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-- Japanese agriculture: towards a sustainable, trade-oriented future --

Fiscal 2015 Research Project Report

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Executive Summary

In recent years, negative views of Japanese agriculture have predominated, arising from the domestic problems of structural and demographic decline and the international challenges of trade liberalisation through the TPP and other frameworks. This research report adopts a more positive approach towards agriculture in Japan, and explores ways in which it is re-orientating towards a more sustainable, trade-oriented future. Technological, organizational and policy innovations are being made at home and an export market of middle-class consumers is growing in Asia. In this context, the report examines areas which may help transform Japanese agriculture into a more stable and profitable sector.

Part 1 of the report highlights changing ideas about agriculture and agricultural policy in Japan and internationally. The postwar era was characterised by a view of agriculture as an exceptional sector of the economy, and most countries adopted a policy paradigm of state assistance to aid and protect farmers. Since the 1980s and 1990s, a view of agriculture as a normal sector of the economy spread, with the United States, the European Union and other governments shifting agricultural policies towards a market liberal paradigm focused on business principles like competition and profit. Japan's policy approach has been slow to change, but since 2012-13 the administration of Prime Minister Shinzō Abe has increasingly advocated policies to advance the role of joint-stock corporations in the sector and liberalize agricultural trade through the TPP. This over-arching paradigm shift helps explain many of the individual policy reforms and trends evident in Japanese agriculture today.

Part 2 presents the results of an original national survey conducted by APIR examining public opinion towards aspects of agriculture and agricultural trade. The results reveal strong public sentiment in favour of protecting the farming sector. Domestic agriculture was valued primarily for the non-economic public goods it contributes to society, particularly in relation to health, food safety and food self-sufficiency. Respondents had low expectations and

relatively high levels of uncertainty about the economic effects of trade liberalisation, and showed low levels of trust in most sources of information about trade negotiations. These findings help explain the low levels of support for agricultural trade liberalisation among Japanese citizens, which goes against the predictions of mainstream economic theory. They also provide information for mapping a ‘policy reform space’, indicating the goals that should guide future agricultural policy.

Part 3 provides a case study of one of the most important examples of policy innovation in contemporary Japanese agriculture, that of the National Strategic Special Zone (or *tokku*) for the revitalization of semi-mountainous regions in Yabu City in Hyogo prefecture. Yabu is a microcosm of many of the problems affecting traditional agriculture in Japan, including ageing, depopulation, a farm successor shortage and farmland abandonment. The central government chose Yabu to host a special zone for the purpose of providing a model for the regeneration of rural areas in other parts of Japan. Led by enthusiastic mayor Sakae Hirose and supported by local bureaucrats and staff from the Mitsui & Co. general trading company, the municipality is implementing a plan to revitalise the local economy, society and agricultural sector. Rather than yet more public spending, the program is based on policy reforms, regulatory easing and attempts to involve joint-stock corporations in local agriculture. Through site visits and interviews, we find that the Yabu *tokku* has achieved modest early success in implementing regulatory reforms and attracting a diverse range of firms from across Kansai and Japan to establish new businesses in the Yabu district. The role of the leaders of this project appears to be important to its progress. Perhaps the greatest success for the *tokku* so far is that it has attracted national and even international attention to this small municipality. If the project can continue to stimulate investment and interest, it may well offer a new model for sustaining agriculture in rural Japan.

Part 4 examines the growing role of joint-stock corporations in agriculture in Japan, with particular focus on vertical farms (*shokubutsu kōjō*, or ‘plant factories’). The postwar agrarian reforms that successfully resolved the problem of absentee landlords also served effectively to exclude private firms from the sector. Legislative changes in 1999 and 2009 have opened the door to corporate agriculture, and since taking office in 2012 the Abe government is actively encouraging businesses to engage in agriculture. Many firms entering the sector are pioneering high-technology farming, an area in which capital- and technology-abundant Japan has a potential comparative advantage. This section includes a case study of Kyoto prefecture-based SPREAD, the leading vertical farm producer of lettuce in Japan. Increased production levels, reduced usage of pesticides and water, and a more stable supply are among the benefits of vertical farming. Start-up, energy and labour costs remain high, but growing domestic demand for vertical farm produce and the export market for licensing these systems overseas suggest that this segment of the agricultural sector will become increasingly important for businesses in the medium-term. IT-based agriculture is already introducing a greater focus on business and profit to the sector, and if costs are further reduced, such high-tech farming could become an important element of sustainable and trade-oriented agriculture in Japan.

Part 5 offers recommendations based on the findings of this research. It notes that the changing policy paradigm and the pro-business orientation of the Abe administration mean that the current agricultural environment is more open than ever to firms entering farming. The results of the national opinion survey on agriculture and trade liberalisation suggest that consumers value health, food safety and food self-security. This implies that these goals should be prioritized by new agricultural producers as well as by policymakers determining future policy reforms. And just as Yabu has demonstrated that reforms are possible without further expenditure, policymakers should aim at using financial support in more efficient

ways, such as through direct decoupled payments, without necessarily increasing the levels of financial support. The advent of the TPP will undoubtedly bring new challenges, but policy reforms, a diversifying producer base and the development of new technologies may go some way to making the future of Japan's agricultural sector more stable, more sustainable more and trade-oriented.

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Introduction: Agriculture in Japan and Kansai

Japan's agriculture sector continues to have political significance that far exceeds its share of GDP and employment. During the negotiations for the Trans-Pacific Partnership agreement, Japan's representatives spent much time and political capital on securing exemptions for several categories of agricultural products, including the so-called 'sanctuary' items (*seiiki*) of rice, wheat, beef and pork, sugar and starch, and dairy products.

The high levels of government support and trade protection afforded to agriculture underlines its unique position in the political economy of Japan. Economists like Kym Anderson and Yujiro Hayami have explained this in terms of farmers' pursuit of material self-interest, while political scientists like Aurelia George Mulgan focus on the broader pursuit of self-interest by politicians, agricultural bureaucrats and Japan Agriculture (JA), the cooperative-cum-*keiretsu* that plays a major role in input supply, distribution, sales and financing of farming activities nationwide. Despite higher cost, Japan's consumers exhibit a strong preference for domestic food produce and even urban voters continue to elect protectionist-oriented parties, suggesting broad backing for the policies of agricultural support and protection.

While there are various views on the desirability of agricultural protectionism, one clear point is that the current policy regime is inefficient and unnecessarily expensive, given that it includes tariff-barriers and low levels of decoupled support, which economic theory has shown to be inefficient policy tools. Yet it is possible to make a more fundamental criticism of the current policy regime—namely that it has failed to prevent the gradual descent of the agricultural sector into a state of near-crisis. Among the many structural problems faced by the sector, the high average age of farmers, lack of farm successors, small average farm size and large and rising area of abandoned farmland are some of the most important. In addition,

as the national population declines, the domestic food market will shrink, adding a further problem for a sector with very low levels of exports.

In order for Japanese agriculture to survive, two elements will be essential. First, it needs to become more sustainable, structurally as well as environmentally. Producers must improve efficiency, lower costs and become more competitive in the international market, since there can be no guarantee that future governments will provide high levels of support. Second, given domestic market shrinkage and the rapidly growing market of middle-class consumers elsewhere in Asia, Japanese agriculture needs to become more export-oriented.

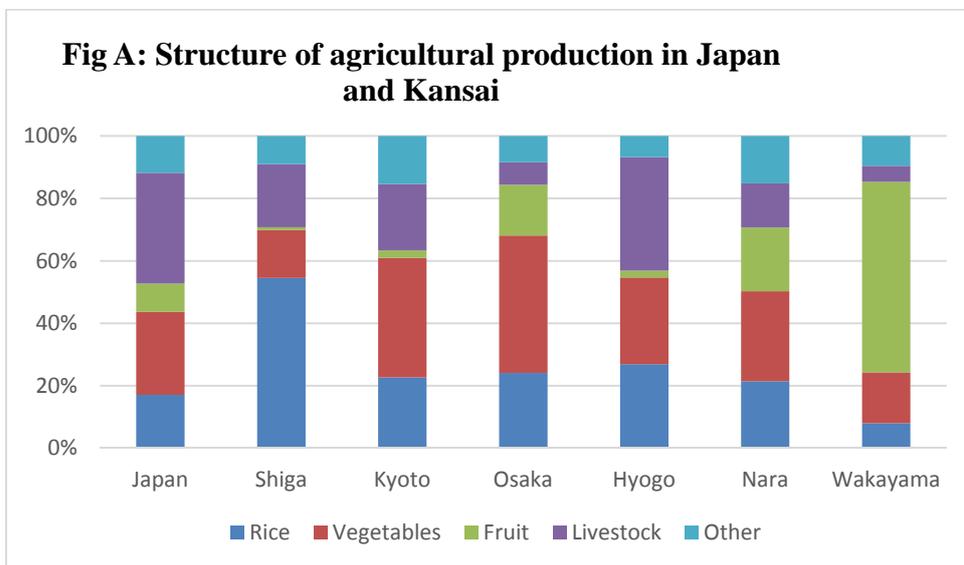
There is cause for optimism in both these areas. In recent years, Japanese agriculture has become more oriented towards business and profit. This has arisen in part through the growing involvement of joint-stock corporations in farming, including both Small and Medium Enterprises (SMEs) focusing on niche markets and large multinationals developing new technologies or repurposing existing technologies to address needs in the farming sector. Another factor has been the steady increase (albeit from a low base) of agricultural, fisheries and forestry exports, particularly to other Asian countries. The Abe administration has also been slowly reorienting agricultural policy in a more business-focused direction, making reforms related to its economic policy programme and in response to external pressure arising from the TPP.

This report examines these positive developments in Japanese agriculture, based on original research through site visits, interviews with agricultural producers and policy experts, and data analysis. In particular, it examines these trends with reference to the Kansai region of central Japan, incorporating the six prefectures of Osaka, Kyoto, Hyogo, Nara, Shiga and Wakayama. Kansai agriculture is worthy of attention for several reasons, including its diverse agricultural hinterlands, large regional market of 20 million consumers, the number of small,

medium and large Kansai firms becoming active in agriculture, and the region’s strong orientation towards exports, and particularly exports to Asia.¹

Agricultural production in Japan and Kansai

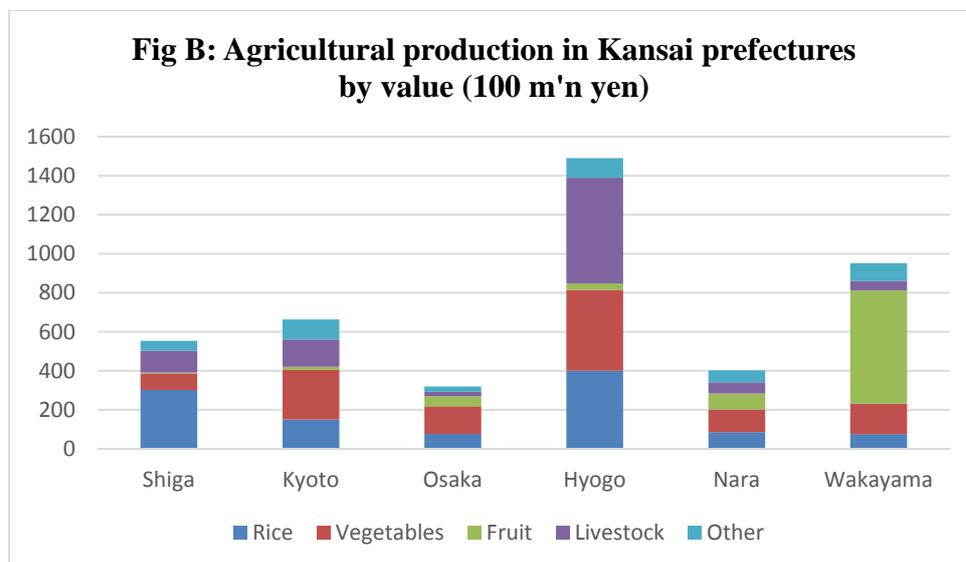
According to the Ministry of Agriculture, Forestry and Fisheries (MAFF), in 2014 Japan’s total agricultural, forestry and fisheries production by value was JPY 8.36 trillion (USD 81 billion²), down from a historical peak of JPY 11.72 trillion (USD 113 billion) in 1984. Figure A shows the structure of agricultural production (excluding forestry and fisheries) by value for Japan and the six Kansai prefectures in 2014. Nationally, the most important categories were livestock (including meat and dairy), accounting for 35.5% of total production value, and vegetables, accounting for 26.6%. Rice represented 17.1% by value, fruits 9.1%, and other items 11.8%.



