

Technical Tour in Japan after Agrivoltaics 2023 (Draft)

February 10, 2023

Solar Sharing Promotion Alliance

1. Background

Several participants and committee members of Agrivoltaics2022, held in Italy last June, expressed interest in visiting Japan, where agrivoltaics is widespread, before or after the Agrivoltaics2023 scheduled to be held in Korea this April. In addition, the Korean side expressed interest in co-hosting the conference with Japan and Korea. After consulting with the conference management, it was decided not to co-host the conference but to conduct an informal technical tour in Japan.

2. Objective

- (1) To understand the reality of Japan's diverse agrivoltaics, and
- (2) Discuss future joint research and project implementation

3. Organizer

Solar Sharing Promotion Alliance / Japan Community Power Association

4. Destination

The following locations are selected considering representativeness and logistics.

- (1) Sosa City
- (2) Fukushima City, Nihonmatsu City

5. Expenses

The organizers will cover the following costs:

- (1) Tour bus between Tokyo and Sosa, and in Fukushima Prefecture
- (2) English-Japanese interpreters for tour and seminar
- (3) Seminar venue

* In addition to the above, the organizer will provide some allowance to speakers.

The following costs have to be borne by the participant:

- (1) Meal
- (2) Some 7,400 JPY/single room, incl. breakfast for a one-night stay at [Richmond Hotel Fukushima Ekimae](#) in Fukushima city (Other accommodations, say in Tokyo, must be arranged and paid by the participants.)
- (3) A round-trip train ticket for Shinkansen (JR East) around 18,000 JPY between Fukushima station and Tokyo

6. Tentative itinerary

Date	Time	Contents
April 16 (Sun.)	09:00	[Travel] * (1) is recommended; (2) is only for exceptional cases. (1) 9:00 Leave Tokyo Station Yaesu Exit by tour bus 11:00 Arrive in Sosa (2) Narita Airport→Sosa (by a microbus or shuttle bus, 35 minutes)
	11:00	Sosa APV Complex tour
	12:30	Travel to Tokyo by tour bus and take Shinkansen to Fukushima.
	17:30	Arrive in Fukushima. Overnight stay @ Richmond Hotel Fukushima Ekimae , * reserved 19 single rooms at 7,400 JPY/night/person.
April 17 (Mon.)	08:30	Visit APV plants in Fukushima City and Nihonmatsu City
	11:30	Lunch @ Fukushima Station
	13:00~15:00	APV International Seminar at Corasse Fukushima
	evening	JR Fukushima Station→Tokyo

7. APV International Seminar in Fukushima (Draft)

We are planning to hold a mini-seminar at the end of the tour. Its objective is to get the people in the Japanese APV community to familiarize international trends of APV and to promote international collaboration. Both organizing parties are active in APV and will advertise and invite their members. Some policymakers may be invited as well.

Date: Monday, April 17, 2023, 13:00~15:00

Venue: [Corasse Fukushima](#) (5F Training Room AB, 66 people capacity)

Program

Time	Min.	Contents	Speaker (tentative)
13:00	5	Opening Remarks	Co-chair, SS Promotion Alliance
	20	APV in France	Cristian Dupraz (INRAe)
	20	APV in Germany	Max Trommsdorff (Fraunhofer ISE)
	20	APV in the U.S.	Kai S Lepley (Univ. of Arizona)
	20	APV in xxxxx	xxxxx
	30	Joint Research/Business Proposals Agrivoltaic Atlas Project Germany-Japan-China Joint Research Project	Kai S Lepley (Univ. of Arizona) Max Trommsdorff (Fraunhofer ISE)
15:00	5	Closing Remarks	Co-chair, SS Promotion Alliance

Note) Speakers and topics need to be confirmed and subject to change depending on participation, etc.

8. APV Seminar in Tokyo and decision-maker consultation (optional or for selected representatives only)

We will hold a similar seminar in Tokyo as in Fukushima, targeting lawmakers and administrative officials in the national government. Country representatives will also attend consultation meetings with the relevant ministry officers.

