

- Confidential

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# REGID INTERNATIONAL BIOMASS ENERGY PROGRAM

**Pitch Investor Deck**

Bioenergy project for decentralized communities in rural Africa



## - Background

Only 25% of the population in Africa has access to electricity. Most of the 600 million people (two-thirds of the population) in Africa without electricity are thought to be off grid or located too far away to connect to the national grid – UNDP. Expanding access while limiting CO2 emissions will be a challenge.



## Our mission

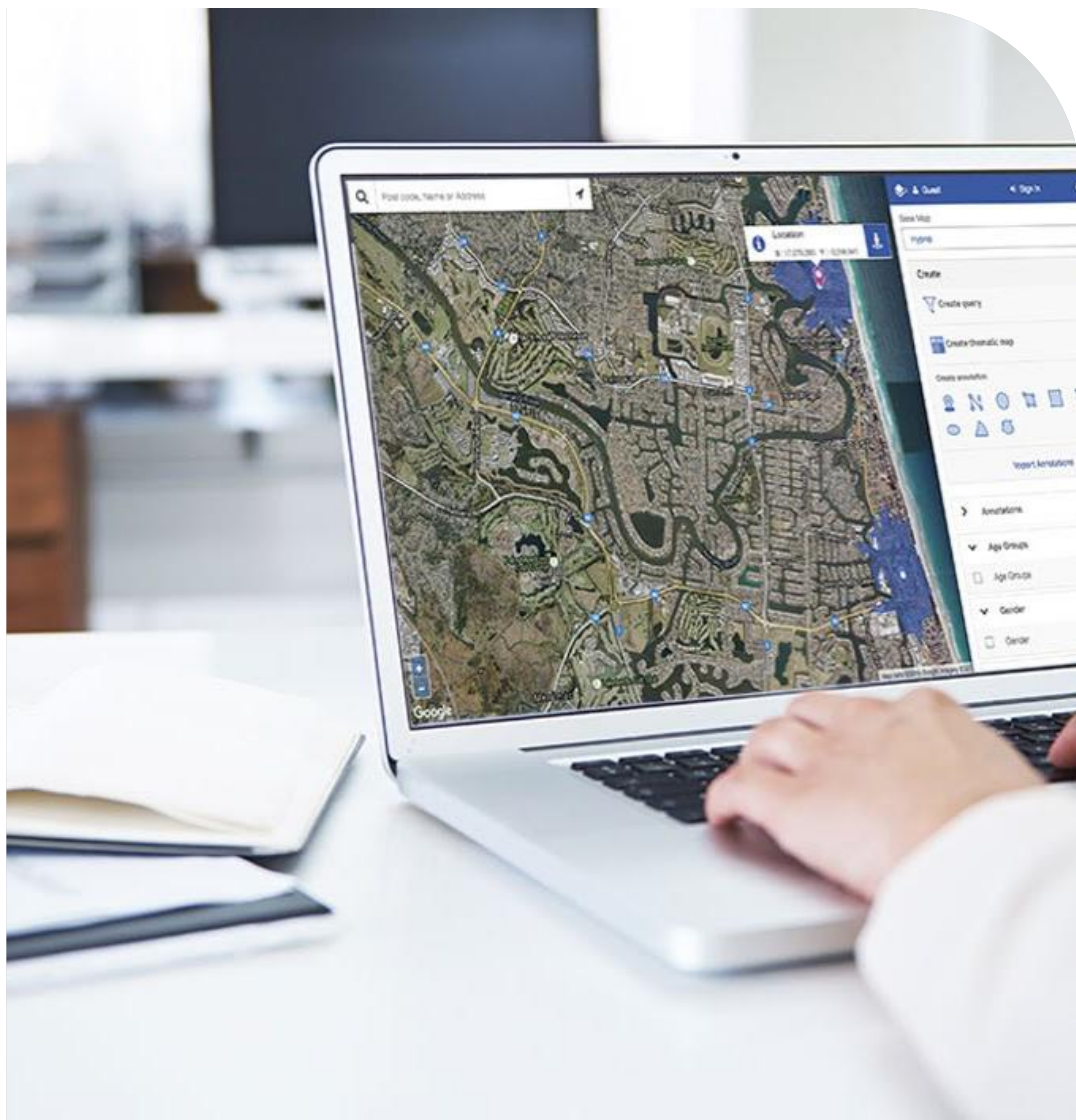
# The Prevailing Challenge

Unplanned power outages poses economic costs and social costs. Indeed, transportation of across the grid involves energy losses up to about 15 to 30% in Africa (World Bank) and requires expensive grid infrastructure.

