



**GrEEn**  
Giving GrEEn for a sustainable future

**SNV**




**Join the**  
**GrEEn Webinar series**  
**No.1: Findings from the 2020 Renewable Energy Market Scan**  
📅 Thurs, 18 June 2020 ⌚ 11:00AM - 12:30PM GMT

📋 **Register here:** <https://bit.ly/greenrewebinar>

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**Find out more about the GrEEn project here:** <https://bit.ly/SNV-GrEEn>

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# Boosting Green Employment and Enterprise Opportunities in Ghana

Sustainable and climate resilient local economies,  
green jobs and development

Green and climate  
resilient local economic  
development

Improved employability  
and entrepreneurship  
capabilities

Local ecosystem that  
supports youth  
employment & MSMEs

**Result 1:** Local economies are stimulated and short-term job opportunities for **youth, women and returnees** are created through green and climate resilient investments



**Result 2:** Employability and entrepreneurship capabilities of **youth, women and returnees** are improved in sectors of economic opportunities, for the benefit of green and climate resilient local economies



**Result 3:** Increased access and usage of financial services, leveraging remittances, adapted to the needs of (i) **youth, women and returnees** benefiting from cash for work schemes and (ii) local communities and MSMEs



**Result 4:** SMEs, offering decent and sustainable jobs to **youth, women and returnees**, are incubated and/or accelerated and contribute to green and climate resilient local economies



Project duration: 11/2019 – 11/2023

Target regions: Ashanti & Western

Target sectors:



**GrEEn**  
Going GrEEn for a sustainable future

# Objectives of the webinar

- **Validate findings** of GrEEn's market scan
- **Introduce and receive feedback** on GrEEn's **planned interventions** in the Renewable Energy Sector

## Key points covered in the market scan:

- What are market opportunities within the two targeted regions?
- How is the renewable energy sector relevant to COVID-19's recovery phase?
- Who are the key stakeholders and players in the sector?
- How can interventions in the sector be coordinated?
- Which areas has GrEEn identified as high impact areas in terms of business growth and employment creation?

A young man with a friendly smile, wearing a blue short-sleeved button-down shirt with 'SNV' and a logo on the chest, holds a large, shallow terracotta bowl. He is standing in front of a brick kiln, with stacks of bricks visible in the background. Other people in blue shirts are blurred in the background.

## GrEn Market Scan RE & EE Sector



1. Global Outlook
2. Ghana's RE and EE Ecosystem
3. Market Outlook
4. Value Chains
5. Skills
6. Energy Efficiency
7. GrEEEn offer
8. Questions to discuss

# Global Outlook



# Renewable Energy(RE) and Energy Efficiency(EE)



RE and EE Measures and Technologies increases the energy mix and provides users with different sources of revenue. from both energy savings and other co-generation benefits. . Consumers and businesses have more money to spend



RE and EE technologies reduce the energy used while also making available energy for different demands



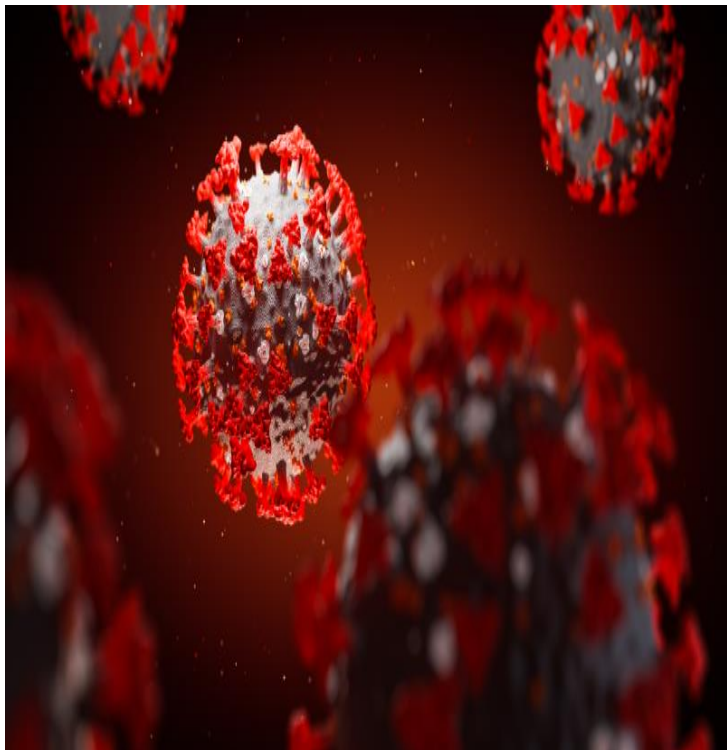
With the increasing boost in investment for RE and EE there is increasing opportunities for women to serve as energy managers and provide them with stable sustainable jobs



RE and EE reduces global GHG emissions thereby improving air quality, improving health and reducing premature death.



# COVID-19 “Building Back Better”



Ensuring energy access to health facilities and other places of sanitation for clean water for drinking and washing

Clean Cooking solutions for the most vulnerable and rural communities

Increasing resilience of local communities

Employment opportunities

Ensuring energy access for information spread and Communication

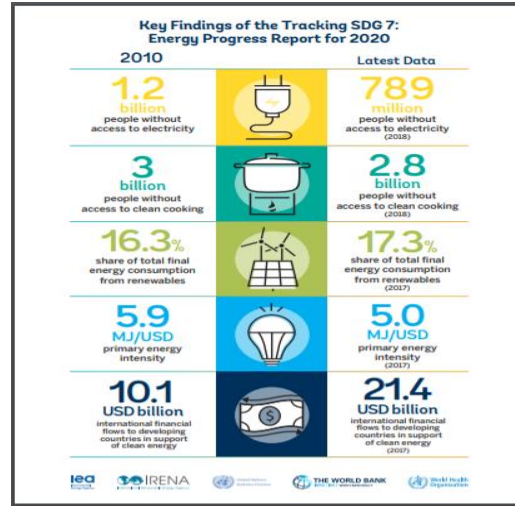
Climate Change Goals



# Global Alignment

The Paris Agreement seeks to keep global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

Renewable Energy and Energy Efficiency provide options for lowering GHG emissions while also satisfying global energy demand



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

## Sustainable Development

### Goals

- 1: No Poverty
- 2: Zero Hunger
- 3: Good Health and Well-being
- 4: Quality Education
- 5: Gender Equality
- 6: Clean Water and Sanitation
- 7: Affordable and Clean Energy
- 8: Decent Work and Economic Growth
- 9: Industry, Innovation and Infrastructure
- 10: Reduced Inequality
- 11: Sustainable Cities and Communities
- 12: Responsible Consumption and Production
- 13: Climate Action
- 14: Life Below Water



# Ghana RE and EE Ecosystem

# National Policies

## Renewable Energy Master Plan

### REMP

Investment framework for the development of Ghana's rich renewable resource providing long term projection

## Sustainable Energy for All

### SEforAll

Provision of Off-Grid Renewable Energy-Based Power Solutions for Remote Communities; Access to Modern Energy for Cooking; and Productive Use of Energy.

