

Possibility and Legal Framework of Solar Sharing and Recent Trends in Agritech - Part 1

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Contents

- I Solar Sharing Scale and Financing
- II Impact on Agritech (corporations) in Recent Legal Amendments

I Solar Sharing Scale and Financing

Introduction

Per the Paris Agreement, on 22 October 2021 Japan submitted its “Nationally Determined Contributions,” wherein it targets a greenhouse gas emissions reduction of 46% by FY2030 (compared to FY2013 levels). This figure is expected to increase to 50% in subsequent submissions. Accordingly, Japan continues to accelerate its climate related efforts; for example, its the 6th Strategic Energy Plan, formulated in October 2021, states that renewable energy production should be raised to 313 billion kWh and expected to be raised 336 to 353 billion kWh in subsequent submission, representing between 36 to 38% of its total power supply composition. Moreover, the country anticipates that by FY2030 solar power generation, which at 79.1 billion kWh currently represents 7.9% of its total power generation, will increase to 129 to 146 billion kWh, 14 to 16% of its total power generation.

Despite such ambition, identifying suitable locations for solar power generation facilities is proving difficult. In part, this difficulty is related to the fact that Japan already has the largest installed capacity for solar energy per unit of land area among major countries, about twice as large as Germany, who has the second largest amount. Indeed, in a June 2022 interview, one Japanese power supply operator stated that “in response to the heightened demand for renewable energy, our policy is to increase our own renewable power sources; however, it is difficult for large-scale new projects to be developed due to limited suitable sites and systems.” Under these circumstances, “solar sharing”, which achieves both power generation and farming on cropland, has attracted attention in recent years. Of the approximately 46.8 billion square meters of croplands occupying most of Japan's flatlands, even if it is limited to the devastated cropland that can be reclaimed, 340 million square meters are in locations that would provide relatively easy access to its power supply system, which, considering Japan's geopolitical and social constraints, make them an indispensable part of the country's future. Given this potential and the importance of solar sharing to achieving Japan's FY 2030 renewable energy targets, the Agri-Food Practice Group and Finance Practice Group at Nishimura & Asahi will jointly issue multiple Newsletters discussing applicable financing and legal frameworks. In this first part of the series, we will briefly outline solar sharing and address its major legal points.

1. Outline and Current Status of Solar Sharing

(1) Outline of Solar Sharing

In light of the growing demand for solar sharing and associated technologies for installing solar sharing facilities, a governmental notification was issued in March 2013 to clarify a (temporary) cropland diversion permission framework. In 2018, such notification was amended (the “Notification”) to extend the term of the temporary diversion permission to support principal farmers¹ and the restoration of devastated farmlands. According to the Notification, “farming-type power generation facilities” refer to facilities, such as those for solar power, that use pillars to suspend essential components above croplands (**Image 1**). Incorporating this technology, “solar sharing” can further be defined as efforts to utilize the same space for both solar energy and agricultural production.



(Image 1. Courtesy of Chiba Ecological Energy & Tsunagu Farm: unauthorized use or distribution prohibited.)

(2) Benefits of solar sharing

Given that the solar sharing initiative envisions generating power on farmland, a safe assumption would be that farmland, despite not being eligible for diversion under the Cropland Act² may be used for solar sharing. Consequently, from the viewpoint of power producers, etc., a reasonable expectation would be that solar sharing enable them to use the limited suitable sites discussed above for power generation projects. From the viewpoint of farmers, they benefit from diversification of income streams, one from the market for farm goods and the other from various types of income associated with the solar portion, which is expected to stabilize under the Feed-in Tariff and Feed-in Premium systems. A secondary benefit to farmers is the further improvement in agricultural management brought through the use of electric power generated on-site. Furthermore, for companies seeking to enter the agricultural industry in the future, solar sharing will increase the possibilities to work toward decarbonization, such as via corporate purchase price allocation.

