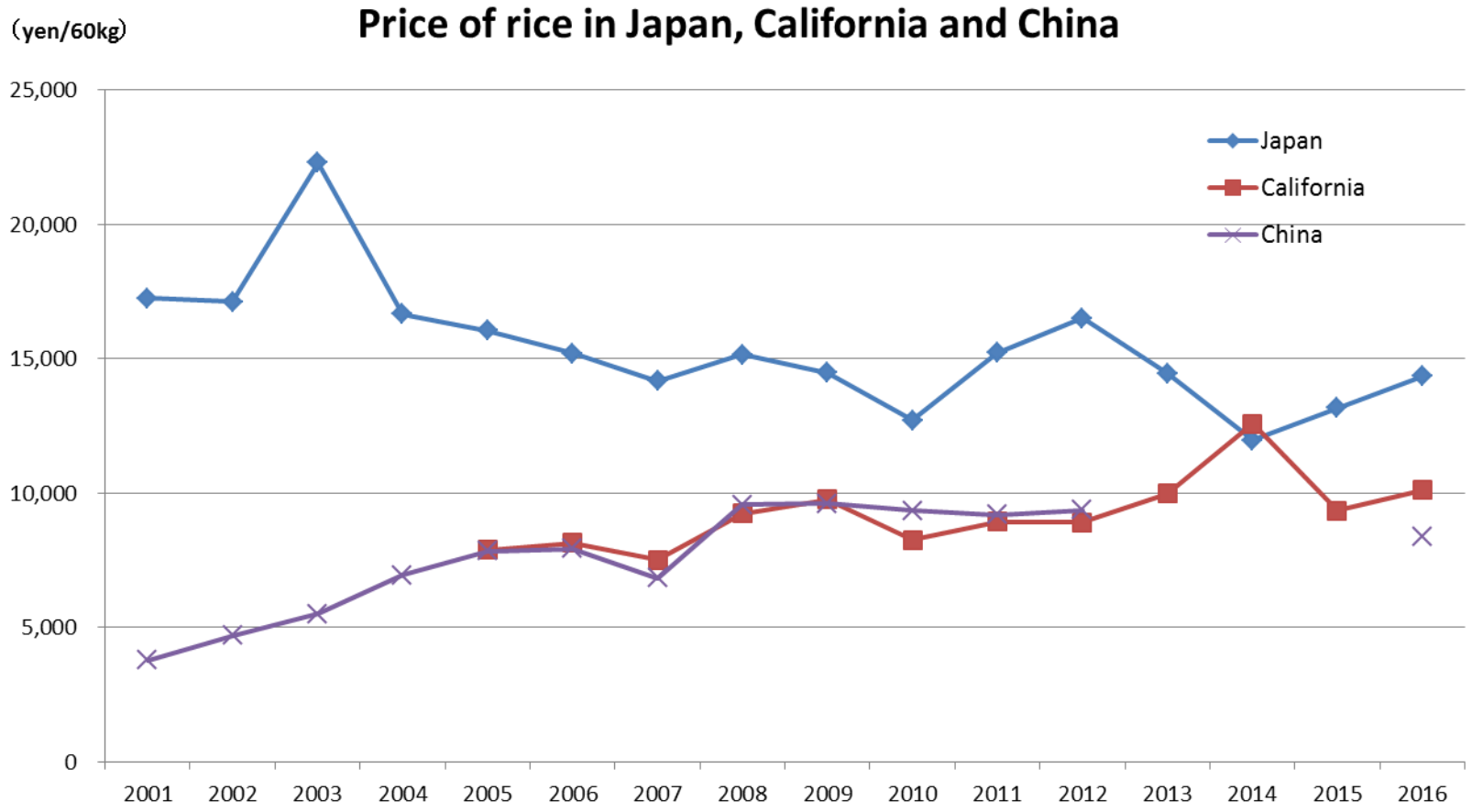
The larger the size, the less costly the production and the more farm income