## Renewable Energy Act 832

### RE Act

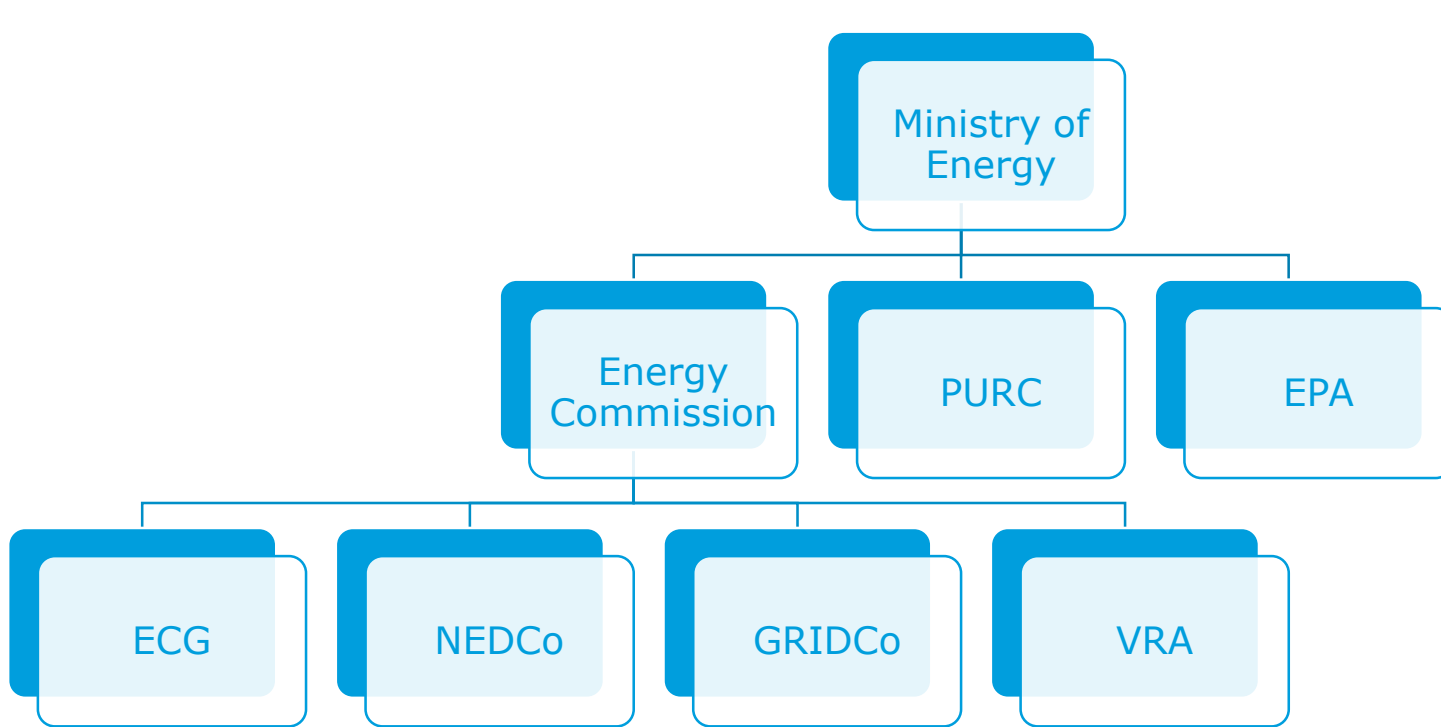
Provides an enabling regulatory environment to attract private sector involvement in the development, management and utilisation of renewable energy in an efficient and environmentally sustainable manner.

## Energy Sector Strategy and Development Plan

### ESSDP

Emphasises on 'increasing the renewable energy supply in national energy mix to 10% by 2020',

# Institutional Arrangement



**Standards**  
Ghana  
Standards  
Authority

**Investment**  
Ghana  
Investment  
Promotion  
Centre

**Taxes**  
Ghana Revenue  
Authority

# Development Partners



# Facilities Available

## Business Incubation



## Consultancies/NGO's



## Financiers



# Training Institutions



## Institutions

1. Ghana Technology University College – Greater Accra
2. DENG Solar Training Centre – Greater Accra
3. CSIR – IIR – Greater Accra
4. ISEES – Greater Accra
5. Suka Solar (Private) – Greater Accra
6. Centre for Renewable Energy Entrepreneurship and Innovation – Greater Accra
7. Koforidua Technical – Eastern Region
8. Kumasi Technical University University (Centre for Renewable Energy and Energy Efficiency) – Ashanti Region
9. Kwame Nkrumah University of Science Technology (Brew Hammond Energy Centre) – Ashanti Region
10. Technology Consultancy Centre – Ashanti Region
11. University of Energy and Natural Resources – Brong Ahafo Ahafo Region
12. Lady Volta Vocational Centre for Electricity and Solar Power – Volta Region



