

October 20, 2021

CHODAI

Metro Davao Energy and Transportation Business Webinar



Potential Renewable Energy Collaboration Opportunities in Mindanao

- Between Japanese and Filipino Firms -

Assistant Manager, Chodai Philippines Corporation
Global Business Promotion Division, Chodai Co., Ltd.

Engr. Jett Tommy P. Tolentino

Today's Agenda

1. Overview of CHODAI Group
2. CHODAI's Renewable Energy Projects in Mindanao, Caraga Region
3. CHODAI's Role in the Development of Renewable Energies Projects
4. Intentions of the Japanese Government and Japanese Investors in Renewable Energy Projects
5. Conclusion (5 min Video Presentation)

1. Overview of CHODAI Group

- Under the slogan of **“People, Dreams and Technology”**, CHODAI contributes to creating an environment where people can live with dreams
- **Founded in 1968**, listed construction consultant on Tokyo Stock Exchange in 2017 (1,500 group employees)
- Established six local subsidiaries in Asia, contributing high-quality infrastructure technology to Asian infrastructure demand



CHODAI	
Corporate Name:	CHODAI CO., LTD. Listed in Tokyo Stock Exchange
Headquarters:	Chuo-Ku, Tokyo, Japan,
Capital Amount:	JPY 3,107,500,000
Foundation:	21 February 1968
No. Employees:	836 (As of 30 June 2021)
Website	http://www.chodai.co.jp/en/

Kiso Jiban (Sister company of CHODAI)



Corporate Name:	Kiso-Jiban Consultants Co., Ltd.
Headquarters:	Koto-ku, Tokyo, Japan
Capital Amount:	JPY 100,000,000
Foundation:	28 August 1953
No. Employees:	590 (As of 1 April 2020)
Website	https://www.kisojiban.com/

Overseas Subsidiary of CHODAI Group



[CHODAI Korea Co., Ltd.] Korea
-Dispatches Korean engineers as construction supervision staff all over the world
-Collects world news from the Korean market



[CHODAI & Kiso-Jiban Vietnam Co., Ltd.] Vietnam
-Combines the strengths of CHODAI and Kiso-Jiban
-Center for ODA projects in Southeast Asia *ODA= Official Development Assistance



[CHODAI & Buro Engineering Pte. Ltd.] Singapore
-Combines the strengths of CHODAI and Kiso-Jiban
-Specializes in structure design, mainly active in Southeast Asia.



[PT Wiratman CHODAI Indonesia] Indonesia
-Founded by CHODAI and PT Wiratman, a comprehensive engineering company in Indonesia.
-Focuses on civil and structural engineering



[Chodai Philippines Corporation] Philippines
-Currently focuses on regional development around Cagaya region in Mindanao.
-Long-term commitment to the whole project phases including investment and O&M



[PT AMCO Hydro Indonesia] Indonesia
-Provides solutions to small hydro power plants to assist their O&M activities, with the combination of the knowledge base of its hydro experts and information technology

CHODAI Group Global Network



1. Overview of CHODAI Group



Hyogo - Akashi Kaikyo Bridge Type: Suspension bridge



Tokyo - Rainbow Bridge Type: Suspension bridge



Egypt - Suez Canal Bridge Type: Suspension bridge



Korea - Incheon Bridge Type: Suspension bridge



Viet Nam - Nhat Tan Bridge Type: 6 span continuous cable-stayed bridge



Denmark - Great Belt East Bridge Type: Suspension bridge



Cambodia - Tsubasa Bridge Type: Cable stayed bridge



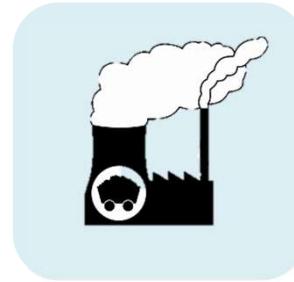
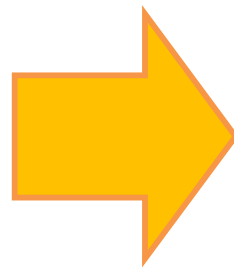
Turkish - Third Bosphorus Bridge Type: Hybrid cable-stayed, Suspension bridge