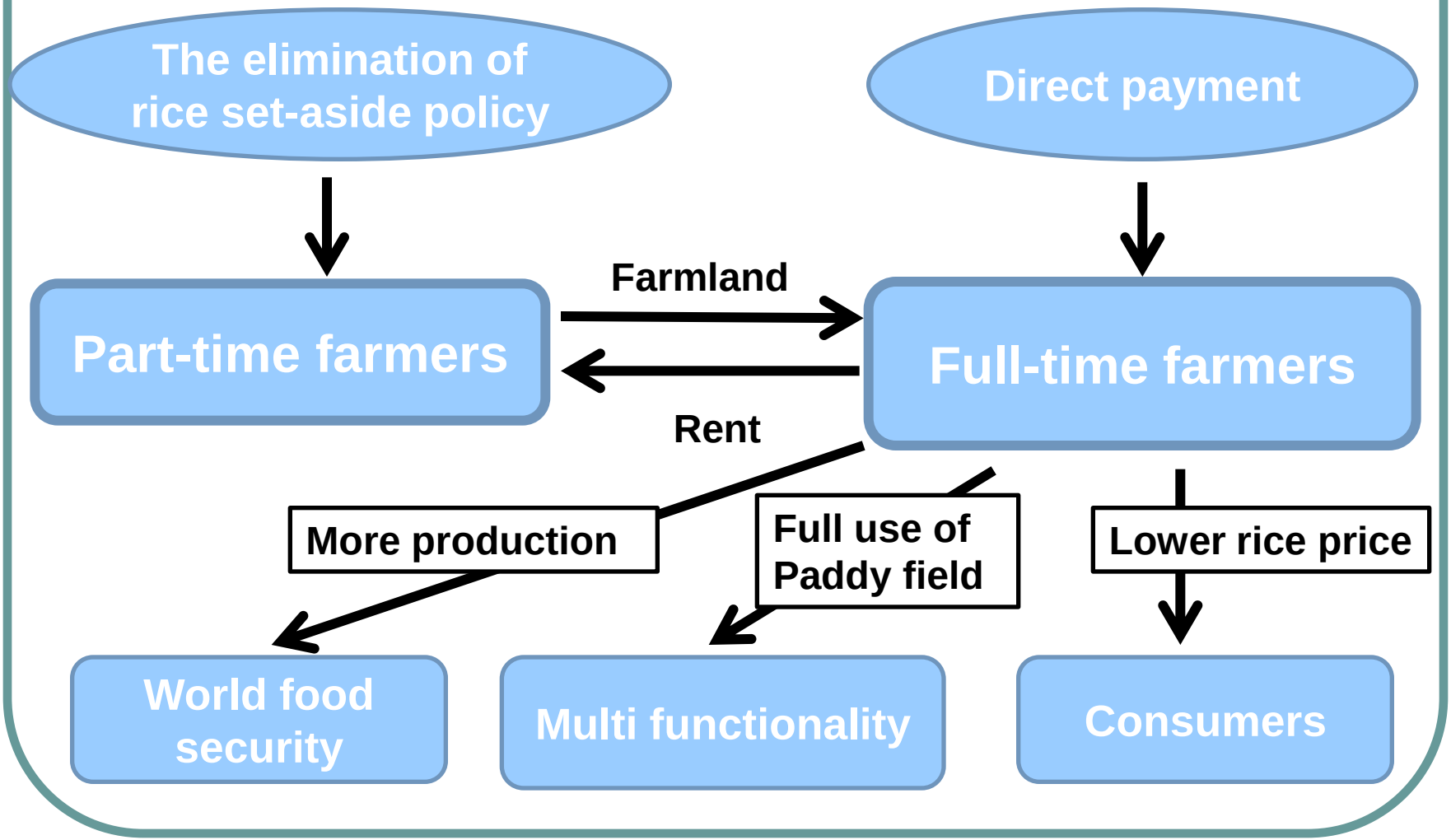
Research for high yield rice varieties is discouraged in Japan