Objectives:

- (1) To let the Japanese decision-makers familiarize the current status of APV in the world
- (2) To get insights on proper policy guidance and public interventions through mutual consultation and exchange of experiences

Program (tentative)

Day	Time	Contents	Venue
April 18, Tue	AM	Consultation with national government officials	Ministry of Environment Ministry of Agriculture, Forestry and Fisheries Diet members
	14:00	APV Seminar in Tokyo	Diet members' meeting hall
	evening	Socializing dinner (TBC)	TBC

Sosa APV Complex

Location: Sosa City, Chiba Prefecture Iizuka, and Kaihata areas, Sosa City, Chiba Prefecture

A model for regional revitalization through the integration of solar sharing and organic agriculture with minimal environmental impact

Over 40 years ago, the upper part of the mountain in the area was excavated and landfilled in the valley to create vast farmland covering 80 ha, most of which was abandoned due to low productivity becoming a regional problem. Solar sharing was implemented in that location, and the farmland was cultivated by a local agricultural production corporation, which has restored 20 ha of farmland. Some 20 ha of farmland is all JAS-certified organic farming. And from 2021, no-till cultivation is also being conducted on some of the lands.

A part of the income from electricity sales is paid to the agricultural production corporation as a farming consignment fee to support agricultural activities. It is also donated to the local Village Development Council, which uses it to support farmers and settlers, run children’s classes during spring, summer, and winter vacations, and conduct environmental conservation activities in the community.

We use narrow-width panels with a shading ratio of about 30% to minimize shadows, rainfall, and wind load effects. With this shading rate, crop growth is not affected. In addition, the height of the mounting frame and the spacing between the poles are designed to match the size of the agricultural machinery, and the power generation project is being carried out, placing agriculture a top priority.

Currently, the company boasts more than 30 facilities of various sizes, including mega facilities, with a total panel capacity of approximately 6.4M.



DC 1.2 MW APV



DC 65 kW (low voltage) APV



Map of APV plants in the Iizuka and Kaihata areas of Sosa City

Fukushima APV Plants

Location: Nihonmatsu City and Fukushima City, Fukushima Prefecture

* Refer to the route map: <https://goo.gl/maps/JxXxKF6dwqC2bvRPA>

(1) Nihonmatsu Organic Agriculture Research Association 9:20-9:35

Agrioltaics for a long-established organic farming group commenced in August 2018 in the farmland that has been organically cultivated for 40 years. The farmers and supporters constructed the system themselves. Sixty percent of consumers quit buying farm produce from Fukushima after the nuclear accident, but they could purchase electricity and donated 4 million yen. Currently, the association wholesales its produce and electricity to the same co-op. The equipment features 70W narrow panels. It is an exemplary operation where the landowner, farmer, and power generator are identical.

(2) Nihonmatsu Farming Solar, Sunshine Corporation 10:00-10:30

One of Japan's largest APV plants, established through a three-party joint venture by Nihonmatsu City's Citizen's Electric Power Gochikan, the local Miyagi Co-op, and the think tank ISEP, began operation in September 2021. Under 9,500 DC 4 MW modules, fresh grapes, organic wheat, and natural pasture are grown. This farmland had long been abandoned because it was stony and unsuitable for cultivation. A new agricultural corporation was established, led by four people: an organic farmer who had closed down his farming business due to the nuclear accident, a young man who was evacuated due to the nuclear accident, a young man who sees hope in a new style of farming, and the chairman of an established organic farming organization that has been continuing organic farming for over 40 years in the local area of (1). The small farming income, until grapes can be shipped, will be supplemented by income from electricity sales. The facility will be built on a pile and a pillar in one piece. The equipment uses a one-piece steel mold for the posts and columns and features a clean design with a single directional cane. It has also led to cost reductions. The design also does not require alignment of the vertical and horizontal sides. Also, no strength calculation is needed, and the shading ratio can be changed simply by changing the spacing of the columns.

(3) Gochikan 10:50-11:10

The first vertical solar farm in Asia, established solely by Gochikan (2), became operational in March 2022. This project was created through an APV2020 exchange, with support from an APV Scientific Committee member from ISEP. Careful attention was paid to customizing the design to withstand harsher wind loads in Japan. This introduction led to a regulation change to exempt vertical APVs from the minimum height requirement of 2m, which is imposed on the standard types of APVs. Some 210 HJT modules were installed at 10-meter intervals. Local livestock farmers grow pasture grass in between. A part of electricity revenue covers the farmer's land rent, fuel, materials, seeds, and fertilizer costs. This facility faces north-south, but a non-FIT facility facing east-west is scheduled to be constructed this year on the adjacent farmland.

