

# 1. City-to-City Collaboration between Renca Municipality and Toyama City

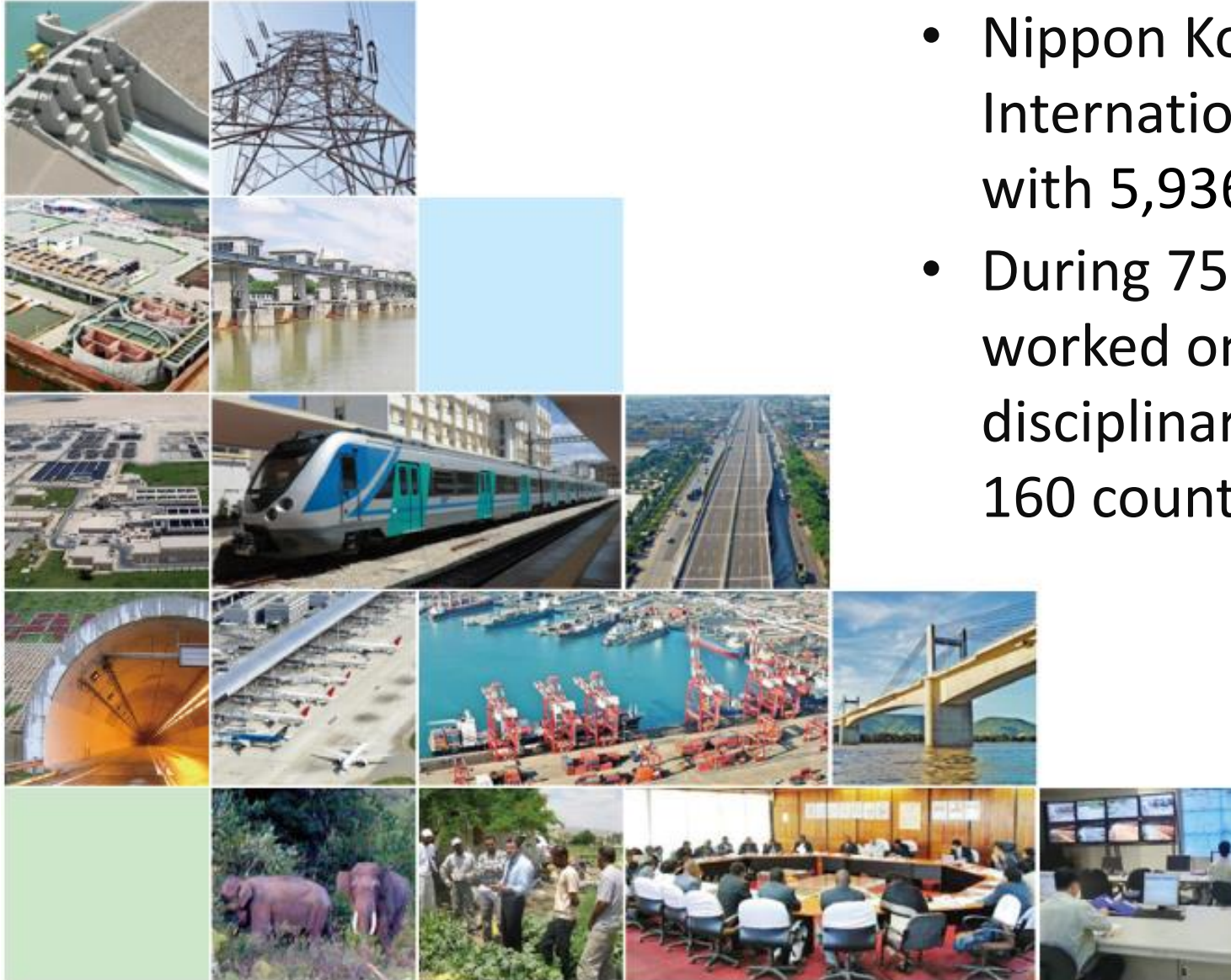
City-to-City Collaboration for Zero Carbon Society

## 2. Development of JCM Projects in Chile

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funded by Ministry of the Environment, Japan

# 1 NIPPON KOEI



- Nippon Koei is Japan's No.1 International Engineering Consultants with 5,936 staff (consolidated).
- During 75 years, Nippon Koei has worked on over 5000 multi-disciplinary infrastructure projects in 160 countries all over the world.

# 1 NIPPON KOEI

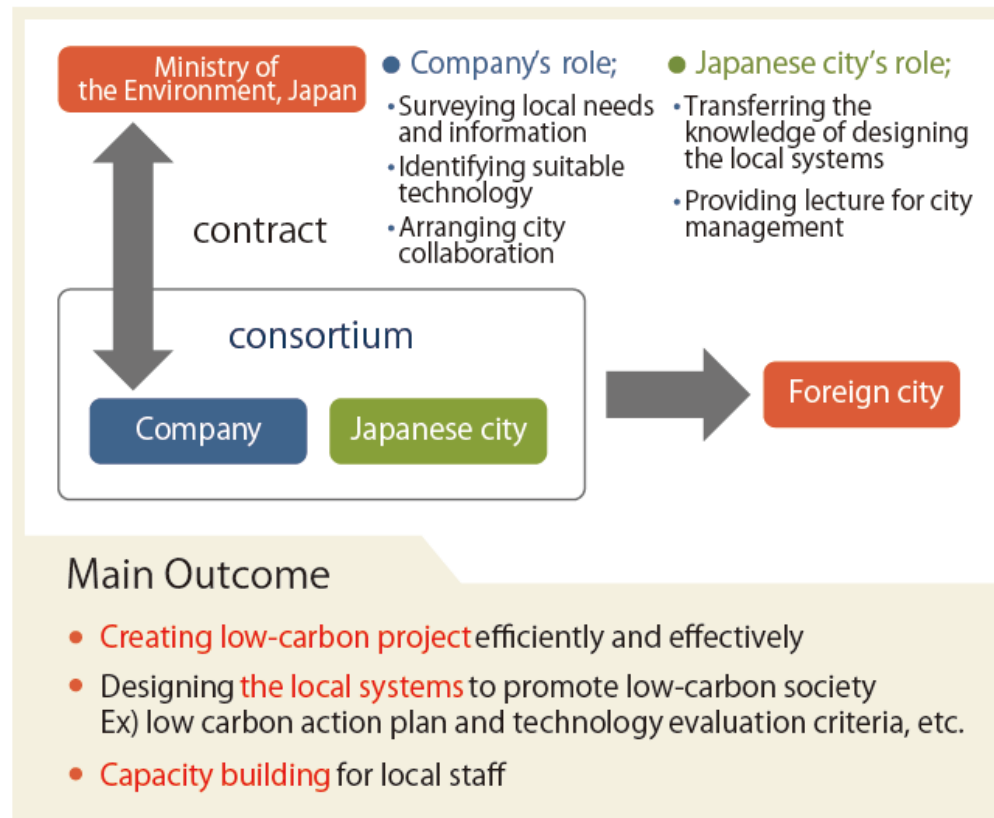
Nippon Koei has its own network in Latin-America especially through its subsidiary, Nippon Koei LAC based in Panama.