¹ “Principal Farmer” is defined in the Basic Plan for Food, Agriculture & Rural Areas (approved March 31, 2015; https://warp.da.ndl.go.jp/info:ndljp/pid/11402597/www.maff.go.jp/j/keikaku/k_aratana/pdf/1_27keikaku.pdf) as:

- (i) Efficient and stable agricultural management (management in which the main workers can secure lifelong income levels with other industrial workers in the region at annual working hours equal to those of other industrial workers)
- (ii) Certified farmers
- (iii) Certified new farmers
- (iv) Village farmers who are expected to become certified farmers in the future

² Cropland Act: Art. 4, Para. 6, Item 1, and Art. 5, Para. 2, Item 1

(3) Current State of Solar Sharing

The number of permissions for diversion of cropland to agricultural for cropland solar sharing has been rising steadily since the framework of (temporary) diversion permission for cropland solar sharing was clarified in 2013, reaching 2,653 in FY2019.³

Regarding the scale of operations, it was estimated at the end of FY2015 that only 77 out of 775 initiated projects had a project cost of at least ¥100 million and even fewer required financing.⁴ However, according to recent publications,⁵ there are about 14 projects being operated on large-scale farmlands (exceeding 4,000 square meters), indicating that at least some large-scale solar power generation projects are engaging in solar sharing. Looking at examples from abroad, it also has been reported that in China, the Baofeng Group is working with Huawei to build a 1GW scale solar park, and that approximately 640MW is already connected to the system.⁶

2. Major Legal Issues for Solar Sharing

We will next briefly examine the legal framework for solar sharing and its legal issues. Detailed requirements and measures for dealing with the issues described in this paper will be discussed in the following newsletter, so in this part we limit discussion to the main requirements.

(1) Issue of temporary permission for diversion of Cropland

Under the Cropland Act, a person who uses cropland for purposes other than agriculture, such as installing solar panels, is required to obtain permission for cropland diversion from a prefectural governor, etc.⁷ In the same way, in order to install solar sharing facilities, the portion of the supporting pillar placed on or into the ground will require such permission. However, solar sharing is subject to a temporary diversion permit, not a regular diversion permit. In addition, it is not necessary to acquire this temporary diversion permission for the whole of croplands where solar sharing is carried out, it is sufficient to acquire the permission only for parts of the farmland where the supporting pillars for the power generation facilities are installed.

The period of this temporary diversion permit is up to 10 years in the following cases (but in other cases, it will be 3 years):

- (a) When the principal farmer uses farmland owned by him or herself or cropland with the right to profit from such usage
- (b) When restoring and utilizing devastated cropland
- (c) When using Class 2 cropland or Class 3 cropland (except for cropland within areas set aside for securing agricultural use).

Accordingly, even if the temporary diversion permission is granted for a maximum of 10 years, it would not cover the typical 20 year period during which electricity is purchased at a fixed or premium price under the Act

³ The diagram is excerpted from "The Situation Surrounding Renewable Energy Power Generation in Rural Areas (January 2022)" by the Environmental Biomass Policy Division, Secretariat of the Minister's Secretariat, Ministry of Agriculture, Forestry and Fisheries (<https://www.maff.go.jp/j/shokusan/renewable/energy/attach/pdf/index-9.pdf>).

⁴ Rural Development Bureau, Ministry of Agriculture, Forestry & Fisheries, "Current Status of Solar Sharing" (May 2018; <https://einou-pv.org/wp/wp-content/uploads/2018/06/527f2b2d7f66767d7f4610920d11fb32.pdf>)p.6

⁵ Expert Conference (Second) Submitted Material (Report Item) (https://www.maff.go.jp/j/study/einougata_taiyoukou.html/attach/pdf/einou_kaiji-66.pdf) (March 10, 2022) to Consider Preferable Future Solar Sharing

⁶ <https://www.pv-magazine.com/2020/09/03/giant-agrivoltaic-project-in-china>

⁷ Cropland Act. Art. 4, para. 1 and Art. 5, para. 1.

on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities and that serves as the basis of the project financing loan period for solar power projects. This leads to one of the major legal issues in that, in order to continue solar sharing for the entire loan period, temporary diversion permission will need to be re-obtained.

(2) Yield requirement

As noted, in order to obtain the above-mentioned permission for temporary diversion, it is necessary to continue appropriately farming the farmland under the power generation facilities. Specifically, it is required that the annual yield on the farmland in question has not decreased by approximately 20% or more compared with the average annual yield of comparable land in the same region in the same year. If there is a year in which a decrease in yields on cropland under the facilities is observed due to unavoidable circumstances, such as natural disasters, including typhoons and cold damage, which cannot be regarded as being caused by the installation of agricultural power generation facilities, whether “appropriate” farming has taken place will be determined by taking into consideration such situation and yields during other years.

