Productive Use of Electricity

Patrina Eiffert, PhD, Senior Director
NRECA International

NRECA
A Touchstone Energy® Cooperative

Over 55 years
Rural Electrification Experts

NRECA President Clyde Ellis (center-left) signs the first electrification contract with USAID as President Kennedy (seated right) looks on. (Photo courtesy NRECA International)

Since 1962, NRECA International has developed and implemented electrification programs across the globe.

Over 55 years, we have provided over 126 million people access to electricity in over 44 countries

Afghanistan, Argentina, Bangladesh, Belize, Benin, Bolivia, Botswana, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Egypt, Ecuador, El Salvador, Ethiopia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Jamaica, Kenya, Liberia, Morocco, Myanmar, Nepal, Nigeria, Pakistan, Panama, Peru, Philippines, Sierra Leone, South Sudan, Sudan, Tajikistan, Tanzania, Uganda, United States, Yemen

NRECA
A Touchstone Energy® Cooperative

Universal Energy Access

United Nations Sustainable Development Goals

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

Under Power Africa we see tremendous public and private sector investments in power infrastructure

Generation, transmission, distribution,
Grid connections and home wiring

Productive Uses of Electricity

How to design a productive use of electricity program (PEP)

a) Stimulate demand for electricity

And . . .

b) Increase the economic welfare of the power consumer

Sustainable Agro-Business

In an agricultural-based economy, achieving significant economic impact through expansion of electrification is dependent on the consumers access to information and financial resources to purchase equipment that can be used to generate income.

PEP Impact Agri-Value Chains

INCREASE PRODUCTION	Increase production and harvest yields
REDUCE LOSSES	Reduce spoilage losses
INCREASE EFFICEINCY	Increase process efficiency
INCREASE VALUE	Add value to the raw commodity before selling
GROW MARKET SHARE	Access larger market at market rates

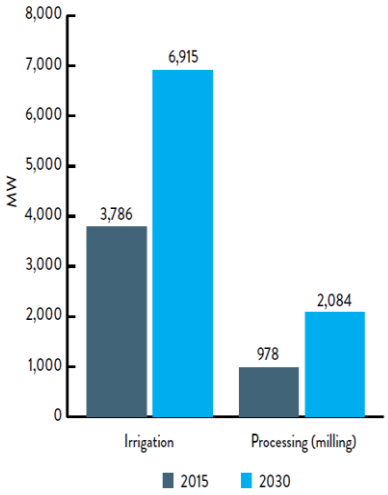
Agriculture Processes: Scale and Power Requirements

- Cleaning and Drying
- Milling
- Cold Storage
- Meat Processing
- Oil Extraction
- Thermal Treatment
- Canning, Bottling, Packaging
- Lighting,
- IOT for Trade and Marketing
- Water Pumping

NRECA International Ltd.

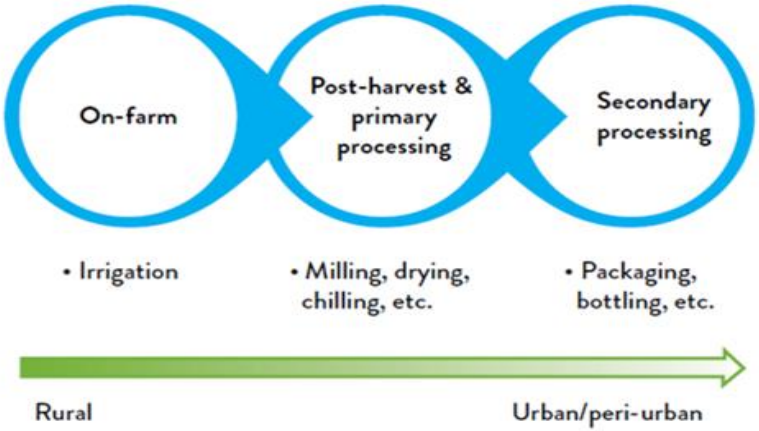
Agriculture Production and Processing

World Bank projection of the potential 3 GW increase in power demand in Sub-Saharan Africa from agriculture by 2030



Energy intensive activities across agriculture value chains varies by farming operations, processes and scale.

Agro-processing presents substantial opportunities for growth and will directly increase demand for electricity.



NRECA International Ltd.

Link Energy and Agriculture

- Tennessee Valley Authority Act of 1933 government mandate construction of transmission lines to reach and serve rural counties
- 1935 FDR New Deal; 1936 rural utilities services become embedded in USDA and integrated with agricultural extension program.
- Established farm electrification & appliance promotion program – purpose to increase energy sales within new electric cooperatives with low interest loans

Over 20 years….

In 1933, 90% of rural homes in the US had no access to electricity

By 1953, 90% US farms and families had electricity in their homes

Farmer's milked cows by hand
in the dim light
of kerosene lanterns

Farmer's wives used wood stoves,
lanterns and washboards

Today, with over $40 billion per year electricity revenue, we are 42 million energy consumers, 70,000 employees and 900 member-owned, community businesses. We own and maintain 2.6 million miles, or 42%, of the nation's electric distribution lines

NRECA
A Touchstone Energy® Cooperative

Stimulate Power Demand

1930's REA sponsored traveling exhibitions to demonstrate the productive use of electric-powered farm equipment, machinery and household appliances as an electricity campaign to rural communities.

50 years Productive Electricity Programs

Since the 1968, NRECA has designed and implemented PEPs with the objective to stimulate increased sales of electricity for the purpose of increasing local economic benefits. Established PEP loan programs, training, technical assistance, coop store, demonstration and outreach marketing program.

Philippines 1968

Bangladesh 1978

Guatemala 1987

El Salvador 1987

Bolivia 1993

South Sudan 2005

Dominican Republic 2006

Haiti 2013

Liberia 2016

Uganda 2018

NRECA
A Touchstone Energy® Cooperative

Haiti

Pilot Project for Sustainable Electricity Distribution (PPSELD)

With USAID, NRECA established PPSELD to power Caracol Industrial Park (CIP)

10 MW micro-grid powering over 8,500 jobs and serving over 12,000 power consumers in 5 communities

Lessons Learned

Successful PEP depends on 5 key factors.

1) Affordable and reliable electricity
2) Electric powered equipment and spare parts
3) Affordable finance capital and terms
4) Coordination, promotional communication, marketing and educational training and technical assistance
5) Markets - local, national, regional and international - with sufficient demand for the product or service.

If these factors are present in a politically stable environment, electricity can provide the opportunity for rural poor to increase incomes and quality of lives.

To create a strategic partnership opportunities, please contact:

Patrina Eiffert, PhD, Senior Director
NRECA International
4301 Wilson Blvd
Arlington, VA 22203
Patrina.Eiffert@NRECA.Coop
+1 (703) 907-6024

The Power to Grow

NRECA
A Touchstone Energy® Cooperative

Rural Electrification Experts Seeking New Partnerships

Rural Electrification Technical Services

Big Data GIS Analysis for Electrification Planning
Owner's Engineer for the Design, Engineering, Construction to Commissioning
Infrastructure Investment Plans
Develop and construct project portfolios
Develop National Technical Standards
Training Programs

Support National Electrification Programs

Develop long-term national electrification plans

Expand rural electric coverage

Socio-economic Studies, ABT v WTP

Establish and Support Member-Owned Rural Utilities

Bangladesh, Haiti, Liberia, South Sudan, Philippines, Bolivia, D.R., Costa Rica, Uganda