## Courses

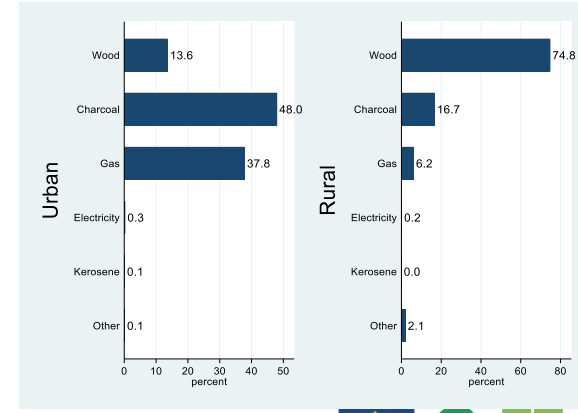
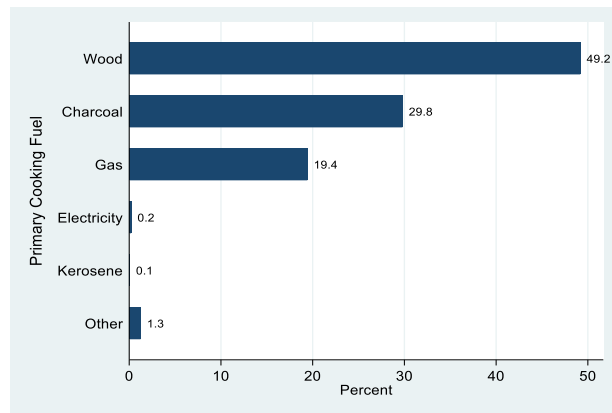
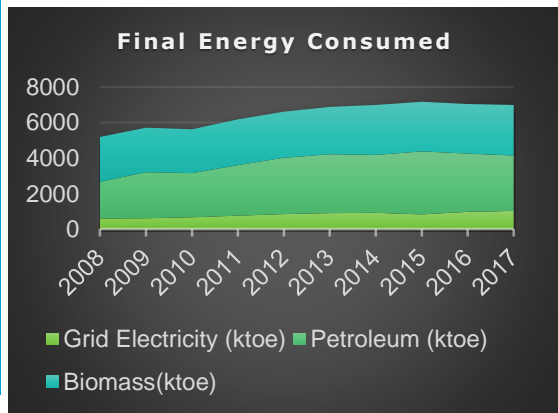
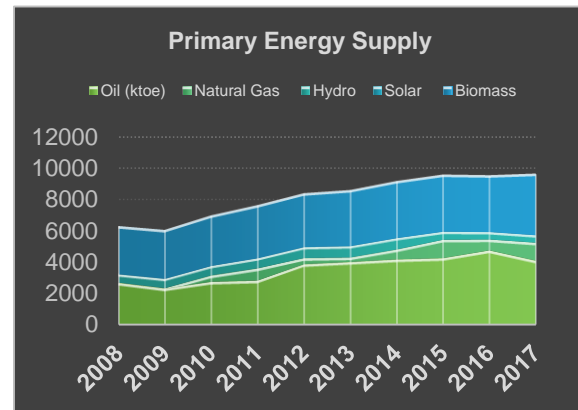
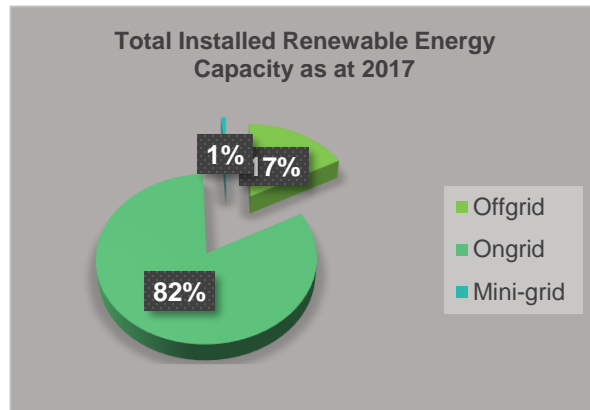
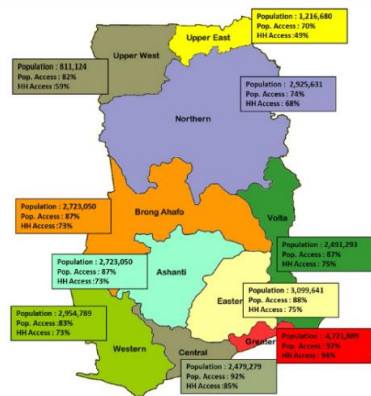
1. ECOWAS Certification of Sustainable Energy Skills (ECSES) with a scholarship scheme for women. Certificate level
2. Short courses on Renewable run by The Energy Centre mostly in May. Certificate level
3. Suka Solar did trainings for mostly women in renewable energy mainly focused on solar. Certificate level
4. KNUST has a graduate programme that awards a Masters in Renewable Energy Technology
5. GTUC has an undergraduate with Anhalt University of Applied Sciences, Germany that awards a Bachelor of Solar Engineering
6. University of Energy and Natural Resources (UENR), Kumasi Polytechnic and Koforidua Polytechnic, run degree and HND programmes in renewable energy technologies or allied disciplines. The Department of Energy Systems Engineering at Koforidua Polytechnic runs an HND and BTech in Renewable Energy Systems Engineering aimed at Competency-Based training approach to prepare engineers to design and implement energy systems for innovative applications





# Market Outlook

# Energy Demand and Supply



# Technologies

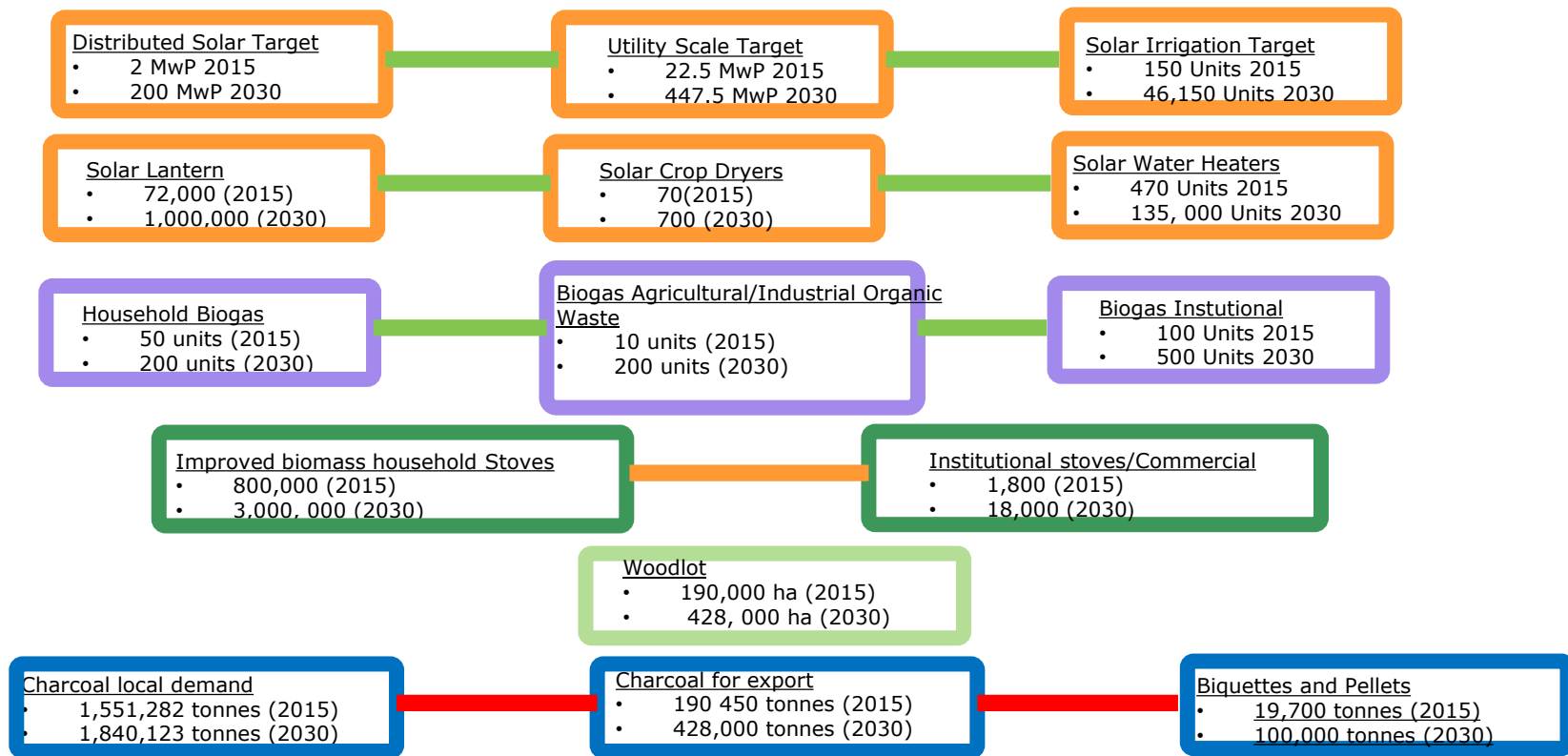


## RE and EE Technologies

Solar water heaters, solar dryers, solar powered irrigation systems, solar homes systems, solar lanterns, bio-digesters, improved cookstoves, timer switches, led lights, woodlot cultivation