The permission for temporary diversion is provided on the term that “if farming on the cropland under the facilities is not carried out, the facilities including the supporting pillar shall be promptly removed and restored to a condition in which it can be used as cropland.” If the proper continuation of farming is not ensured or is not expected to be ensured, the guidance shall be given to the person who has received the permission for temporary diversion to take necessary improvement measures. If the necessary improvement measures are not taken despite the guidance, the person who has obtained the permission for temporary diversion shall be instructed to remove the equipment for solar sharing. Accordingly, this yield requirement needs to be met continuously during the period of temporary diversion permission, making “how to continue appropriate farming” an important factor when considering financing schemes for solar sharing, such as project finance.

3. In Conclusion

As stated above and in the following newsletter, the handling of solar sharing in Japan's current legal system is extremely complicated, and some issues still remain. On the other hand, since solar sharing has great significance to the future of both the energy and agricultural industries, and is attracting attention around the world, including in Japan, it is prudent to enter this business at this point. In the following newsletter, we plan to discuss solutions to the legal issues described in 2 (above) and financial schemes based on the current legal system.

II Impact on Agritech (corporations) in Recent Legal Amendments

Introduction

According to the 2022 Agriculture and Forestry Census, the percentage of people aged 65 or older who are engaged in agriculture under private management was 69.6%, up 4.7 points from five years ago. In addition, Japan's food self-sufficiency rate on a calorie basis, which was at the 73% level in fiscal 1965, fell to 38% in 2019. In addition to the reduction of greenhouse gases, Japan's agricultural sector is faced with challenges such as the aging of agricultural workers, the weakening of production infrastructure due to labor shortages caused by a lack of successors, and a decline in the food self-sufficiency ratio. In order to overcome this situation, smart agriculture and agritech, which are new agriculture methodologies that realize super-labor-saving and high-quality production by utilizing robotics technology and ICT, have attracted attention in recent years. In order to demonstrate “Smart Agriculture” and accelerate its social implementation, the Ministry of Agriculture, Forestry and Fisheries has been conducting smart agriculture demonstration experiments in

various parts of the country since 2019, showing positive results with regard to reducing working hours and increasing agricultural production through, among other things, improvements in management efficiency. In relation to solar sharing, services such as searching satellite data for abandoned cultivated land have also begun to emerge. It is hoped that new technologies and information sources will be developed for securing sites for power generation facilities. Although the details will be described in the following articles, it can be said that expectations for agritech to address various social issues are increasing day by day, as monitoring and data collection involving agritech are key to the revision of laws and governmental notifications useful for solar sharing. Therefore, in this newsletter, we would like to examine several instances of how the laws and regulations that surround agritech (or will do so in the near future) will affect agritech corporates and investors in those companies, as well as individuals and corporations that introduce agritech. This time, we would like to take up the handling of agritech (corporate) in the Act on Promotion of Business Activities to Reduce Environmental Impact (hereinafter referred to as the "MeaDRI Food System Law" or "the Law") put into effect on July 1, 2022, that seeks to establish an environmentally harmonious food system in Japan.

1. Agritech's Handling in the MeaDRI Food System Law

(1) Creation of certification systems for Agritech

In the first place, the MeaDRI Food System Law aims to establish a food system in harmony with the environment by working to reduce the burden on the environment at each stage from production to consumption of agriculture, forestry, and fisheries products, and thereby lead to the sustainable development of the agriculture, forestry, fisheries, and food industries (Article 1 of the Law). In order to reduce environmental impacts, it is important to create an environment in which non-agricultural, forestry, and fishery operators can actively incorporate their technologies, expertise, and management resources, thereby enabling agriculture, forestry, and fishery operators to easily work to reduce environmental impact. Therefore, the Law has newly established certification systems to promote efforts such as research and development and implementation of technologies that contribute to reducing environmental impact. Specifically, the government will take tax and financial support measures for agriculture, forestry and fishery workers who have been certified under the "Plan to Implement Business Activities to Reduce Environmental Impact (*Kankyo-huka-teigen-jigyo-katsudo-jisshi-keikaku*)" (Article 19, Paragraph 1 of the Law) and for businesses that have been certified under the "Plan to Implement Business Activities to Establish Infrastructure (*Kiban-kakuritsu-jigyo-jisshi-keikaku*)" (Article 39, Paragraph 1 of the Law).

