

API Renewable Energy

Pushing back the Sahara™

Production of biodiesel from non-food oil seeds in Ethiopia



www.africanpowerinitiative.com

www.api-energy.com

Problem

Ethiopia imports all of its petroleum in addition to the escalating fossil fuel prices



Policy Measures: Bio-fuel strategy issued in 2007

Goal: to produce adequate bio-fuel energy from domestic resource for substituting imported petroleum products and to export products.

Objectives:

- Substitute mineral fuels by locally produced bio-fuels (to save and earn foreign exchange);
- Contribute to rural development by creating job in feedstock production, bio-fuel manufacturing, and in transporting and distribution of feed-stocks and products;
- Reduce environmental pollution by harmful pollutants from vehicles exhausts (GHG emissions).

API Renewable Energy PLC

In 2009, API started its Biofuels production project in Tigray state of the Federal Democratic Republic of Ethiopia, and now expanding towards other regions i.e. Somali, Oromia and Afar.

Many parts of these regions are suffering from deforestation, soil depletion, erosion combined with minimal precipitation.

API's purpose is to provide a clean, competitive and high quality energy option, while contributing to the creation of job opportunities, climate change mitigation and economic development.

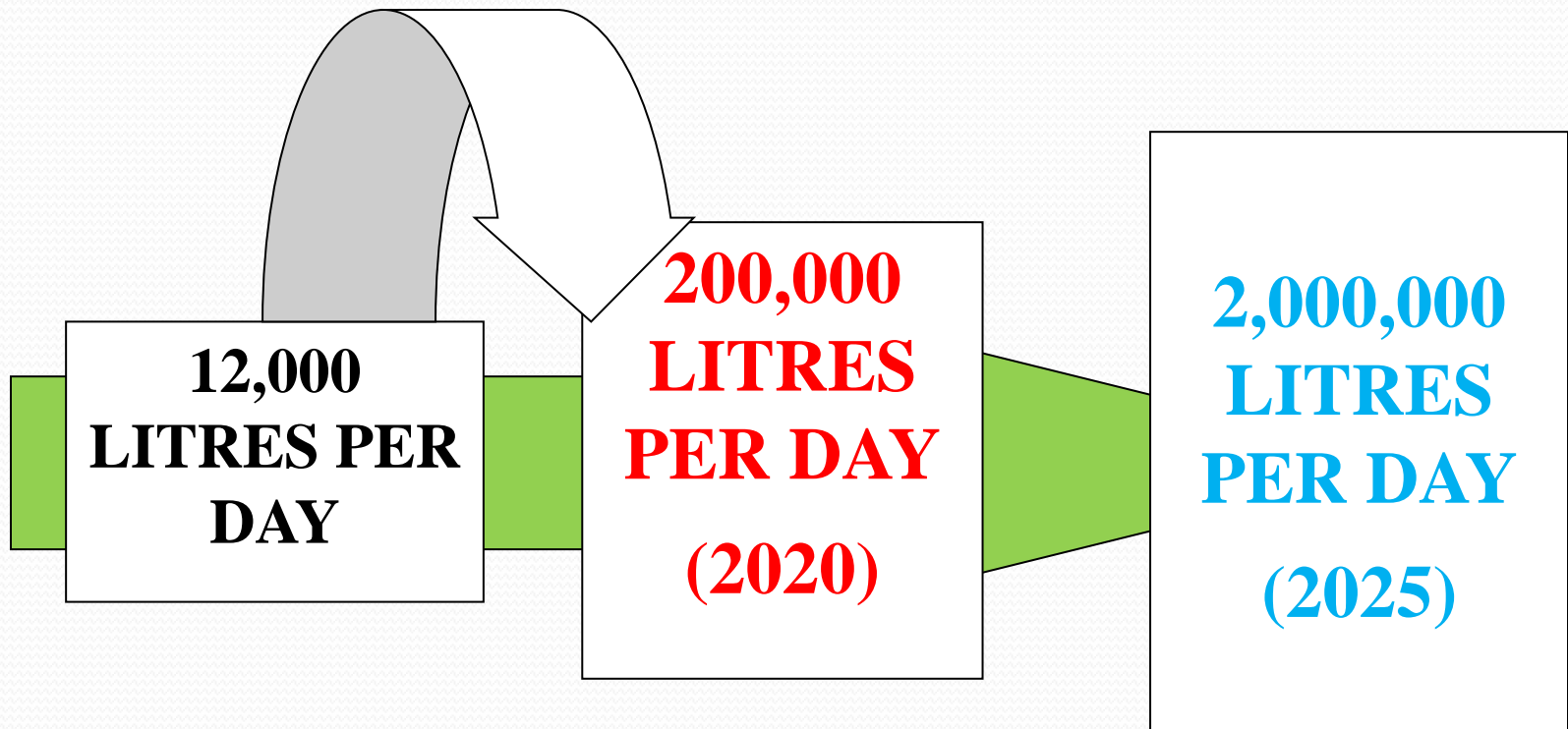
Project Structure

The project is being implemented as a Public-Private Partnership consisting of three tiers i.e.

- Tier 1: Community: Provides labor for silvicultural practices
- Tier 2: Local and Regional government: provides land, mobilizes the community to get involved, provides wages for community, and infrastructure.
- Tier 3: Company/API: buys seeds from the community, provides wages and salaries for project workers, equipment, R&D, manages and monitors project activities.

Project status and expansion plan

- Over 240,000 hectares of jatropha plantations in 33 weredas
- 12,000 litres per day biodiesel processing plant in Ethiopia.
- Project target: 200,000 litres of biodiesel per day



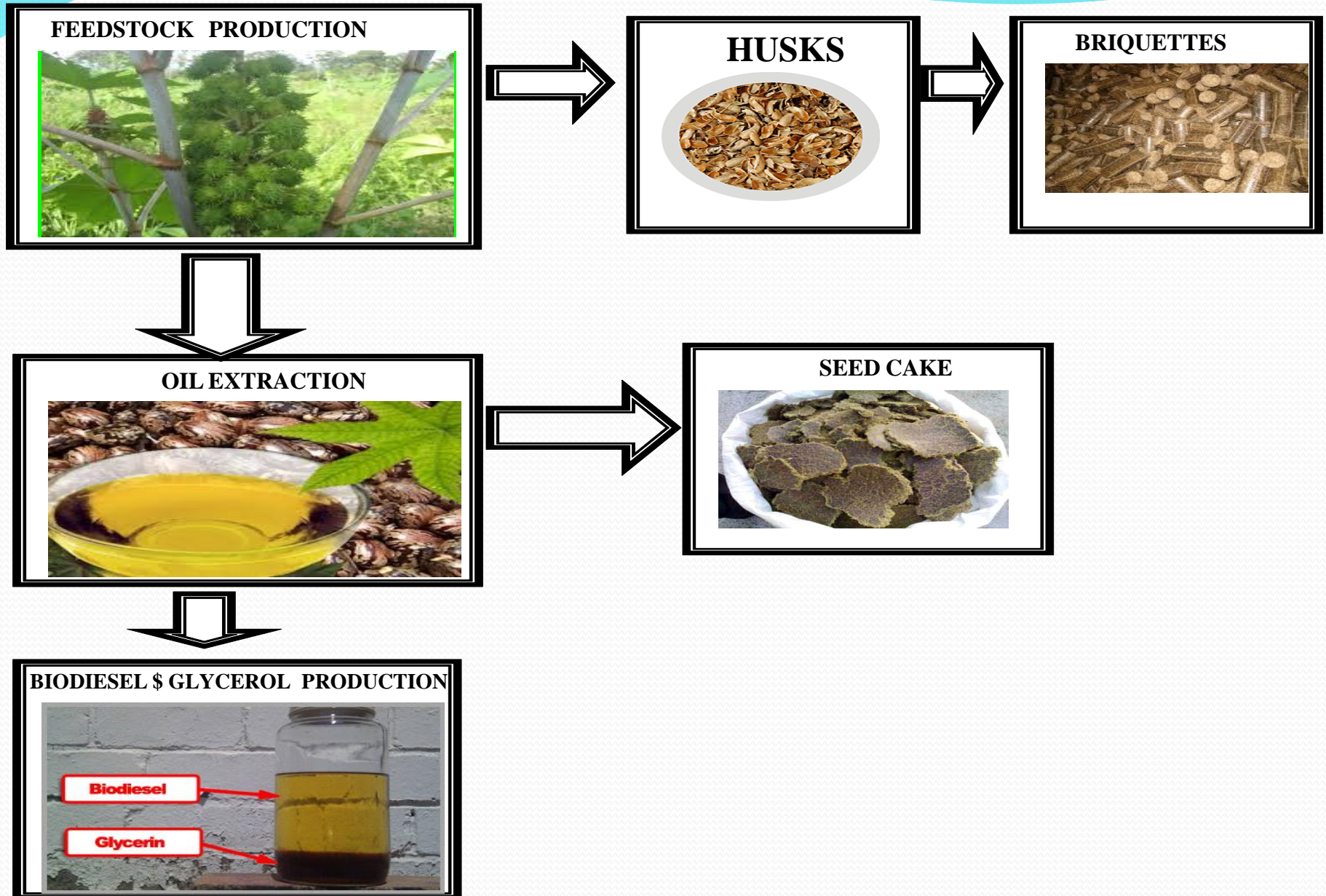
**Annual crop , Matures in six months, 3 tones of seed
per acre**

