



MAKENI ETHANOL AND POWER PROJECT



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Royal Swedish Academy of Agriculture and Forestry
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ABOUT ADDAX BIOENERGY

ADDAX BIOENERGY

Addax Bioenergy is developing a Greenfield renewable energy and agriculture project. FAO BEFS define us as an integrated Food-Energy Systems for People and Climate.

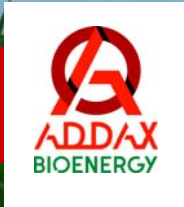
It will produce bio-ethanol for export and domestic use, and green electricity for the national grid and by products (vinasse as fertiliser).

The project aims to become a model for sustainable development, through the respect of strict sustainability standards and the introduction of innovative social solutions.

It has been designed to comply with the following laws and standards:

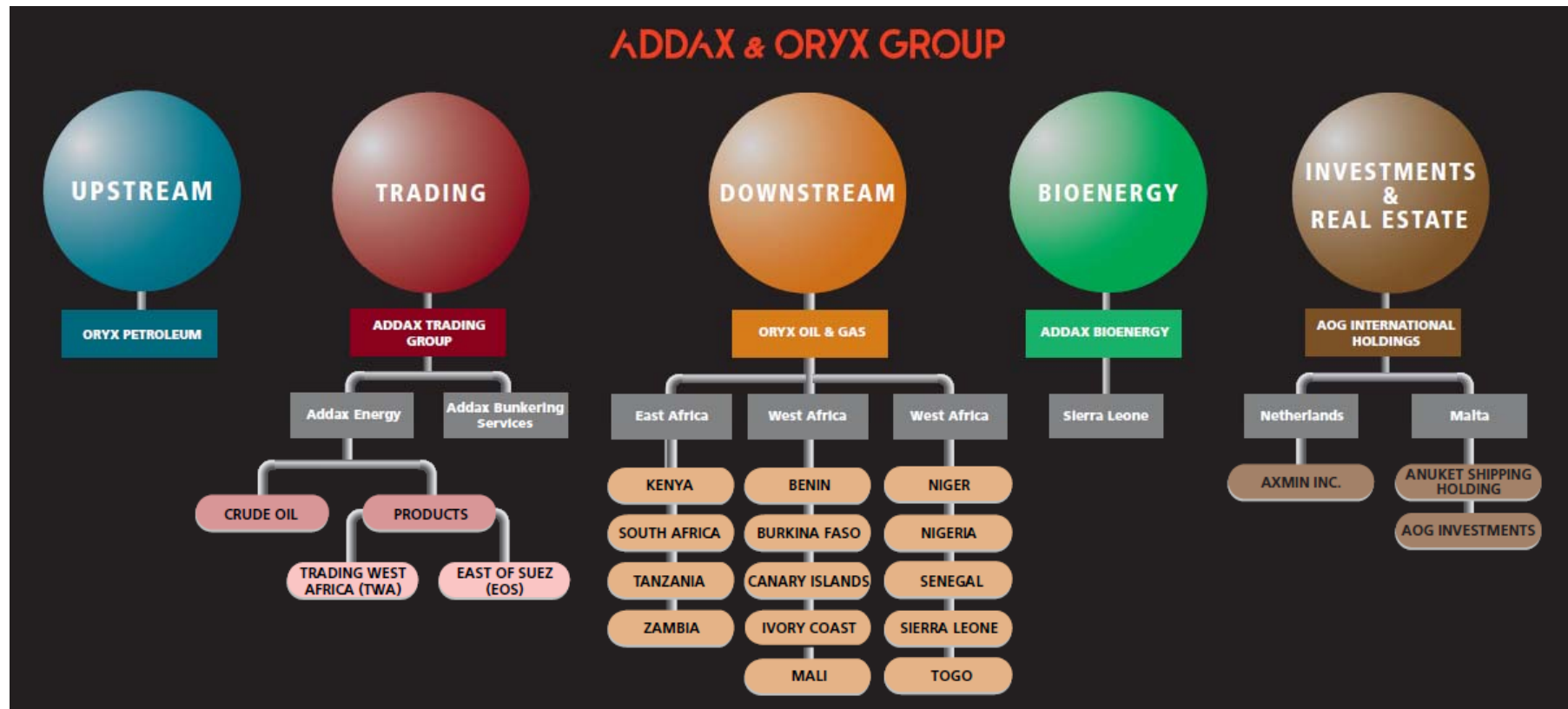
- **IFC Performance Standards**
- **AfDB Standards**
- **Equator Principles**
- **EU RED Directive**
- **Roundtable of Sustainable Biofuels and Bonsucro standards**

