JICA's Cooperation for Pacific Region

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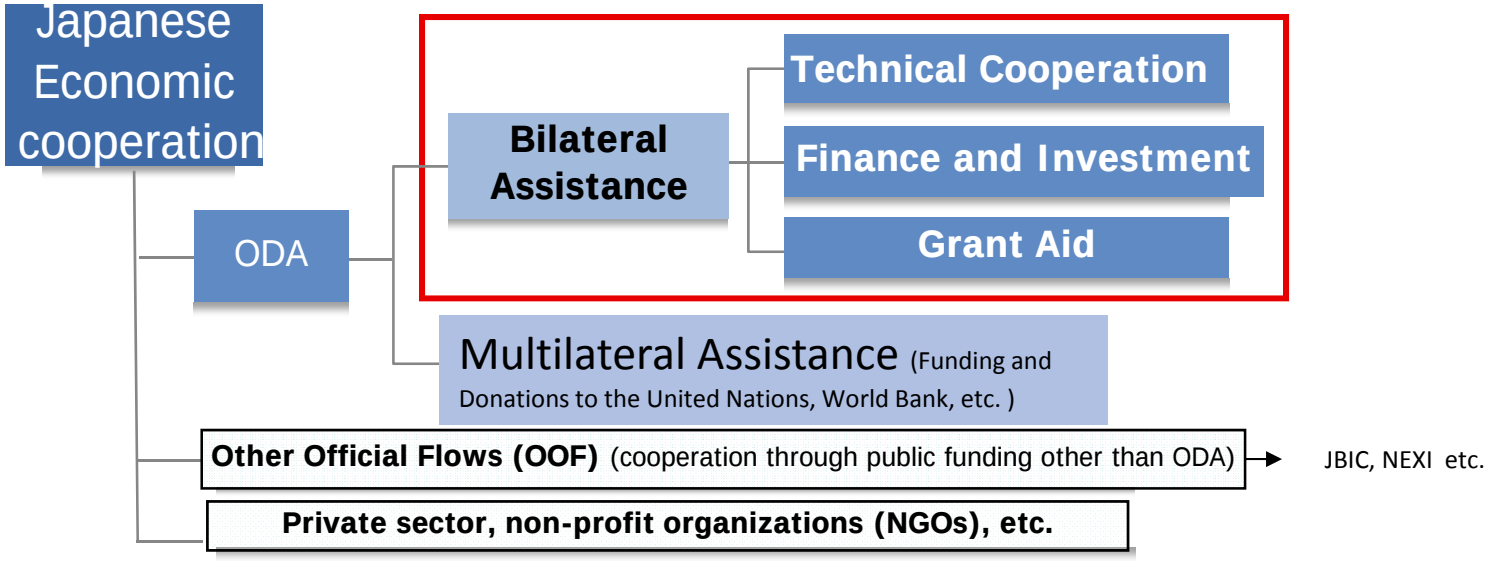
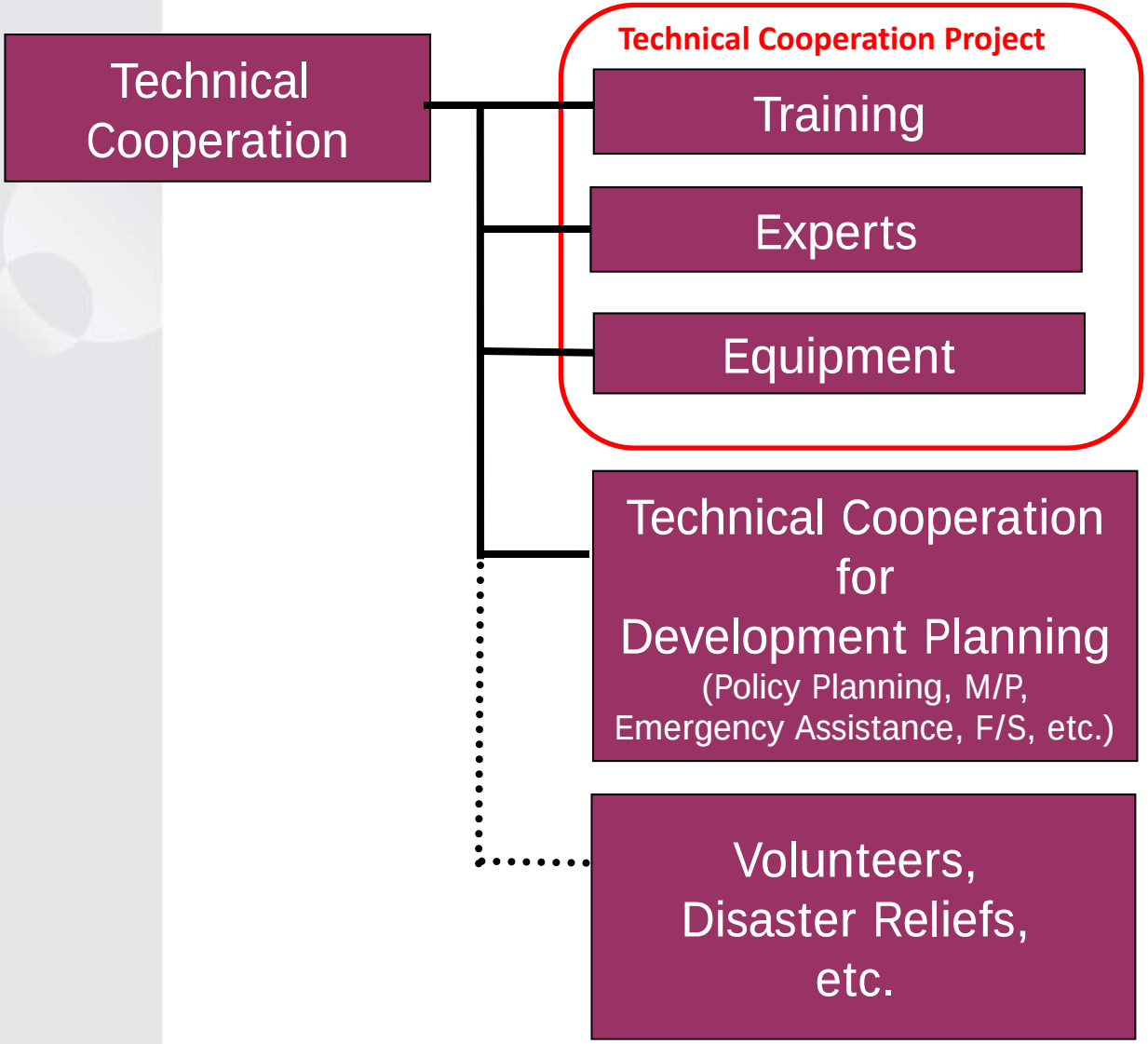
1. Introduction of JICA