2. CHODAI's Renewable Energy Projects in Mindanao, Caraga Region



Energy Capacity and Generation Mix | 2020

**Installed Generating Capacity
TOTAL: 26, 250 MW**



10, 944 MW | 42%
Coal



7, 617 MW | 29%
Renewable Energy

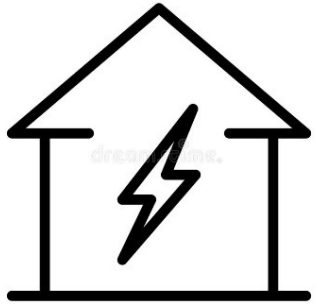


4,237 MW | 16%
Oil Based



3, 453 MW | 13%
Natural Gas

Source: Department of Energy (DOE)



POWER SUPPLY



**BASIC INFRASTRUCTURE
SERVICE**



**POWER SUPPLY
by RENEWABLE
ENERGY**



**BASIC INFRASTRUCTURE
SERVICE**

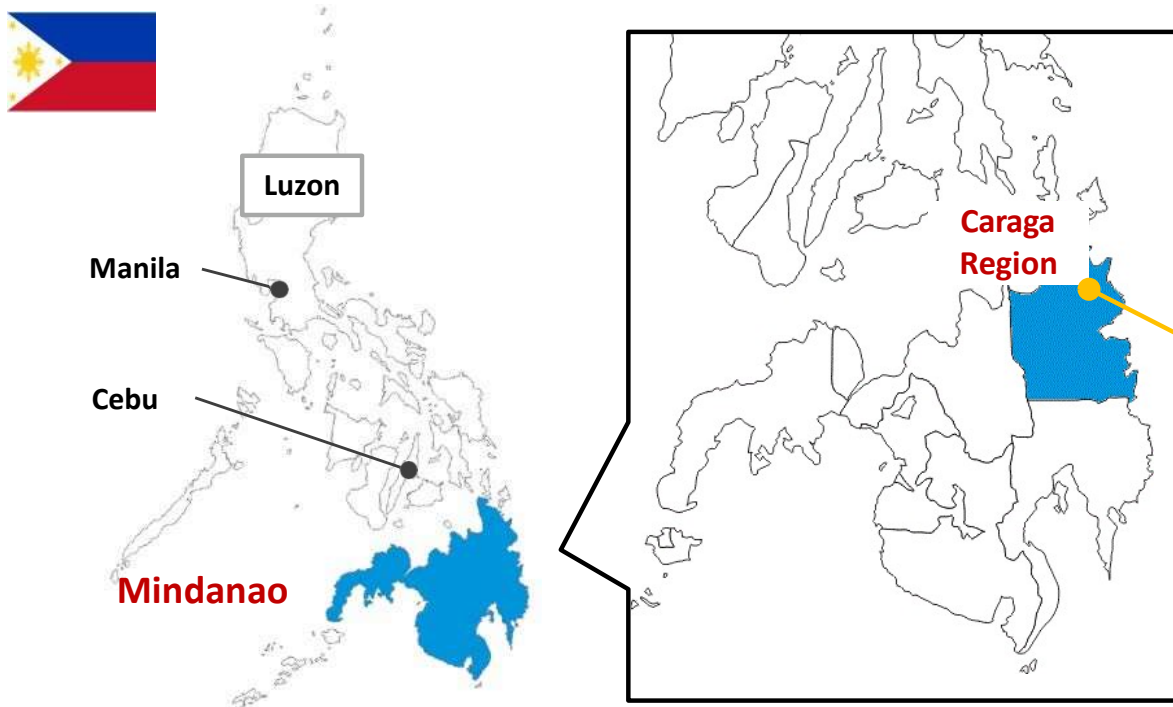


- ✓ **Energy Security**
- ✓ **Independence in Energy Resource**
- ✓ **Will attract more investments**

Regional Development through Comprehensive Alliance

Signed Multiple MOUs for the Development of Various RE Projects such as Hydro, Wind, and Biomass

Several MOUs were entered to jointly develop and implement various Renewable Energy projects in Mindanao, the Philippines, such as hydro, biomass, and wind. The aim of the understanding is to develop a master plan of renewable energy utilization in Caraga region, and to establish mutual understandings and cooperative relationships among the Parties in connection with the development of regional economy under a “Private-sector-driven PPP model” for the development of the whole region of Mindanao.



**Mindanao
Business**

**ミンダナオ島カラガ地域総合経済開発計画
Caraga Region Comprehensive Economic
Development Plan**

Project Duration: Oct 2011～

CHODAI's Ongoing Renewable Energy Projects in Mindanao

Red text indicates the involvement of Japanese government agencies.



