

# Relevant Works with Food Security in the Energy Working Group (EWG)

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# APEC Energy Working Group (EWG)

Launched in 1990, the EWG helps further APEC goals to facilitate energy-related-trade and investment and seeks to maximize the energy sector's contribution to the region's economic and social well-being, while mitigating the environmental effects of energy supply and use.

The EWG meets formally twice a year to discuss developments and progress on energy policy issues.



# EWG and sub-fora

- Expert Group on Clean Fossil Energy (EGCFE)
- Expert Group on Energy Efficiency & Conservation (EGEE&C)
- Expert Group on Energy Data & Analysis (EGEDA)
- Expert Group on New & Renewable Energy Technologies (EGNRET)
  - Biofuels Task Force (BTF) (2005-2011)
  - Energy Trade and Investment Task Force (ETITF) (2009-2013)
  - Low-Carbon Model Town Task Force (LCMT TF) (2010- )
  - Energy Resiliency Task Force (ERTF) (2015- )
- Supported by two research bodies
  - Asia Pacific Energy Research Centre (APEREC) (1996- )
  - Asia Pacific Sustainable Energy Centre (APSEC) (2015- )

# Key Policy Goals and Initiatives/Activities

- Energy Intensity Reduction 45 % by 2035
- Renewable Energy Doubling by 2030
- Reform of Inefficient Fossil Fuel Subsidy
  
- Energy Security Initiative
- Energy Smart Communities Initiative
  - Low Carbon Model Town
  - Knowledge Sharing Platform
- Energy Resilience and Modernisation of Infrastructure
- Peer Reviews on RE, EE, IFFS

## Energy in New and Renewable Questionnaire

### BIO MASS ENERGY

Fuel Wood & Wood Waste  
Bagasse  
Charcoal  
Other Biomass  
Biogas  
Industrial Waste  
Municipal Solid Waste  
Liquid Biofuels  
    Biogasoline  
    Bioethanol  
    Bio-jet  
    Biodiesels

Hydro  
Geothermal  
    Electricity  
    Heat  
Solar  
    Photovoltaic  
    Thermal  
    Electricity  
    Heat  
Tide, Wave and Ocean  
Wind

Often the use of traditional biomass leads to high pollution levels, forest degradation, deforestation, and food security concern.

# Relevant Activities

- Bioethanol and biodiesel compete with food usage
- Traditional use of biomass for cooking is low efficiency
- Burden of collecting firewood → Gender issue
- Biomass and biofuels need water → water-energy nexus
- Best practices for developing the green energy smart farm in the APEC region
- APEC low carbon model town solar photovoltaic agricultural development mode study
- Water-energy nexus: coal-based power generation and conversion – saving water



**APEC PERU**  
———— 2016

## **APEC Peru 2016**

### **Quality Growth and Human Development**

**Best Practices for Developing the Green Energy Smart Farm  
in the APEC Region (EWG 23 2015A)**

Priority work plan on **Development of rural communities (RD)** for  
**Enhancing the Regional Food Market**

**“Support for the realization of the initiative on best practices for  
developing the Green Energy Smart Farm in the APEC Region, led  
by Chinese Taipei.”**

# Background

- Most farms in APEC's developing economies are located in the remote rural areas, and are difficult to connect the centralized power grid for access to the modern and clean energy.
- These farmers and their family rely on **burning traditional biomass fuels directly** for cooking, heating, studying, etc. breathing in toxic smoke.
- Only **introducing the modern and clean energy** can relieve them from the time-consuming drudgery to improve their living conditions.



# Objectives

1. Assess and demonstrate the small-scale distributed renewable energy in the farms including solar PV and advanced biomass energy derived from the agricultural waste for the APEC region
2. Introduce the PV-ESCO (energy service company) model, a financial mechanism to provide the economic benefits to farmers directly in the APEC regions
3. Help APEC's developing economies to build up the green energy smart farms with access to the renewable energy.
4. Assist the farmers and their family in reducing the poverty.

# Outcome

**Workshop**

**Project  
Report**

**Guidebook**

**Demonstration  
Site**

## Outcome

### Demonstration Site

A small demonstration site (test base) is established in an experimental farm at National Chung Hsing University in Chinese Taipei to conduct project experiments and show the best practice model for developing the green energy smart farm in the APEC region.



**Experimental Animal Farm, National Chung Hsing University, Chinese Taipei**

# Outcome

## Workshop

Two workshops of the best practice and experience exchange are conducted alongside a demonstration site visit to focus on the preliminary findings in light of the desired outcomes.

It offers an opportunity to assess the validity of the preliminary findings, and provide the check, peer reviews and consultations, and also receive the feedback for further revised actions.

**1<sup>st</sup> Workshop**  
**Apr 12-13, 2016**  
**Taichung**  
**Chinese Taipei**

**2<sup>nd</sup> Workshop**  
**Oct 12-13, 2016**  
**Jakarta**  
**Indonesia**



Speakers of 1st Workshop

# Outcome

## Workshop

### 2nd Workshop on Developing the Green Energy Smart Farm in the APEC Region

BPPT, Jakarta, Indonesia

12 -13 October, 2016

#### **Oct 12 - SESSION I: Policy Instruments and Measurements**

1. The Legal Issues on Development of Green Energy Smart Farm
2. Economic Issues for Developing Green Energy Smart Farm
3. Introducing PV-ESCO Mechanism to Green Energy Smart Farm
4. Social Enterprise and Green Energy Smart Farm

#### **Oct 12 - SESSION II: Technologies and Case Study**

5. Smart DC Power Opportunity for Community and Farm in Thailand
6. Distributed Biomass Gasification Power System in Indonesia
7. Applying Biogas Technology for Green Energy Smart Farm
8. Microturbine Generators for Agricultural Usage

#### **Oct 13 - SESSION III: Site Visit**

# Outcome

## Guidebook

A Guidebook will be published to provide all useful information and knowledge about building a green energy smart farm including

- **the type and definition of renewable energy,**
- **constructing a small-scale standalone distributed renewable energy system,**
- **ESCO financial mechanism,**
- **APEC economies' legislative,**
- **policy framework, and**
- **incentives of renewable energy, etc.**

This Guidebook will be uploaded to the APEC EGNRET's website, and also be delivered to the farmers who request support to build up a green energy smart farm.

# Outcome

## Project Report

The final project report will be produced highlighting the recommendations with suggested roadmap to develop the green energy smart farm with the small-scale standalone distributed renewable energy system, and the ESCO financial mechanism in the APEC region.

The main contents of this report will include introduction to standalone distributed renewable energy system and installation, APEC legislative and policy framework, ESCO financial mechanism, research and technical development (RTD), challenges and barriers, deployment roadmap, recommendations, etc.

## 10 kW Small-scale Mobile Downdraft Gasification System for Agricultural Waste



**12 kg cow manure = 1 kWh**



Pellet (OD=12 mm)

**Cow manure**



