

# Rwanda Biofuels Limited

Powering Rwanda's Development

# 1. Global Bio-Fuel Industry



- 🔥 Trans-esterification of vegetable oil was conducted as early as **1853**, many years prior to the first diesel engine. Trans-esterification is the foundation of biodiesel.
- 🔥 On 10<sup>th</sup> August 1893 in Augsburg, Germany Rudolf Diesel ran the **first 'Diesel' engine on peanut oil.**
- 🔥 1990's, after Kyoto Protocol, look at bio-fuels potential to meet energy requirements while reducing global CO<sub>2</sub> emissions.
- 🔥 2000 – 2010, international targets set for the production and blending of bio fuels, e.g. **'EU Renewable Energy Directive (2009/28/EC)'** which requires that 20% of the EU's energy needs should come from renewable sources by 2020, (**target for the transport sector of 10% from bio fuels**).



## 2. Rwanda Biofuels Limited



### Direct Foreign Investment and re-investment between **USD \$250 million and \$300 million**



Reduction in 'balance of payments' deficit of approx **USD \$15 million per annum**

**Capital Expenditure** – Extraction & Processing Equipment **USD \$38 million\***

**10,000 Hectares** of plantation on marginal land, with considerable provision for training and support of distributed out grower networks.

**56 million Jatropha Trees\*** planted.

**Land improvement and reclamation:** USD \$117 million\* budgeted.

**Employment:** Sustainable employment of approx **8,000 workers** on both plantation and outgrowers' network.

USD \$55 million\* **unskilled wage bill.**

**Direct community re-investment:** USD \$15 million\* .

**Production:** 34 million litres per annum (**approx 90,000 litres per day**) **peak bio-fuel** production, about 50 times the current biodiesel production in Rwanda.

**CO<sub>2</sub>e emissions reduction: 2.5 million tonnes CO<sub>2</sub>e\*** emissions reductions through sequestration and avoided emissions.

*\*Total over a 30 year project cycle.*



### 3. Rwanda Biofuels Ltd., Activities 2005 - 2010



June 2005

**Dr. Philip Giovannini (Eco-Fuel Global)** initiates discussions with the Rwandan Ministry of Science and Technology on the development of bio-fuels in Rwanda.

February 2006

Presentation of Dr. Philip Giovannini's findings on bio-fuel in Rwanda in the report "**Biofuel Technologies for Rwanda**" (Report to the Ministry of Science and Technology).

April 2007

Dr. Philip Giovannini invited to Rwanda as a **Visiting Scientists at IRST**, where he oversaw the **installation of the countries first experimental bio-diesel reactor** (a small reactor). Among other experiments, he showed how to produce biodiesel using Jatropha oil from John Nkongoli's plantation in Nyamata (a 7-year old plantation), and published the report entitled "**Rwanda Biofuels Development Program**". He was subsequently invited by the Government of Rwanda to develop commercial biodiesel production capacity within Rwanda.



## 4. Rwanda Biofuels Ltd., Activities 2005 - 2010



- July 2007 **Eco Fuels Global** and **Eco Positive** are engaged to develop a commercial bio-fuel program within Rwanda.
- September 2007 Seed distribution in Eastern Province.
- October 2007 Initial **MOU signed with Government of Rwanda** for production of bio-fuel.
- March 2008 Letter issued by Governor of Eastern Province indicating availability of 10,000 Ha of marginal land for use with bio-fuels.
- August 2008 **Operation of test plots and nurseries commence** in Southern and Eastern Province for the development of seedstocks and expertise in Jatropha cultivation.
- March 2009 Eco Positive issues Implementation Framework and Negotiation Framework documents describing the implementation of bio-fuels within Rwanda.
- May 2009 Eco Positive propose **tax incentive and mandated bio-fuel blending structures** to assist in securing investment and ensure a market for bio-fuel outputs.
- December 2009 **Contract and 10,000Ha Land Lease** with Government of Rwanda is signed to enable the commercial production of bio-fuel within Rwanda



## 5. Project Activities 2011



10<sup>th</sup> January 2011 Specialist teams on the ground in Rwanda for intensive 3 week planning phase. Rwanda staff in place to facilitate and shadow specialist teams.

28<sup>th</sup> January 2011 Comprehensive demarcation of land parcels completed.

31<sup>st</sup> January 2011 Project Implementation Plan published describing full implementation of project.

3<sup>rd</sup> February 2011 Procurement requirement issued for national and international tender. Import duty wavers sought for all industrial, agricultural & transport equipment.