¹ Kansai accounts for about 16.3% of Japan’s population, 15.6% of GDP, 21.3% of its exports and 26.7% of its exports to Asia.

² Rate: USD 1= JPY103.836 (July 2016 average, X-Rates website [<http://www.x-rates.com/average/?from=USD&to=JPY&amount=1&year=2016>, accessed August 1, 2016])

Figure B ranks Kansai prefectures in terms of agricultural sales. The largest is Hyogo (JPY 141.9 billion [USD 1.4 billion]), for which livestock and vegetables are the most important products; due to its similar output structure, Hyogo is sometimes called ‘Japanese agriculture in miniature’. Second is Wakayama (JPY 95.2 billion [USD 916 million]), for which 61% of sales are fruits, followed by vegetables. Kyoto is third (JPY 66.3 billion [USD 639 million]), with vegetables, rice and livestock the other major items. In Shiga (JPY 55.4 billion [USD 534 million]), rice accounts for over half of agricultural sales by value, followed by livestock. In Nara (JPY 40.2 billion [USD 387 million]), vegetables, rice and fruits are the major items. In Osaka (JPY 32.0 billion [USD 308 million]), vegetables and rice are most important. As these statistics show, agricultural production in Kansai is diverse, including both major and minor prefectures in terms of production scale, and prefectures that specialise in one or several categories of products.

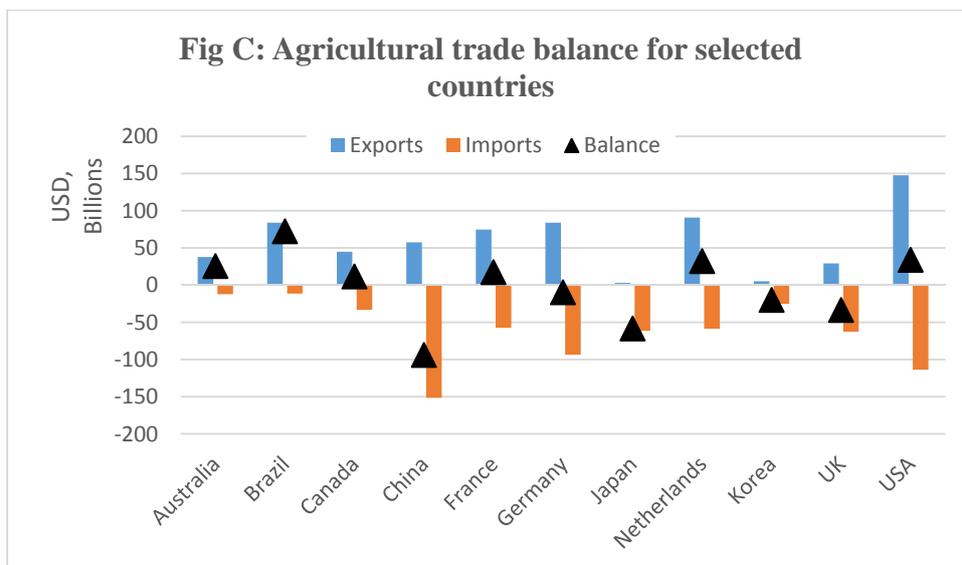


Japan's agricultural trade in context

A common view about food production is that Japan is heavily dependent on food imports, and that this undermines the country's food self-sufficiency and food security. In this view,

the low food self-sufficiency rate leaves Japan vulnerable to international events that may disrupt supplies of food imports. The appeal of this view in an island nation situated in a region with several political risk factors is easy to understand.

However, it can be argued that this view is mistaken in at least three ways. First, Japanese agriculture is highly dependent on imports of oil and other production inputs. In a situation where food imports stopped, other imports would also stop, making agricultural production difficult. Without access to imports of any kind during a crisis, Japan's real food self-sufficiency rate would be very low in the short-term, but this is also true for most countries. Second, given that the goal in an emergency is to maximize calorie production to ensure survival, a country's food and calorie production and consumption in normal times is not an accurate indicator of production potential in emergency periods (Honma, 2015: 110). During a crisis, a range of resources may be diverted from other uses to food production. For example, foods that were being produced for export could be consumed domestically, and non-agricultural grassland such as parks and golf-courses could be planted with crops.



Third, while Japan is among the largest food importing nations in terms of value, its import value levels are not dissimilar to other major economies. As Figure C shows, Japan's imports are similar to France and the Netherlands, and much less than Germany, three countries with smaller populations than Japan. Indeed, when considered in terms of imports per capita (in value terms), Japan (USD 483) is behind the Netherlands (USD 3469), Germany (USD 1155), the United Kingdom (USD 971), Canada (USD 936), France (USD 865) and Australia (USD 516)³.

Where Japan is an outlier is in terms of food exports. Japan's low levels of exports mean that it is a large net importer, second behind only China in the major economies shown above. Boosting Japan's agricultural exports would help normalize its agricultural trade profile, and increase its production potential in emergency situations, which could alleviate fears of a future crisis. However, to boost international competitiveness and increase exports, it is necessary to understand where Japan's comparative advantage lies in agricultural production.

Understanding Japan's comparative advantage in agriculture

The fundamental problem faced by Japanese agriculture is one of factor endowment. Japan is relatively scarce in land and low-cost labour, and relatively abundant in capital and high-skilled labour. Traditional agricultural production relied on land and low-cost labour, but modern agricultural production as practiced in major exporting countries like the United States and Australia uses land and capital (i.e. technology). For this reason, Japanese agriculture will always lack competitiveness against countries that are land-abundant. Conversely, Japan would have an advantage in types of agricultural production that utilizes capital and high-skilled labour. Recently, the number of firms developing such agricultural production methods is increasing.

³ Based on author's own calculations, using data from FAO and World Bank.

The report is structured as follows. Chapter 1 examines the changing paradigm for agricultural policy internationally and in Japan, which provides the context for shifts in the orientation of agriculture in recent years. Chapter 2 provides insight into popular support for protecting domestic agriculture, as evidenced through the results of an original online national opinion survey conducted by APIR in March 2015. Chapter 3 looks at one attempt to revitalise agriculture through policy innovation rather than further government expenditure, the National Special Strategic Zone for semi-mountainous regions in Yabu, a rural municipality in northern Hyogo prefecture.

Chapter 4 considers the growing role of joint-stock corporations in the agriculture sector, with reference to IT-based agriculture and vertical farming, known as ‘plant factories’ in Japan. Finally, Chapter 5 summarizes the findings of the report, and considers the future of the agricultural sector in light of the changing policy paradigm.

Chapter 1: Changing Ideas about Agriculture in Japan and the EU

Both internationally and domestically within Japan, debates over agriculture and agricultural policies tend to be particularly intense. Internationally, agriculture has been a major stumbling block in negotiations for liberalizing trade agreements at the bilateral, regional and WTO levels. Domestically, agricultural policy has been one of the most contested policy areas throughout the postwar period, and intermittent international pressure (*gaiatsu*) since the 1980s has influenced the national discourse, most recently in relation to the TPP.

The international policy framework concerning agriculture has undergone a fundamental reorientation in recent decades. An analysis of the changes in agricultural policy and the ideas that shape it provides important context for the current situation in the sector, recent trends and the possible future course of agriculture both as a sector of the economy and as a field of business. This chapter outlines the two competing ‘policy paradigms’ in agriculture, and surveys the paradigm shift that has been taking place globally and in Japan. It then examines the case of the European Union’s Common Agricultural Policy, which has been progressively reformed since 1992, such that the EU has become a net food exporter since 2010.

1.1 Competing agricultural policy paradigms: Exceptionalism vs Normalism

The intensity of debates around agricultural policy may be explained in part by the different philosophical viewpoints that are often held by participants, and the policy paradigms to which these give rise. At one end of the spectrum is *agricultural exceptionalism*, the view that agriculture is an exceptional sector of the economy with distinct features that make it different from other sectors. At the other lies *agricultural normalism*, the view that agriculture is a normal sector of the economy, comparable to other sectors. Each of these

views gives rise to particular preferences for agricultural policies. Daugbjerg and Swinbank (2009: 5-14) provide useful explanations of these two positions, summarized in the following paragraphs and in Table 1-1.

Agricultural exceptionalism describes the view that agriculture is an exceptional sector of the economy with inherent features that make it fundamentally different from other sectors like industry and services. These include (i) features of production such as vulnerability to weather events; (ii) variable and potentially unstable demand conditions in the domestic and global markets; (iii) its role of providing a stable and secure supply of food to a state's population; (iv) its contribution to maintaining the natural environment, biodiversity and rural landscape; (v) its socio-economic role in sustaining rural communities and local cultural heritage. These latter factors are often referred to as the *multifunctionality* of agriculture.

Agricultural exceptionalism usually gives rise to preferences for government intervention to support farmers through a range of measures. These include tariffs, non-tariff barriers, price supports, direct producer payments, input subsidies, export subsidies, credit and insurance subsidies, rural public works investment and other measures. Typically, advocates of these measures adopt what Coleman et al. (1997) term a *state-assisted paradigm*.

The state-assisted paradigm in agricultural policy has two tenets: (1) that “the agricultural sector contributes to national policy goals and therefore merits special attention”, and (2) that “the price mechanism is a sub-optimal means of achieving an efficient and productive agricultural sector... [i]mperfect markets combine with unmanageable natural risks and concern for food security to give governments a large role in subsidizing agricultural production” (Coleman et. al, 1997: 275).

In turn, these principles gave rise to three key agricultural policy goals in OECD countries: (1) that farmers should receive sufficient farming income to ensure an adequate living standard; (2) that increased efficiency should be pursued by the adoption of new

technology to allow intensive production; (3) that marginal farmers should receive assistance to become efficient, commercially viable agricultural producers. Coleman et al. suggest that all countries have subscribed to some degree to these goals (at least in the past), and that some countries organise their agricultural sectors almost entirely around them. However, by the 1990s, this paradigm started to give way to an alternative.

Agricultural normalism refers to the view that agriculture is a normal sector of the economy, not inherently different from the industrial and service sectors. In this perspective, markets are seen as tolerably stable, and market-based approaches as the most efficient way to meet society's needs for agricultural produce.