(a) Business Activities to Reduce Environmental Impact (*Kankyo-Huka-Teigen-Jigyo-Katsudo*)

In order for a business to be certified under the Plan to Implement Business Activities to Reduce Environmental Impact, official recognition that its activities contribute to ensuring sustainability falling under one of the following categories is necessary. Specifically, it is necessary to contribute to ensuring sustainability by, for example, maintaining or increasing the income from agriculture, forestry, and fisheries by, for example, utilizing agritech to improve the added value of agricultural crops (Basic Policy (*Kihon-Hoshin*) published as of September 15, 2022).

Category (each item of Article 2, para.4 of the Law)		Proposed Initiatives (ref. Basic Policy)
(i)	Business activities by production methods that utilize techniques to improve the properties of soil through the application of compost and other organic materials and to reduce the application and use of chemically synthesized fertilizers and pesticides.	<ul style="list-style-type: none"> Organic agriculture without chemical fertilizers and pesticides Improving the quality of the soil through the application of compost and other materials obtained through the effective use of livestock excrement after periodic soil checks, reduction in the application of chemical fertilizers through the introduction of local fertilizer application and the application of organic fertilizers, and the implementation of comprehensive pest control combining various pest control methods including the prevention of the occurrence of pests and diseases, etc.
(ii)	Business activities that contribute to the reduction of greenhouse gas emissions.	<ul style="list-style-type: none"> Energy conservation and electrification of agricultural and forestry machinery and fishing vessels Introduction of heat pumps and wood biomass heaters in facility horticulture Implementation of autumn cultivation in paddy field cultivation and extension of the middle drying period Conversion to management methods for livestock excrement, which produces less greenhouse gases such as enforceable fermentation Efforts such as switching to feed for improved amino acid balance, etc.
(iii)	In addition to what is listed in the preceding two items, business activities prescribed by the Ordinance of the Ministry of Agriculture, Forestry and Fisheries as contributing to the reduction of environmental impact.	<ul style="list-style-type: none"> Business activities by production methods conducted using cultivation techniques that do not use soil, and using techniques that reduce the application and use of chemically synthesized fertilizers and pesticides, etc.

(b) Business Activities to Establish Infrastructure (*Kiban-Kakuritsu-Jigyo*)

Then, in order to receive the certification of the "Plan to Implement Business Activities to Establish Infrastructure," the business must be carried out in a manner that establishes a basis for the efforts to reduce environmental burdens, and must be "Business Activities to Establish Infrastructure" that fall under the categories listed in each item of Article 2, Paragraph 5 of the Law. For example, "Businesses Concerning the Promotion of Research and Development on Advanced Technologies and Transfer of Their Results" (No. 1 of the same paragraph), which are envisaged to be businesses that conduct research and development of technologies that are effective in reducing environmental loads, "Businesses Concerning the Production and Sales of Materials, Machinery, and Other Properties that Support the Reduction of Environmental Loads" (No. 3 of the same article), and projects involving the use of "machinery and other properties contributing to the reduction of environmental burden," which was envisioned as businesses for leasing and renting such machinery that could contribute to the acceleration of the introduction of smart agricultural throughout producing areas (No. 5 of the same paragraph).

(2) Certification Examination Points

(a) Points of Certification for the Plan to Implement Business Activities to Reduce Environmental Impact

Article 19, para.5 of the MeaDRI Food System Law stipulates the requirements for certification by the prefectural governor of the proposed action plan for reducing environmental impact. Among these, we take up the following two items with strong relationships to agritech:

- (i) it conforms to the Consented Basic Plan (*Doi-Kihon-Keikaku*) and is appropriate to ensure the execution of the Business Activities to Reduce Environmental Impact; and
- (ii) the Business Activities to Reduce Environmental Impact contribute to reducing the environmental impact and ensuring the sustainability of the agriculture, forestry and fisheries conducted by the agriculture, forestry and fisheries operators.