18<sup>th</sup> February 2011 Tender process ends and procurement agreements signed.

28<sup>th</sup> February 2011 All expatriate staff required for implementation resident within Rwanda (expected to be 5 – 10). Infrastructure development commences in support of workforce, transport and irrigation.

March 7<sup>th</sup> 2011 Workforce in place and construction commences for nursery development at two sites in Eastern Province combined capacity 1.5m plants at 360,000 plants per week. Land preparation for initial planting commences at 150 Ha per week.



## 6. Project Activities 2011



11 <sup>th</sup> April 2011	Planting commences on preliminary areas (total 1,000 Ha).
May 2011	Irrigation infrastructure and land preparation on remaining areas identified for September – November 2011 planting.
June 2011	Nursery operation reaches target capacity of 5.8m plants at 1.5m plants per week.
July 2011	Land clearance and preparation for September / October planting commences at 570 Ha per week.
August 2011	Water harvest & irrigation systems completed.
September 2011	Planting commences on secondary areas (total 4,000 Ha)
November 2011	Terracing and land preparation commences on Hill 6, 11, 12 and 5.



## 7. Rwanda Biofuels Ltd., Development Objectives



**Plantation** It is essential to develop a **sustainable domestic supply of feedstock** to gain many of the benefits associated with domestic bio-fuel production. Rwanda Biofuels will focus on the development of plantations on **marginal land** to ensure domestic feedstock supply, large scale sustainable employment and improvement of land condition.

**Outgrowers** Promoting large scale outgrowing without education and skills development risks moving farmers from food crops. Rwanda Biofuels will avoid this by ensuring training is provided on use of oil crops for **intercropping, fencing and utilisation of marginal land**. With carefully controlled training programs we aim to **increase food production** as well as supplement farmers income with oil crop production.

**Technology** Over **25 bio-fuel processing equipment manufacturers** exist worldwide, with many more extraction technologies. Rwanda Biofuels and EP Jatropha Project Development are undertaking a **comprehensive technology review** of the available extraction and processing plant with a view to determining preferred procurement in early 2011.



## 8. Rwanda Biofuels Ltd., Development Objectives



**Skills Transfer** Rwanda Biofuels aims to ensure that eventually **99% of full time staff are from Rwanda**, with a comprehensive skills development and transfer programme.

**R & D** Rwanda Biofuels have made provisions for **comprehensive research and development programmes within Rwanda** which will be conducted as a mixture of in house research, collaboration with academic institutions and **grants issued to institutions**.

**Production** Rwanda Biofuels will aim to produce in excess of 36m litres of bio-diesel annually for commercial resale within Rwanda to EU Standard EN 14214:2003.



## 9. Rwanda Biofuels Ltd., Vision



### Rwanda

Rwanda Biofuels aims to replace a significant proportion of the Rwandan diesel fuel requirement with **100% domestically produced, sustainably bio-diesel**.

In addition a **focus on sustainable employment, community reinvestment and training** will centre on assisting the development of communities involved with the production of bio-fuels for Rwanda.

**Skills Transfer** A focus on securing leading international expertise for each aspect of bio-fuel development coupled with ensuring these skills are transferred to a local management team is designed to develop a **comprehensive skills base within Rwanda Biofuels in Rwanda**.

Collaboration and provision of funding to Rwandan academic institutions to provide university courses and direct research will aim to position **Rwanda as a regional centre of excellence in bio-fuels**.

### East Africa

Eco Positive and EP Jatropha Project Development are currently developing a pipeline of bio-fuel projects within East Africa with Rwanda Biofuels as the pioneer project and principal skills base for bio-fuel development. Eco Positive and Eco-Fuel Global are the owners of Rwanda Biofuels Ltd.

The long term objective is to provide a continuous career path centred in Rwanda comprising specialist university education, an employment path within Rwanda Biofuels or the wider Rwandan Bio-Fuel Industry and ultimate **skills export to the region** for bio-fuel development



# 10. Future of Bio-Fuels Within Rwanda



***“Establish Rwanda as the regional centre for excellence in the production of bio-fuels.”***

1. Development of a domestic bio-fuel industry to reduce reliance on imported fuel, improve the international ‘balance of payments’ and fuel security.

2. Collaborative Private Sector - Academic Research Programmes and Grants. University courses to develop skills base with skills transfer into the country from specialist employed within the bio-fuel industry.