Agricultural normalism usually gives rise to a *laissez-faire* approach to agricultural policy. Government interventions in domestic agricultural are seen as distorting both domestic markets and the world market. Since such policies assist farmers with the greatest political advantage rather than those with the greatest comparative advantage, agricultural support and protection are believed to reduce national and global welfare and result in the inefficient use of finite natural resources.

Advocates of this view tend towards what Coleman et al. (1997) call a *market-liberal policy paradigm*. The market liberal paradigm focuses on market allocation and efficiency over state intervention and equity. There are four tenets of this view: (1) that agriculture should be seen as being like any other economic sector and not connected to serving other policy goals; (2) that competitive markets based only on supply and demand should determine producers' incomes; (3) that only market-competitive producers should remain active in the market; and (4) that individual producers should be responsible for insuring themselves against income loss due to natural disasters (Coleman et. al, 1997: 275-6).

In this paradigm, the policy goals are: (1) to give precedent to efficiency in agricultural production over equity; (2) to lower food costs and provide greater choice of products for

consumers; (3) to encourage international competition between agricultural producers in different countries.

Table 1-1: Agricultural exceptionalism and agricultural normalism		
	Agricultural exceptionalism	Agricultural normalism
Exceptional features of agriculture as a sector	<ol style="list-style-type: none"> 1. <i>Vulnerability to disruption of production</i> 2. <i>Variable/unstable demand</i> 3. <i>Role in providing food to a nation's people</i> 4. <i>Contribution to nature and environment</i> 5. <i>Socio-economic role relating to rural communities</i> 	<i>None—markets are tolerably stable, and the market mechanism brings efficient outcomes</i>
Related policy paradigm	<i>State-assisted paradigm</i>	<i>Market-liberal paradigm</i>
Tenets of policy paradigm	<ol style="list-style-type: none"> 1. <i>Agriculture contributes to national policy goals and so merits special attention</i> 2. <i>Market price mechanism is sub-optimal for achieving an efficient, productive sector</i> 	<ol style="list-style-type: none"> 1. <i>Agriculture is comparable to other sectors, and not connected to other policy goals</i> 2. <i>Competitive markets should determine producers' income</i> 3. <i>Only market-competitive producers should produce</i> 4. <i>Individuals should insure themselves against losses</i>
Key policy goals	<ol style="list-style-type: none"> 1. <i>Farmers should have sufficient income for adequate living standard</i> 2. <i>Increase efficiency through new technology and intensive production</i> 3. <i>Assist marginal farmers to become viable</i> 	<ol style="list-style-type: none"> 1. <i>Efficient agricultural production</i> 2. <i>Lower food costs and greater choice for consumers</i> 3. <i>International competition between producers</i>
<i>Sources: Coleman et al. (1997), and the author.</i>		

1.2 Paradigm shifts in international and domestic agricultural policy

Following the creation of the General Agreement on Tariffs and Trade (GATT) in 1947-48, the idea of agricultural exceptionalism became dominant, and countries adopted protectionist policies towards their domestic agricultural sectors. During negotiations for the Dillon Round (1960-62), Kennedy Round (1964-67) and Tokyo Round (1973-79), the United States increasingly pushed for the liberalisation of agricultural trade, but the European Economic Community (EEC) resisted. Disruptions in world food markets in the 1970s and

1980s and the development of methodologies for measuring the economic costs of agricultural protection (such as the OECD's 'Producer Support Estimates' in 1987) helped change the policy environment (Daugbjerg and Swinbank, 2009: Chapter 4). The Uruguay Round agreement in 1994, including the *Agreement on Agriculture* (URAA), marked a shift towards a view of agricultural normalism and a market-liberal paradigm in global agricultural trade. In the European Economic Community/European Union⁴, the Common Agricultural Policy underwent a series of reorientations beginning in 1992, as detailed below in Section 1.3.

In Japan, the orientation of agricultural policy has also shifted, albeit more slowly. The evolution is evident when comparing the two agricultural basic laws of 1961 and 1999, which may be considered as the 'constitutions' that set the framework and direction for subsequent agricultural policy. The 1961 Agricultural Basic Law (*Nōgyō Kihon Hō*) was premised on addressing both the productivity gap and the income gap between agriculture and industry, goals which were arguably contradictory, and subsequent policies focused more on the latter by seeking to raise farmers' income rather than their competitiveness. The government retained a major role through such policies as setting the rice price for producers each year and the *gentan* programme of rice production and set-aside, while the war-era Food Control Act remained effective until 1995, mainly regulating the rice market. The 1999 basic law, termed the Food, Agriculture and Rural Areas Basic Law (*Shokuryō Nōgyō Nōson Kihon Hō*), was premised once again on two potentially contradictory goals: the introduction of the market principle and the development of sustainable agriculture. It was intended to address the growing problems of ageing farmers and rural depopulation, and the challenges posed by the tariffication of non-tariff barriers for all items (including rice, eventually) in the URAA.

⁴ The European Economic Community was one of the original communities established by the 1957 Treaty of Rome. It became part of a reorganized European Community (EC) in 1992 Maastricht Treaty, and was subsequently absorbed into the European Union (EU) from 2009.

Thus, while scope for interventionism remained, the new basic law created space for a more market-liberal paradigm.

The shifting paradigm in domestic agricultural policy has been most evident under the current Abe administration, which took office in December 2012. As part of its economic policy agenda, the administration set a number of reform goals relating to JA, agricultural production companies (*nōgyō seisan hōjin*) and the promotion of farm producers' involvement in multiple stages of the food value chains, termed 'Sixth Sector Industrialization' (*dairokuji sangyōka*). The revised 'Japan Revitalization Strategy' published in June 2014 gave a series of numerical targets. These included consolidating 80% of farmland under the management of 'leading farmers', increasing the numbers of agricultural production companies from 14,600 to 50,000 and increasing the market for sixth sector industrialisation from JPY 1 trillion to JPY 10 trillion. In relation to agricultural trade, the administration announced an aim to double the 'value of exports of agricultural, forestry and fisheries products, and food items' (*nōrinsuisanbutsu shokuhin no yūshutsu gaku*) from JPY 450 billion in 2012 to JPY 1 trillion by 2020.

On the international level, Japan's undertakings in the URAA in 1994 marked an early step towards a more market-liberal paradigm. After the turn of the millennium, Japan's trade policy pivoted from a WTO focus to the pursuit of trade liberalisation through bilateral free trade agreements (FTAs). However, the agricultural lobby successfully resisted import liberalisation until the 2014 Japan-Australia Economic Partnership Agreement (JAEPA), when tariffs on beef and certain other items were cut. In the TPP agreement of October 2015, Japan committed to eliminate tariffs on 81% of 2328 agricultural products. Fifty-one percent of tariffs will be removed immediately, and the remainder phased out over the next two decades. Seventy percent of the 586 products in the five key categories of 'sanctuary' (*seiiki*) products of rice, wheat, beef and pork, sugar and dairy will continue to receive some

protection. However, on the whole, the TPP does seem to represent a further movement in the overarching policy paradigm towards a greater market-liberal orientation.

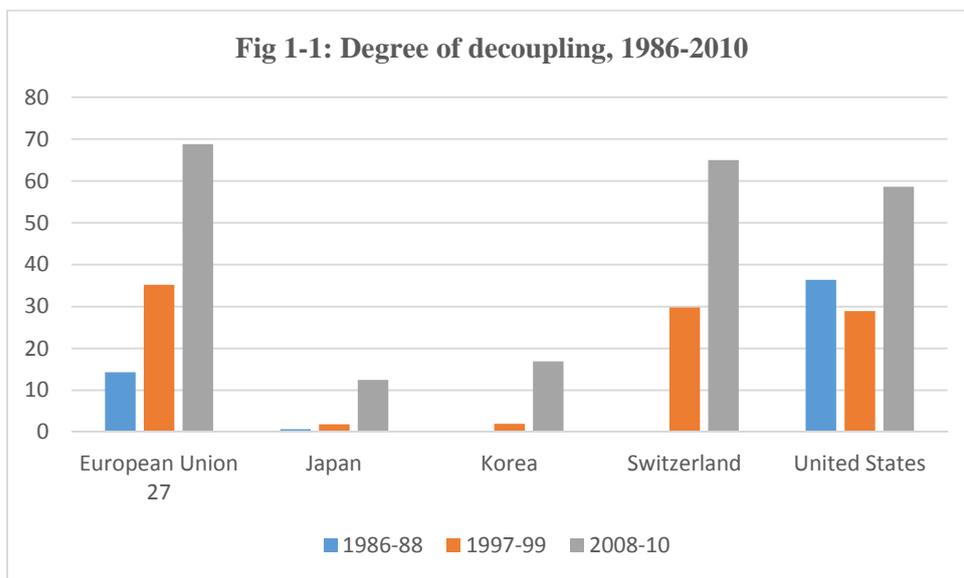
1.3 Reforming the CAP towards net exports

Among other major economies, the European Union and its Common Agricultural Policy (CAP) provides arguably the most relevant comparative case study for agriculture and agricultural policy in Japan. For decades after the creation of a “common policy in the sphere of agriculture” by the EU’s foundational Treaty of Rome in 1957, the CAP provided generous levels of support and protection to European farmers. The effect of this was often to cause over-supply in EU markets and export subsidy-induced distortions in global food markets during the 1970s and 1980s. However, a series of reforms made since the 1990s have transformed the CAP into a policy with a greater market orientation. Since 2010, the European Union has been a net exporter of agri-food items.

As in Japan, the dominant strand in EEC/EU agricultural policy from the 1960s until the 1990s was that of *market price support*, and the belief that maintaining high prices for agricultural goods would increase farm incomes and the living standards of agricultural communities (Swinbank, 2015: 2). As in Japan, the EEC/EU policies restricted imports, caused domestic oversupply and imposed costs on both taxpayers and consumers. Yet EEC/EU policy went further by providing export subsidies that disrupted world markets and hurt overseas producers. The CAP also encouraged intensive farming to the extent that by around 1990 agriculture was viewed in Europe as a sector which damaged the environment.

The 1992 MacSharry Reforms reoriented the CAP away from price supports and towards various direct payments for arable land and livestock, thus maintaining farm income but shifting the burden from consumers to taxpayers (Swinbank, 2015: 4). It marked the beginning of the process of *decoupling* support payments from production levels, which

economic theory shows is a more efficient way to deliver support. Figure 1-1 illustrates this change (where higher levels indicate more efficient support). The *Agenda 2000* reforms of 1999 continued this reorientation and introduced rural development as a policy goal. The 2003 Fischler Reforms increased the decoupling of payments from production levels. The main feature was the introduction of a decoupled ‘Single Payment Scheme’ that was conditional on ‘cross compliance’ with environmental, food safety and animal welfare standards (Anania and Pupo D’Andrea, 2015: 33). The *Health Check* reforms of 2008 extended decoupling further, with the result that almost 70% of the CAP budget was decoupled by the period 2008-10.



The most recent round of reforms was implemented as part of budget planning for the CAP during the period 2014-2020, with policymakers making greater reference to environmental and climate change dimensions during negotiations. The Single Payment Scheme was replaced by a *basic payment scheme* and a so-called *greening component* that will account for 30% of direct aid. As Swinbank (2015: 12) explains, larger farmers will have to undertake some crop diversification and use at least 5% of their arable land as ‘Ecological Focus Areas’ (EFA), or risk losing the greening component or part of the basic payment.