Since 2015, we are developing JCM projects in Chile with the support of MOEJ and JICA. We support to develop many approved JCM projects in Chile (4 projects out of total 8) and in other countries.

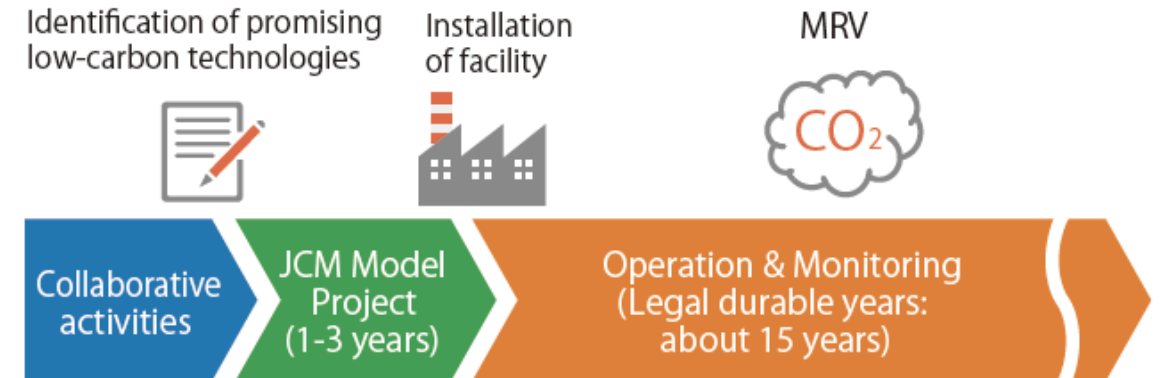
## 2 CITY-TO-CITY COLLABORATION

Ministry of the Environment, Japan launched City-to-City collaboration scheme in 2013. From 2020, we are happy to start the first project in Latin-American countries between Renca, Santiago and Toyama.



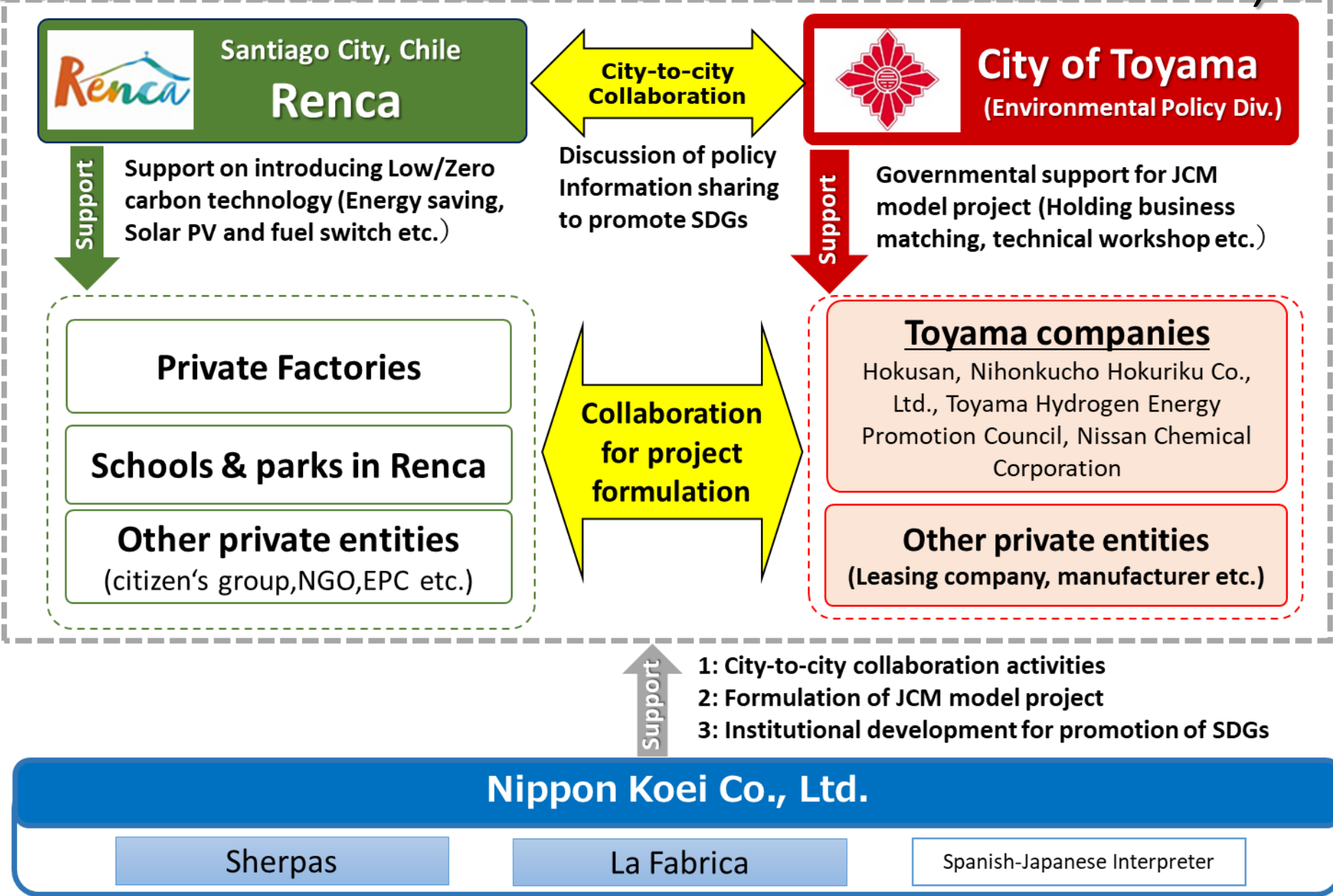
Outline of City-to-City Collaboration Programme

