

International Seminar on Energy Security in the Pacific Island Countries

JICA 's Cooperation for Energy Sector in Pacific Island Counties

## "Hybrid Islands Initiative – Smart Energy Integration for Resilient Islands"

June 18, 2015

### MATSUNAGA, AKIRA

Energy and Mining Group Industrial Development and Public Policy Department Japan International Cooperation Agency (JICA)

Japan International Cooperation Agency



### AGENDA

1. JICA's Recent Cooperation

2. JICA's View on the Current Challenges

3. JICA's New Program:

"Hybrid Islands Initiative - Smart Energy Integration for Resilient Islands - "

# **1. JICA's Recent Cooperation**

- Work together in various cooperation program including T/A and grants
- Utilize knowledge/experiences from island regions such as Okinawa (\*)



#### All

- Training for Fuel-Reduced Operation of Diesel Power Plants (-2014) (\*)
- Training for Promotion of Renewable Energy in Micro Grid (2014-) (\*)

- Study on the Dissemination and Feasibility of Grid-
- Master Plan Survey for the Effective and Efficient
- Solar Home System (LED included) (2012)
- Grant Project for Introduction of Micro-Grid System with Renewable Energy (2015) (\*)
- **Dissemination Program of Typhoon-Resistant Wind** Power Turbines (2014-15) (\*)



### Training for Fuel-Reduced Operation of Diesel Power Plants(\*)

- Review the mechancs of a diesel generator
- Understand theory and methodology of economic operation
- Conduct the economic load distribution among multiple diesel generators
- Formulate an action plan for dissemination

### Training for Promotion of Renewable Energy in Micro Grid(\*)

- Share history and current situation of PV development in Japan
- Understand how to identify necessary conditions to promote PV penetration
- Formulate a preliminary plan of hybrid power generation system (renewable energy connecting with diesel) in each country







### JICA's Cooperation (Ex. 2) : Master Plan for Formulation of Self-Sufficient Energy Supply System in MARSHALL(\*)

- Enhance the capacity to establish sustainable and self-sufficient energy supply system through:
  - 1) Assessing the institutional arrangement to promote RE
  - 2) Evaluating the allowable capacity of grid-connected RE
  - 3) Planning and designing DEG-PV hybrid grid system
  - 4) Conducting Economical operation of DEG





# JICA's Cooperation (Ex. 3) : Micro-grid System with Renewable Energy in TONGA

- Ensure the stable electricity supply, integrating various energy resources with microgrid system consisting of:
  - 1) Renewable energy (solar PV: 1MW),
  - 2) <u>Grid-stabilizer</u> (lithium-ion capacitors: 500kW), etc.

OFFICIAL OPENING of THE MATA 'O E LA' A SOLAR FACILITY WITH STABILIZING CAPACITOR AND MICRO-GRID CONTROL SYSTEM by HIS MAJESTY KING TUPOU VI on 29<sup>th</sup> MAY 2015 at VAINI, TONGATAPU



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### 2. JICA's View on the Current Challenges



>>> <u>Hybrid System for Fossil Fuel Reduction and Energy Security</u>

## **ji** 3. JICA's New Program: "Hybrid Islands Initiative"



# 3. JICA's New Program: "Hybrid Islands Initiative"



<sup>5</sup> <u>JICA's "Allowable Capacity"</u>: Maximum capacity of RE which can be connected to grid without serious damage on the stability of power and the generator, with neither stabilizer or new/upgraded generator provided.

### [Assessment Method for Candidate Assistance]



# 3. JICA's New Program: "Hybrid Islands Initiative"



( consultation on-going with GOJ, Pacific Island countries, etc. )



## THANK YOU.

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