# Government Targets

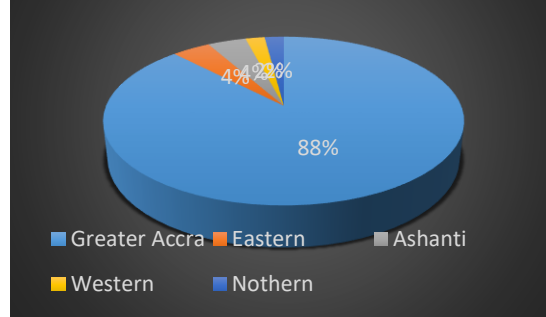


# Private Sector Spread

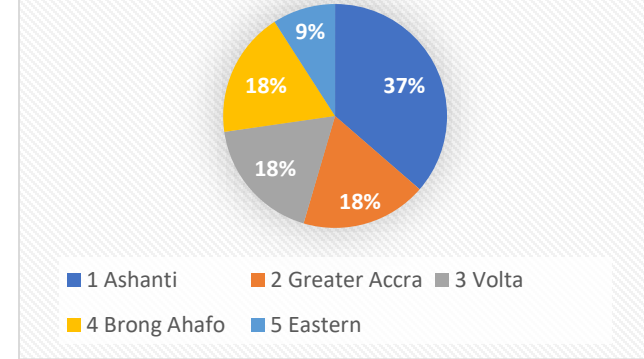
## Installation and Maintenance Holders 2020

No.	Region	Number
1	Greater Accra	43
2	Eastern	2
3	Ashanti	2
4	Western	1
5	Northern	1
	Total	49

## Installation and Maintenance Holders 2020

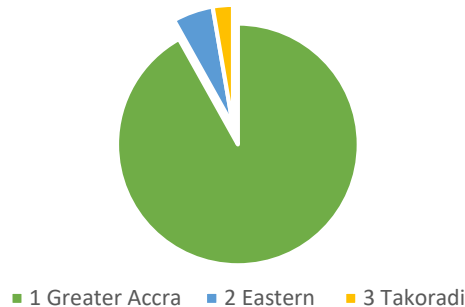


## Charcoal Exportation Companies



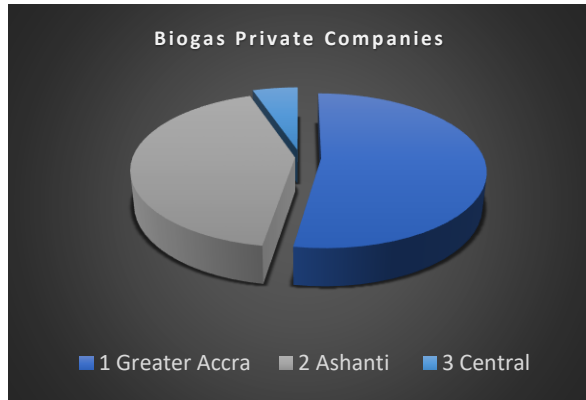
No.	Region	Companies with Importation License
1	Greater Accra	34
2	Eastern	2
3	Takoradi	1
	Total	37

## Companies with Importation License



No	Region	Charcoal Exportation Companies
1	Ashanti	4
2	Greater Accra	2
3	Volta	2
4	Brong Ahafo	2
5	Eastern	1
	Total	11

# Private Sector Spread

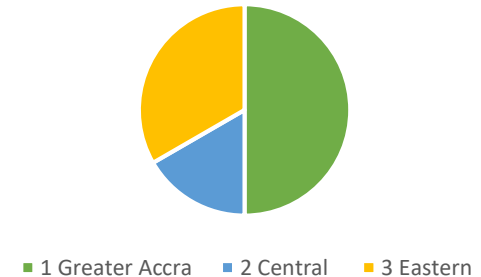


Source: Ghana Climate Innovation Centre,  
Ghana Biodigester Market Study

No.	Region	Biogas Private Companies
1	Greater Accra	10
2	Ashanti	8
3	Central	1
	Total	19

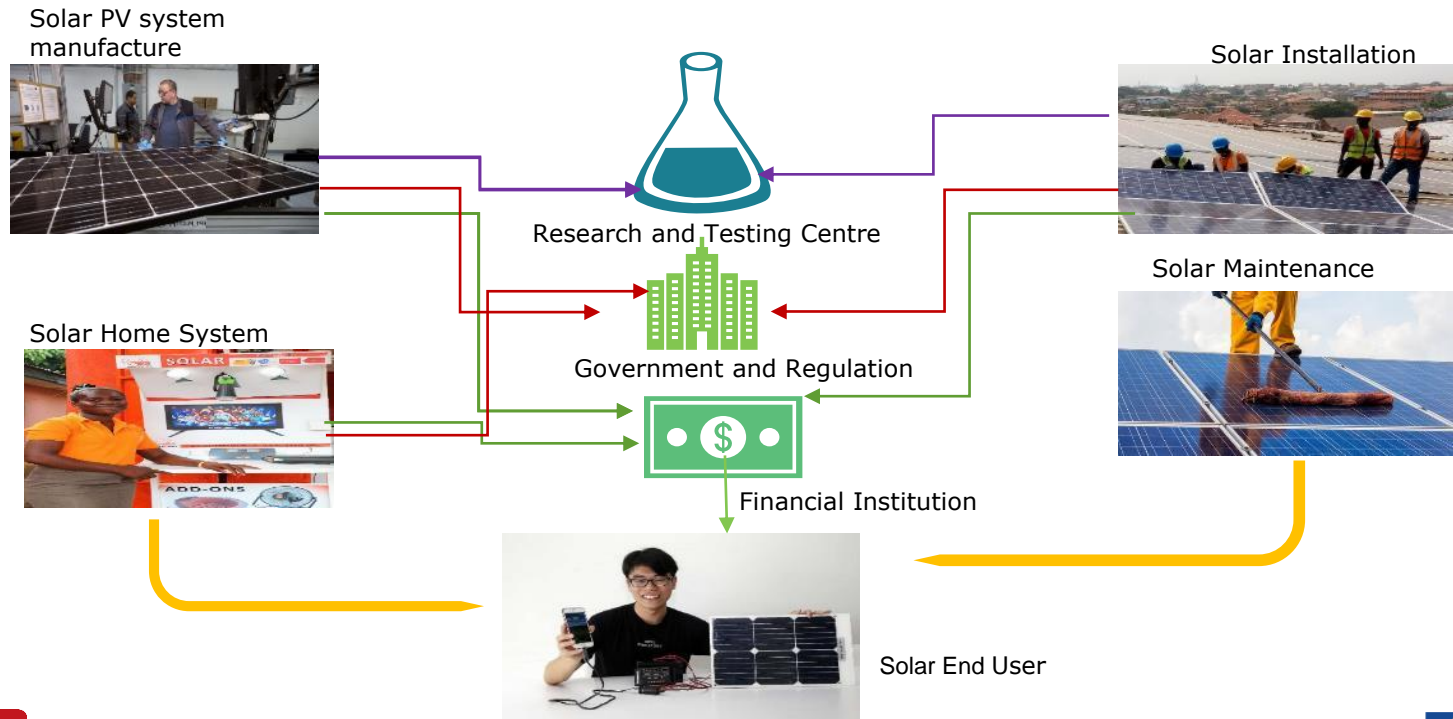
No.	Region	Companies in Briquetting
1	Greater Accra	3
2	Central	1
3	Eastern	2
	Total	6