Local name: Gulo

CASTOR
SEEDS.



Value Chain

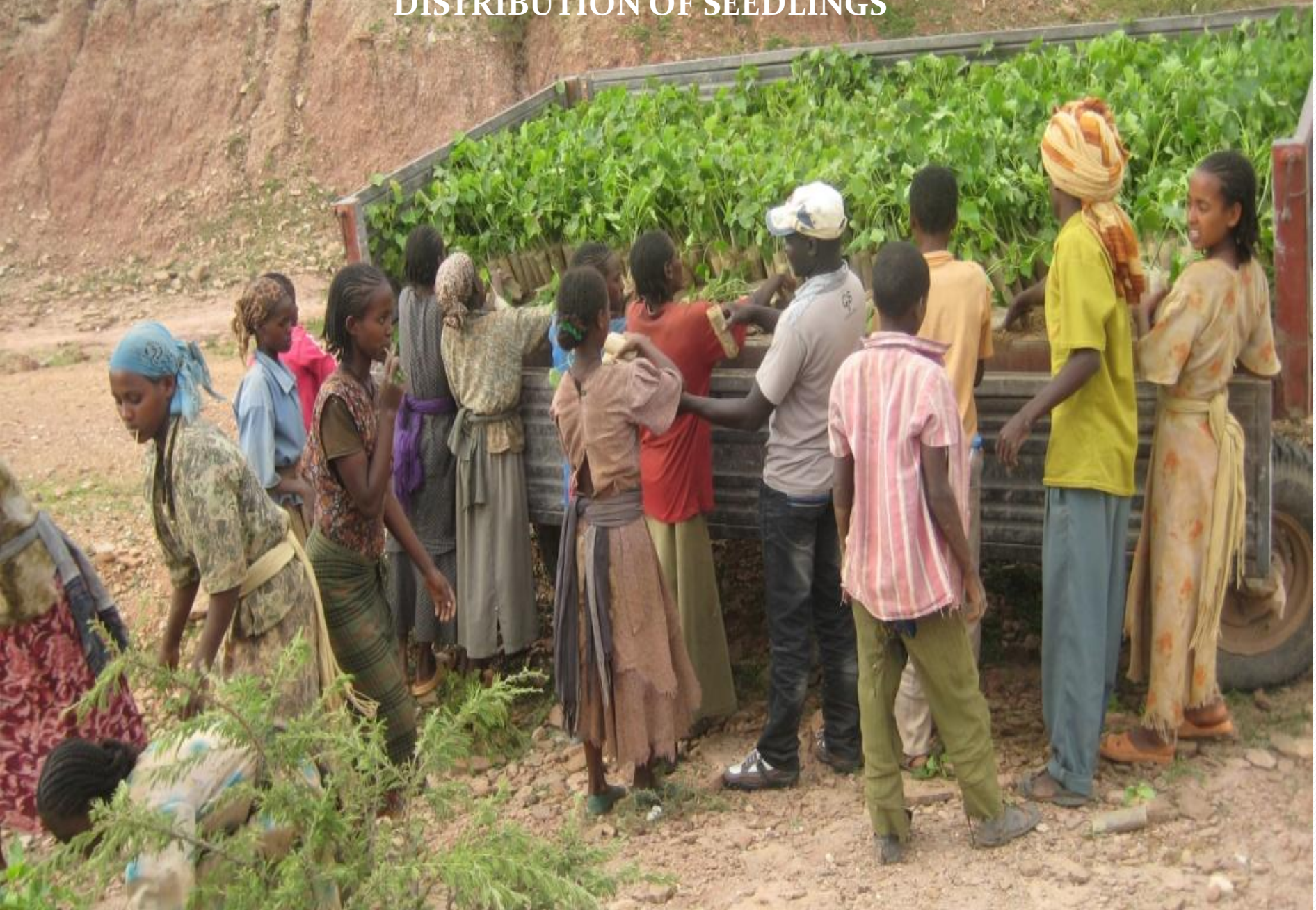


PROJECT PROGRESS 2009 TO DATE

DEGRADED SOILS IN TIGRAY REGION, 2009-2010



DISTRIBUTION OF SEEDLINGS



PLANTING OF SEEDLINGS AND MANAGEMENT OF TREES 2009 TO DATE



BIOFUEL REFORESATION WITH JATROPHA TREES



BIOFUEL REFORESTATION



Revegetation at the start of the rain season



Seed transportation



Biodiesel processing plant



Biodiesel use by others



- B5 Biodiesel is now permitted across Europe.
- In the UK, B20 or B30 grade.
- American truck and bus operators use a blend of 20% Biodiesel in mineral diesel
- In Uganda, a biofuel bill has been passed mandating all petroleum products to be blended with biofuel. API Uganda will produce 60,000 litres per day of biodiesel

Project Benefits

- 1.4 million-hectare reforestation provides renewable resource for biofuel in harsh East African environment.
- Based on successful pilot plant, new commercial-scale refinery targets annual biodiesel production of over 70 million litres.
- 5MW to 240MW on or off grid power generation with battery storage back-up capacity
- Over 560,000 jobs created in feedstock production and 10,000 jobs created in biodiesel processing and distribution.

Project Benefits

- Long-term economic impact for East Africa should approach \$1 billion annually, including biofuel revenue, foreign exchange from the sale of carbon credits.
- Additional anticipated benefits include a healthier environment (land rehabilitation, decreased fossil fuel use, reduced greenhouse gas emissions) and greater political stability in the region.
- Replacement of coal use by biomass in cement factories
- Glycerin provides a source of raw material for other industries.

Partnerships

- Jatro-Renewables :Patented biodiesel processing plant
- Nile Petroleum Co. LTD : Biodiesel off take
- Messebo Cement factory : Biomass off take
- Tigray Co-operative Agency : Co-ordination of all farmers
- Green Fuel Solutions Group: Power Generation
- Mesfin engineering Co. : Mechanical services

- Mekelle University : Research and Development
- Yale University : Research and Development
- India National Oil Seed Research Institute in Hyderabad :
Research and Development
- UNDP: Development Partners