Source: MOEJ



Low-carbon project development under the City-to-City Collaboration Programme (an example)

# 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO



### 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO

#### Outline of Toyama City



■ Map of Japan



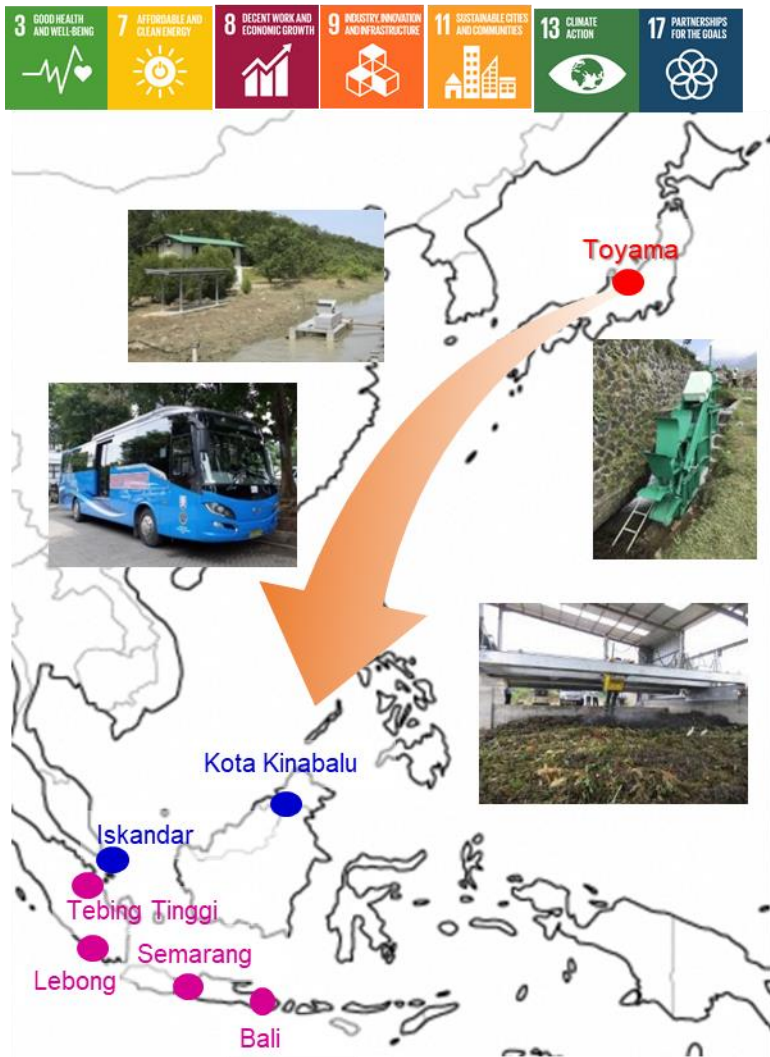
■ Toyama Prefecture

- Population: 418,686 people(2015 census)
- Area: 1,241 km<sup>2</sup>
- Diverse topography ranging from a sea level of -1000 m (Toyama Bay) to 2,986 m (Mt. Suisho)
- General Account Budget: ¥172.7 billion (FY2021)
- Industries: pharmaceutical, high-tech, robotics, electronic parts, banking



Source: Toyama City

# 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO



Source: Toyama City

- Bali, Indonesia
- Tabanan, Bali, Indonesia
- Semarang, Central Java, Indonesia
- Lebong, Indonesia
- Klungkung , Bali, Indonesia
- Tebing Tinggi, North Sumatera, Indonesia
- Iskandar, Malaysia
- Kota Kinabalu, Malaysia
- Renca, Santiago, Chile



