



API Renewable Energy PLC

Pushing back the SaharaTM

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API Renewable Energy PLC to launch Ethiopia's First Commercial Biodiesel Plant Renewable Energy Industry Transforming East Africa

API Renewable Energy plans to launch Ethiopia's first commercial-scale biodiesel refinery with a ribbon-cutting ceremony in the Adama Industrial Zone in the first week of December 2018.

The goals of the African Power Initiative are to rehabilitate degraded lands, create large-scale employment, generate wealth in East Africa and improve the region's environment.

- 1.4 million-hectares (4 million-acres) of reforestation provide renewable resource for biofuel in harsh East African environment.
- Based on successful completed pilot refinery plant, new commercial-scale refinery plant targets annual biodiesel production of over 70 million litres.
- Nine more plants planned for Ethiopia, (completed by 2025), with total generation estimated at 730 million litres of biofuel annually.
- Long-term economic impact for East Africa based on this generation would approach \$1 billion annually, including biofuel revenue and potential foreign exchange from the sale of carbon credits. This also reflects the creation of up to half a million jobs.
- Significant anticipated social benefits include a healthier environment (from land rehabilitation, decreased fossil fuel usage and reduced greenhouse gas emissions) as well as greater political stability in the region.

Marcos Bitew, CEO of API, said, "Our team is incredibly excited and gratified for the world to see our vision of sustainable energy production coming to fruition in Ethiopia. We have poured our lives into this project for over a decade. It has not been an easy ride, but we have persevered through many obstacles to reach this important milestone—the opening of our first full-scale biodiesel plant. We are grateful for the support of everyone involved in this important initiative: our employees, investors and the government entities that have played such important roles in our success."

Proving Renewable Resources for Biofuel are Viable in East Africa

API identified the Tigray state in the Federal Democratic Republic of Ethiopia as a target region for biofuel development due to its underutilized land. The area suffers from deforestation, depleted soils, erosion and minimal precipitation, all of which deter agriculture stability, therefore land remains significantly underutilized. API was confident the land would support *Jatropha* (also called the “castor oil plant”), a hardy, drought-resistant biofuel crop.

Partnering closely with local communities, API invested in seedling development, nursery bed preparation, planting, caretaker training and education regarding the benefits of cultivating biofuel crops. This API effort—the first initiative of its kind in the region—resulted in the world’s largest plantation of *Jatropha*: 1.4 million hectares.

API, working with Key Ethiopian officials plans to expand its land improvement efforts across Ethiopia, with the next phase focusing on the Afar, Oromia and Somali regions. By 2030, API expects that 5.5 million hectares (13.6 million acres) of barren land in Ethiopia will have been reforested under this program. API recognizes that since one hectare of *Jatropha* yields about 1000 liters of oil, then the expected 5.5 million hectares will support production of approximately 5.5 billion liters of biofuel per year.

Biofuel Production Ramp-up

Short-term production goals are more modest. While proving biodiesel production methods with a small pilot refinery plant, generating 12 thousand liters of oil daily, API drew up plans for the full-scale refinery it launches. Commercial production expectation from the new plant is expected to reach up to 73 million litres of biodiesel annually.

Nine additional refinery plants of similar capacity are already planned to be online in Ethiopia by 2025. Collectively, the 10 refineries should be able to generate 730 million litres of biofuel annually.

Local Economic Impact of Biofuels

If API meets its output targets, biodiesel could displace half of Ethiopia’s carbon-based diesel and eliminate all of the coal it uses in cement manufacturing—a major local industry. In addition, API’s biofuel refineries could produce enough glycerin to replace all of Ethiopia’s imported glycerin, as well as generate large volume of biogas, organic fertilizer and if requested bio-jet fuel.

With a daily output of 2 million liters of biodiesel, 2 hundred thousand liters of glycerin and 6 thousand tons of biomass to displace coal, Ethiopia would generate revenue and foreign exchange savings of some \$730 million each year.

Equally as important, the new jobs created by a growing biofuel industry would inject sustainable revenue into the Ethiopian economy, increasing disposable income and consumption in every sector of the economy, from consumer products to banking. API expects direct employment in biofuel refining to create as many as 10,000 jobs in the next 10-12 years.

The newly created agriculture required to support the industry could generate exponentially more employment. As a rule of thumb, every 10 hectares of biofuel crops require one worker, so the 2030 goal of 5.5 million hectares under cultivation would require another 550,000 workers.

When added together, the long-term economic impact of the biofuel industry on East Africa would approach \$1 billion annually.

Environmental and Societal Benefits of Biofuels

Widespread adoption of biofuels in Ethiopia would displace up to two million liters of fossil diesel fuel and reduce greenhouse gases by about 4,400 tons daily and 1.6 million tons annually. The coal emissions replaced by biomass would be carbon neutral. Furthermore, the demand for biofuel crops would stimulate rehabilitation of vast tracts of land in East Africa, resulting in profound improved soil and water quality.

A significant side benefit to greater land cultivation, employment and economic prosperity is social stability. Government officials supporting the African Power Initiative expect that development of the biofuel industry will reduce conflicts over land and water, and play a vital role for peace in the region.

ABOUT API RENEWABLE ENERGY PLC

API is a public-private partnership formed to develop sustainable energy production and economic growth, API Renewable Energy PLC, was founded in Ethiopia in 2009.

With a strong commitment to corporate social responsibility, API's ambitions for developing the biofuel industry in Ethiopia are built on three pillars: community, government and company.

- The community produces seeds, provides labor for land preparation and planting, protects cultivated areas, and harvests the crops.
- The government provides land and infrastructure (roads, electricity and water), mobilizes the community, pays wages for land preparation, and provides overall project management.
- The company buys seeds from the community, provides equipment, pays workers, processes and distributes biofuel, conducts research and development, and manages operations.

As part of its industry development efforts, API has been supported by several Ministries in the Federal Government of Ethiopia as well as the Regional Government of Tigray; The Ethiopian Embassy in Kampala, Uganda and the Ethiopian Ministry of Foreign affairs.

API has partnered with a wide range of research and development entities, technology providers and end users, including: the India National Oil Seed Research Institute, Makerere University, Mekelle University, Mesfin Industrial Engineering, Messobo Cement Factory, Nile Petroleum Co. LTD, Tigray Co-operative Agency, and Yale University.

API has also worked closely with UNDP Ethiopia on climate change mitigation—specifically the use of biomass in the cement industry and the development of carbon credits; in addition API is working expanding the renewable energy sector and proper usage of agro waste of energy with ISWAS Group LLC and Green Fuel Solutions.