However, since smaller farmers will be excluded from the EFAs by an ‘area threshold’, it may be that up to 88% of farms and 48% of arable land falls outside the environmental scheme (Pe’er et al, 2014). As such, the efficacy of the environment-related measures has been questioned. Analysing the discourse of the reform negotiations, Erjavec et al. (2015: 238) argue that ‘greening’ was important as a political strategy, but that in reality ‘greening’ is in fact a “greenwash”. Pe’er et al. (2014: 1090) consider the new environmental measures “so diluted that they are unlikely to benefit biodiversity”.

A detailed assessment of the efficacy of CAP reforms since 1992 is difficult, due to the very complex nature of the policies, the reforms and the extremely diverse structure of agricultural production across the EU’s 28 member states. However, it can be said that the cumulative effect of the four stages of reform outlined above has been to shift the sector towards a market orientation, reduce distortions in the domestic and world food markets, reduce the impact of agriculture on the environment and increase the efficiency of farm income support (Anania and Pupo D’Andrea, 2015: 34).

1.4 Concluding remarks

The changing policy paradigms in both domestic and international agriculture provides valuable context for the recent trends towards a more business-focused orientation among agricultural producers in Japan, and gives an indication of the future direction of the sector. For several decades after the establishment of the GATT/WTO, a view of agricultural exceptionalism dominated, giving rise to a paradigm of state assistance in which governments provided support and protection to farmers, who were perceived to contribute to wider national policy goals. From the 1980s and 1990s, a view of agricultural normalism spread, giving rise to a market-liberal paradigm which considered the market as the most suitable principle on which to organize the agricultural sector. The paradigm shift took place at

different paces in different countries, but became evident in Japan by the late 1990s and 2000s. Most recently, the Abe administration has demonstrated a stronger pro-business orientation in relation to agriculture, as evidenced by the agricultural trade liberalisation commitments agreed in the TPP.

The reforms of the Common Agricultural Policy of the European Union undertaken in stages since 1992 may provide a partial model for future policy in Japan. The reforms have ended surplus production, reduced the share of the EU budget spent on agriculture and seem to have contributed to the EU becoming a net exporter of agricultural products (although this is hard to verify conclusively). At the same time, while policy reforms have contributed to European agriculture becoming greener, it appears that the most recent recalibrations of the CAP have been more about *greenwashing* the policy discourse in the language of environmental stewardship rather than implementing policies with meaningful positive impacts on the environment. In this regard, the CAP represents a cautionary tale rather than a model for Japan.

Chapter 2: Consumer Attitudes to Agriculture, Trade and Liberalisation

2.1 Aims of the survey

Agricultural policy in Japan has received considerable academic and media attention, both within Japan and overseas. Studies have considered the protectionist policy measures, fiscal costs (e.g. Harada, 2012) and opportunity costs (e.g. Lee and Itakura, 2014) incurred by the current policy regime, and the roles of politicians, bureaucrats and JA (e.g. Mulgan, 2014).

One aspect that has received less attention in existing accounts of the political economy of Japanese agriculture is the roles of individual citizens as taxpayers, voters and consumers. Taxpayers consent explicitly to protection for farmers in their role as voters by electing into office the Liberal Democratic Party (LDP), the party which has done most to implement protectionist agricultural policies. Consumers implicitly consent to such policies by purchasing domestic produce at high retail prices.

One reason that the role of citizens has not been examined deeply is the difficulty of accurately measuring popular opinion, both at a given moment and over time. However, historical longitudinal data in the form of public opinion surveys do exist, and the internet now offers greater possibility for conducting research in this area. Government-administered surveys conducted by the Cabinet Office since the 1970s and by the (state-owned) Japan Finance Corporation (*Nihon Seisaku Kinyū Kōko*) since 2008 have repeatedly found strong public support for domestically-produced food and policies of support and trade protection that facilitate it. At the same time, such surveys must be interpreted with some degree of caution, given that they were conducted by a government department and a semi-governmental agency.

In order to provide independent evidence of consumer attitudes to agriculture, agricultural trade and liberalisation, APIR has conducted an original national public opinion survey of attitudes to agriculture, the results of which are presented in this chapter.⁵ Our survey goes beyond previous surveys to explore in greater depth the nature of public sentiment towards agriculture, the factors shaping public attitudes, and attitudes towards the possible liberalisation of agricultural trade. It also examines commonly-held images about agriculture, which may provide deeper insight into attitudes and opinions. The results reveal the nature of public concerns about agriculture, which can provide guidance for future policy and business.

2.2 Prior literature

The attitudes and influence of consumers have received comparatively little treatment in the two main accounts of the political economy of agriculture in Japan. The account of agriculture during periods of economic growth and structural change (Anderson and Hayami 1987, Hayami 1988) assumed that rational individuals pursued their own material interests. For farmers, this meant lobbying for agricultural protection after manufacturing had grown to become the major sector of the economy. For consumers, the logic of rational choice theory implies favouring material interests in the form of lower food prices, but in practice a collective action problem may have prevented consumers organizing to realize these interests.

More recent studies have sought to explain the fact that Japanese consumers have repeatedly expressed preference for domestic food, even if the price was higher than for imports. For example, Naoi and Kume (2011) suggested that public support for agricultural protection was due to individuals seeing themselves in terms of their roles as producers rather than consumers and projecting their own job insecurities onto farmers, whose livelihoods

⁵ A preliminary analysis of the results of this survey was reported presented in the Fiscal 2014 report of this research project, published in June 2015. The following sections contain some areas which appeared in that report.

were threatened by international competition. Naoi and Urata (2013) suggested that uncertainty over the outcome and effects of TPP negotiations and the effectiveness of lobbying by JA helped explain protectionist public attitudes. Similarly, Mulgan has suggested that it is due to JA successfully identifying farmers' interests with the national interest (Mulgan, 2014).

An alternative hypothesis is that the primary concerns of Japan's food consumers relate to issues other than the market price of food. For example, Vogel (1999) has argued that consumers value quality and safety above all, and are prepared to accept higher prices in return. Past survey data from the Cabinet Office offers evidence that supports this view.

As shown in Table 2-1, home preference for domestically produced food has consistently been strong. For example, concern with low levels of food self-sufficiency and high imports rose from 67% in 1975 to 79% in 2009 (Row 2), while respondents who supported policies favouring Japan producing basic foods like rice even if the price was higher than for imports was steady at round 40% between 1987 and 2014 (Row 3). Freshness, quality and especially safety were cited as reasons for the home preference (Row 4), and these factors off-set the high cost of domestic food for around half of respondents, with another fifth considering domestic food as being not so expensive (Row 5).

Rice, which is the most important agricultural product in Japan, was considered the most appropriate (*fusawashii*) food for Japanese by around 90% of respondents between 1978 and 1996 (Row 6). Major views of the role of rural areas ranged from 'food production', 'providing livelihoods', 'protecting the environment' to 'providing fresh food' (Row 7), while clear majorities in the most recent surveys thought that in agricultural areas in future, functions like land and environmental protection were most important, while efforts should be made to improve economic efficiency (Row 8).

Table 2-1: Extracts from Cabinet Office surveys, 1975-2014

	1975	1978	1980	1984	1987	1990	1993	1996	2000	2007	2009	2014
1 Sample size	4211	4075	2494	4087	2323	2292	2219	3567	3750	1727	3144	1880
2 Concern with:												
<i>low FSS / high imports</i>	66.7			56.7		62.8	71.0	70.5		70.1	79.1	
<i>future food supply</i>									78.4	76.7	93.5	
3 Imports vs. domestic production:												
<i>imports when cheaper</i>		20.1	16.4	14.1	19.9	17.0	17.4	10.8	10.5	7.8	3.1	
<i>as much as possible foods in which Japan is self-sufficient</i>		67.1	74.5	75.0								
<i>domestic food, while reducing production price, even if price is higher</i>					31.9	32.7	32.4	45.9	43.6	44.5	51.5	
<i>domestic basics like rice, while reducing production price, even if price is higher</i>					39.6	40.5	44.7	37.5	40.6	42.3	42.4	
4 Reason for home preference:												
<i>freshness</i>						70.6	69.4	66.6	57.3		51.6	
<i>quality</i>								57.8	42.3		56.7	
<i>safety</i>								71.7	82.0		89.1	
5 Domestic agriculture is relatively:												
<i>expensive but provides fresh, safe food</i>						51.1	44.3	53.6				
<i>expensive but doesn't provide fresh, safe food</i>						13.0	10.7	8.4				
<i>not so expensive and provides fresh, safe food</i>						12.5	22.4	19.0				
6 Rice is most appropriate food for Japanese people:		87.0	89.4	91.8	95.4	94.2	94.1	93.3				
7 Role of rural areas:												
<i>food production</i>						63.4	73.2	74.9			65.8	83.4
<i>providing livelihoods</i>						30.0	36.0	29.7			46.1	48.7
<i>environmental protection or nature</i>				56.6	*70.9			23.6			48.9	49.8
<i>reduce pesticides, provide stable food</i>						54.2						
<i>address consumer needs</i>						22.4						
<i>maintain culture, festivals, tradition</i>				23.8	*11.4			12.6				
<i>provide fresh food</i>				50.8	*32.1							
8 On decline in agricultural areas, economic role and future:												
<i>economic efficiency is most important as agriculture is one part of economy</i>							30.6	26.8			9.3	13.7
<i>functions like land and environmental protection most important, while improving economic efficiency</i>							42.4	42.2			68.2	63.1
<i>functions like land and environmental protection more important than economic efficiency</i>							13.1	14.0			17.4	16.8

Source: Cabinet Offices website (see Appendix I for details). All figures are percentages. All questions were multiple choice with fixed response. Some questions permitted multiple selections, so the sum of responses may exceed 100. Some responses reported in the same time series are collated from similar but differently-worded questions from different years. Numbers marked with an asterisk (*) indicate responses from urban residents only; in most surveys, answers from both urban and rural residents were reported together.

2.3 Design of the survey

Our original national opinion survey of attitudes to agriculture, trade and liberalisation was conducted online in March 2015 using the Rakuten Research company⁶. The sample size was five hundred, of which half were female and half male. Sampling was representative of prefectural population shares. There were one hundred respondents from each of five age cohorts: 24-29, 30-39, 40-49, 50-59 and 60-69. Those aged under 24 (of university age) were excluded since several questions concerned anticipated effects on the respondent's own job or sector of employment.

The questions aimed to explore more deeply several of the issues covered in prior literature or past surveys. A first set of questions asked general questions, including level of education and income, employment status and sector of employment, involvement in export-related work, feeling of job security, marriage status and children. Other questions asked whether respondents had personal or family links to farming or JA.