The project is developed in partnership with seven European and African development finance institutions (DFI's)



PROJECT SPONSOR: ADDAX & ORYX GROUP

Addax Bioenergy is a subsidiary of the diversified energy company Addax & Oryx Group (AOG)



- AOG's operations and investments focus on Africa, with a track record dating back to 1982.
- AOG's turnover in 2010 was USD 7bn.



THE MAKENI PROJECT: SCOPE

THE MAKENI PROJECT

Location

Makeni, Central Sierra Leone

Project features

Feedstock

Sugarcane

Factory

Ethanol and Power

Market

EU export and national grid

Project capacity

Plantation size

10'000ha, irrigated, mechanized

Processing capacity

1 mio tons of cane p.a.

Ethanol output

93'000m3 p.a.

Excess power

15 MW

Workforce

> 2000

Investment

EUR 258mio

Timing

Construction

2009-2013

First production

2013





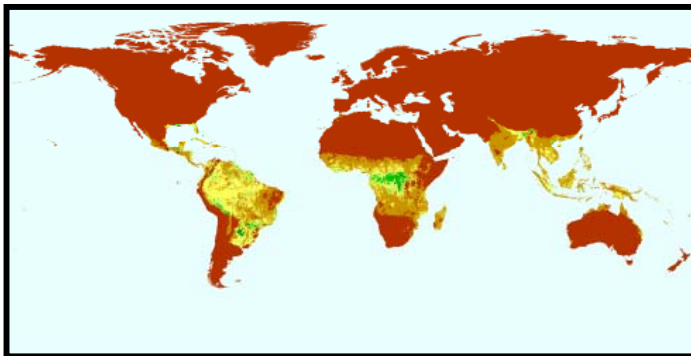
PARTICIPATING DFI'S





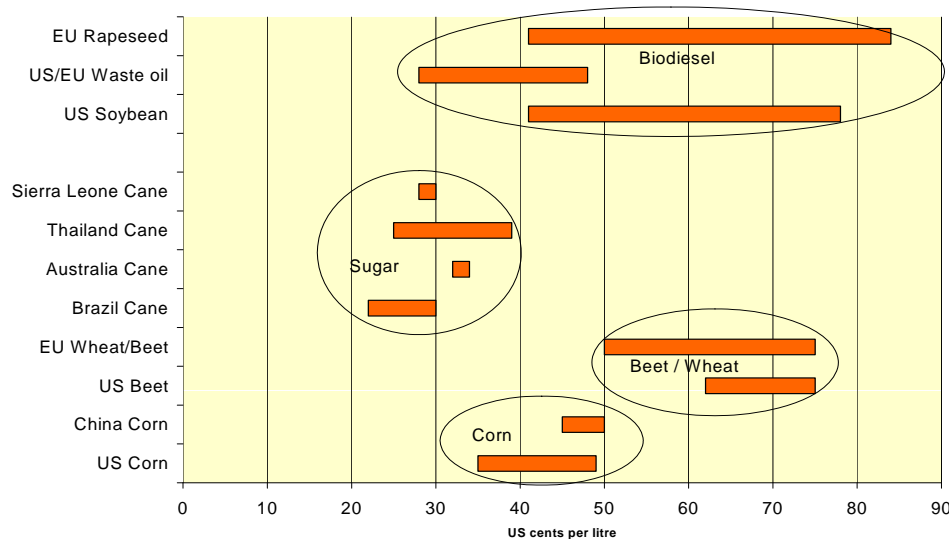
WHY SUGARCANE ETHANOL?