### 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO

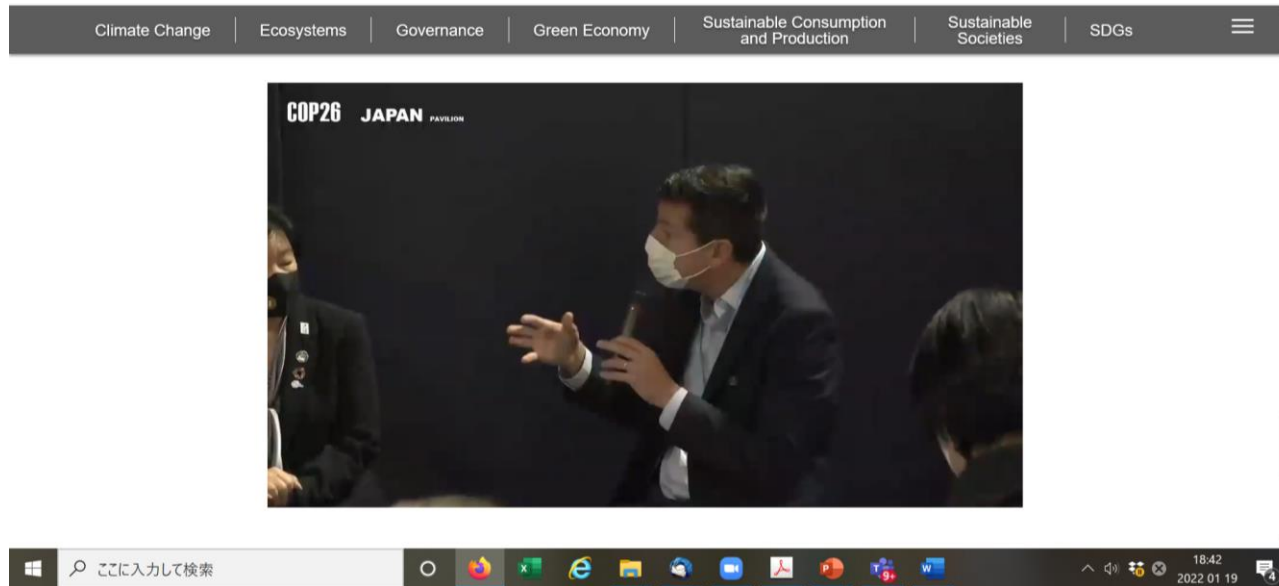


Source: Toyama City



Renca and Toyama started cooperation in 2019 and applied to City-to-City Collaboration Program of MOEJ in 2020.

### 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO

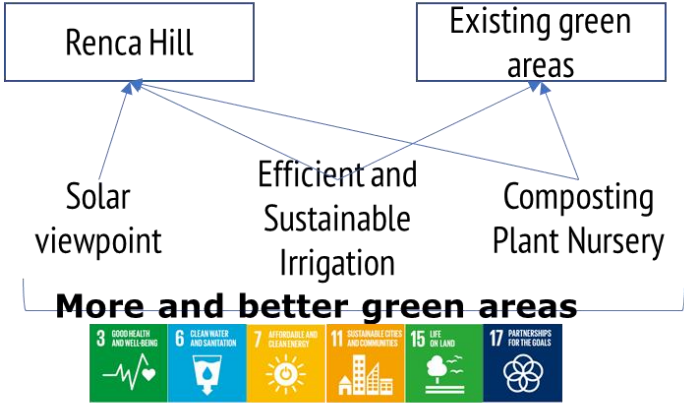
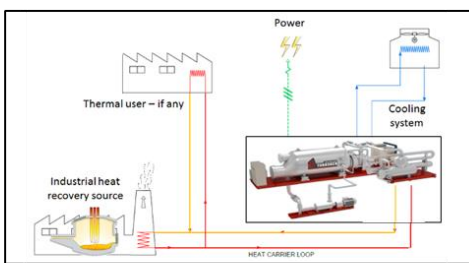


COP26 in Glasgow: Mayor of Renca participated in the side event  
“Roles of multi-stakeholders towards subnational decarbonization”  
held at Japanese Pavilion and mentioned about the project

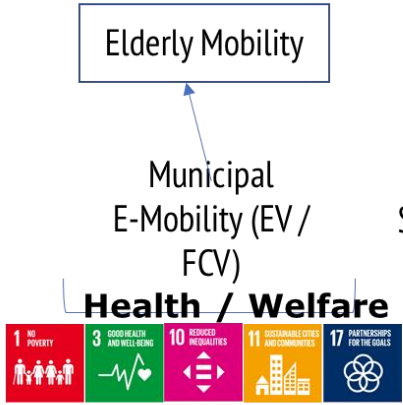
<https://www.youtube.com/watch?v=pEef6gmTQaE&t=5085s>

# 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO

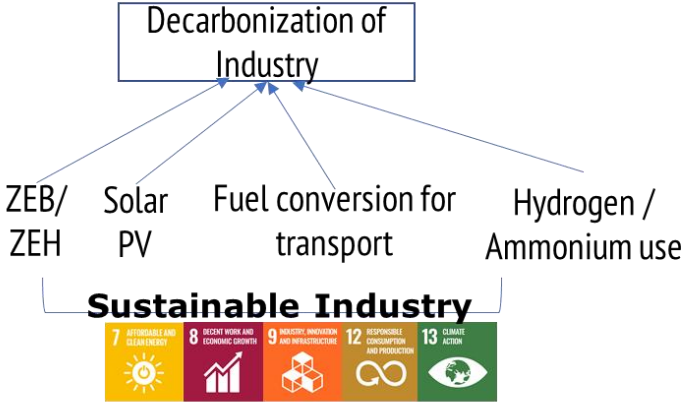
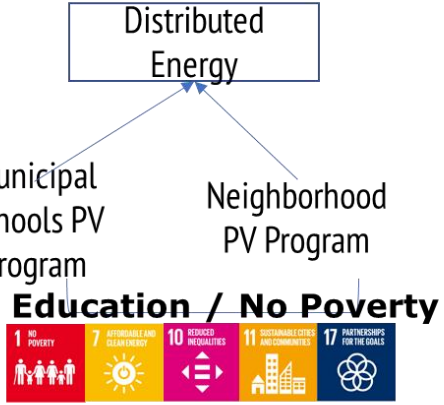
## Project Development in line with Concept of SDGs