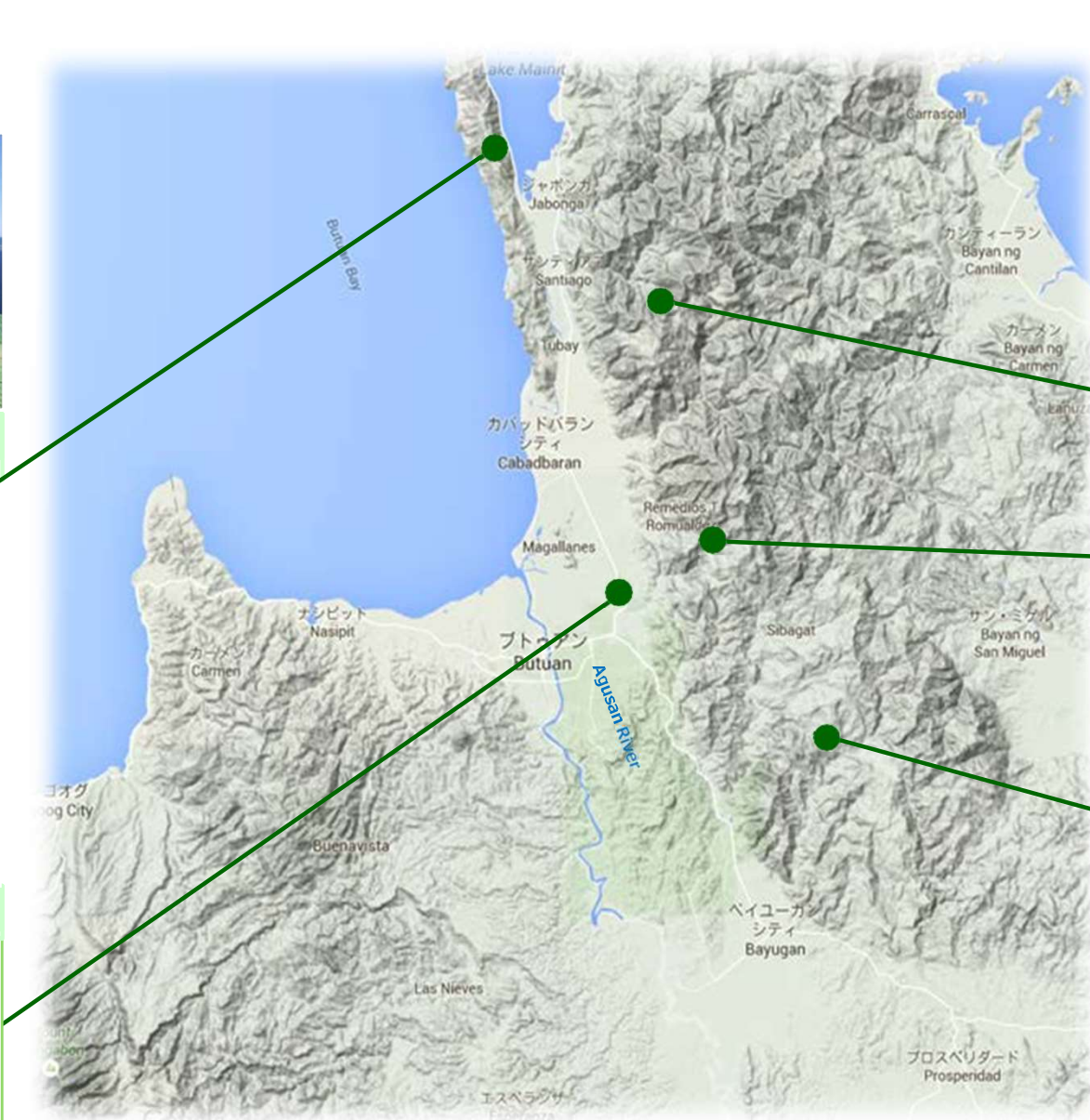
Wind Power

- To be operated by 2024
- F/S funded by METI (2016, 2017)
- JCM equipment assistance project adopted in 2019 (33MW)



Biomass Power

- Stable supply of rice husk + 2.5 MW power generation + Pilot plant of by-product sales.
- F/S funded by METI (2015, 2017)
- JCM equipment assistance project adopted in 2018



Asiga River Hydro Power

- 8MW Operation already started
- Installed power generation equipment by Voith Fuji Hydro.
- Two-step loan by JBIC provided
- Plan to introduce remote monitoring system

Taguibo River Hydro

- 4MW (Under Developing)
- F/S funded by JBIC (2015)
- In preparation to be applied for JCM Equipment Assistance