Companies in Briquetting



Source: Energy Commission

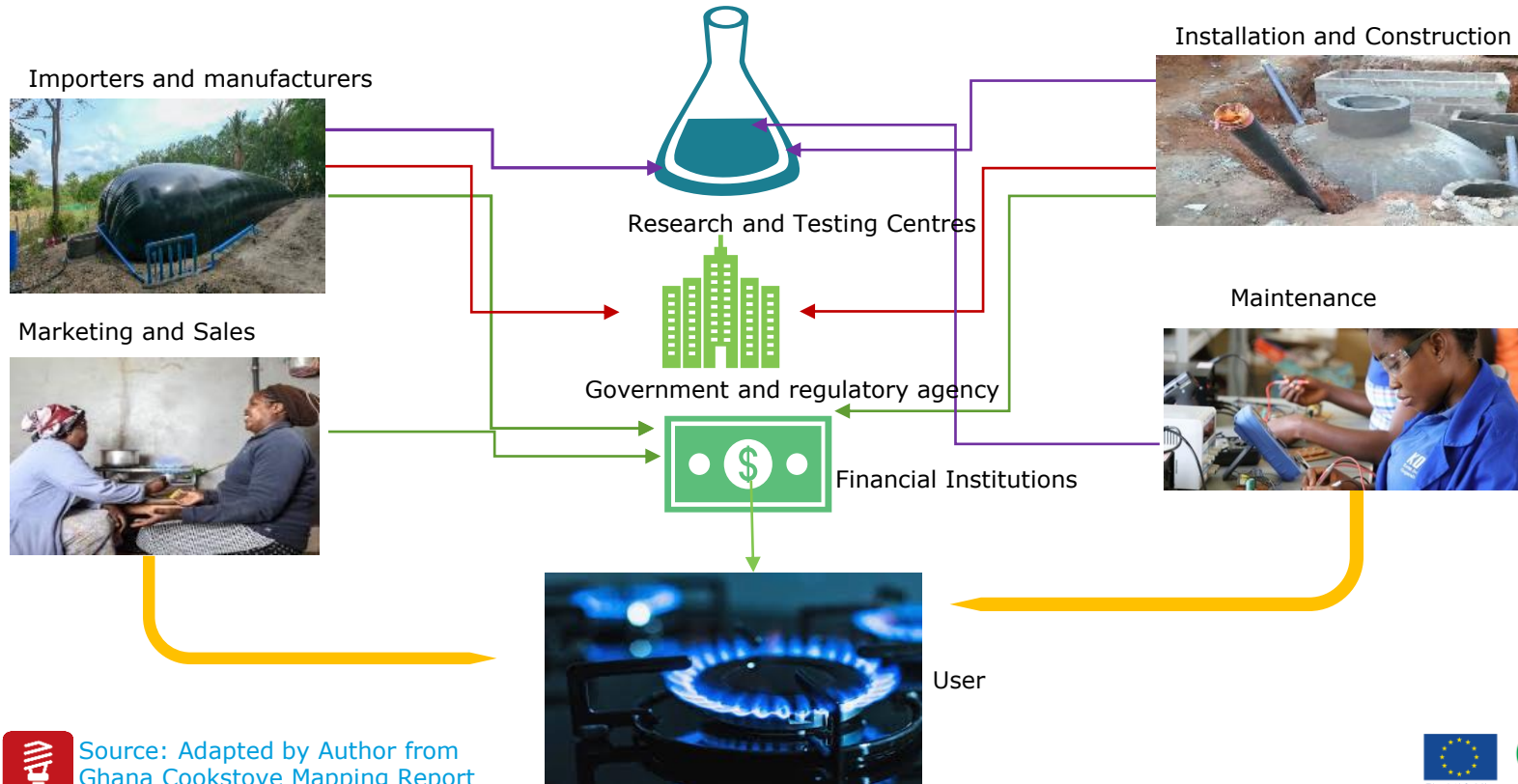
# Solar: Value Chain



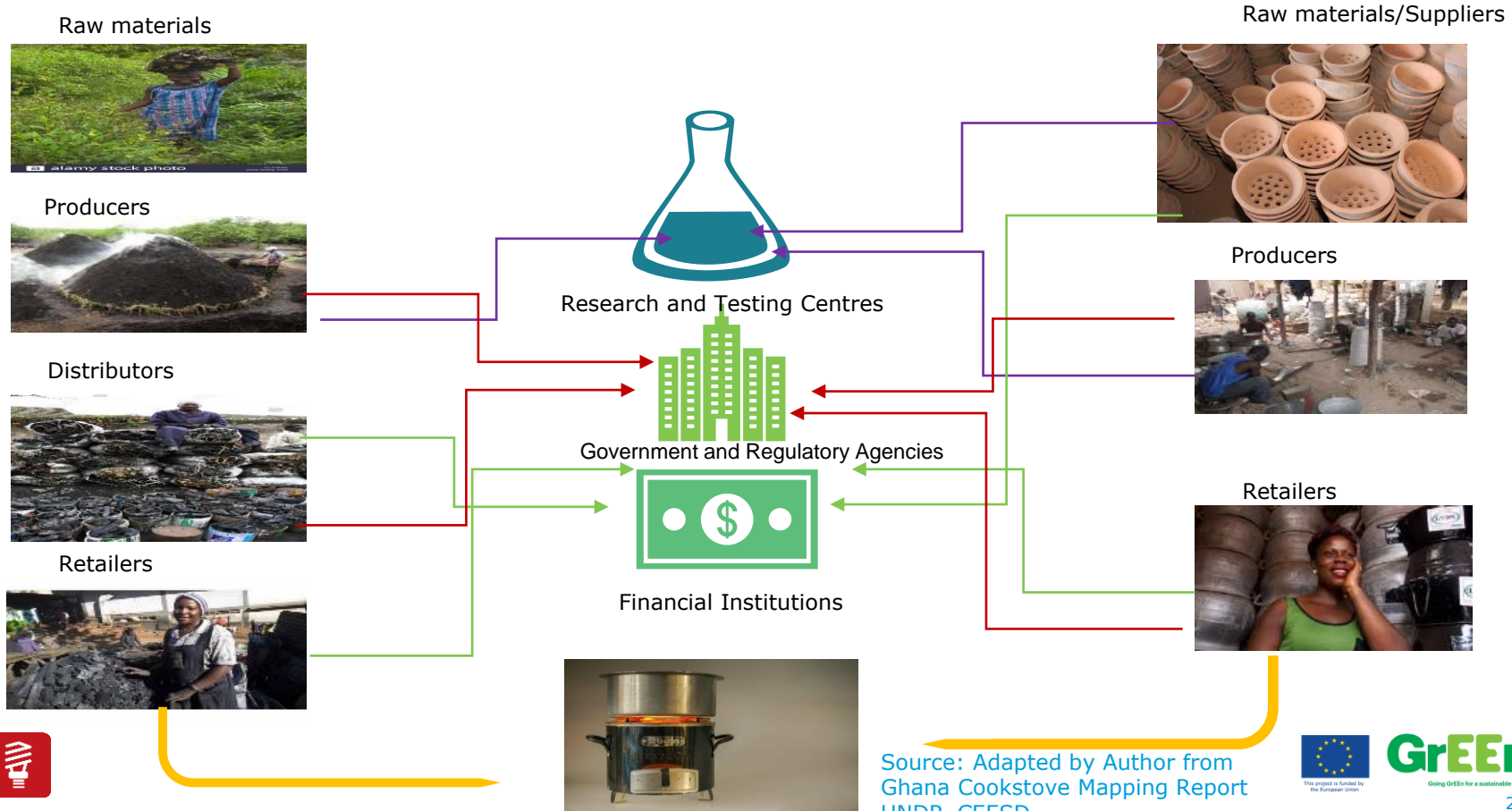
Source: Adapted by Author from Ghana Cookstove Mapping Report  
UNDP, CEESD