1. Sugarcane grows in most of sub-Saharan Africa

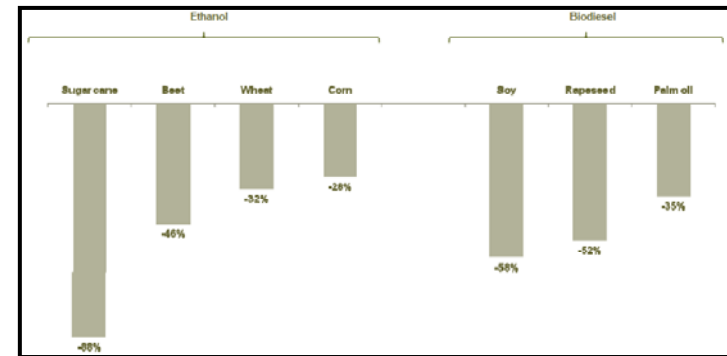


Proven Model

3. Lowest production cost

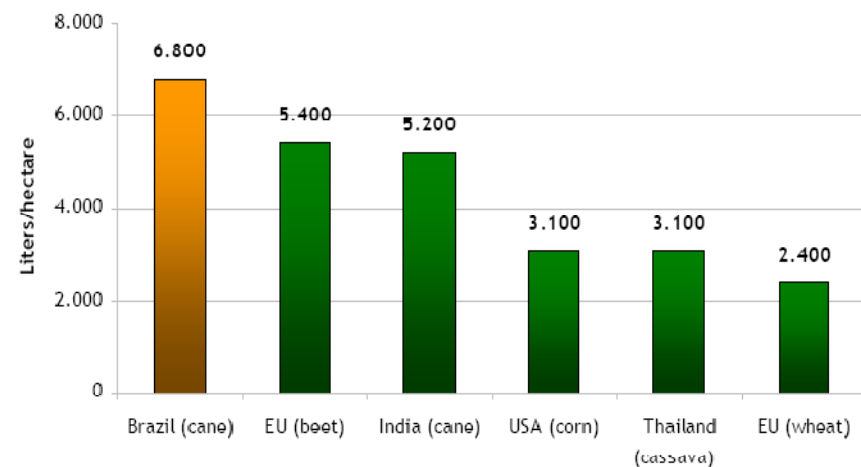


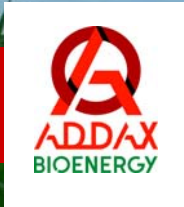
2. Best CO2 savings by far



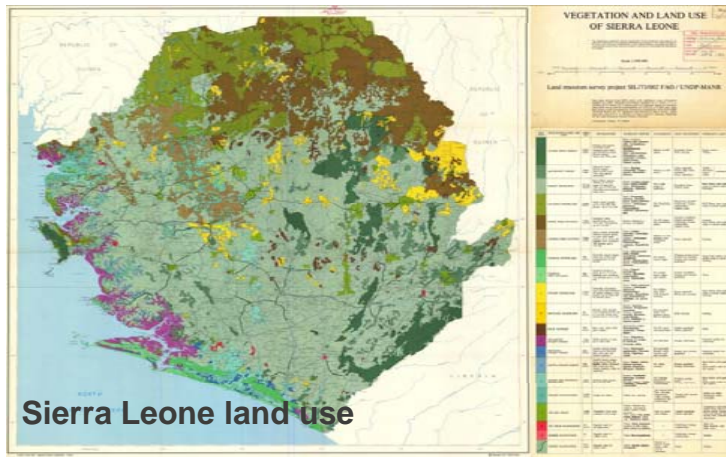
4. Highest yield per hectare

Raw Material Productivity





SIERRA LEONE: FACTS AND FIGURES



Sierra Leone facts (FAO 2010):

People	: 5 mio
Surface	: 7.2 mio ha
Forest cover	: 1 mio ha
Arable land	: 5.3 mio ha
Cultivated land	: 0.8 mio ha
Rainfall	: ~3000 mm

2 mio ha = 2050 food security target

3.3 mio ha = available



Gently undulating estate lands in Bombali District



Aerial pictures from the project area



PROJECT PHILOSOPHY, DESIGN AND AMBITIONS

Foundations:

Addax principles and experience with community relations in Africa

- = Long-term win-win community inter-action
- = Commercial success is key but must be sustainable (economic, social, environmental)

EU RED sustainability criteria for biofuels

- = Avoid displacement
- = Protection of biodiverse areas
- = Carbon life-cycle analysis

IFC Performance Standards – project focus on:

- = Food security
- = Land rights
- = Physical and economic displacement - resettlement
- = Nobody worse off than before