Environmental Value



Social Value



Economic Value



Contribution to Race-to-Zero Commitment of Renca and Green Recovery

# 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO

## Three Year Plan

FY2020: Implemented as planned

<b>CtC Support</b>	Share info of SDGs Future City Plan, renewable and energy efficiency technologies and business matching
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JCM & SDGs	<b>Environmental</b>	Study: Management of green area (Solar PV, watering, water management), eco-nursery
	<b>Social</b>	Study: Community e-mobility and community solar PV
	<b>Economic</b>	Study: Decarbonization of industry (Ex. Solar PV, waste heat recovery, H2 application, ZEB/ZEH, HVAC etc)

FY2021

**We are here!**

<b>CtC Support</b>	Draft goal and target of SDGs Future City Plan Review the progress of climate change plan of Renca for future support
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JCM & SDGs	<b>Environmental</b>	Implementation: Management of green area (Solar PV, watering, water management), eco-nursery
	<b>Social</b>	Study: Community e-mobility and community solar PV
	<b>Economic</b>	Implementation of JCM Project: industrial decarbonization (ex. Solar PV, waste heat recovery, H2, gas, ZEB/ZEH, HVAC etc)

FY2022

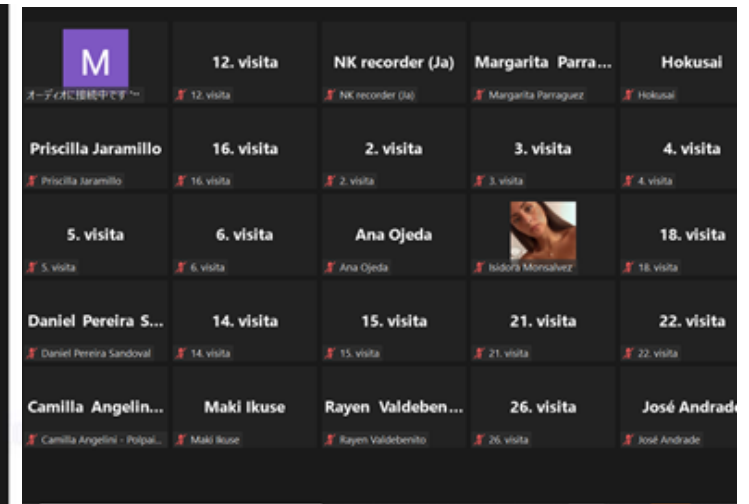
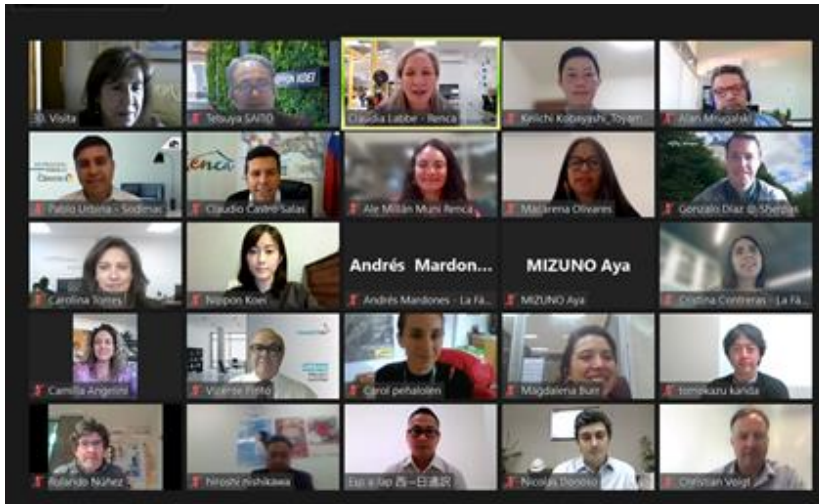
<b>CtC Support</b>	Draft SDGs Future City Plan of Renca and support implementation of climate change plan of Renca
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JCM & SDGs	<b>Environmental</b>	Implementation: Management of green area (Solar PV, watering, water management), eco-nursery
	<b>Social</b>	Implementation of JCM Project: Community e-mobility and community solar PV
	<b>Economic</b>	Implementation: industrial decarbonization (ex. Solar PV, waste heat recovery, H2, gas, ZEB/ZEH, HVAC etc)

Experience and information sharing are conducted on planning process and key performance indicator regarding net-zero and SDGs