# Biogas: Value Chain



# Biomass: Value Chain



Source: Adapted by Author from  
Ghana Cookstove Mapping Report  
UNDP, CEESD

# Challenges



## Policy and Regulation

- ❖ Lack of enforcement codes and standards
- ❖ Unfavourable policies
- ❖ Intellectual property rights
- ❖ Land Acquisitions



## Economic and Financial

- ❖ High upfront costs
- ❖ Limited access to capital
- ❖ Currency fluctuations
- ❖ Lack of consumer financing options
- ❖ Unaccounted cost on conventional technologies
- ❖ High operations and maintenance cost



## Market

- ❖ Underdeveloped supply chain
- ❖ Failed past experience
- ❖ Unstable market situation
- ❖ Information asymmetry



## Technical

- ❖ Lack of skilled human capital in the areas of manufacturing, project development installation and maintenance
- ❖ There is difficulty in obtaining parts especially when installations are broken
- ❖ New technology too complicated
- ❖ Lack of infrastructure

# SKILL

GROWTH

ADVANCED  
TRAINING

KNOWLEDGE

LEARNING

COMPETENCE

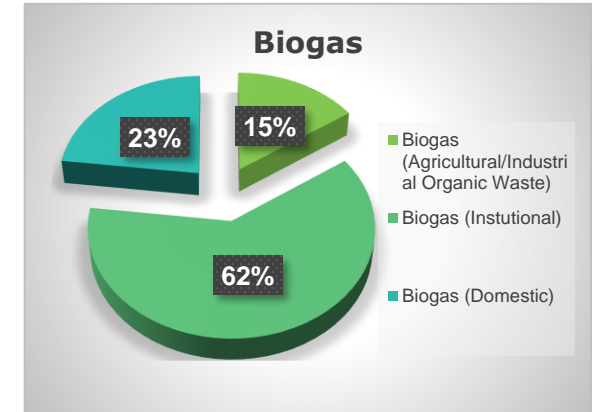
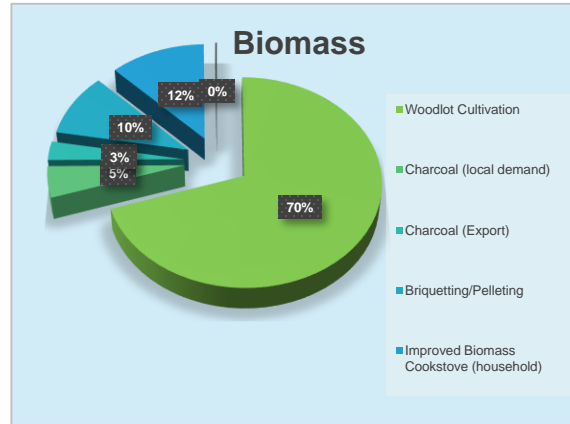
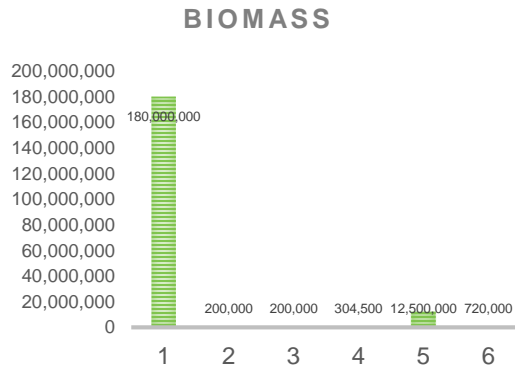
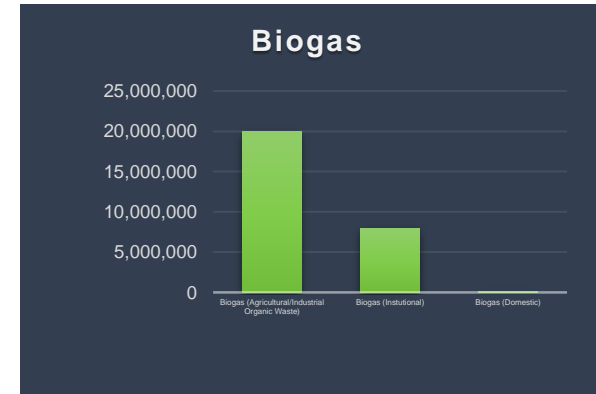
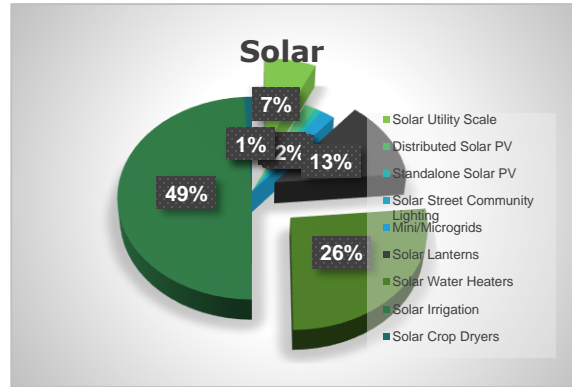
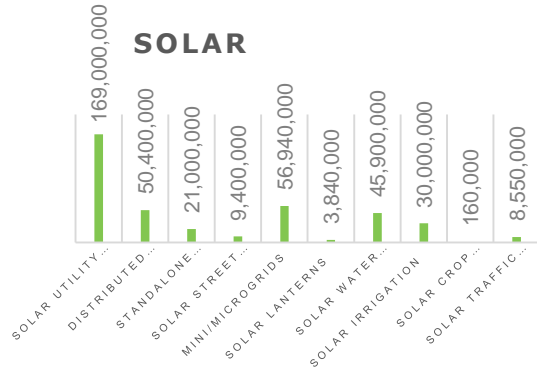
EXPERIENCE