Law of Sierra Leone

- = SLEPA
- = Water Act
- = Land Act

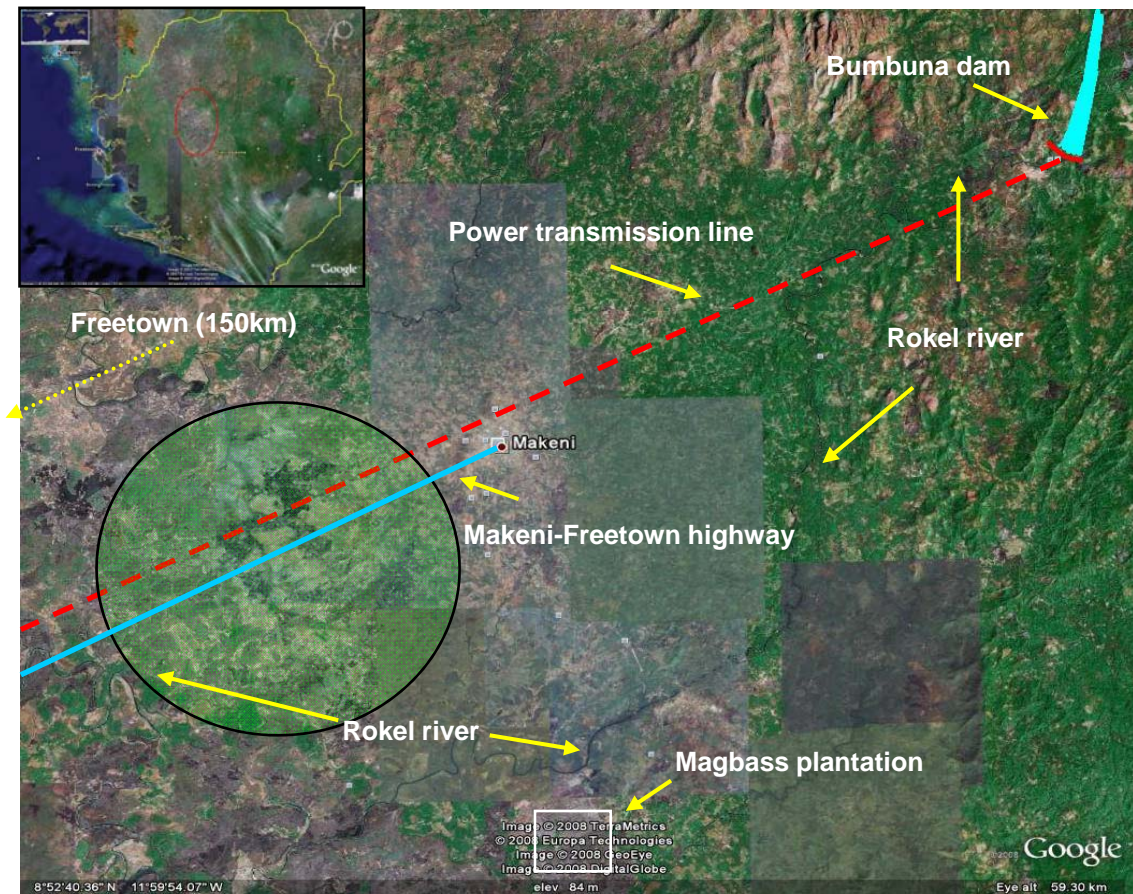
Impacts: Avoid if you can, mitigate if you can't



President Koroma Graduates Addax Farmer Field and Life School participants on 10 November 2011