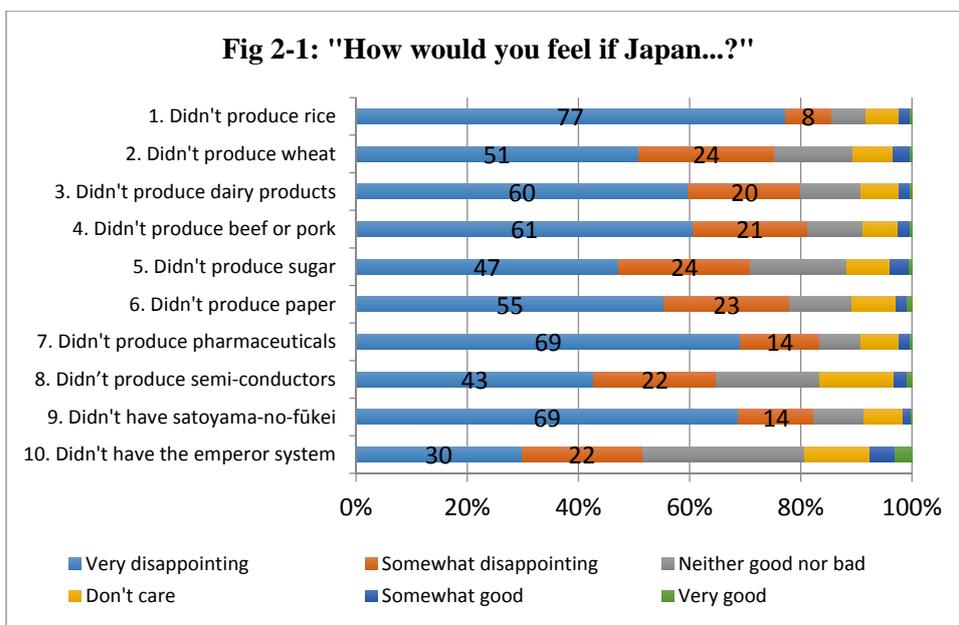
A second set of questions concerned the hypothetical loss of domestic production of certain products or culturally-significant items. Other questions concerned the expected effects of trade liberalisation and of protecting sectors in trade negotiations, and the trustworthiness of sources of information about trade agreements and their effects. A third set of questions focused on ideas about agriculture, whether and why it should be excluded from liberalisation, and keywords respondents associated with it. Finally, a free response question allowed respondents to input the words or phrases that described their image of 'Japanese agriculture'. A selection of the answers is reported below.

⁶ Rakuten Research is a leading internet survey company in Japan with over 2.3 million panel members. For details, see http://research.rakuten.co.jp/download/Rakuten_Research_Company_Profile.pdf

2.4 Results

(1) Comparing the potential loss of agricultural and other items

The first question related to ten hypothetical scenarios of loss, concerning the domestic production of five agricultural and three manufacturing products, as well as two culturally meaningful aspects of society. While it is to be expected that respondents would be loss-averse, the question offers the chance to examine relative strength of sentiment. As seen in Figure 2-1, the percentage of respondents who reported that they would be very or somewhat disappointed to see a Japan that did not produce rice was 85%. The equivalent figure for pharmaceuticals production was 83%, 82% for *satoyama no fūkei* (traditional village scenery typically involving rice paddies and hills), 81% for beef or pork production, 80% for dairy production, 78% for paper production, 75% for wheat production, 71% for sugar production, 65% for semiconductor production and 52% for the emperor system.

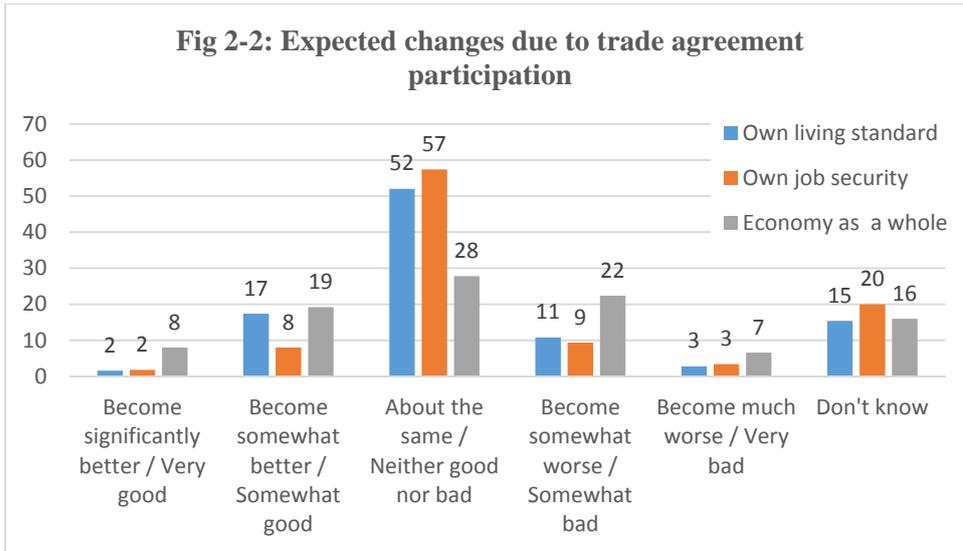


When asked which sectors, if any, the Japanese government should protect in trade negotiations, the highest response was for agriculture, forestry and fisheries (66%). Medical services (55%) and government procurement (52%) were also chosen by a majority, while electronics manufacturing was chosen by 43%. The other categories (chemical industries, retail and trade, automobile manufacturing, other manufacturing [steel, textiles, apparel etc.], construction, and finance and insurance) received between 39% and 36%.

(2) Trade liberalisation: expected effects and information sources

The next series of questions asked about the expected effects of trade liberalisation. First, with regard to respondents' living standards, expectations for trade liberalisation were low. As shown in Figure 2-2, a majority (52%) expected it to be about the same after liberalisation, 19% expected it to become somewhat or significantly better, while 14% expected it to become somewhat or much worse, and 15% said they did not know. Second, with regard to job security, similar results were observed. Here, 57% expected it to be about the same, 10% significantly or somewhat better, 13% somewhat or much worse, and 20% said they did not know. Third, regarding the economy as a whole, the spread was greater. Here, 28% thought it would be about the same, 27% somewhat or significantly better, 29% significantly or somewhat worse, and 16% did not know.

Taken together, these results suggest low expectations and a relatively high degree of uncertainty about the economic effects of trade liberalisation. This is in contrast with economic studies that invariably predict that the Japanese economy will grow by participating in agreements such as the TPP.



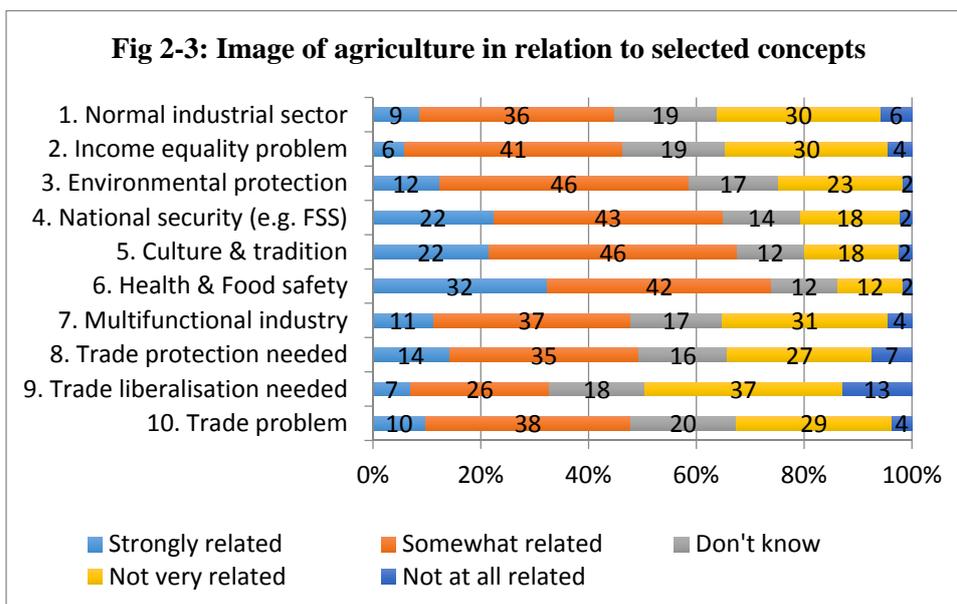
The survey also asked about sources for information regarding liberalisation. Respondents were asked to rate sources as either ‘very reliable’ (*taihen shinrai dekiru*) or ‘not really reliable’ (*yōjin suru wa kōshita koto nai*). The most trusted source of information was ‘researchers and academics’ (23.6%), followed by the Japanese government (18.4%). JA (15.0%) was more trusted than *zaikai* business circles (12.6%), and the internet (12.0%) was more trusted than the mass media (9.8%). Bureaucrats (7.6%) were more trusted than the U.S government (7.0%), and politicians (4.8%) were the least-trusted sources.

The next questions focused on trade protection. When asked, “Do you think that Japan’s government should protect any sector or item in trade negotiations?”, 73.6% responded ‘yes’ and 26.4% responded ‘no’. In terms of specific industries, 66% of the total sample responded that agriculture, forestry and fisheries should be protected by the government, while a majority also felt that medical services (55%) and government procurement (52%) should be protected. Electronics manufacturing (43%) was next, followed by retail and trade (39%), chemical industries (39%) and automobile manufacturing, other manufacturing, construction, and finance and insurance (each 36%).

Regarding agriculture in trade agreements, when asked, “Do you agree or disagree that agriculture should be excluded from liberalisation in trade agreements?”, 43.6% agreed and 56.4% disagreed. Those who agreed were asked why they thought agriculture should be excluded from liberalisation. Three reasons predominated. Given as a percentage of total respondents, 15.2% cited food safety, 14.8% cited national security/food self-sufficiency and 13.2% cited health. Other responses were multifunctionality (4.4%), the historical, cultural or religious importance of agriculture (3.4%), farmers’ incomes (2.8%) and environmental preservation (1.6%).

Those who disagreed were asked why they thought agriculture should not be excluded from liberalisation. Again, three reasons predominated. Given as a percentage of total respondents, 8.8% cited ‘food is expensive’ and ‘excessive agricultural protectionism’ respectively, while 8.2% cited ‘increase consumer choice’. Other responses were ‘extend the market principle’ (5.0%), ‘boost agriculture’s competitiveness and efficiency’ (4.0%), ‘protectionism benefits politically influential groups’ (3.8%), ‘in order to participate in FTAs boost trade, and help competitive industries’ (3.4%).

(3) Images of agriculture



The next set of questions focused on images of agriculture. First, respondents were asked to rate ten categories relating to images of agriculture as being ‘strongly or somewhat related’, ‘not very or not at all related’ or ‘don’t know’. As shown in Figure 2-3, the highest scoring response for ‘strongly’ or ‘somewhat’ related was ‘health & food safety’ (74%), followed by ‘culture & tradition’ (68%) and ‘national security/food self-sufficiency’ (65%). Other responses were ‘environmental protection’ (59%), ‘trade protection is needed’ (49%), ‘trade problem’ (48%), ‘multifunctional industry’ (48%), ‘income inequality problem’ (46%), ‘normal industrial sector’ (45%) and ‘trade liberalisation is needed’ (33%).

A further question asked respondents to choose the one image that they associated most strongly with agriculture. Again, three answers dominated. Health & food safety was chosen by 28%, national security/food self-sufficiency by 18%, and culture & tradition by 12%.

The final question was a free-answer question, in which respondents could enter a few words or sentences about their image of agriculture in Japan. Table 2-2 gives a selection of some of the answers provided.