Introduction of JICA: Implementing Agency of Japan's ODA

Japan's ODA and JICA



Basic Information -Technical Cooperation
Classification of Technical Cooperation



Officials from partner countries who receive education or training in/out of Japan

Officials dispatched to partner countries to make guidance or advice

Equipment provided to partner countries which are necessary for technical cooperation

Studies for formulating policies or public works planning

Dispatch of volunteers eager to make use of their skills and experience acquired in Japan to developing countries to work together with local people

2. JICA's Cooperation in Energy Sector

JICA's Approach for Power Sector Development

1）Policy / Institutional Development in Energy Sector

①Master Plan, Ground Designing

②Technical Standard

2）Efficient Energy Use

① Promotion of Energy Saving / Efficiency Coal

② Thermal Power Plants with CCT

3）Renewable Energy

①Geothermal ②Solar ③Wind

4） Rural Electrification

Renewable Energy: Geothermal

①Geothermal Power Development

- **Asia and Pacific – Indonesia, Philippines**
- **Latin America – Costa Rica, Bolivia**
- **Africa – Kenya, Ethiopia**

Geothermal Development in Indonesia;

- 3,900MW to be developed during 2010-2014
- Master plan to promote geothermal development, identified sites with priority
- Loan Support for Geothermal Projects (Lahendong, Uruberu, Kamojang)
- Support for human resources development and institutional development

Renewable Energy: Wind

② Wind Power Development

Wind Power Development in Zafara , Egypt

- Yen Loan Project: 13.5 bil Yen
- Construction of 120 MW of Wind Power Plant in Zafara with 13.5 bil Yean loan
- A CDM Project - Contributing to GHG Reduction (approx. 250 thousand ton/year)
- Average wind speed 8-10m/s

Renewable Energy: Solar (Photovoltaic)

③ Solar Power (Photovoltaic; PV)

Grid-connected PV System

- Installation of Grid-connected PV system to public facilities, such as airport, government buildings, hospitals, etc.
- Grid-connected PV system – enables to operate without batteries and under existing power system
- Expected to lead the introduction of similar system by the recipient government

Agency

Application of Solar Energy in Rural Area

General Problems

- High initial cost of PV system for rural communities
- High recurrent cost of batteries
- Lack of Enterprise (income generating activities) / lack of capital to create the enterprise
- Lack of engineering capacities
- Difficulties to keep on building capacities

Cooperation Strategies (example)

- Establishment of Business Model utilizing existing resources
- Introduction of new technologies (eg. LED)
- Capacity building for engineers in rural area
- Awareness raising / short-term training for users

Solar Portable Lighting (SPL) devices

Easy Operation & Maintenance compared with Solar Home System !

