On the path to carbon neutrality by mid-century: Sharing Korea’s Experience

Small-Medium Sized Agricultural Development through Solar System

June 15, 2023
# Table of Content

1. Introduction : Philippine Agriculture

2. Problem Statement : Global Crisis

3. Korea-Philippine ODA Program (CSO)

4. Suggested Solution and Application
   - Background
   - small, medium-sized solar system
   - Benefits
Agriculture in the Philippines

A large portion of Filipinos living in the Philippines work in the agricultural sector. This includes Farming, Fisheries, Livestock, and Forestry. The environmental value and food security of these activities are crucial for the country's economy and sustainability.

Filipino workforce: 24%
Total GDP(22’): 8.9%
Major Crops in the Philippines

- **Rice**: 8th largest rice producer in the world
- **Corn (Maize)**: Around 600,000 farm households depend on corn as a major livelihood
- **Coconut**: A second largest producer in the world
- **Banana**: A second largest exporter in the world
The El Niño phenomenon will affect the country’s rice production as many farmlands start to dry out with the extreme drought.

Problem Statement

The convergence of all the global challenges like increasing petroleum prices, distortion of the global supply chain, increase in shipping costs, an increase of the price of agricultural inputs like gasoline, fertilizers, feeds, and now the Ukraine crisis will definitely lead to global food price spike leading to higher food inflation.
Water management and Irrigation

- In the Philippines, Republic Act 3601 entitled “An Act Creating the National Irrigation Administration” was signed into law (1963)

65.28% out of 3.128 M hectares (DA,2021)

- Low percentage of Newly Constructed System
- Not enough budget for maintenance and operation
- Dependency on Foreign-assistance
Korea ODA Strategy in the Philippines (KOICA CP, 2022)

- Multi-sectoral convergence to strengthen urban resilience
- Health promotion through a life cycle approach
- Establishing a transparent, accountable and inclusive governance

Inclusive and sustainable rural development
- Strengthen productivity & value Chain of agriculture, stock breeding, fishery
- Support Rural community

Budget: 1st place 53.2 USD (38%)
From the Community
Our duty is to respond from the community’s needs.

With the Community
Our belief is to act together with the community.

For the Community
Our promise is to work for the community.
Agriculture Value Chain

01. Supporting sustainable agricultural activities

02. Adding value by milling and processing

03. Opening online and offline sales channels through cold chain

Value Social Impact

01. Creation of environment value through eco-friendly agriculture

02. Empowering young social entrepreneurs and creating jobs

03. Providing social services and profit returns to the community
A solar-powered irrigation system is a sustainable and cost-effective solution to irrigating crops, particularly in areas where access to electricity is limited or unreliable. The system uses solar panels to convert sunlight into electricity, which powers the irrigation pumps and other equipment needed to water crops.
Background

Potential power generating capacity

4.5-5.5 kWh per square meter per day
Application

The Solar Powered Irrigation System (SPIS) of Central Luzon Integrated Agricultural Research Center (CLIARC) for Low Land Development was located in Rice Production and experimental area of the Station.

Solar Powered Irrigation System

SPIS runs on solar energy so that bringing water to farmlands will be much more affordable than the traditional diesel and gasoline-powered engine pumps.

Irrigate 32 hectares of agricultural lands that will primarily benefit 34 agrarian reform beneficiary households and neighboring farmers. (cavite)
In 7,200 hours or 25 years the 120 Horsepower four-cylinder Diesel engine water pump can consume 31,937,500 litters of diesel on daily use bases or 50li of diesel for 24hrs in 25yrs with an average price of diesel today of P70.00/litter.

5million pesos project will have an estimated life span of twenty-five (25) years, and it covered almost nine (9) hectares of land station production.

Application

- Fifty Six (56) Solar Panels
- Ten foot high tank
- More or less seventy (70kt) kilowatts of energy per day
- Twenty seven (27m³) cubic meter or twenty thousand litters of water capacity
- Fifteen Thousand watts(1500 W) of Submersible pump
- Up to twenty five (25) years
Benefits

Solar power, as it has zero emissions, can help displace some coal-based and oil-based generation, thus helping mitigate the impact of climate change.

Rural electrification as it provides a reliable energy source in remote areas helps reduce energy costs for irrigation and enables low-emission agriculture.
Challenges & Potentials

**Severe Climate Change**
- Drought
- Typhoon
- Changing ecosystem

**Data Collection System**
- Tracking System
- Management and support

**Community Engagement**
- Maintenance
- Community level operation

**Collaborative Governance**
- Encourage more investment and expand the practice
On the path to carbon neutrality by mid-century: Sharing Korea’s Experience

Small-Medium Sized Agricultural Development through Solar System

THANK YOU.