No.	Gender	Age	Prefecture	Comment
1	F	60	Fukuoka	Japanese agriculture is better quality than other countries but I think the gap between farmers and regular people is widening. I think they should hold workshops on exporting overseas etc. and set about ending this disparity.
2	F	38	Hyogo	I think it’s important that Japan is self-sufficient, and so I think that it is the government’s duty to protect farmers.
3	M	55	Nagano	For example, agriculture needs to be commercialised and split into a sector that works hard on productivity and a sector that preserves, stores and utilises water in rice fields.
4	F	50	Tokyo	Agriculture is very important. On the off chance a war breaks out and food stops coming into Japan, we will be in trouble if there are no people, places or industries in our country that can produce foods. I don’t agree with allowing foods that contain preservatives or pests, or GM foods from foreign countries into Japan. GM foods and prepared foods with even the smallest amount of GM ingredients should have labels informing consumers of such. Foods from overseas have lax standards in that regard, so I’m against promoting the import of those foods. The decreasing number of young people entering the industry is a serious problem. I can’t think of a way of preventing this, but we need to do something. Farmland plays an important role in protecting Japan’s natural environment.
5	M	60	Iwate	We need to maintain our food self-sufficiency rate
6	F	65	Osaka	Management of farms by individuals has reached its limit, we have to corporatize to improve labour conditions
7	F	60	Chiba	We need to liberalise the sector to improve labour conditions. We aren’t completely self-sufficient, but there would be problems if there were no agricultural sector in Japan. I think Japanese agriculture is one of the better agricultural industries around the world in terms of food safety.

8	F	61	Aichi	I think Japan is the only country in the world with good rice, and I want Japanese people to be able to eat safe fruit and vegetables
9	F	28	Yamanashi	Safe and sound. Small scale. Overprotection. Low profitability. High quality produce.
10	M	60	Fukuoka	We have excellent technical capacity, but there is still work to be done in shifting to large scale intensive agriculture, and there are many small scale farming operations run by individuals. Also, there are only a few dedicated farmers and farms have weak management bases.
11	F	29	Osaka	I see food made domestically as having strict standards and as being safe. Some domestic produce is more expensive than foreign produce, but for the sake of our self-sufficiency rate and food safety, I want domestic produce to stay and production levels to stay the same.
12	F	39	Hokkaido	Safe and sound food. Japanese agriculture will continue to produce research that improves the quality of produce, and will deliver safe and delicious food to consumers.
13	F	29	Aichi	I see Japanese produce as being safer and tastier than foreign produce, but more expensive. I want to buy Japanese produce in spite of its price, and I am trying to choose Japan-made produce whenever I can to help our agriculture industry. There is a perception that 'agriculture = old people', so I think we should make it easier for younger people to work in the industry.
14	M	51	Tokyo	I think the government should stop buying rice and reselling it, and allow people to buy and sell more independently.
15	F	25	Hiroshima	We should not ruin farmers and eliminate dependable local produce by increasing imports of cheap foreign foods. Doing so would threaten our food safety. I want local goods to be protected so that shops will always be able to stock safe and sound agricultural goods.
16	F	39	Osaka	Our agricultural sector's technology is world class, but its ability to sell itself is poor. If it had better sales potential, I think it could be competitive on a global level.

2.5 Conclusions from online survey

The results of our national survey of public opinion towards agriculture, trade and liberalization suggests at least four important conclusions that are relevant to policymakers and agricultural producers, both domestically and internationally. First, agriculture, agricultural products and even agriculture-related scenery are very highly valued in contemporary Japan. Comparatively, they are valued more than items which have much greater economic importance, and those considered to have high social importance. Second, respondents show low expectation about trade liberalisation having a positive impact upon their own lives in terms of living standards and job security, or on the national economy as a whole. There is also a lack of trusted sources for information regarding trade liberalization.

Third, there is a strong desire to see agriculture partially or fully excluded from liberalization. In this regard, food safety, national security/food self-sufficiency and health are considered as reasons why agriculture should be protected. Fourth, in terms of respondents' images of agriculture, agriculture was considered to be particularly related to

the concepts of health and food safety, culture and tradition, and national security/food self-sufficiency. These results highlight issues of concern for consumers that should be taken into account by policymakers, current agricultural producers and those considering entering the market.

Chapter 3: Sustaining Rural Communities—the Yabu Special Zone for Semi-Mountainous Agriculture

Next to Tokyo, Kansai and the other major regions selected by Prime Minister Abe in March 2014 to be National Strategic Special Zones (or *tokku*), one choice stood out—that of Yabu, a small rural municipality in northern Hyogo prefecture, chosen as a model for the revitalization of semi-mountainous regions, with a focus on agriculture. This chapter presents the main findings so far from our ongoing study of Yabu as an important example of policy innovation in agriculture. It seeks to answer three questions: Why was Yabu selected as a special zone? What progress has been made so far? And what is the broader significance of Yabu for agricultural reform and rural revitalization?



Rice terrace in Yabu City, Hyogo prefecture. Photo: APIR.

3.1 Yabu background: Semi-mountainous agriculture in miniature

The municipal district of Yabu, situated about 2.5 hours by road or rail from the major urban centres of Kobe, Osaka and Kyoto, covers an area of 423 km² in northern Hyogo prefecture. As shown in the map below, the city has two main population centres and several remote, sparsely populated valleys. Eighty-four percent of the municipality consists of

mountains and forests, while only 4.5% is agricultural land. Historically, Yabu was a centre of silk production until the 1930s, tin mining until the 1980s, and agriculture. Besides rice, other notable local products include Tajima beef (a category which includes Kobe beef) and *sanshō*, a spicy peppercorn. Tourism is an important part of the economy, and Yabu has a number of ski slopes that operate during the heavy snowfalls in winter, when agricultural production is suspended.



Source: Yabu City Office

Many of the socio-economic problems in Yabu are typical of the semi-mountainous rural regions that account for around 40% of all farmland in Japan, although they are not necessarily more severe than in other regions. Problems include an ageing population, urban migration, low birth-rates (and few women of childbearing age), a shrinking local economy and the costs of providing healthcare to a large and growing elderly population.

According to Yabu City Hall data, Yabu's population fell 12% from 2000 until 2010, and stood at around 26,000 in 2015-16. The proportion of seniors rose by 13.4% in the same period, with one-third of residents now in this cohort. In the agricultural sector, the amount of abandoned farmland rose from 119 hectares to 226 hectares, while the amount of unrecoverable abandoned farmland rose from 26 hectares to 86 hectares. The number of full-time farmers fell 41% from 499 to 295 between 1995 and 2010. In the same period, the number of part-time farmers fell 72%, from 3142 to 878. Together, these trends contributed to the municipal economy shrinking by 29% between 2005 and 2010.

The decline of rural Japan has caused great concern among policymakers at all levels. The central government responded to regional demise (*chihō no shōmetsu*) by creating a new ministry for 'overcoming population decline and vitalizing local economy' in September 2014. Until August 2016, the new ministry was led by Shigeru Ishiba, who was also minister of state for the National Strategic Special Zones and a former agriculture minister.⁷ Within the MAFF, agricultural policy is mainly split into business-focused industrial policy (*sangyō seisaku*) and rural revitalization-focused regional policy (*chiiki seisaku*), with a third policy strand aiming at preserving rice paddies and traditional scenery.

At the local level in Yabu, the municipal administration under Mayor Sakae Hirose has attempted a number of revitalization projects. A 2013 'Economic Revitalization Plan' focused on tourism and agriculture, including promoting Agriculture-Industry-Commerce cooperation and 'Sixth Sector Industrialisation', in which farmers participate in the processing, distribution and/or sales of their products in order to increase profit margins. The city hall also established a private corporation, Yabu Partners, aimed at fostering agricultural businesses. Yabu Partners is led by the Deputy Mayor Shoji Mino, who was previously involved in the revival of the Huis Ten Bosch Dutch theme park in Nagasaki prefecture.

⁷ In August 2016, Ishiba was replaced by Kozo Yamamoto.

Yabu's application for tokku status in August 2013 was thus the third revitalization-oriented project attempted by the current city administration. Mayor Hirose has adopted the slogan, "Yabu has nothing to lose, so Yabu continues to try"⁸. It seems that the mayor's personal initiative was instrumental in the municipality being selected by the central government for special zone status.

3.2 The goals of the special zone

In seeking special zone status, the local government had five main goals: (1) to revitalise the local economy and society; (2) to revitalise agriculture; (3) to re-utilise abandoned land; (4) to create a more liquid land market; and (5) to increase the involvement of business in agriculture. For the central government, at least three aims were evident: (1) to create a model of successful revitalization of semi-mountainous rural communities; (2) to achieve this through regulatory change rather than public expenditure; and (3) to foster an increased role for business in the agricultural sector.

Five main measures are being pursued as part of the tokku. First, the land sales system is being reformed by transferring responsibility for approving sales from the local agricultural committee to the mayor's office. Second, management restrictions on agricultural businesses are being eased. Third, regulations on farm restaurants are being relaxed to encourage the sale of locally grown produce. Fourth, agricultural businesses will be permitted to access the Small Business Credit Guarantee system. Fifth, exceptions to the ryokan regulations law will be provided to allow the conversion of large old family homes into guest houses. This last measure is possible since the terms of the tokku allow the local government to pursue reforms outside the primary focus of the zone.

⁸ In Japanese, "*Yabu-shi wa nanimo ushinau mono mo nai, dakara Yabu-shi wa chōsen shitsuzukeru*".

3.3 Developments so far

Since the tokku was decided, some initiatives have been implemented already and others are under deliberation. Transferring the land sales process to the mayor's office has resulted in decision times being reduced by two weeks. A proposal to reform regulations of agricultural production companies was passed, reducing the stipulation that 50% of members be farm-involved down to one person being farm-involved. The requirement for agricultural production companies (*nōgyō seisan hōjin*) to have agriculture as their main business (that is, accounting for over 50% of profits) has been eased, making Yabu the first area in Japan to implement this policy proposal by the Abe administration. Another measure would allow non-farmers to make up more than the current limit of one-quarter of shareholders in agricultural production companies.

An important element of the tokku project is the number and diversity of private firms who have become involved in the agricultural sector in Yabu. At the time of our most recent research visit, sixteen firms had established operations or announced business plans since the tokku was announced, up from four in the previous ten years. Production scales range from under 0.5 to 10 hectares, with plans for up to 40 hectares. Involved firms come from backgrounds in agricultural machinery, energy, supermarkets, construction, real estate, and agricultural production and processing. Many have headquarters elsewhere in Hyogo and Kansai, and several are from more distant prefectures like Chiba, Aichi, Fukushima and Shimane. Operations include flower cultivation and honey processing, seeds, biomass power generation, farm restaurants, cultivation of tomatoes, peppers and other vegetables, and the cultivation of rice for sake production.

The municipal government has also received assistance from the business community. Mitsui & Co., a general trading company, seconded a deputy head of division to act as tokku coordinator and contact point for investors, and established a tokku support team. MB

Agribusiness, part of the Mitsui group, also established contract cultivation and distribution of local specialty produce, offering new access routes to major urban centres. For example, Yabu farmers now sell *hozuki* (Chinese lantern plant), a high-value speciality fruit, through the new sales routes.

In terms of recent developments, the municipal government has received permission from the central government to permit the sale of agricultural land to joint-stock corporations. This is potentially a very significant development with national implications, since private firms have been prohibited from owning agricultural land throughout the postwar period. In the case of Yabu, the land will first be purchased by the local government, then sold to specially-established ‘Designated Agricultural Land-Owning Corporations’ (*Tokutei Nōchi Shoyū Hōjin*). Sales contracts will include various conditions, including allowing the local government to buy back land if it falls into disuse. In another initiative, the City Hall is also seeking to introduce a ‘ride-share’ service similar to Uber in order to improve the local public transportation infrastructure.