PROJECT OVERVIEW



Bumbuna Dam



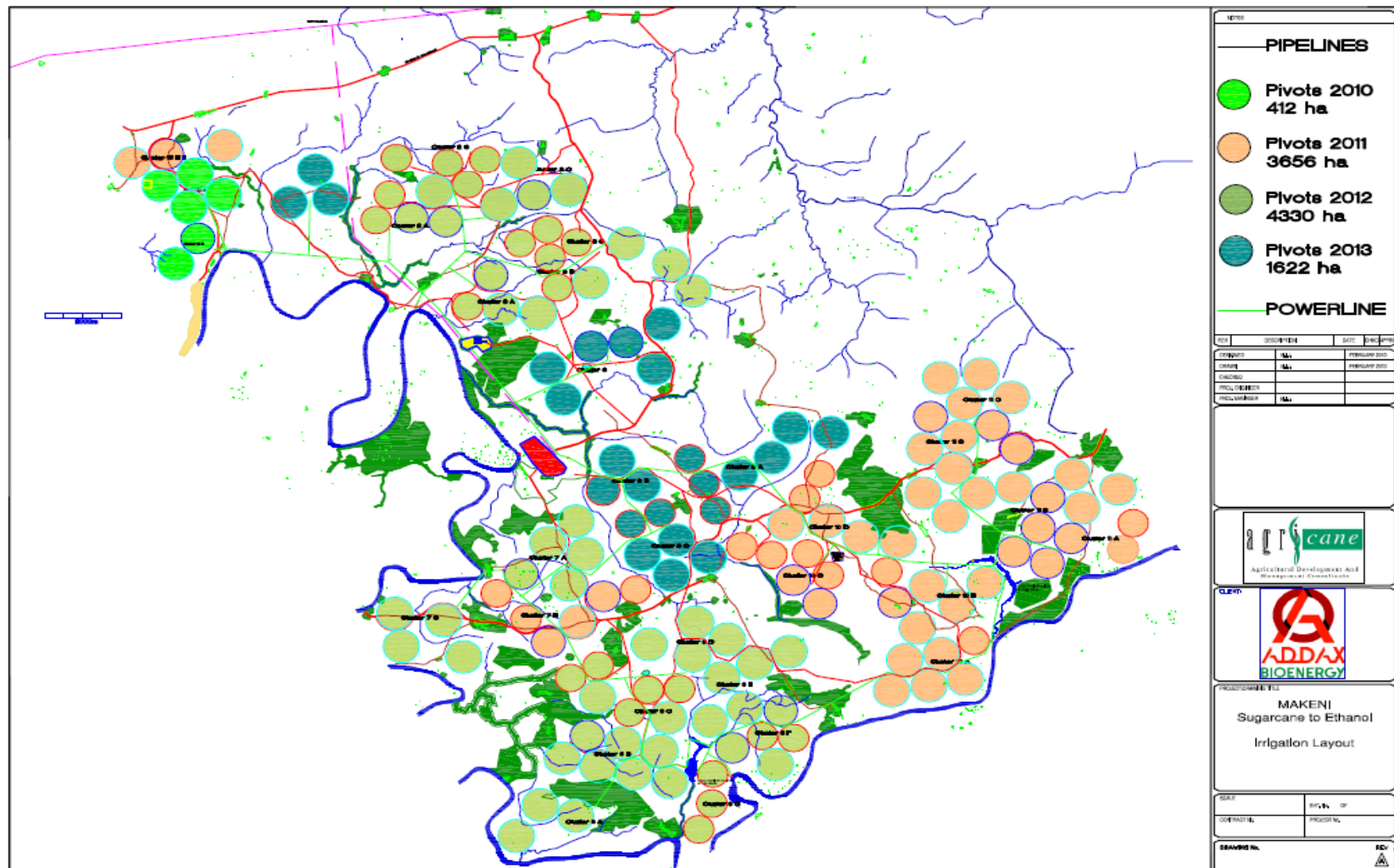
Rokel River



Project Area



Export Terminal





SUGARCANE DEVELOPMENT



The 40 ha pre-nursery, established in 2008



Centre-pivot irrigation systems



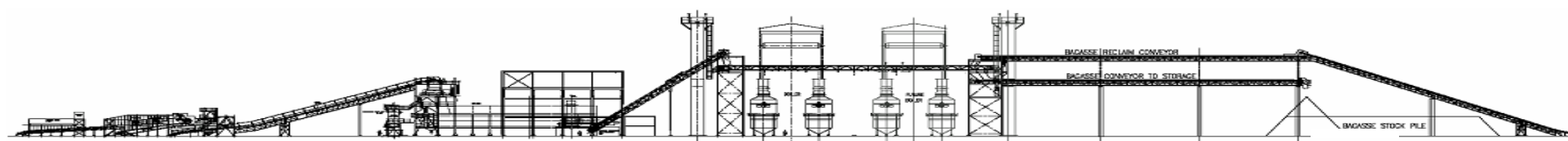
26 different varieties grown and tested



Sugarcane growing in Pivot 16-002



FACTORY LAYOUT AND PRODUCTION LINE



Cane Prep Line

Diffuser

Mill House

Boiler House

Bagasse Conveyors

Bagasse Stock Pile



THE FARMER DEVELOPMENT PROGRAMME (FDP)