Among these, the Consented Basic Plan in (i) refers to a basic plan for the promotion of Business Activities to Reduce Environmental Impact that is prepared jointly by prefectural and municipal governments in order to effectively promote the creation and horizontal development of model regional efforts. The plan was agreed upon after consultation with the Minister of Agriculture, Forestry and Fisheries (Article 16 Paragraph 1, 18 of the Law). This plan is supposed to include the details of business activities required as Business Activities to Reduce Environmental Impact (Article 16, Paragraph 2 of the Law), and it is considered that the technical system of Agritech, etc., to be introduced in the plan will be included in this section.

With regard to (ii) above, the key point would be to be evaluated, for example, by use of agritech "reducing the environmental burden," by, for example, reducing the amount of pesticide sprayed and "contributing to ensuring sustainability" by reducing working hours and increasing the added value of agricultural crops.

(b) Points of Certification of the Plan to Implement Business Activities to Establish Infrastructure

Article 39, para. 4 of the MeaDRI Food System Law stipulates that the competent minister shall approve an application for a Plan to Implement Business Activities to Establish Infrastructure when he/she finds that the application conforms to all of the following:

- (i) It is appropriate in light of the Basic Policy and appropriate for the execution of the Business Activities to Establish Infrastructure without fail.
- (ii) The Business Activities to Establish Infrastructure will contribute to the improvement of the added value of agriculture, forestry and fishery products produced through the activities to promote the effect of the reduction of environmental burden or to reduce environmental burden.
- (iii) When the rationalization of food, etc., distribution is included in the Business Activities to Establish Infrastructure, it falls under the case where the authorization set forth in Article 5, paragraph (1) of the Food, etc., Distribution Act may be granted pursuant to the provisions of paragraph (3) of said Article.

The Basic policy of the MeaDRI Food System Law concerning (i) mentions that, as requirements for receiving certification, business effects will affect and contribute to a wide area and that the content of businesses contains some advanced nature. In other words, the effects of efforts to reduce the environmental impact by its agritech business expansion, which is about to be certified, will spread beyond the jurisdiction of local agricultural cooperatives and the prefectural area, and it will be necessary for the agritech business to have a certain degree of innovativeness in its content, taking into account the current technical level, etc., in order to receive the certification of the Plan to Implement Business Activities to Establish Infrastructure. In addition, it is assumed that standards for judging will be established for each type of item in Article 2, Paragraph 5 of the Law. For example, in regard to "Businesses Concerning the Promotion of Research and Development on Advanced Technologies and Transfer of Their Results," which was mentioned in II(1)(b) in this article, it is

planned to be a point for examination whether the roadmap for the practical application and commercialization of agritech and the business model have been specified and clarified in detail.

(3) Privileges for Certified Businesses

(a) Taxation system to promote greenery investment (*MeaDRI-Toshi-Sokushin-Zeisei*)

Under the fiscal 2022 tax system revision, corporations submitting blue tax returns that are agriculture, forestry, and fishery businesses and that have received certification for a Plan to Implement Business Activities to Reduce Environmental Impact or businesses that have received certification for a Plan to Implement Business Activities to Establish Infrastructure, are now eligible for preferential tax treatment. Specifically, a system was established in which special depreciation equivalent to 32% (16% for buildings and their attached facilities and structures) of the acquisition price of assets for the Business Activities to Reduce Environmental Impact or assets for the Business Activities to Establish Infrastructure could be applied during the designated period if specific requirements were satisfied (Special Tax Measures Law 44-4, Paragraphs 1 and 2).

These special depreciation permits early depreciation of depreciable assets, which allows delay of the timing of taxation and benefit from so-called tax deferrals.

(b) Examples of Other Benefits

The Agricultural Improvement Financing Law's exceptions apply to any certified Plan to Implement Business Activities to Reduce Environmental Impact, allowing them to receive benefits such as one-stop loan certification procedures and extending the period of depreciation (10 years to 12 years) (Article 23 of the Law). In addition, businesses that have received certification for a Plan to Implement Business Activities to Establish Infrastructure will be able to obtain loans at a special interest rate (0.43% to 0.90% (as of April 2022) for funds for promoting new business activities (up to ¥270 million)) from JFC when they introduce newly developed manufacturing equipment, such as agricultural machinery and production materials, that contribute to reducing the environmental impact.

In addition, they are entitled to special benefits under the Food, etc., Distribution Law (Article 27 of the Law) and the Cropland Law (Article 28 of the Law). As further enhancement of the privileges for certified business implementation plans is under consideration, it will be necessary to pay close attention to them.

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