3.4 Interpreting the significance of the Yabu special zone

As a source of innovation in agricultural policy, a small rural municipality like Yabu would seem an unlikely location. The plans being implemented in the national strategic special zone there represent a small but noteworthy step on the path toward agricultural reform. Many measures are still in the process of being implemented, but Yabu is already significant for at least three reasons. First, in national terms, Yabu represents an attempt by central government to deal with long-standing rural problems by new means—regulatory easing and business cooperation rather than further public spending. Japan’s trade partners can also take this as evidence of Prime Minister Abe’s belief in the power of business activity and deregulation. Second, at the local level, Yabu demonstrates the impact of an enthusiastic

municipal leadership in driving reforms. This has included a mayor with a strong commitment to revitalizing the community, supported by a team with business experience in tourism and general trading. Third and perhaps most surprising has been Yabu's ability to attract business interest from across the country to this remote rural locality without providing financial incentives.

On this basis, Yabu may be judged a success so far. Since the policies undertaken have been driven by policy innovations under local leadership rather than by government expenditure, Yabu could indeed fulfil the goal of becoming a model for other semi-mountainous districts attempting to revitalise their economies. The policy tools being utilized in Yabu could be made available to other municipalities seeking rural revitalization.

Chapter 4: Firms on the Farm—the Growing Role of Corporations in Japanese Agriculture

The involvement of corporations in agriculture is a recent development with potentially significant implications for the competitiveness of the sector. This chapter examines the growing role of firms on Japanese farms. In particular, it focuses on vertical farms, which are called ‘plant factories’ (*shokubutsu kōjō*) in Japanese.

4.1 Background: postwar agrarian reforms

Pre-war agriculture had been dominated by a small number of large-scale landlords who wielded strong political influence, while small tenant farmers struggled and often engaged in rebellions to improve their situations. The agrarian reforms of 1946-49 implemented by the MacArthur administration had a very positive effect for small farmers, who were granted the right to purchase the land they cultivated on extremely favourable terms, since the sums involved were soon reduced in value by hyperinflation. At the same time, the restrictions aimed at preventing a recurrence of the landlord system also had the effect of excluding corporations from agriculture for over fifty years. In these circumstances and without any business competitors, the agricultural cooperative *Nōkyō* (now known in English as Japan Agriculture, or JA) subsequently grew to become a monopolistic conglomerate in the agricultural sector as well as a powerful lobby group.

In the years since the Agreement on Agriculture in the 1994 Uruguay Round agreement at the GATT/WTO, the role of corporations in agriculture has been changing incrementally. The 1999 Agricultural Basic Law permitted joint-stock companies to have a stake of up to

25% in farmer-led agricultural production corporations (*nōgyō seisan hōjin*), while the revised Agricultural Land Law of 2009 allowed firms to rent (but not own) farmland.

Recently, the Abe government has sought to further relax restrictions on joint-stock companies in agriculture by permitting investment of up to 50% by non-agricultural investors and reducing the number of farmers required to sit on the boards of agricultural production corporations. The number of agricultural production companies rose by 29.5% between 2009 and 2014 to 14,333. Potentially one of the most significant changes was enacted in the May 2016 revision of the National Strategic Special Zone Law, when regular firms were finally permitted to own agricultural land in Yabu City.

4.2 Growing corporate involvement in agriculture

Firms are now involved in a number of sectors of the agriculture industry, including traditional farming, and the development and implementation of IT agriculture. The AEON supermarket chain and the Lawson and Seven and I Holdings convenience store chains are among those engaged in farm production of rice and vegetables. In terms of applying IT to agricultural production, Fujitsu was one of the first major firms to enter the field in 2012 when it launched *Akisai*, a cloud-based data management service that is now used by AEON's farming division and others. NEC, Hitachi, Toshiba and Toyota are among the other large firms active in this area.

In Kansai, Panasonic has developed 'passive house' greenhouses that utilise technologies developed by its industrial systems and housing systems divisions, such as sensors that allow for automatic adjustments to light, heat and moisture levels. Similarly, Sharp, recently acquired by Hon Hai, has begun selling strawberry-producing plant factory installations in the United Arab Emirates. The units use Sharp's LED and air-cleaning technologies, and may also incorporate its solar panels in future.

The agricultural machinery manufacturer Kubota recently announced a ‘Kubota Farm’ strategy to increase its direct farming operations, which it operates for research and development purposes. By 2019, Kubota plans to increase its number of farms from 4 to 15, and the coverage of its farms to around 1000 hectares. It plans to establish one of these farms in Yabu City. Kubota is also partnering with NTT, a telecommunications firm, to develop farm machinery that uses information technology, such as GPS, sensors and drones. It plans to start selling self-driving farm equipment by 2018. The firm hopes to sell such machinery to young operators who lack experience in farming. Softbank, another telecommunications firm, recently established a partnership with MyFarm, a start-up in Kyoto prefecture. Together, the firms will develop a database of national farmland available for sale or rent. Users will be able to search the database and receive information on the technical condition of the land for a fee.

Finally, other Kansai firms have been implementing agriculture using IT. These include Orix Fudosan, a real estate firm, and the Kintetsu and Hanshin railway companies, each operating vegetable factories for testing or commercial purposes. Obayashi Group, a construction firm, is also building a large plant factory to serve the Tokyo market in cooperation with SPREAD.

4.3 Plant factories: Benefits and drawbacks

The idea of vertical farms has spread internationally in recent years, popularized in part by the publication in 2010 of *The Vertical Farm: Feeding the World in the 21st Century* by Dickson Despommier, emeritus professor of microbiology and public health at Columbia University. While Despommier’s vision was one of tall urban towers for growing vegetables, the term ‘vertical farm’ has come to mean any kind of indoor agriculture using advanced

technology, since production units are generally stacked vertically. In Japan, such facilities are known as *shokubutsu kōjō*, or ‘plant factories’.

Plant factories may be defined as sites which use advanced technologies and industrial methods to produce agricultural items. Typically, plant factories have controlled air environments and plants are grown using hydroponic solutions rather than soil. Lighting may be artificial, natural, or a combination of both. Particularly when artificial lighting is used, plants are grown on stacked shelves and moved around during the production process. Plant factories offer benefits over traditional production methods, but also have a number of drawbacks.

In terms of benefits, first, plant factories require only small amounts of land and use technology intensively, making them well-suited to Japan’s factor endowments. Indeed, agricultural land can easily be ‘created’ by stacking upwards on shelves, and since hydroponics are used, there is no soil erosion effect. Second, multiple crops can be produced annually and growing seasons are shorter, meaning that production levels are many times higher than traditional production. Third, indoor production prevents crop damage from severe weather events or insects, allowing for a stable supply to consumers. Fourth, production uses few or no pesticides and less water than traditional farming methods. Since heavy farming machinery is not necessary, fossil fuels are not needed for plowing, fertilizing, seeding, weeding and harvesting (Despommier, 2010: 5). And since factories can be located close to consumption centres, transportation costs are lower and fresh produce can be delivered to consumers more easily. In these specific respects, plant factory production is less polluting than field production.

On the other hand, a number of criticisms are frequently made⁹. First, set-up costs and production costs are much higher than for traditional production methods. Second, rather than

⁹ See, for example, Kozai et al. (2016: 21-29) for a list of common critiques and responses.

clean and free sunlight, plant factories use electrical energy, which is both financially costly and (when produced by fossil fuels) environmentally polluting. Energy is also lost at every stage of the transformation process, putting an efficiency limit on production even when using renewable photovoltaic energy sources. Third, labour costs per unit are much higher in plant factories. Fourth, the range of vegetables which can be produced in these facilities is limited mainly to leafy vegetables, herbs and some fruits like strawberries. Moreover, since vegetables account for only a small share of farmland use, increased productivity in this segment will have little effect on overall farmland use. Fifth, the technology-intensive nature of vertical farms means that the demand for labour is relatively weak, so the construction of facilities may have little impact on local employment.¹⁰

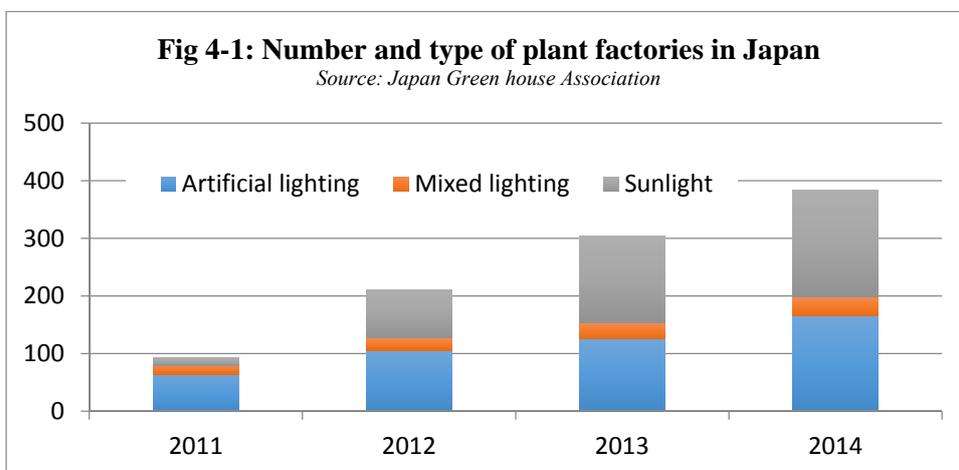
As Robert Laing of farm.one, a New York-based vertical farm company, notes, vertical farming is not a panacea, but it does address specific problems in agriculture like crop failure and pesticide use, and will likely play an important part in the “produce landscape” in future cities (Laing, 2016). Since Japan has some of the largest and most densely populated cities in the world, the potential for plant factories is perhaps higher here than in any other country. And given the growth of major cities with significant middle-class populations elsewhere in Asia, technologies developed in Japan could be more easily exported to other countries in the region than those developed in North America or Europe, where environmental and other conditions are more dissimilar.

In Japan, plant factories may have another benefit, relating to land use. Japanese cities have large numbers of raised railway lines and raised highways, the spaces beneath which are often vacant due to noise, pollution and lack of sunlight. Plant factories could utilise this space in or close to consumer markets and utilise the adjacent transportation networks for

¹⁰ See Cox (2016) for a spirited critique of the concept and practice of vertical farming.

distribution. In the Kansai region, the Kintetsu and Hanshin railway companies have already constructed test facilities for this purpose.

As seen in Figure 4-1, the total number of plant factories in Japan is growing steadily, rising from 93 in 2011 to 383 in 2014. Forty-three percent of these used wholly artificial lighting, 9% mixed lighting and 48% sunlight only, according to the Japan Greenhouse Horticultural Association (JGHA).



The value of the consumer market for plant factory produce is also expected to grow, with one market research firm forecasting that the total value of the domestic market for artificial and mixed (artificial and natural) lighting would rise from JPY 23 billion (USD 222 million) in 2013 to JPY 150 billion (USD 1.45 billion) by 2025.

4.4 Case study: SPREAD

Japan's largest plant factory by output, and one of the largest in the world, is operated in Kansai by SPREAD. SPREAD is one of five firms in the TRADE Group, each of which is involved in aspects of the supply chain. SPREAD was established in 2006 to grow vegetables for sale through the parent company's existing retail sales channels. According to company

president Shinji Inada, SPREAD aims to develop “a system that will provide a sustainable supply of safe vegetables for the next generation”.¹¹

In 2007, SPREAD constructed a large-scale plant factory in Kameoka City in Kyoto prefecture, situated about 30 km from central Kyoto and 40 km from central Osaka. The four-floor factory contains 16 rows of



cultivation shelves, in which four kinds of lettuce are grown using hydroponic solutions. Plants are grown using artificial lighting only.