Wawa River Hydro

- 10MW (Under review)
- Development Stage
- F/S funded by METI (2012)
- F/S funded by JICA (2014)

As of September 2021

Our Operational 8MW Hydropower (Asiga MHPP)



Project:	8MW Asiga HPP
Status:	Operational (since 2019)
Capacity:	8MW (2 Francis Turbine 4MW each)
Funding:	Two-step loan to JBIC
Future Plan:	Introduce Remote Monitoring System



3. CHODAI's Role in the Development of Renewable Energy Projects

Overall Consultancy Services

Financing & Investment



Japanese Government Funds
(METI, JICA, JBIC)
And Private Funds/Investors

Engineering Consultancy Services



Life-cycle Engineering Services
From Planning to O&M
(Operation & Maintenance)

Critical equipment procurement



E&M, Procurement, Supply of
Japanese Critical equipment

1. Planning/Design & Financing

Planning/Design

- Field Survey
- Business plan/Financial plan
- Design (Outline/Basic/Detail)
- Support for license acquisition

Environment

- Environmental Assessment

Partnership

- Building relationships with stakeholders

Financing

- Acquire public support
- Investment / Financing arrangements

2. EPC Phase

Engineering (E)

- Design Review / Factory Inspection (E&M)

Procurement Support (E)

- Bidding Documents
- Various equipment, construction
- Bidding Evaluation & Contract

Construction support (E)

- Supervision for Construction & Commissioning

Equipment supply (P)

- E&M, Procurement, Supply

3. O&M Phase

Operation Management

- Plant Operation
- Plant Monitoring

Maintenance Management

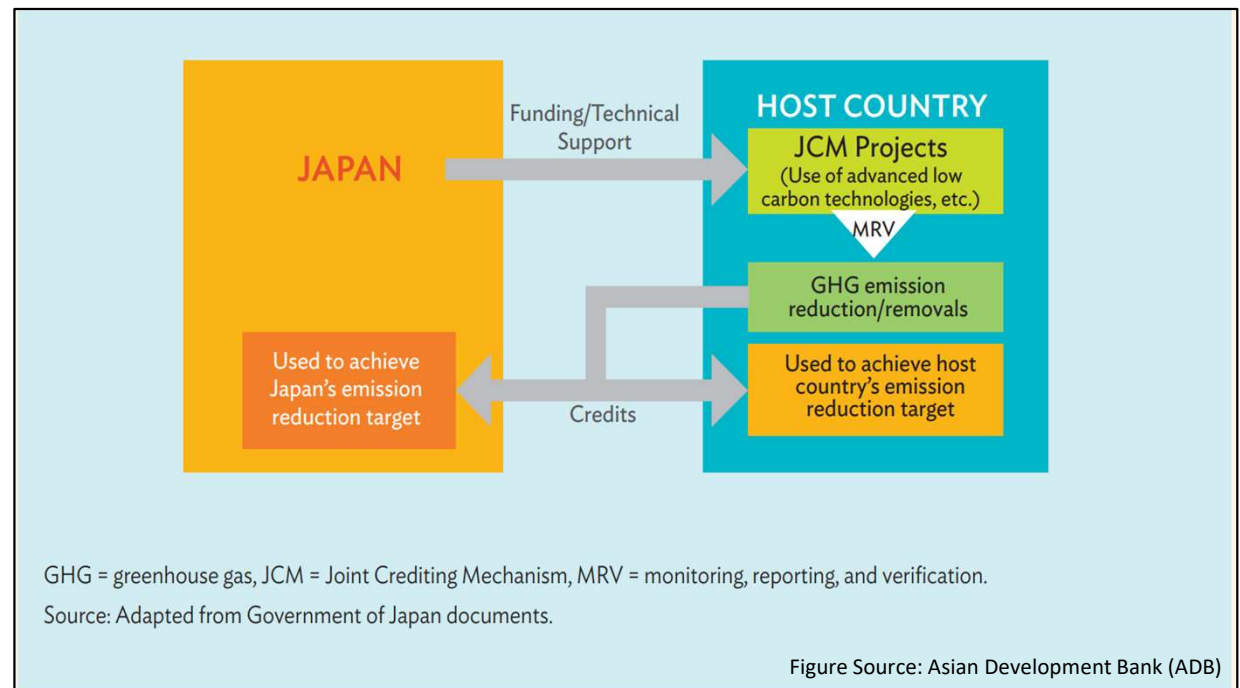
- Maintenance support plan
- Help desk

Asset Management

- Asset book
- Various contract management
- Assets management related support

Joint Crediting Mechanism (JCM)