## Our mission

REGID International's mission consists in providing access to a clean and affordable energy for local communities in decentralized areas in Africa.





## THE COMPANY

# REGID International



### Who We Are ?

We are a private company developing solutions for climate resilient activities across the world. Based in Nairobi, we are local developers of energy projects.



### What We Do ?

We develop decentralized bioenergy projects in rural Africa for energy access, ecological sustainability and social capital building.

- The Solution

# Decentralized Heat and Power Systems

These are small scale power units that provide both clean and affordable heat and power to local institutions, SMEs and households in marginalized locations. Our technology: A steam fired cogeneration engine with zero CO2 emissions.



# Shrubs / Tree Branches

## Agroforestry

The projects can involve tree planting activities, benefiting the environment and the community with increased income from farming. Only the branches are harvested.

# Bioproducts Waste

## Recycling

Most of the bioproducts waste is burnt in the atmosphere which has dramatic consequences on the environment and health. These wastes can be used for powering the plant.

## The Process

# Feedstock Supply Chain

## Multiple benefits

The collection of feedstock for powering the bioenergy systems resolves many dire issues in rural areas including ecological, social and economic.



### Employment

Numerous jobs are created



### Cost effective

The feedstock is freely available

## Our Solution

# Agroforestry

REGID International has selected the high fertilizer Gliricidia shrubs to be intercropped into crop fields to increase the yields per hectare. For a 6 hectares plantation, additional direct 150 jobs are created, and income per capita increase is estimated at \$1750 USD annually (sale of feedstock and increased food production). Biomass Energy will also create an opportunity for contributing to climate mitigation. Planting Gliricidia with maize has shown to increase carbon sequestration 2-4-fold. The impact of carbon sequestration for a watershed of 100 farming households (Assuming 6000 trees per hectare) would be 17,325 tCO<sub>2</sub>-eq.



## Environment

Sequestration of carbon above and below ground



## Social Capital

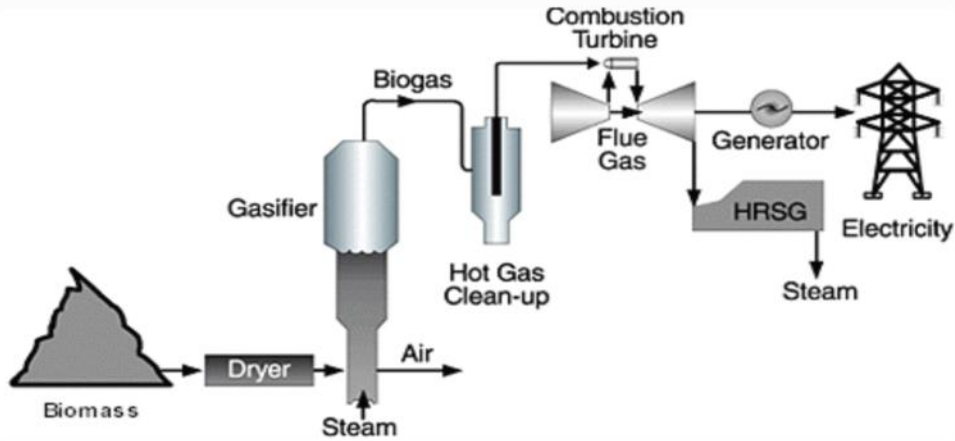
Creation of jobs for maintenance



## Economic

Fertilization of soils and improved yields per ha





Schematic of integrated biomass gasification combined cycle

**-90%**

### Annual carbon emissions

For instance, out of the expected 2.5tCO<sub>2</sub>-eq/kWh for generation supply chain, the new emissions at the power plant rate of 0.25tCO<sub>2</sub>-eq/kWh per year

### Means to Capture Carbon Storage at the Power Plant

Cost effective technology innovation for carbon(IV)oxide scrubbing before it is released back into the atmosphere for small size power plants – Environment friendly Hydrophobic solvents or oxyfuel combustions among other alternatives.

Monetizing these benefits: Carbon credits at \$10 USD per ton of CO<sub>2</sub> would result to \$275,000 USD annually.