Company president Shinji INADA explains the growing process during a site visit to the SPREAD factory. Photo: APIR.

The production capacity of the factory is 21,000 heads of lettuce per day and 760 tons per year, more than double the capacity of the Number 2 firm in the market at the time of our visit. Around 90% of the produce is sold through local supermarkets, with the remainder sold through other outlets including a sandwich firm and a convenience store chain. In 2013, sales reached JPY 760 million (USD 7.32 million).

Table 4-1 shows a comparison of outputs and inputs for field-cultivated lettuce versus plant-factory cultivated lettuce. Stacked shelving and multiple annual crops mean that productivity per 1000m² of land is around 80 times higher in plant factories, a very significant advantage in a land-scarce country like Japan. Water usage is also much lower in plant factory production, at around 8% of levels used in field cultivation. On the other hand, plant factories face three costs that are less significant for field cultivation: electricity usage, labour costs and depreciation expenses.

¹¹ In Japanese, “*tsugi no sedai ni jizoku kanō de anzen na yasai wo teikyō suru shisutemu wo tsukuritai*”.

Table 4-1: Cultivation of Field and Plant Factory Lettuce

	Field cultivation	Plant factory
ANNUAL OUTPUT PER 1000M²	3,560 heads	289,683
CULTIVATION PERIOD	60 days (1 crop per year)	42 days (8 crops per year)
ELECTRICITY COST	N/A	1.75kw/head
LABOUR COST	N/A	19 yen/head
WATER USAGE	10.725 litres/head	0.825 litres/head
<i>SOURCE: SPREAD</i>		

In terms of labour, the Kameoka site employs 120 workers, of whom 20 are full-time and 100 are part-time staff. Kameoka is a semi-rural area. The part-time workers include many local housewives, including those of local farmers. In this sense, SPREAD contributes to the continuation of agriculture-related employment in the district.

However, labour also represents a major cost for the firm. In order to reduce these costs, SPREAD is currently constructing a new facility in Kameoka that will be almost entirely automated. After the initial seeding stage, subsequent stages of cultivation and harvesting will be done by robots. The firm expects the new facility to reduce labour costs by 50%, reduce energy usage by almost 1/3 and recycle 98% of water used in production (Tech Insider, 2016). While some production-related jobs will be lost, it is anticipated that new jobs in R&D will be created.

4.5 Concluding remarks

This chapter has examined the growing role of firms on the farm in Japan. Corporations were effectively excluded from agriculture by the postwar agrarian reforms, but restrictions have been gradually reduced in recent years and the current Abe administration's orientation has been strongly pro-business, including in relation to agriculture. As such, corporate involvement in agriculture represents a genuinely new trend in Japan's agricultural sector, and one which may increase competition and drive efficiency gains in future.

Large multinational firms and SMEs have been entering the sector in a number of ways, such as by conducting traditional farming operations, developing IT-based agriculture or doing a combination of the two. The development of production methods and technologies that rely on capital and technology rather than land or labour is of particular interest in Japan, since this fits better with the country's factor endowments.

This chapter has examined the costs and benefits of plant factories in some detail, including through a case study of the SPREAD company, a market leader. While it is clear that plant factories are not a panacea to the problems of the agricultural sector, it seems likely that they can contribute to a growing niche in the market, catering for safe, sustainable production with a supply independent from extreme weather events.

However, it seems that the government could do more in policy terms to support such ventures. For example, in the case of SPREAD, when setting up its first factory the company had to wait six months for approval from the local Agricultural Committee to change the land-use of the site from agricultural land to factory land. The government decided in December 2015 that plant factories in future would not have to apply for permission to change land usage, a decision that should help future investment in the sector. As in the case of the Yabu tokku, policymakers can take actions that encourage agriculture-related business without resorting to further fiscal expenditure.

Chapter 5: Towards a Sustainable, Trade-Oriented Future

5.1 Summary of the research findings

This report has examined some recent trends in Japanese agriculture and considered them in the context of achieving a more sustainable and trade-oriented future for the sector. With particular attention to the Kansai region, it has focused on four areas that will influence the future direction of the sector: changes in the agricultural policy paradigm, the concerns of taxpayers and consumers, efforts to revitalize agriculture and communities in semi-mountainous areas, and the growing involvement of corporations in agriculture.

First, there is evidence that the agricultural policy paradigm in Japan has been undergoing a fundamental shift towards a greater market orientation, as has already happened in the United States, the European Union and elsewhere. The former view of agriculture as an exceptional sector has been challenged by a view that agriculture is a normal sector of the economy, similar to industry and services. As a result, policy has moved from a strongly state-assisted focus to a more market-liberal focus and the policy goals have also changed. This trend is visible in both the long view, by comparing the two agricultural basic laws of 1961 and 1999, and also by examining the changes that have occurred in the last decade or so. Under the current Abe administration, the pace of change seems to be increasing, as seen most recently in the liberalization commitments agreed in the TPP outline agreement.

The European Union offers a useful case study for agricultural reform. The EU's Common Agricultural Policy has become more market-oriented since 1993, including high levels of decoupled support, and this has seemingly contributed to the EU becoming a net agricultural exporter since 2010. Given Japan's very low level of agricultural exports, the EU could provide a model for shifting to a more globally competitive, export-oriented agricultural

sector. However, the environmental dimensions of the CAP in recent years appear to be lacking in real substance, which offers a cautionary tale for Japanese agricultural reforms.

Second, the report provided original independent opinion survey data that revealed the preferences and concerns of food consumers in Japan. Our findings, which concur with previous surveys conducted by the government, are that agriculture has had and maintains a special position in the minds of a majority of taxpayers and consumers. Agricultural products like rice and the scenery of agricultural villages are valued more highly than items with great economic importance like semi-conductors or items with perceived social importance, like the emperor system. Two-thirds of respondents wanted some degree of protection for domestic agriculture in trade agreements, with over half wanting it protected completely.

Three issues were uppermost in the minds of respondents: health and food safety, national security/food self-sufficiency, and culture and tradition. Price factors appear to be a low concern, while issues relating to health and safety receive greater support. The findings suggest that policymakers, agricultural producers and new market entrants should bear these factors in mind when making future decisions.

Third, the National Strategic Special Zone in Yabu City in Hyogo prefecture provides an interesting case study of policy innovation for the revitalization of agriculture and communities in semi-mountainous areas. The local municipal administration has implemented measures to improve bureaucratic processes, reduce regulatory burdens on producers and encourage firms from around the country to invest in agriculture in the district. Since it is driven by local leadership and based on policy innovation rather than government spending, we expect that Yabu could provide a useful model for other municipalities seeking to revitalize local agriculture and communities. The project is on-going and we at APIR will continue to monitor developments.

Fourth, the growing role of joint-stock corporations marks a significant new development in Japanese agriculture. The current Abe administration has been actively encouraging firms to participate in the sector, and corporations are now operating farms and developing and implementing new technologies including data monitoring systems that allow for more efficient food production. Large Kansai-based MNCs including Panasonic, Sharp and Kubota are among the firms active in farming. The Kyoto-based SME SPREAD has developed a strong market position in the vertical farm/plant factory market for lettuce, and is building a new facility that will automate almost every step in the production process. The growing role of firms on the farm is important because it introduces greater competition into the agricultural sector, and because firms are focusing on capital-intensive production methods that better suit Japan's factor endowment. New technologies and production methods are already being exported to other Asian countries, and this trend is expected to continue in future.

5.2 Assessing the changing policy paradigm in Japan

Policy environments are like natural environments—dramatic change tends to be rare, while gradual evolutionary change is more common. It is not always clear when one dispensation has been replaced by a new order. For individuals situated in the midst of a slowly changing policy environment, the task of identifying the direction and progress of change is necessarily more difficult than in retrospect.

Agricultural sectors in most advanced economies have experienced such policy changes during the last three decades. In the case of the European Union, for example, the dates of successive reform packages beginning with the 1992 MacSharry reforms are known, and data on producer support estimates, decoupled payments and the agricultural trade balance stand

as evidence of the movement towards a greater market-orientation of agricultural policy and of the sector itself.

In Japan during the same period, several areas of the economy have shifted to a more market- and trade-oriented direction, and integration with the global economy has increased. The manufacturing sector has become deeply integrated with the Asia-Pacific region through production networks, the financial and postal savings sectors have been reformed, and even the university sector has undergone a degree of corporatization. Yet through all of this, Japanese agriculture has been slow to change domestically and integrate internationally.

In retrospect, the 1990s saw the first steps in the reorientation of agricultural policy, from a basis of agricultural exceptionalism and a state-assisted paradigm towards one of agricultural normalism and a market-liberal paradigm. This was evident in the 1994 Uruguay Round Agreement on Agriculture and the 1999 revision of the agricultural basic law. In the 2000s, slow change continued, including the growth of agricultural production companies and the 2009 Agricultural Land Law permitting joint-stock firms to rent agricultural land.

During the 2010s, the pace of change has increased noticeably. The business-friendly administration of Shinzō Abe since December 2012 has encouraged corporate involvement in agriculture and facilitated deregulation and policy innovation, including in Yabu. The commitment to liberalise agricultural imports in the TPP was a noteworthy change, even if it was offset by countermeasures to mitigate the impact on farmers.

As has been the case previously in the political economy of Japan, the countervailing forces have been strong and the reforms delivered have amounted to less than the reforms promised. The direction of travel has been towards more market-oriented policies with a greater role for corporations and a reduced role for JA, but many measures of state assistance remain in place, and recently-announced subsidies for industrial or feed-use rice production

show that the tendency towards state-assistance remains strong. At present, the policy paradigm is no longer state-assisted and not yet market-liberal, but is somewhere in-between.

The desire to protect domestic agricultural production continues to be strong among the general public, as it is among farmers themselves and JA members. As this report has shown, concerns about health, food safety and food self-security are major considerations for consumers, and these concerns over-ride economic considerations like price.

This same set of factors could contribute to the transformation of Japanese agriculture into a more sustainable and profitable sector with a greater trade orientation. Firms entering agriculture are bringing technological innovation and operational know-how, and developing new products and processes that can be profitable domestically and also exported to the growing consumer markets in the Asia-Pacific region and beyond. Some firms, like those in Yabu and SPREAD in Kameoka, are employing members of local agricultural households in new forms of agriculture. In plant factories like SPREAD, the demand for manual labour may decrease but the need for research and design is creating new kinds of agriculture-related employment that previously did not exist.

The business focus is also evident among policymakers, as the case of Yabu shows. In Yabu, individuals with business experience are partnering with the municipal government to foster new links with the wider business community and bring new kinds of investment into the local agricultural sector and wider community. Finally, consumers' strong preference for high-quality, healthy, safe domestic produce is shaping the direction of these new agricultural businesses. Produce grown for the Japanese market will also appeal to the growing number of middle-class consumers elsewhere in Asia, particularly if consumers are persuaded that Japanese food products are high quality and trustworthy.

Thus, there are good reasons to adopt a more positive view of the future of Japanese agriculture. Serious structural problems do remain, but the domestic and international

contexts offer good prospects for future growth. If the innovative capacity evident in the sector can be fostered further, and if policymakers can find a balance between achieving greater productivity and maintaining the broader contributions of agriculture that are valued by citizens, Japanese agriculture could indeed achieve a sustainable, trade-oriented future.

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Japanese agriculture

: towards a sustainable, trade-oriented future

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