Subsidy Program of Japan for Projects that Contribute to Carbon Reduction



4. The Intentions of the Japanese Government and Japanese Investors in Renewable Energy Projects

January 2017



▲ "Philippines-Japan Business Forum" held at Waterfront Hotel in Davao on 13 Jan 2017



The Intentions of the Japanese Government and Japanese Investors in Renewable Energy Projects

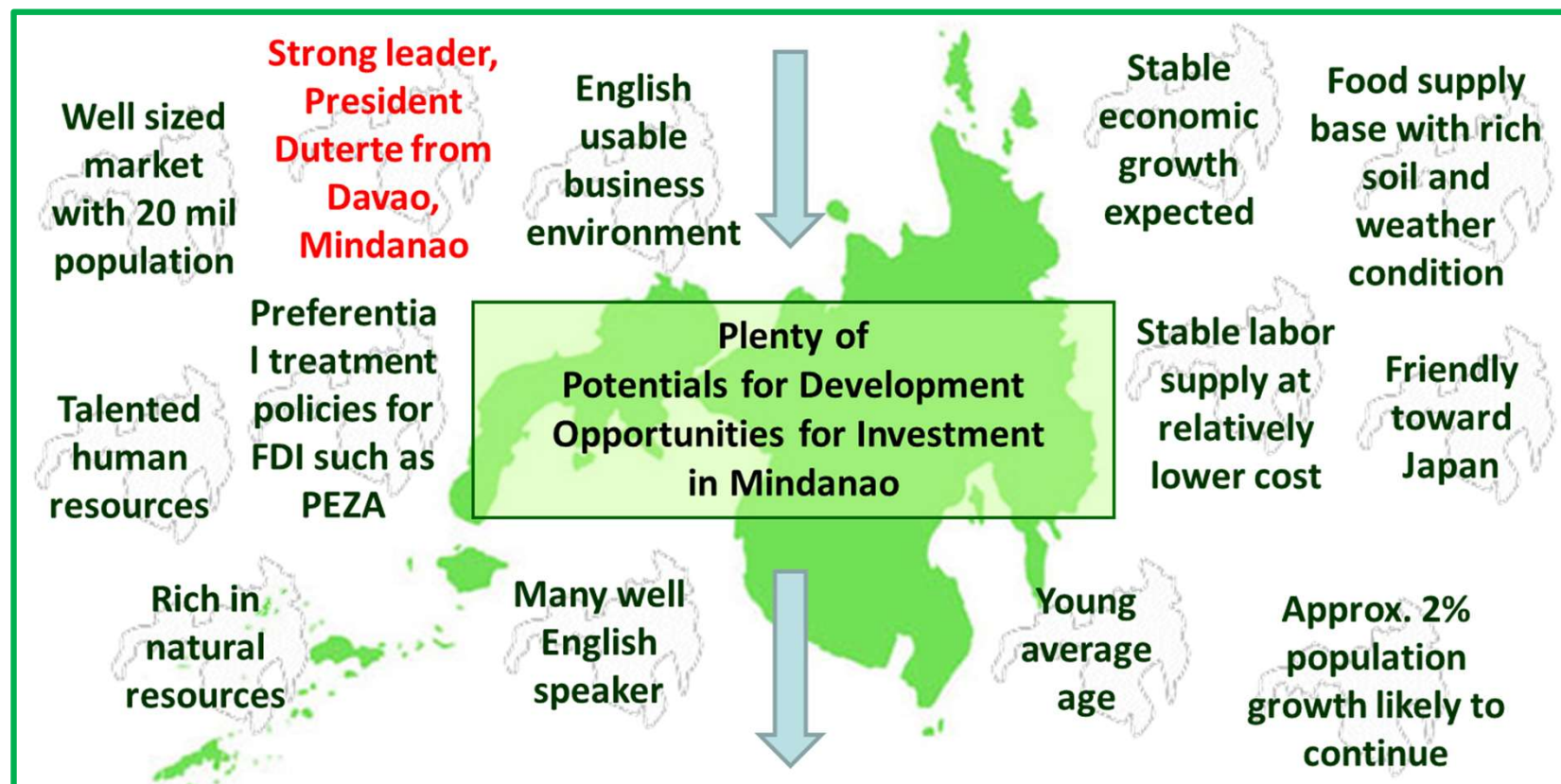
- **Japanese Government**

- Contribute to Global Decarbonization
- Committed to be Carbon-Neutral by 2050
- Contribute and Support in the Development of Mindanao Island