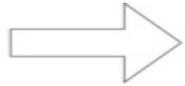
3. Export of skills into the region in support of the development of bio-fuels in East Africa. Export of excess bio-fuels when the Rwandan national demand has been met.



# 11. Taxation & Incentives



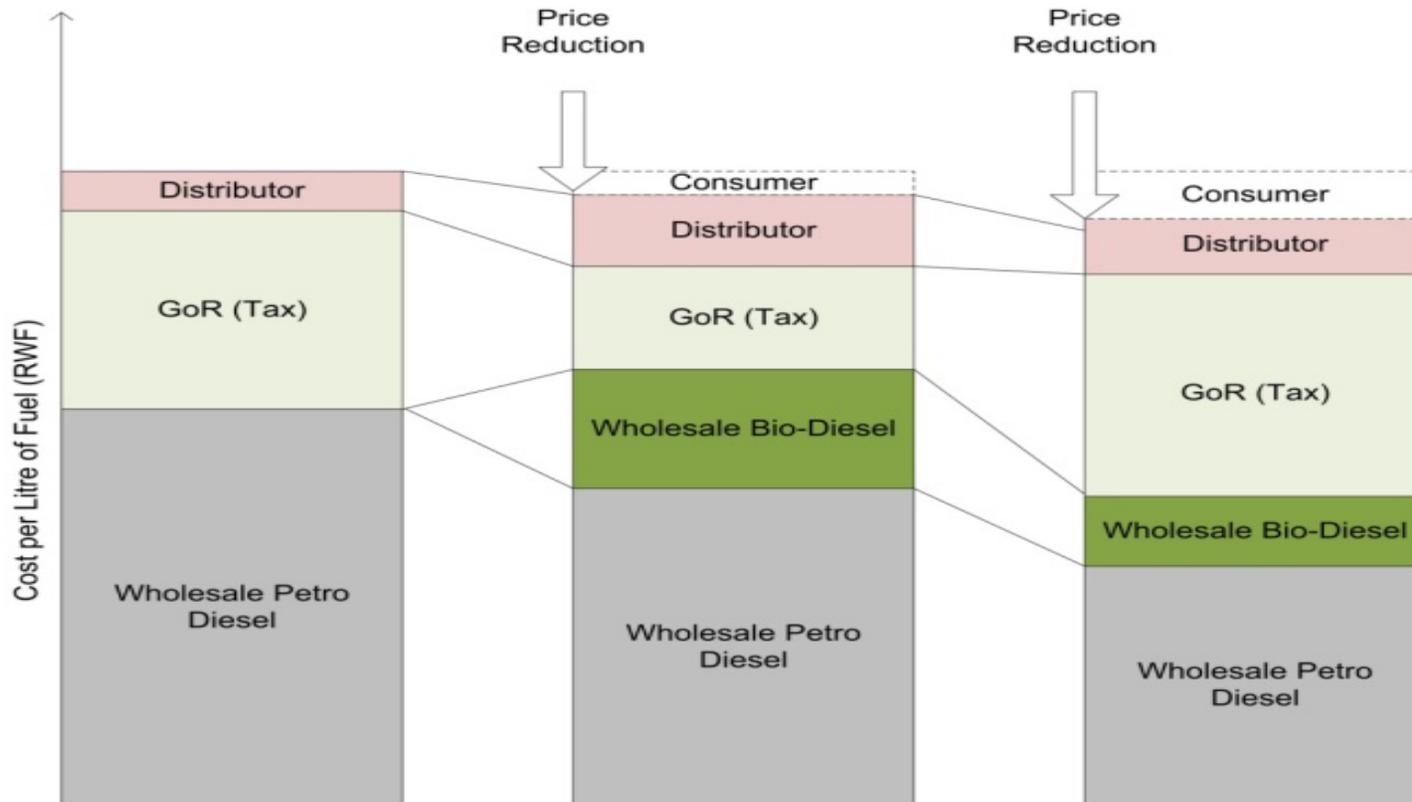
Current petro-diesel sales.



Period of Tax Incentive



Ongoing blended-fuel sales after tax incentive



## 10.1 Rwanda Biofuels Ltd., Position



### **Current Position:**

🔥 In 2011 Rwanda Biofuels Limited will be initiating 10,000 Ha of *Jatropha Curcas L.* Plantations, with capacity to extract and process in excess of 36 million litres of bio-fuel per annum.

🔥 Eco Positive have in excess of USD \$200 million currently under management for development of bio-fuels in East Africa and are keen to ensure the competitiveness of a future Rwandan bio-fuel industry.