# 3 PROJECT TO PROMOTE SDGS FUTURE CITY WITH RENCA, SANTIAGO

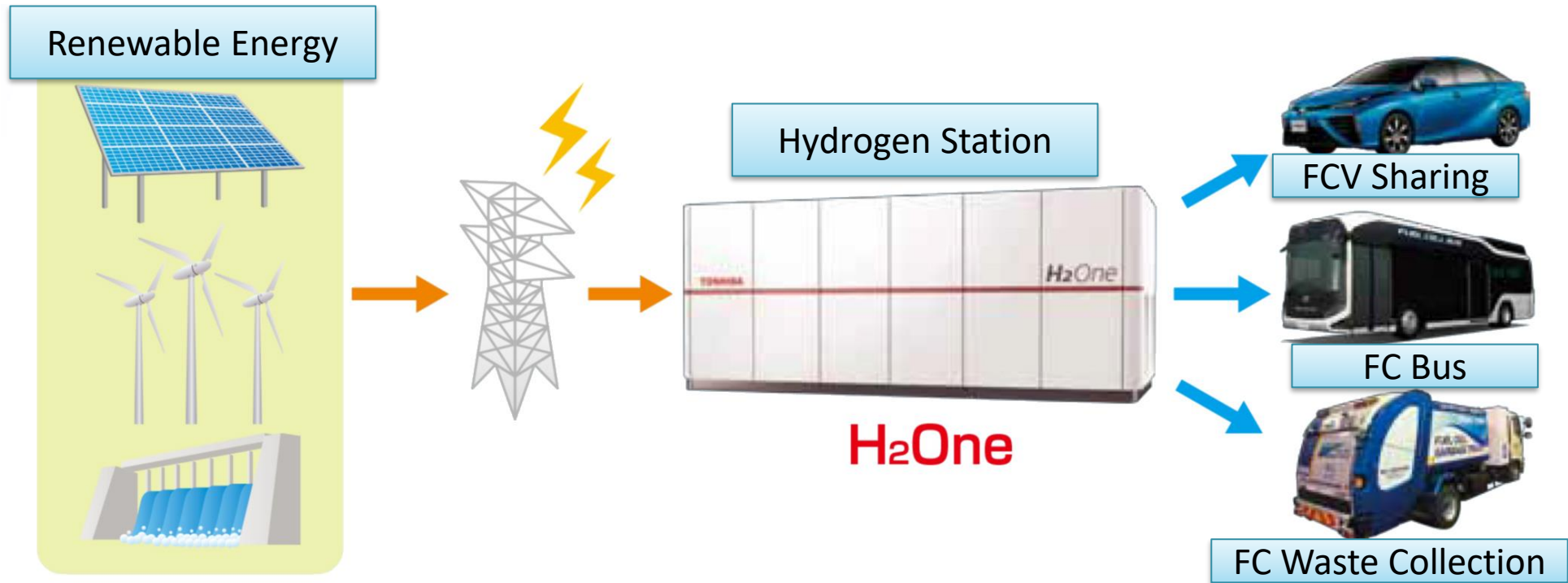
## Race-to-Zero / Zero Carbon City Seminar



1. Shared the experiences and thoughts of two leading cities in climate change from both countries
2. Mayor of Renca presented Race-to-Zero commitment and Toyama side presented Zero-carbon city commitment and its new energy vision
3. Shared importance of public-private collaboration to achieve net-zero

# 4 PROJECT DEVELOPMENT

## Toyama Companies



Green Hydrogen Experience in Toyama Environment Center

# 4 PROJECT DEVELOPMENT

## Toyama Companies



## Filling Green Hydrogen to Fuel Cell Vehicle in Toyama



# 4 PROJECT DEVELOPMENT

## Toyama Companies



株式会社日本空調北陸



Largest sales of industrial Sharp PV panels in Japan in 2020



# PROJECT DEVELOPMENT THROUGH MOEJ SUPPORT

# 5 TIPS FOR PROJECT DEVELOPMENT

## To develop feasible JCM projects

### *[Firstly, let's estimate potential subsidy]*

1. **Maximum subsidy amount:** Smallest among “GHG reduction (tCO<sub>2</sub>/yr) x Project duration (yr) x 35 USD/tCO<sub>2</sub>”, “50% of the cost of core technology to reduce GHG”, or “18 million USD” will apply
2. **Emission reduction:** Emission Factor applied in 2021

	Energy Saving	
Case	Other case	Replace diesel self-generation
Emission Factor	0.611	0.8

	Replace grid	Replace grid and self-generation	Replace self-generation
SEN	0.404	0.404	0.533
Aysen	0.176	0.176	0.533
Magallanes	0.361	0.361	0.533