#### Technical insights

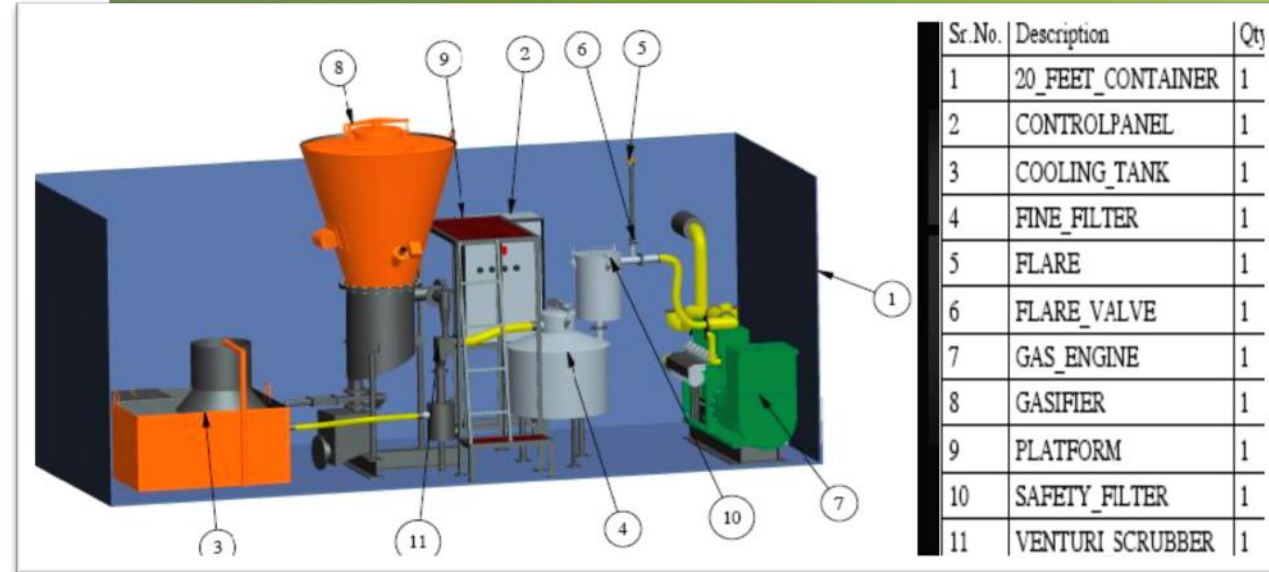
# The Biomass Power Plant

## Technical Insights

# The Proven Technology

30 years of proven success

Over 1000 installations globally



We leverage on Proven Biomass energy systems for decentralized power solutions:

- Remotely controlled that allow for centralized control monitoring systems.
- We integrate both homogenous feedstock sources (agroforestry biomass) with waste to energy technologies.
- Tailor made telco and community heat and power systems.

# The technology process

## Combustion

The feedstock is burnt in a combustion chamber.

## Production of steam

Burning the biomass at high temperatures produces syngas/producer gas. The gas is cleaned then compressed sent under high pressure to the turbines to produce mechanical energy.

## Production of electricity

The gas rotates a turbine which in turn rotates an alternator. The alternator produces alternative electric power. A transformer rises the power voltage to transport easily the power into transmission lines.

## Cogeneration

At the turbine exit, a part of the hot gas is recycled to be used as heat in the oxidation zone. This is what we call gasification. The remaining hot gas is in turn transformed into heat using an exchanger in which is used in space heating or factory manufacturing.



All-inclusive solutions

# Services Offered

## Our vision

To build a solid knowledge foundation, investor interest and public & private engagement in implementing integrated food-energy projects in Africa.



### Pre feasibility- Study

Preliminary report



### Candidate Site Identification

Project Viability



### Feasibility Study

Off-taker identification



### Licensing, Feedstock Agreement

Off-grid license acquisition



### Project delivery Structure

Financial Model



### Plant Commissioning

Business Development

## Our team

# The REGID Team

REGID International was created in 2017 by James Daniel. Based in Nairobi (Kenya), it comprises one project and communication manager and one director of energy programs.



## Mr. James Daniel

### CEO and CTO

Graduated from Masters in Renewable Energy from Kenyatta University (Kenya). Over 5 years Biomass Energy and GIS Consulting experience globally. He created REGID International in 2017.



## Mrs. Eva Leibovici

### Project and Communication Manager

Graduated from Masters in Communication and Business Development from SciencesPo Paris (France). She worked as communication manager in energy and security sectors.



## Mr. Eliazar Keya

### Director of energy programs

Graduated from Masters in Renewable Energy from Kenyatta University (Kenya). He has been an engineer in energy sector and a high school teacher in chemistry.

**Advisers:** Dr. Dennis Garrity, UN Dry Lands Ambassador and former Director of ICRAF Kenya; Dr Ioannis Tsipouridis, Executive Director at RED Pro with over 25 years in biomass energy systems; Dr. Kenneth Namunje: CEO at Kipeto (Kenya)



Reach us on

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