Without set-aside, Japanese rice is much less expensive



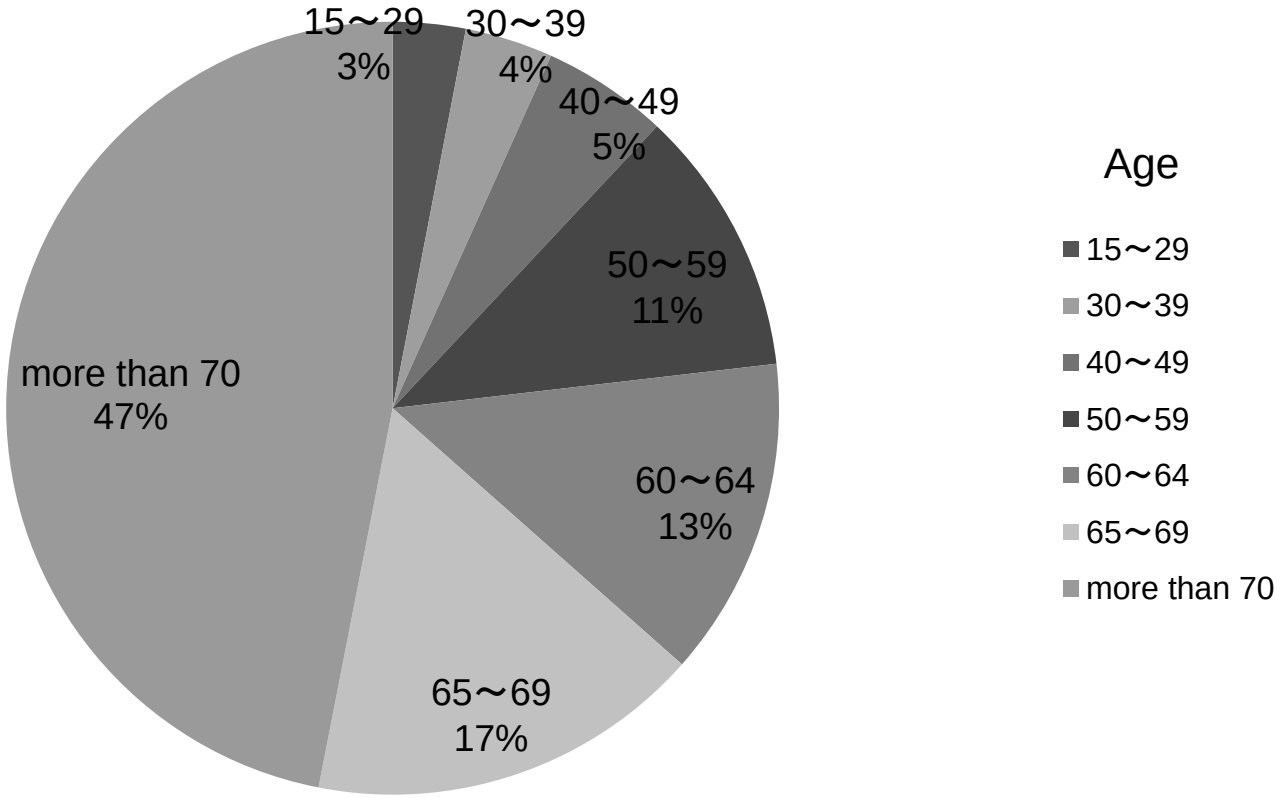
A Desirable Policy



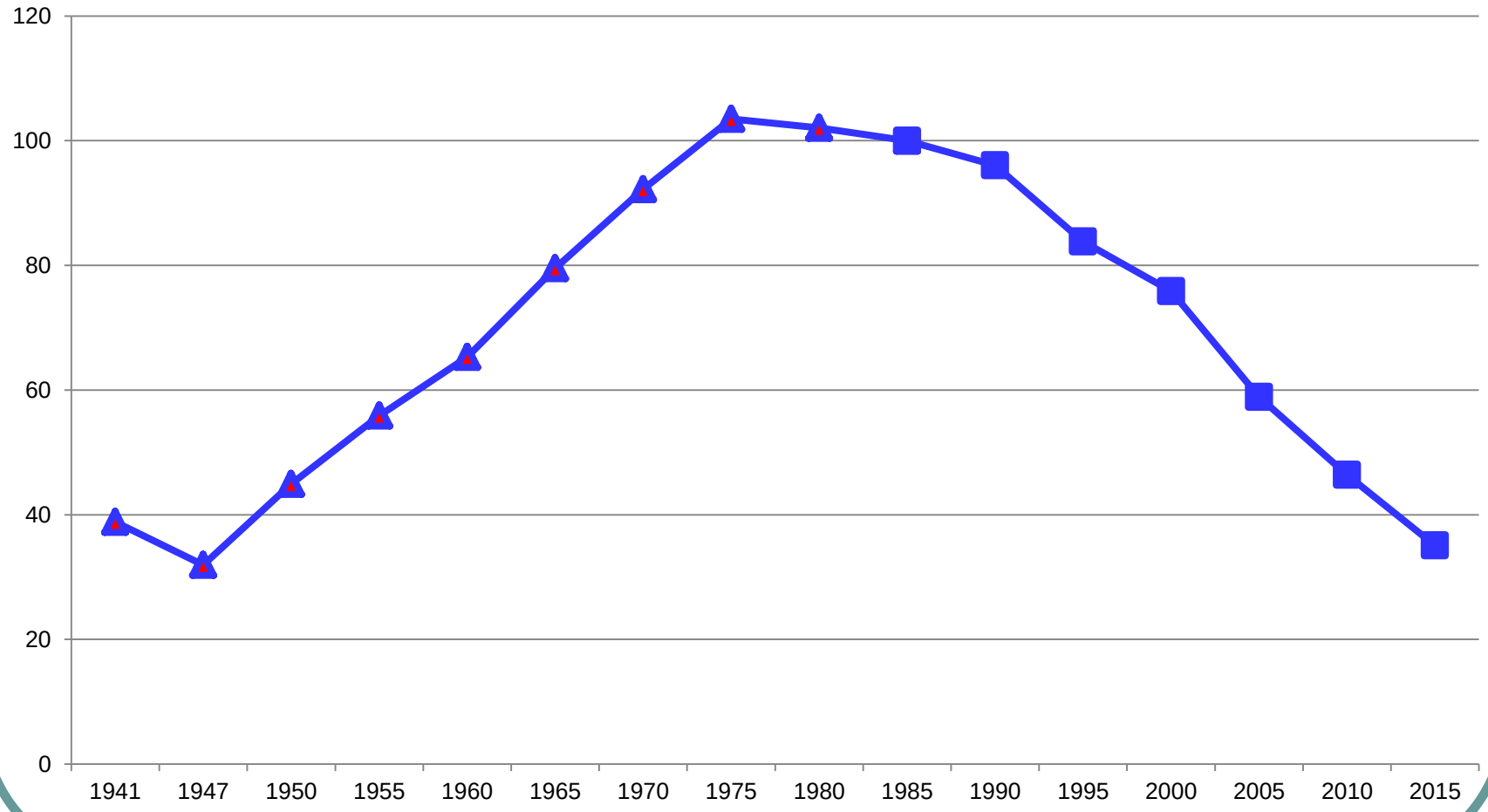
A silver lining for reform

- Recently the average farm size began to increase since the farming population is aging and decreasing.
- The decrease of part time farmers will shaken the political and economic foundations of JA.
- IT or AI technology cannot be fully utilized by part time farmers. Full time farmers will increase their competitive advantage over part time farmers.

More than 60% of farmers are older than 65



The declining part-time farmers(1985=100)



Free Trade for Food Security and Sustainable Agriculture

- In normal times, we import wheat and beef and export rice under free trade. In case of a food crisis, Japan will stop exporting rice and rather start consuming. It works as a stockpile without public expenditures.
- Exporting rice in normal times under free trade maintains agricultural resources, paddies, in case of need.
- Free trade is indeed a basis of food security and sustainable agriculture.


Thank you !