- **Japanese Investors**

- To Partner with Local Filipino Firms
- Export Japanese Technology
- Contribute and Support in the Development of Mindanao Island

Plenty of Potentials/ Opportunities in Mindanao



Other PPP Projects of CHODAI in Mindanao

★ Funded / decided
★ Consultation service provided / planned
(※ light color is under discussion)
【As of September, 2021】

The business development with partners of local construction companies from 2011, in the Caraga region of Butuan city, northern part of Mindanao Island. It aims at **regional economic development through industry and job creation** by basic infrastructure maintenance such as electricity (renewal energy), water supply and industrial estate development.

⑦ Rice Farming and Milling Project

- Achieved 7-8 t/ha (average regional yield of about 3.7 t/ha)
- Cultivation of short grain rice registered in Phil Rice
- Japanese high-performance rice milling machine introduced



⑧ 【JCM】 Biomass Power Project

- PFS with METI support in 2015, additional survey in 2017
- Stable supply of rice husk + 2.5 MW power generation + Pilot plant of by-product sales. Will be deployed in the Caraga region.
- JCM equipment assistance project adopted in 2018

⑨ 【JCM】 Wind Power Project

- PFS with METI support in 2016, additional survey in 2017
- JCM equipment assistance project adopted in 2019 (33MW)

⑩ Solar Power Project

- Private own survey began (Scheduled for 200MW)

⑪ Low-carbon Industrial Park Development Projects

- Low carbon industrial park in 141ha (SPC established), PEZA certified
- FS of water supply infrastructure introduced in 2016 by METI support

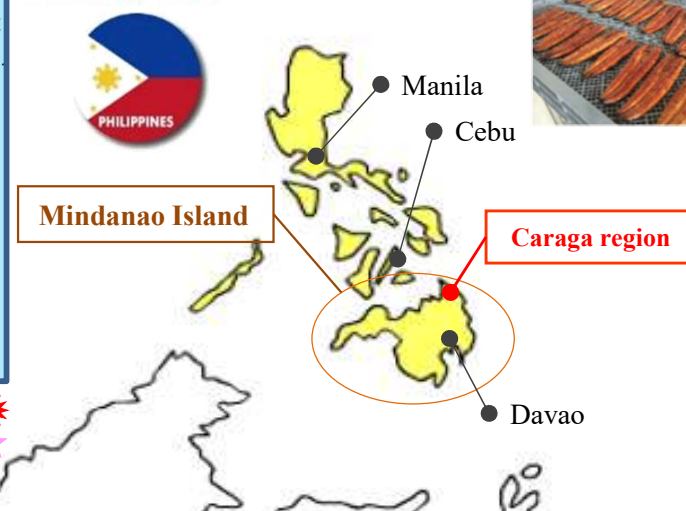


⑤ Pilot Project of Shrimp Farming

- Application of soil and water quality improvement materials from Japanese SMEs in 2014, JICA Project Survey, to recover abandoned ponds

⑥ Eel Farming Project

- Acquired aquaculture and production information publication JAS standard by Japanese feed
- Introduced Japanese broiled processing line, processing technology transfer



⑫ Infrastructure Basic Survey, (OCAJI) and IDI Survey

- Logistics infrastructure expansion proposal, OCAJI survey
- Agusan River Crossing Bridge Survey in 2017, IDI survey
- Port Expansion Survey in the 2018, OCAJI Survey

① Asiga River Small Hydropower Project

- 8MW / Operation started
- Introduce Japanese Water turbine generator (2 units)
- Use JBIC's two-step loan
- Planned to introduce remote monitoring system



② Taguibo River Small Hydropower Project

- 4MW / Under Developing
- JBIC FS conducted in 2015
- JCM equipment assistance application will be submitted

③ Wawa River Small Hydropower Project

- 10 MW (under review) / scheduled to operate around 2023
- Conducted FS survey with METI support in 2012
- 2014~2016.5 JICA Preparatory Survey
- Building a stable system with a tunnel headrace channel that is resistant to climate change and other disasters

④ 【JCM】 Water Supply Project

- 30,000 m³/d (80,000 m³/d in future)
- 2015~40 (+ 25 years)
- Japanese manufacturers' equipment (Pipe, Purification plant)
- 2017 METI(Additional FS)
- 【JCM】 introduce micro-hydro facilities (JCM adopted 2018)



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Thank you very much for your attention!



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