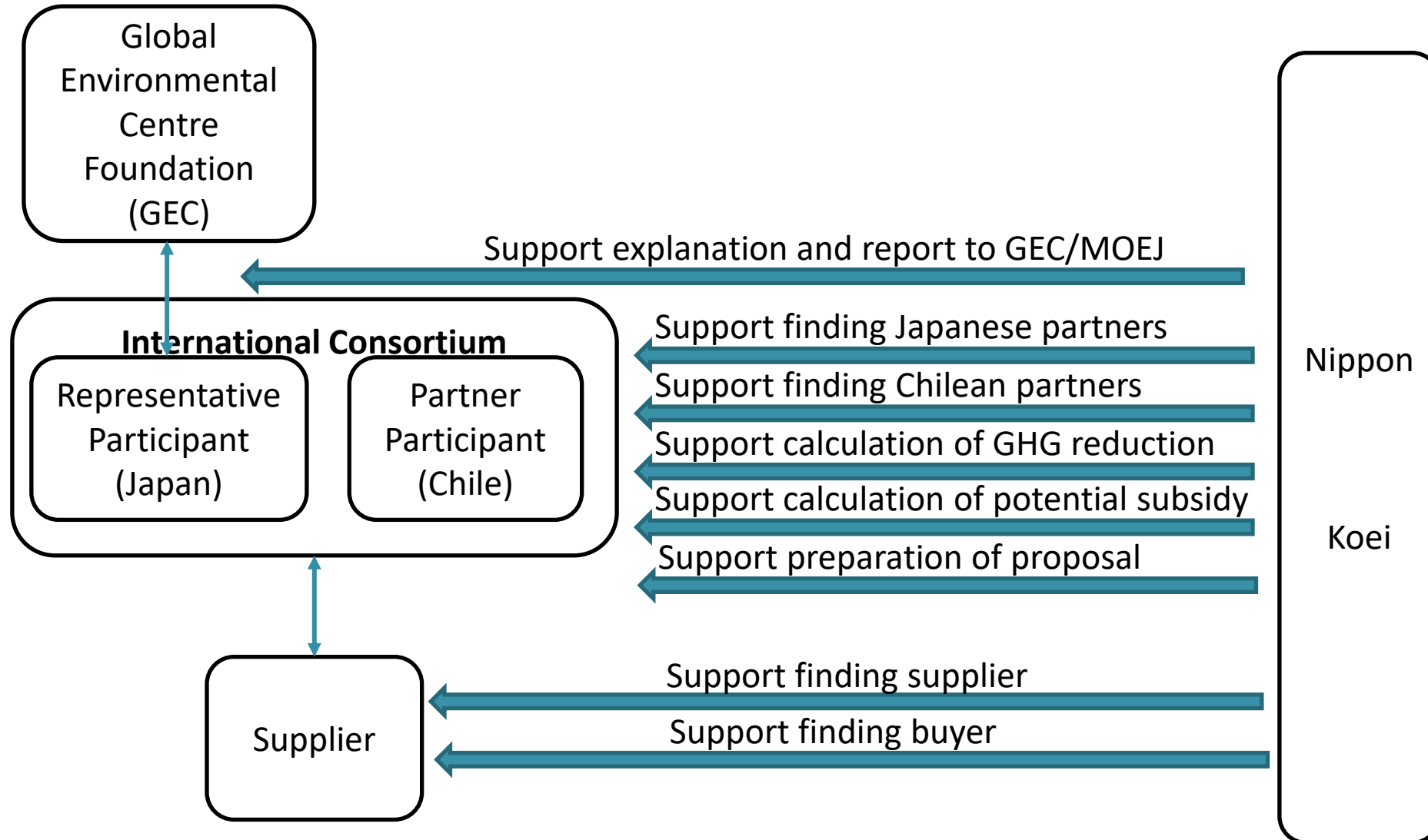
# 5 TIPS FOR PROJECT DEVELOPMENT

## To develop feasible JCM projects

### *[secondary, let's structure a project]*

3. **Partnering with Japanese company:** To apply JCM model project, at least one Japanese and one Chilean entity shall form an international consortium. Interested supplier is also required. (I am sorry but please be noted that some Japanese suppliers are reluctant to come to Chile... )
4. **Schedule (for 2022):**
  - ✓ Next call for proposal: Apr-Nov 2022 (tentative)
  - ✓ Selection: 1-2 months after submission of the proposal
  - ✓ Official contract: 2-4 months after the selection (procurement can be started only after this contract), earliest Sep/Oct 2022.
  - ✓ Commissioning: At latest by the end of Jan 2025

# 6 CONSULTING SERVICE BY NIPPON KOEI



# 6 CONSULTING SERVICE BY NIPPON KOEI

**Please provide following information to consult with us**

## **1. Project information**

- ✓ Project duration (yr) will be set by Japanese law based on the project type with applied technology
- ✓ Project cost with economic analysis (pay-back and/or IRR)

## **2. Type of GHG reduction**

- ✓ A) Energy saving: The original power source is from the grid or the power generated by the project owner
- ✓ B) Renewable energy: power is injected to the grid, or is solely used for self consumption

## **3. Calculation of CO<sub>2</sub>(GHG) reduction**

- ✓ Annually saved energy (MWh or fossil fuel amount), or
- ✓ Annually generated renewable energy (MWh)

# 6 CONSULTING SERVICE BY NIPPON KOEI

**Please provide following information to consult with us**

## **4. Project process**

- ✓ Necessary permissions and the plan to obtain them
- ✓ Progress of internal decision on investment for the project (possibly with the condition of receiving subsidy)

## **5. Relationship with Japanese companies**

- ✓ Japanese partner (Nippon Koei may support finding)
- ✓ Provider for leading low carbon technologies

## **6. Project schedule**

- ✓ Project commencement is only after the official contract
- ✓ Projects needs to be completed (start CO2 reduction) in four financial years of Japan

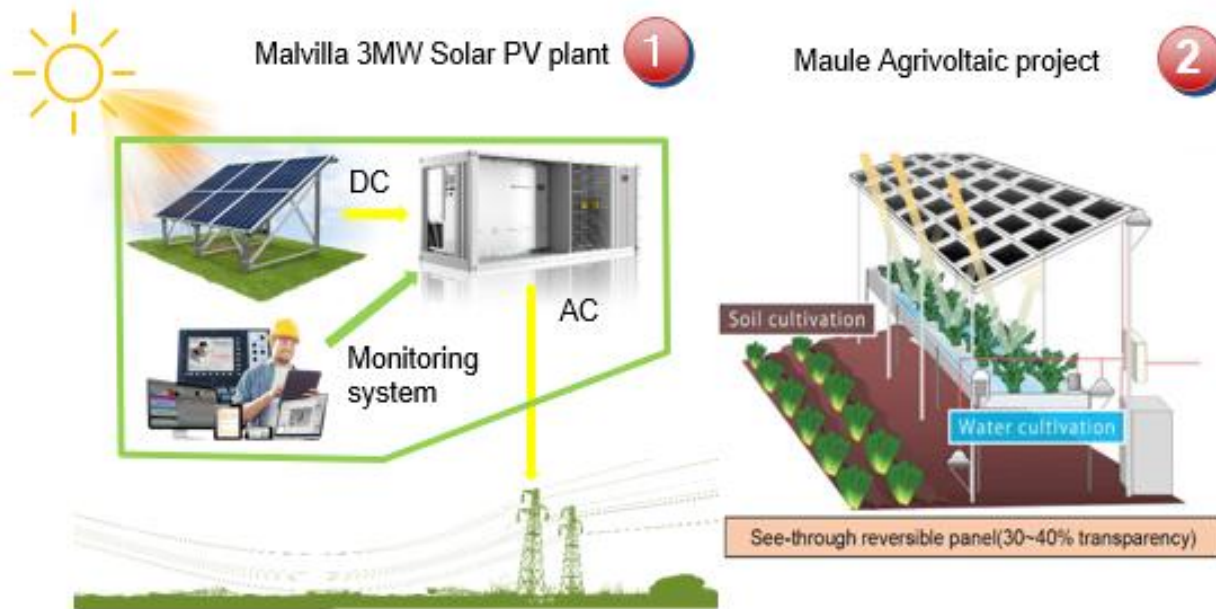
# 7 OTHER POTENTIAL SUPPORTING SCHEMES

1. **City-to-City collaboration:** Ministry of the Environment of Japan support Japanese Cities to cooperate with Chilean cities to promote the low carbon society and JCM projects
2. **Co-innovation:** Low-Carbon Technology demonstration for localization as well as the contribution to co-innovation.
3. **JOIN:** Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development, could be a investor for transportation and city development.
4. **JICT:** Fund Corporation for the Overseas Development of Japan's ICT and Postal Services (Japan ICT Fund)
5. **JBIC:** Japan Bank for International Cooperation
6. **NEDO and METI:** New Energy and Industrial Technology Development Organization and Ministry of Economy, Trade and Industry, could be a supporter for large scale projects