TRAINING

ABILITY

## Jobs and Skills

# Investment and Jobs



# Skills Needs in the RE Sector

## Improved Cookstove

	Construction/Erection and Installation	Operation and Maintenance
High Skilled	Mechanical technicians	
Medium Skilled	Stove combustion expert Laboratory Technicians and assistants Ceramics expert  Metal fabricators Metal Welders Metal artisans Spraying	Cookstove Business Developer Sales Reps Marketing Reps Accounting Clerks Monitoring and Evaluation Specialist Organisation and Administrative clerks Metal Fabricators Construction Professionals
Low Skilled	General Construction Transportation workers	

## Solar

	Construction/Erection and Installation	Operation and Maintenance
High Skilled	Commissioning engineers(electrical)	Recycling Specialists
Medium Skilled	Control and Software technicians Quality assurance specialist Installer Distribution and wiring electricians (CEWP) Construction Professionals Project and installation technicians	Photovoltaic maintenance specialist (electricians specialising in solar) Diesel engine technicians for mini grid and hybrid systems Inspectors Sales Reps Monitoring and Evaluation Marketing Reps Accounting Clerks Organisation and Administrative clerks
Low Skilled	Transportation Workers Construction professionals	Inspectors

## Woodlots

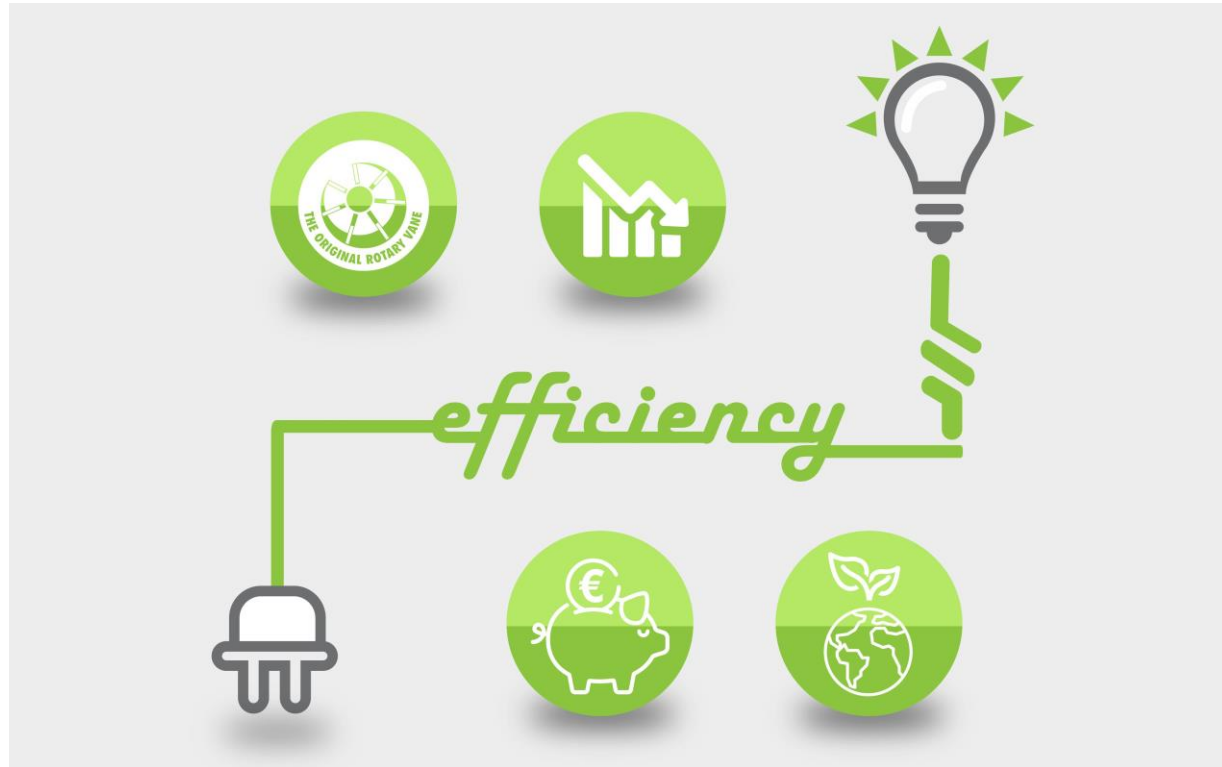
	Planting	Operation and Maintenance
High Skilled	Soil Scientist Plantation silviculture	
Medium Skilled	Agronomist  Tree nursery developer Woodlot pest and disease Manager	Woodlot Landscaper Agronomist Operation and maintenance specialists Sales Reps Marketing Reps Accounting Clerks Monitoring and Evaluation Specialist Organisation and Administrative clerks
Low Skilled	Transportation workers	Inspectors Harvesters Woodlot Guards

## Biogas

	Construction/Erection and Installation	Operation and Maintenance
High Skilled	Chemical, mechanical, electrical, biological technicians	
Medium Skilled	Environmental Technicians Laboratory Technicians and assistants Control and Software Technicians Construction professionals General electricians, plumbers, roofers Commissioning technicians (electrical)	Gas handlers Laboratory technicians Operation and maintenance specialists Sales Reps Monitoring and Evaluation Marketing Reps Accounting Clerks Organisation and Administrative clerks
Low Skilled	General Construction Construction professionals Transportation workers	Inspectors

Source: Adapted by Author from Africa-EU Renewable Energy Cooperation Programme, TVET Country Mapping

# Energy Efficiency





# Government Strategies

## Demand Side Management Government Implemented Programmes

1. Replacement of incandescent lamps with Compact Fluorescent Lamp (CFL);
2. Replacement of inefficient refrigerators with new energy efficient ones in homes under a rebate scheme;
3. Power factor correction in about 32 public institutions;
4. Energy efficiency training and capacity building for energy managers in Ministries, Departments and Agencies (MDAs) and Metropolitan, Municipal and District Assemblies (MMDAs);
5. Nationwide public education and capacity building for members of Ghana Hoteliers Association; and
6. Promotion of energy efficient lighting and electrical appliances as part of the National Rooftop Solar Programme.