3. JICA's Cooperation in Pacific region

JICA's Cooperation in Pacific Region

Palau
- The Project for Upgrading of Electric Power Supply and Power Transmission Lines in Babeldaob Island (Grant)
- The Project for Babeldaob Electrical Transmission and Distribution Lines (Grant)
- The Project for Upgrading of Electric Power Supply (Grant)
- The Project for Introduction of Clean Energy by Solar Electricity Generation System (Grant)
- The Master Plan Study for the Upgrading of Electric Power Supply (Development Study)

Federated States of Micronesia
- The Project for the Upgrading of Electric Utilities (Grant)
- The Project for Introduction of Clean Energy by Solar Electricity Generation System (Grant)

Marshall Islands
- The Project for Introduction of Clean Energy by Solar Electricity Generation System (Grant)

Kiribati
- Study of Utilization of Photovoltaics for Rural Electrification (Development Study)
- The Project for Upgrading of Electric Power Supply in Tarawa Atoll (Phase-1,2) (Grant)

Tuvalu
- The Project for Upgrading of Electric Power Supply in Funafuti Atoll (Grant)

Papua New Guinea
- Yonki Hydroelectric Project (Loan)
- Warangoi Hydroelectric Project (Loan)
- Kelowna 4 Hydroelectric Project (Loan)

Samoa
- The Project for Rural Electrification in Western Samoa (Grant)
- Power Sector Expansion Project (Loan)

Solomon Islands
- The Project for the Improvement of the Honiara Power Supply (Grant)
- The Project for Lunga Power Generation Development (Grant)

Vanuatu
- The Project for Sarakata River Hydroelectric Power Development (Grant)

Tonga
- The Project for Introduction of Clean Energy by Solar Electricity Generation System (Grant)

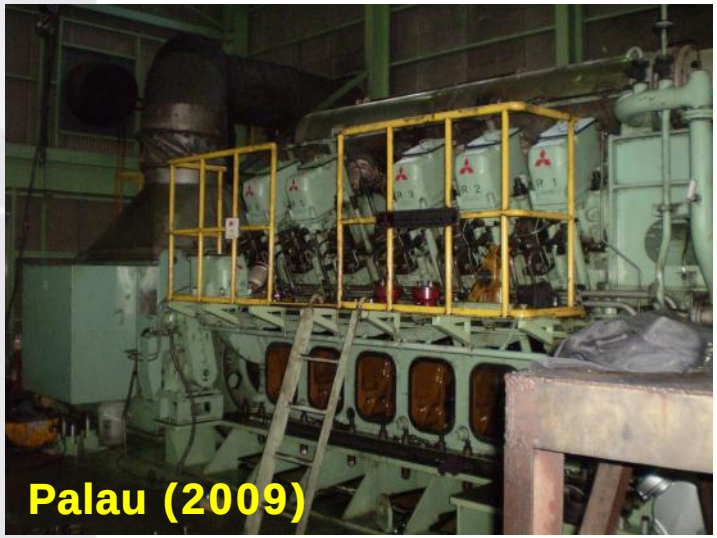
JICA's Cooperation in Okinawa

- Capacity Development of Renewal Energy

General issues and challenges in Pacific region

- Mostly depend on imported fossil fuel (No indigenous petroleum resources)
- Vulnerable energy security (limited storage, long supply chain with high transportation cost)
- Environmental damage, habitat loss and pollution caused through conventional energy supply
- Limited human and institutional capacity especially in rural communities

Challenges for Operation & Maintenance of Power System



Lack of human resources and spare parts, especially in remote islands

Capacity building (both individual and institutional level) is the key to success!

Solar Home System in Tonga

Deteriorated PV module

Something wrong?

Batteries out of use

Challenges Found Through Past Cooperation

1. Combination of both Hard and Soft Component
   - Improvement of Diesel or Hydro Power Plant (Facilities)
   - Human Resource Development of Energy Sector (Capacity Dev.)

2. Support for the promotion of photovoltaic power energy
   JICA－The Project for Introduction of Clean Energy by Solar Electricity Generation System in Palau, FSM, Marshall Islands and Tonga

As power system (network) is small in Pacific region, introduction of renewable energy should be examined in detail through soft component to avoid negative impact on the system.

Challenges Found Through Past Cooperation (Cont'd)

In order to meet the growing demand, many power stations and distribution system have been installed under Japan's Grant Aid.

Unfortunately, some diesel engine generators stopped running due to lack of appropriate O&M works.

Solomon (2011)

Challenges Found Through Past Cooperation (Cont'd)

After implementation of the project, following measures shall be taken for the appropriate operation & maintenance of diesel engine generators;

(1) Secure enough budget for the replacement of spare parts.
(2) Plan and implement periodical overhaul works.
(3) Plan for the future reinforcement of diesel engine generators in consideration of the demand growth to allow for the shutdown of each unit for the above overhaul works.

Overhaul Works in Progress

Possible Cooperation in the Future

It is expected to shift gradually from conventional power supply to renewable energy + energy efficiency & conservation.

- Technical assistance to introduce more renewable energy into existing power system
  - (1) Regulations, institutional arrangements
  - (2) Maximum capacity for grid-interconnection
- Technical assistance for Supply Side Management (SSM) through optimum operation management of
  - (1) Power Plant
  - (2) Distribution System

Reduced dependency on imported fossil fuel (ultimate goal)

Thank you very much
for your kind attention!