ENERGY IN THE AGRICULTURAL VALUE CHAIN

Inputs
- Seed
- Fertilizer
- Pesticide
- Herbicide
- Farm equipment
- Energy
- Water/Irrigation
- Labor
- Crop protection
- Fodder

Production
- Growers
- Cooperative
- Truck
- Bicycle
- Train
- Boat
- Animal
- On foot

Local Transport/Collection
- Grain
- Elevators
- Cooling
- Brokers & Traders

Storage Handling/Trading
- Primary Processing (drying, grinding, milling, etc)
- Food & feed ingredients

Processing
- Ocean
- Container ship
- Barge
- Rail
- Truck

Transportation/Logistics
- Retail
- Consumer
- Food Services

Marketing/Distribution
- Food
- Feed
- Biofuels
- Industrials

End User

Types of Prod’n:
- Horticulture
- Livestock
- Aquaculture
- Dairy/meat

Pre or post processing storage
ENERGY AND FOOD PRICE

Food Price & Crude Oil Price Index from January 2006 to March 2014

- Food Price Index
- Energy Price Index

Time (Months)
FtF’s Energy Challenge

The chart shows the percentage of the population with access to electricity in various countries. The countries are listed along the x-axis, and the y-axis represents the percentage of the population with access to electricity. The bars are divided into two sections: blue for national access and black for rural access.

- Liberia: Low national access, minimal rural access.
- Rwanda: Higher national access, slight increase in rural access.
- Malawi: Moderate national access, moderate rural access.
- Uganda: Moderate national access, moderate rural access.
- Mozambique: Low national access, minimal rural access.
- Ethiopia: Moderate national access, moderate rural access.
- Tanzania: Moderate national access, moderate rural access.
- Mali: Low national access, minimal rural access.
- Kenya: Higher national access, slight increase in rural access.
- Zambia: Lower national access, minimal rural access.
- Cambodia: Moderate national access, moderate rural access.
- Bangladesh: High national access, significant rural access.

The chart illustrates the varying levels of access to electricity across these countries, with Bangladesh having the highest percentage of both national and rural access.
Millions of farmers and agribusinesses in developing countries lack access to the clean energy services necessary for increasing agricultural productivity.
Currently, just 4 percent of African cropland is irrigated.

India could save $10 billion per year if it had sufficient refrigeration/cold storage for crops.

In sub-Saharan Africa only 50% of the food that is grown makes it to the table.

Electrifying the unserved is a $700 billion market.
POWERING AG HELPS SOCIAL ENTERPRISES OVERCOME MARKET BARRIERS

Access to capital
Scattered, rural & poor customers
Market Awareness
Ineffective business models
Ineffective clean technology
Innovative & Appropriate Technology
Irrigation, Cold Storage,
Post-harvest Processing,
Decentralized Power

Impact
Increased Ag. Productivity & Value,
Sustainable Economic Development,
New markets for renewable energy & efficient tech,
Viable rural utilities,
CO$_2$ mitigation
POWERING AG IS FOUR MUTUALLY REINFORCING PROGRAM COMPONENTS

Early Stage Innovation
- Global Innovation Calls
- Country Specific Calls
- Innovation Prizes

Financing
- Global Financing Facility

Mainstreaming and Acceleration
- Public Private Partnerships
- Market Development

Knowledge Management
- Results-Based Monitoring
- Evaluations / Research / Analysis
- Online Knowledge Sharing Platform

Knowledge Management
- Online Knowledge Sharing Platform
## Powering Agriculture Energy Grand Challenge

### Portfolio Position Year 1

<table>
<thead>
<tr>
<th>Stage</th>
<th>Early R&amp;D</th>
<th>Advanced R&amp;D</th>
<th>Proven Technology</th>
<th>Pre-Field Test</th>
<th>Field Test</th>
<th>Pilot</th>
<th>Pre-Commercialization</th>
<th>Commercialization</th>
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<td><strong>Grants/ Self Finance</strong></td>
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## Powering Agriculture Energy Grand Challenge

### Expected Portfolio Position Year 3

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<th>Stage</th>
<th>Early R&amp;D</th>
<th>Advanced R&amp;D</th>
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Mainstreaming and Acceleration: Accelerated commercialization of PV water pumps in Nepal (AC PVWP)

**USAID/FTF: KISAN project**
Provides value chain support to farmers from improved seeds, fertilizers, trainings to marketing of products; coordination with AC PVWP for PV irrigation

**GON: AEPC**
Coordination with AC PVWP in promoting PV pumps, quality assurance, achieving NRREP productive use targets, analyzing subsidy requirements

**FARMERS** interested to expand high value crop farming with year round irrigation

**AC PVWP Support**
- Awareness creation, product demonstration, marketing of products with LFIs and suppliers,
- Inform about the PVWP market and develop financing terms
- Promote partnerships with Intl supplier for local supply and installation
- Provide information on irrigation requirements to select pump sizes for promotion; discuss sales terms

**Local Financial Institutions (LFI)**
- Pay the supplier

**Local PVWP supplier/installer**
- Import PVWP per order

**International PVWP manufacturer/supplier**
- Farmer: Place order to purchase PVWP
- Supplier: Install/commission the PVWP; provide aftersales service
- Provide financing to farmers for PVWP purchase; Collect periodic payments from farmers
Mainstreaming and Acceleration: Pakistan Commercial Biogas Project (PCBP)

Pakistan NESTLE
Provides farmers with payment premium for biogas chilled milk

DAIRY FARMS interested to supply milk chilled with biogas electricity

Chilled milk to Nestle

Payment for chilled milk

PCBP Support

Build capacity to finance biogas plants

Build capacity to provide high quality design, construction and support services for biogas electricity plants;

Awareness creation, product demonstration, support pre-feasibility study, quality control

Tameer Bank and other Financial Institutions

financing to farms for biogas

chilling + biogas incentives

Biogas Construction Companies (BCC)

Pay the BCC

Payment for chilling milk

Pay the BCC
• Multiple technologies exist that are cost competitive, financing/business models challenging
• Complex systems required to achieve scale
• Original innovators often not the ones that bring technology to scale
• Cross sectoral/nexus challenges abound
Powering Ag Opportunities

• Round 2 Global Innovation Call: October 2014
• Public-Private Partnership Call: October 2014

www.poweringag.org

Jeffrey Haeni
jhaeni@usaid.gov