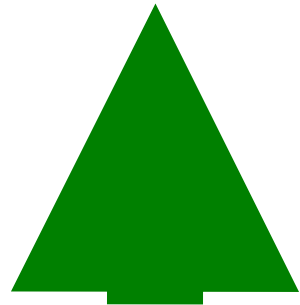
To ensure minimum impact on food crop production areas and that large areas of land are available within the project area for communities, Addax Bioenergy has set up the FDP:

- Aligned with Government and donor agricultural strategy
- Developed in cooperation and building on FAO experience
- Assisting smallholders to become self-sufficient
- Training > 2000 farmers during 30 week FFLS training courses
- First 118 farmers graduated in February (70% were women)
- >2000 ha of lands to be prepared under the Addax FDP
- Currently largest food production programme in Sierra Leone





PROJECT ENVIRONMENTAL AND SOCIAL PROCESSES



Level Five

- [Opportunities](#) – Project Affected People prioritised for job opportunities

Level Four

- [Mitigation](#) through Social Environmental Management Programme (SEMP)
- 29 individual management plans (ESMPs) with FDP being the flagship programme



Level Three

- [Compensation](#) through formal RAP Process



Level Two

- [Land Lease process](#) including Acknowledgement Agreement targeting land owners
- Coherent and transparent process - Lease of 5 USD per acre (abt 12 USD per hectare)



Level One

- Formal [Stakeholder Engagement](#) Process
- [Environmental Social impact Assessment](#) (ESHIA)
- 14 individual specialist studies

Each field and structure counted and ground-truthed:

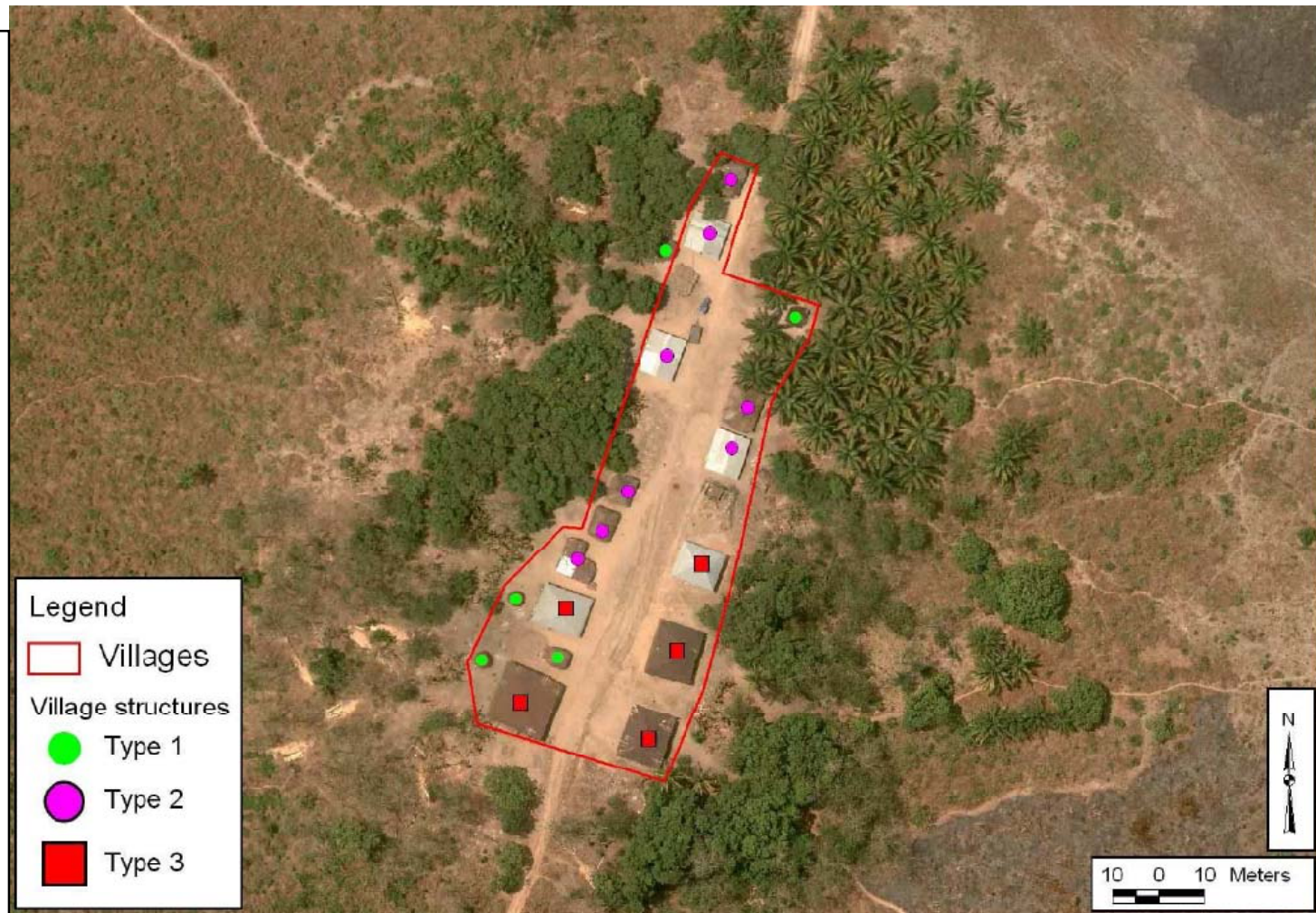
Type 1: 0 people
Type 2: 8 people
Type 3: 13 people