Mandatory Energy Audits in commercial buildings

Awareness creation on benefits of energy efficiency and conservation

Build the capacity of energy auditors and institute certification for auditors

Programmes and measures to help consumers optimize energy use

Provision of incentives for real estate and constructors to implement energy efficiency measures and technologies in their buildings

Promotion of efficient lighting (LED)



# Skills Need in the EE Sector

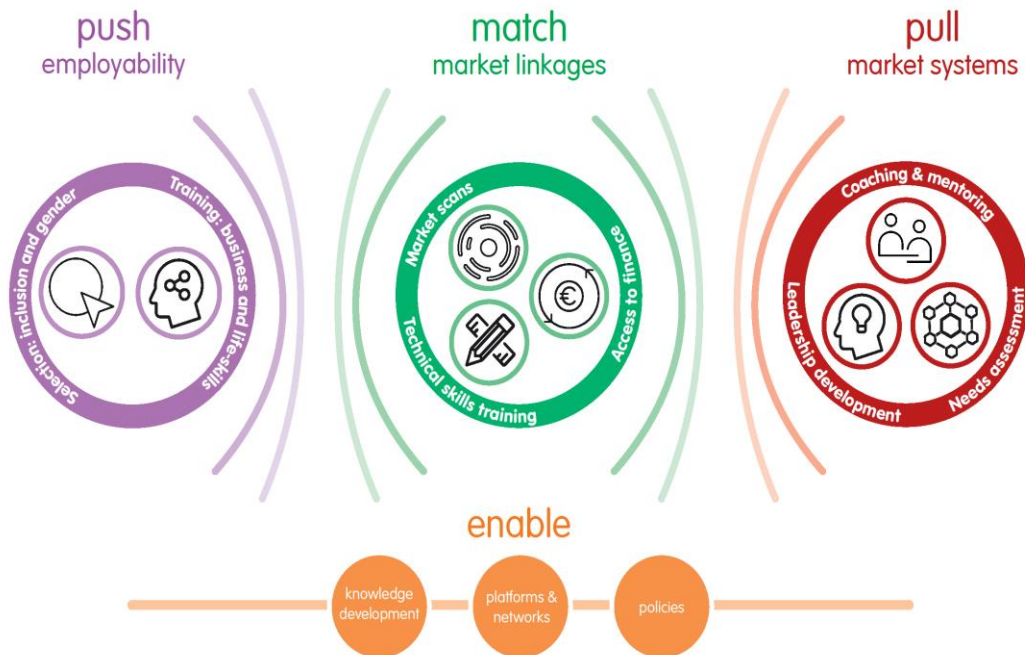
	Construction/Erection and Installation	Operation and Maintenance
High Skilled	Project Managers (Technical) Energy Modelers  Energy Auditors Sustainability Managers Architects Quality Assurance Specialist Electricians	Recycling Specialists
Medium Skilled		Operating Engineer Electricians Inspectors Sales Reps Monitoring and Evaluation Marketing Reps Accounting Clerks Facility Manager
Low Skilled		Inspectors  User



## GrEEEn Offer

# GrEEen Offer

## Opportunities for Youth Employment



Employability and entrepreneurship capabilities of Youth, **Women** and Returnees

### Demand Driven Training Delivery

- Agri based renewable energy training (Efficient charcoal production, solar lanterns)
- Mainstreaming OYE into RE TVET service providers

### Peer to Peer networking sessions

- RE Entrepreneurs skills improvement

### Internship and Job Placement

- MOU's with Private Sector companies under associations (GHACCO, REAG, AGSI & BAG)

### Value Chain Fora

- Forums on solar irrigation, businesses in solar lanterns, woodlots, improved cookstoves

### Web Based Platform

- Representation of RE markets (solar importers and various solar installers) hosted on website.
- Job and Business Opportunities

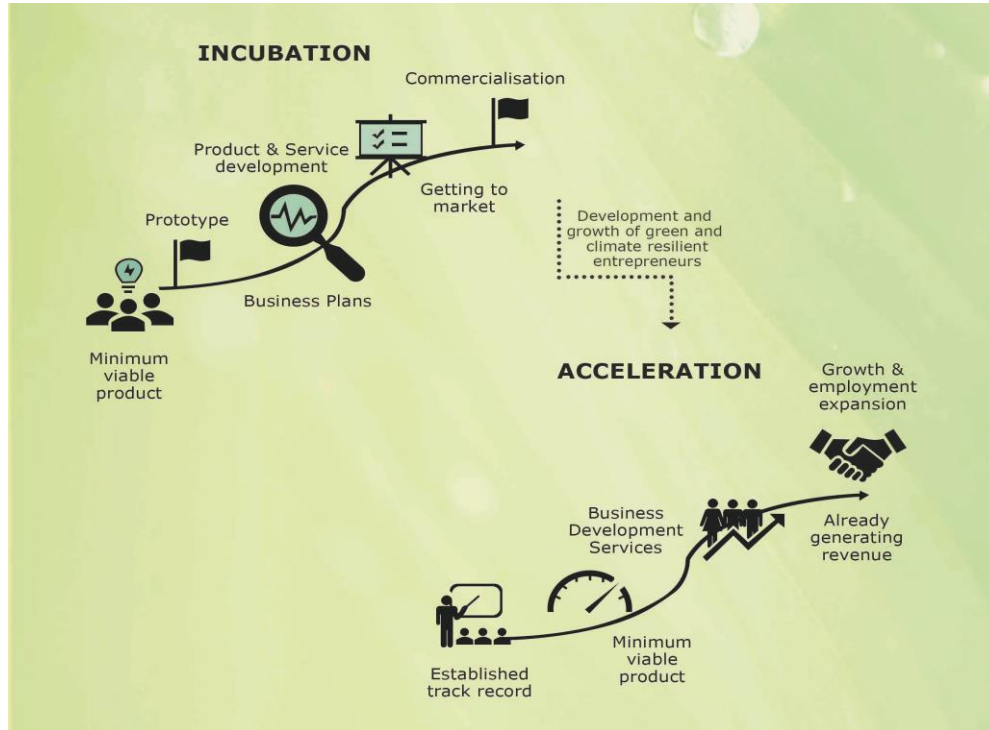
### Business Plan Competitions

- Innovative RE solutions that affect other targets areas (Franchising models for cheaper quality solar powered irrigation systems, briquetting, efficient charcoal production)

### Matching Grants

- Provide access to financing reducing high cost of technologies

# GrEEen Offer



Incubation and acceleration of SME's led by Youth, **Women** and Returnees

## **Strengthen business hubs to incubate and accelerate inclusive MSME**

- Introduce modules with RE practicality for RE companies (RE focused business model, financing RE offgrid businesses)
- Support and build network of coaches and advisors for RE companies

## **Business Incubation and Acceleration services**

- Providing incubation and acceleration support for RE (briquette, solar) businesses to expand their operations creating job opportunities

## **Semi-annual International Green Investment forum with diaspora**

- Organising investment forum for RE businesses (Collaborating with gov't led programmes (RE Fair)
- Assessing financing options available to improve investment

## **Market Research**

- Identifying market research information needed for upscaling of RE and EE businesses

## **Blended Finance**

- Increasing financing from FI's for Green businesses

## **"Green biz" Web based platform**

- Linking RE business(solar sector, efficient fuel industry) with market players(investors)

## **Challenge Fund**

- Access to finance for RE based businesses to overcome high cost of technologies

## **Greening MSME's and Project Activities**

- Ensuring zero emission from project activities( SME's switching to the use of RE and EE based technologies, packaging, ensuring non flaring of biogas technologies)

# Questions to discuss



1. Have the right sub sectors been focused on for job creation and business growth in the sector?
2. How can the market information for Western and Ashanti be improved?
3. How many internship and job placement can be provided by the RE and EE sector in the next 2 to 3 years?
4. How many RE and EE SME's can be incubated or accelerated in the next 2 to 3 years?
5. How can dialogue and collaboration be established at the regional level?

**Nagode Oyiwad)0**

**Thank you Akpe**

**Medaase**

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