# 8 PROJECT DEVELOPMENT

## Diversification of Renewable Energy Projects is in Need

All of 8 selected projects in Chile are PMGD project. 7 are solar PV and 1 is biomass. Considering new regulation (DS88), simple solar PV will be less profitable, and supplying more stable electricity by **RE+battery / wind / hydropower / biomass / waste heat recovery / solar thermal** will be more important.



## 3MW Solar Power Project Utilizing Farmland in Valparaíso Region

Together with Chilean Ministry of Agriculture and Irrigation, a 20kW agrivoltaic pilot project is implemented in Maule Region. This will contribute to climate change adaptation by reducing water consumption.

# 8 PROJECT DEVELOPMENT

## Hydrogen / Ammonia

There are still some barriers (especially cost efficiency, approx. 35 USD/tonCO<sub>2</sub>), but please contact with us so that we can try to consider various schemes. There would be also new schemes under consideration.

## Energy efficiency

There are many projects in other country utilizing energy efficient technologies, such as air-conditioning technologies.

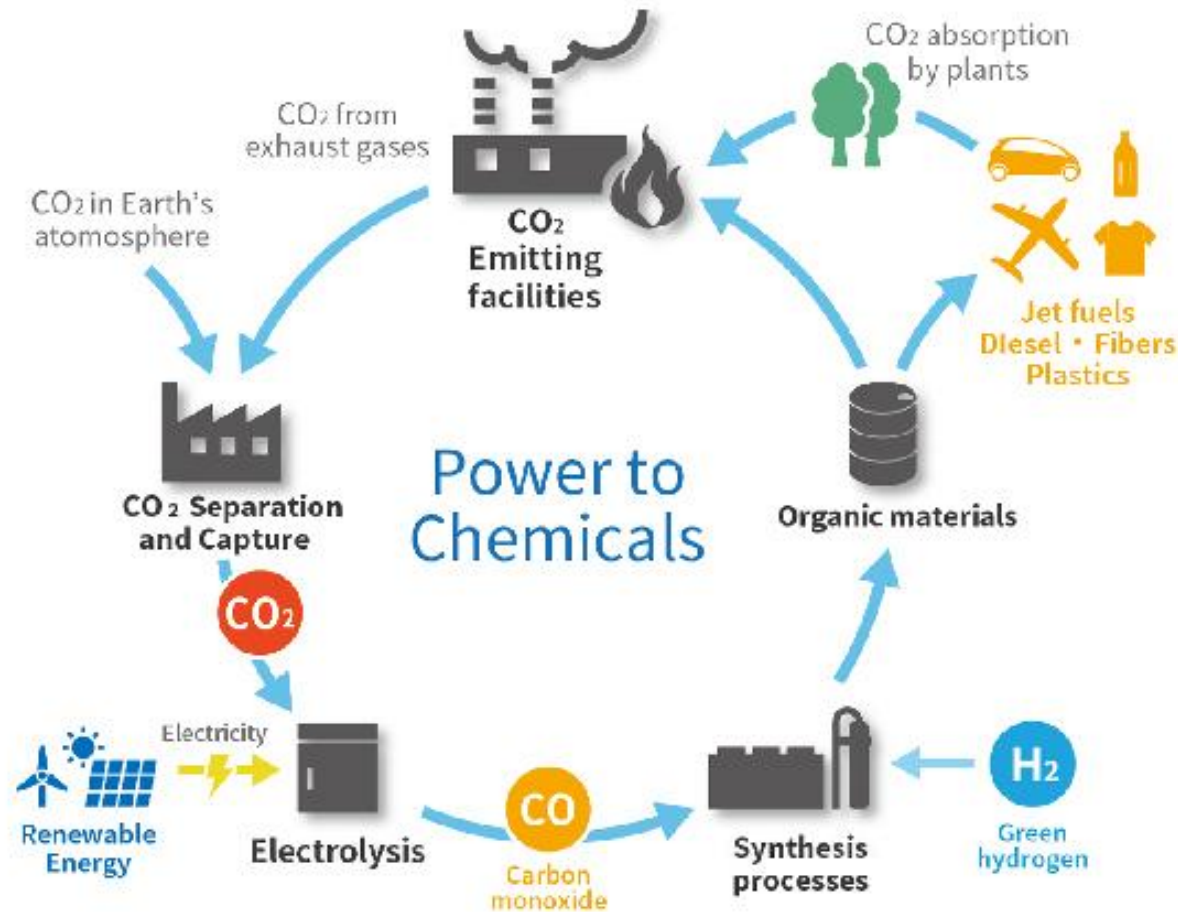
## Refrigerant, Forest Management etc.

At this moment we cannot mention clearly, but in line with Article 6 of Paris Agreement, new type of application of JCM is under consideration.

# 8 PROJECT DEVELOPMENT

## CCUS (Carbon Capture, Utilization and Storage)

Following is one of the approach toward carbon neutral related to CCUS



<Source: TOYO Engineering Corporation  
News Release on 2 Dec. 2020>

**Please feel free to send e-mail to following address**

**Japan** (English or Japanese)

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**Chile** (Spanish or English)

Gonzalo Diaz (Mr.), [gdiaz@sherpasgroup.cl](mailto:gdiaz@sherpasgroup.cl)

**Muchas gracias!!**