Number of villages in the project area =

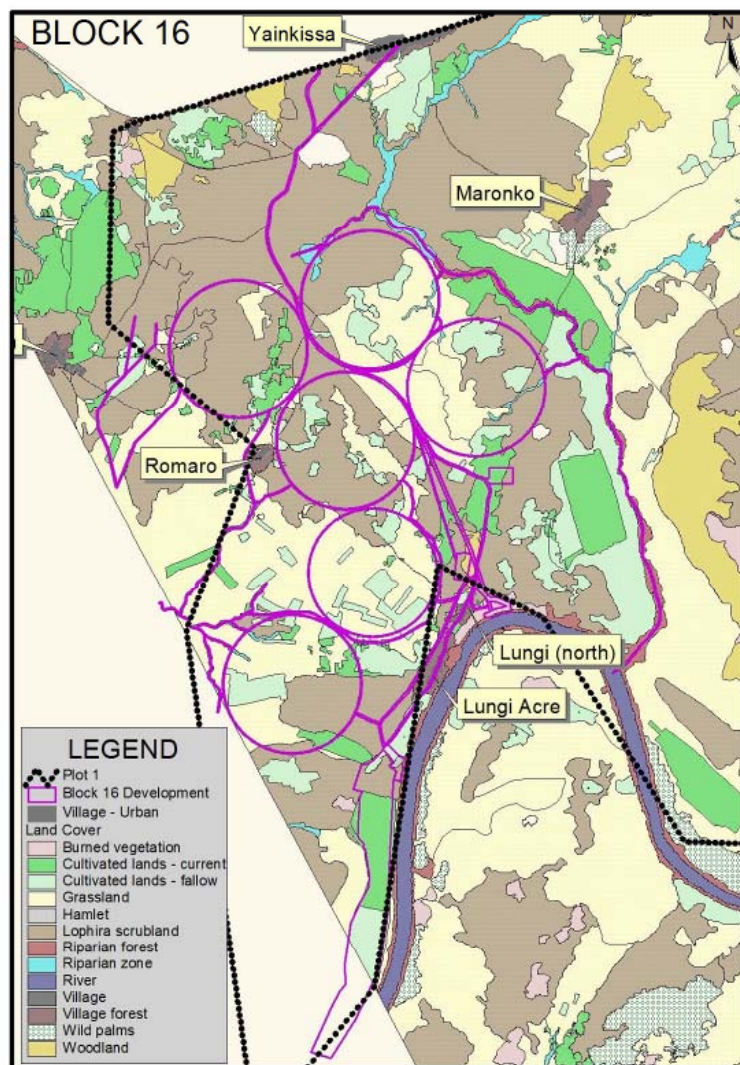
68

Total population in the project area =

13'600



Final land use assessment



Savannah use: Grasslands : 36%

Scrublands : 32%

Cropland use: Permanent : 2.3%

Fallow : 9%

Village use: : 0.1%



LAND LEASE – LAND ACQUISITION PROCESS

THIS INDENTURE is made under the Provisions of the Provinces Land Act, Chapter 122 of the Laws of Sierra Leone on the day of April in the year of Our Lord Two Thousand and Ten BETWEEN Paramount Chief, Regent Chief of the Chiefdom, together with Chiefdom Speaker, CHIEF, Chiefdom Councillor,, Principal men of the said Chiefdom, acting as the Chiefdom Council of the said Chiefdom (hereinafter called "the Chiefdom Council" which expression shall include their successors in office and in title) of the one part AND Addax Bioenergy (SL) Limited, a company incorporated under the Companies Act (Cap.249) of the Laws of Sierra Leone and having its registered office at No.4 Liverpool Street, in Freetown (hereinafter called "the Company" which expression where the context so admits shall include their successors and assigns) of the other part.

WITNESSETH as follows:

1.1. The Chiefdom Council hereby demises unto the Company ALL THAT piece or parcel of land situate and being at in the Northern Province of the Republic of Sierra Leone more particularly described in Schedule 1 (hereinafter referred to as the "Demised Premises" which expression includes all matters on or attached to the land other than Permitted Third Parties (as hereinafter defined) and any such matters belonging to Permitted Third Parties together with the rights set out in Schedule 2 over the adjoining and neighbouring land of the Chiefdom Council (the "Adjoining Land") TO HOLD the same unto the Company for a term of Fifty (50) years from the day of 2010 CERTAIN YIELDING AND PAYING therefore during the said term from the commencement of the Lease the yearly rent of US\$ 3.60 per acre

THIS ACKNOWLEDGEMENT AGREEMENT is made this day of in the year of Our Lord Two Thousand and BETWEEN

(1) **Addax Bioenergy (SL) Limited** a limited liability company incorporated under the Companies Act Cap. 249 of the Laws of Sierra Leone and having its registered office at No. 4 Liverpool Street, Freetown) in the Western Area of the Republic of Sierra Leone (hereinafter referred to as "the **Company**" which expression where the context so admits shall include its successors and assigns) of the one part; and

(2) the party named as the **Landowner** in the Schedule (hereinafter referred to as the "**Landowner**") for and on behalf of himself and the family named in the Schedule (hereinafter referred to as the "**Family**"), their successors in title and assigns of the other part

in respect of the area of land referred to in the Schedule (hereinafter referred to as the "**Plot**") :

WHEREAS:

(1.) The Company has entered into a Lease Agreement (the "**Lease**") dated the of 2010 and registered as No. at page in volume of the Book of Leases kept in the office of the Registrar-General, Freetown with the Chiefdom Council in respect of land (the "**Lease Area**") within the Chiefdom which includes the Plot for a

Land Lease and Acknowledge Agreement

Total Rent

US\$ 5 per acre - (US\$ 12 per hectare)
(US\$ 3.60 LL plus US\$ 1.40 AA = US\$ 5)

Distribution

50% Landowner
20% Chiefdom Council
20% Districts
10% GOSL

Land owners rent

Total amount US\$ 3.20 = 63% of total rent
US\$1.8 from Land Lease plus
US\$1.4 from Acknowledgement Agreement

Direct Compensation for lost crop

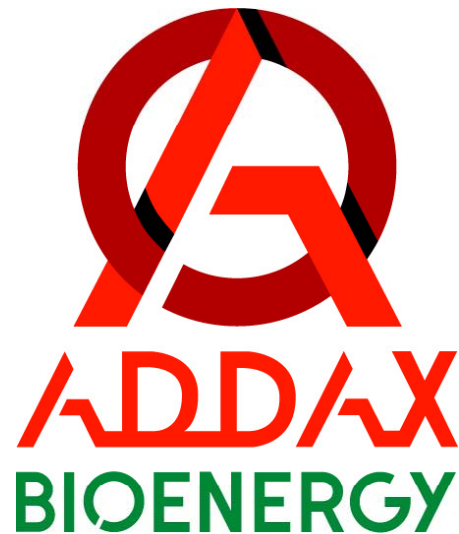
Formal compensation process







END OF PRESENTATION



Directing Energy – Growing Solutions

THANK YOU

www.addaxbioenergy.com