



Cassava

OPPORTUNITY THESIS

The Liberian cassava industry offers opportunities in both latent and unexploited verticals. The root has many applications in global markets many of which are fast-growing, premium and environmentally friendly. Innovation and differentiation will yield the highest returns in this sector.

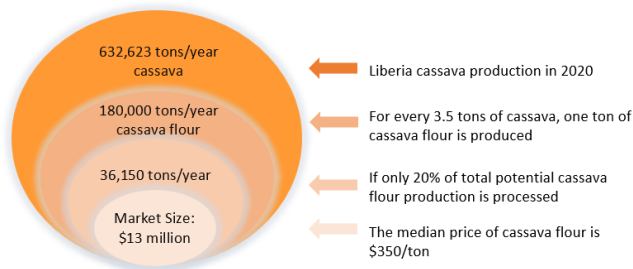
OPPORTUNITY OVERVIEW

The current value of three niche unexplored opportunities in Liberia is c.\$30 million with the possibility to grow at over 8% CAGR.

Cassava production in Liberia is already >600,000 tons/year.

Strong domestic demand and favorable global market conditions underpin continued growth. Cassava is a major staple food in the developing world, providing a basic diet for over half a billion people. It is the 3rd most important calorie source in many countries, after rice and maize; it is the 2nd most important in Liberia.

DIRECT IMPACT – UN SDGs



HIGHLIGHTED OPPORTUNITIES

1. CASSAVA FLOUR

Naturally gluten-free, it commands premium prices and has applications in cuisines around the world. Demand is driven by healthier diets and the increased number of people with celiac disease (+100 million people)

- Global Market Size (2020): \$5.4 billion
- Exp Market Growth (2021-2026): 8%
- Latent Value to Liberia (2020): \$13 million

2. EDIBLE CARBON DIOXIDE

Edible CO₂, marred by high import prices and unreliable supply, can be produced without its usual associate pollution by upgrading biogas generated by the processing of cassava peelings

- CO₂ yield from cassava: 35%
- Expected price: \$500/ton
- Latent Value to Liberia: \$6 million

3. ORGANIC FERTILIZER

A bi-product of processing cassava peelings is nutrient-rich organic fertilizer. Local production would change the whole industry as access to fertilizer is commonly a challenge, in terms of cost and availability

- Average price in West Africa: \$360/ton
- Local increase to FOB price: 50-85%
- Latent Value to Liberia: \$10 million

INVESTMENT IMPACT

1. Jobs created to meet additional production needs of new cassava processing facilities
2. Increase in income for cassava farmers due to the increase demand of cassava products
3. Increase revenue and profits for operators due to an increase in sales
4. Better access for Liberian consumers to healthy cassava products
5. Knock-on interest in Liberian cassava sector from stakeholders in the eco-system (warehousing, transportation, packaging)
6. Production of environmentally friendly fertilizer

Cocoa

OPPORTUNITY THESIS

Processing and branding cocoa will elevate the industry in the long run; in the short run, farmers need to plant trees and access quality inputs to harvest the volumes and quality that will command premium prices

OPPORTUNITY OVERVIEW

The current combined value to Liberia of the three highlighted opportunities is over \$110 million.

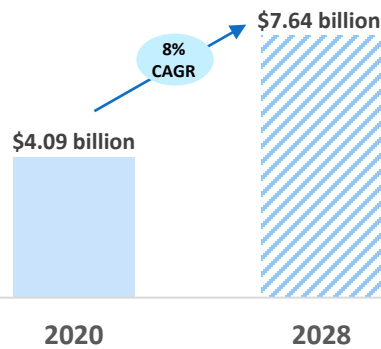
Cocoa is Liberia's second most important export crop, with nearly 50,000 households and 70,000 acres in production. Liberian cocoa yields around 110kg/acre, just 20% of its potential, demonstrating the huge upside potential of the sector.

The average price of cocoa is around \$2/kg so the value of the existing cocoa production in Liberia is \$15 million. However, the potential yield per acre is actually 650kg/acre (45 million kg/year) valued at >\$90 million. In short, the sector is being underutilized by nearly 500% and is ripe for investments.

DIRECT IMPACT – UN SDGs



Global Cocoa Butter Market



HIGHLIGHTED OPPORTUNITIES

ORGANIC-FAIRTRADE CERT.

Global organic cocoa market expected to grow to \$943 million by 2028. Liberian cocoa already has many traits for specialty buyers- biodiversity in rainforests and old trees that offer unique flavors compared to the uniform hybrids widely available

- Price Premiums for Organic and Fair-Trade Cocoa: + \$540/ton
- Global organic cocoa market (2020): \$533 million
- Liberia projected organic market (2028): \$30 million

COCOA BUTTER

Global cocoa butter market is projected to grow at 8% CAGR between 2020 and 2028. The growth in the market will be driven by the increasing demand for cocoa butter in food, cosmetic and pharmaceutical applications

- Liberia's cocoa production = 3% global production
- Global cocoa butter (2020): \$4 billion
- Liberia cocoa butter at 1.5% market penetration: \$60 million

SEEDLINGS & FERTILIZER

Farmers need cocoa seedlings to grow new tree stocks and agrochemical inputs to ensure quality harvests. Fertilizer slows the rate of tree mortality, results in higher yields and better, higher-quality pods

- Regional fertilizer costs: \$370/ acre
- Cocoa production: 70,000 acres
- Liberian agrochemicals market for cocoa: \$26 million

INVESTMENT IMPACT

1. Improvements of farm-to-market roads
2. More competitive and efficient cocoa marketing
3. Increased attention to critical processes like fermentation, drying and storage
4. Better selection, production and distribution of improved planting material
5. Agricultural input marketing
6. Potential development of rural finance



Coffee

BUSINESS MODEL DESCRIPTION

Establish greenfield farm or upscale existing operations and undertake sustainable production of cash crops, especially coffee, targeting global specialty markets

MARKET SIZE AND ENVIRONMENT

Global specialty coffee market estimated at over USD 50 Billion; African countries enjoying a premium price

The 2019 Specialty Coffee Transaction Guide highlights the ‘premiumization’ of African coffee, with the median FOB price at \$3.23/pound far above the average ICO benchmark price of \$1.09/pound.

African countries Burundi, DR Congo, Ethiopia, Kenya, Rwanda, Tanzania, and Uganda exported over USD 300 million worth of specialty coffee in the past three years. The global specialty coffee market is expected to grow from USD 54 billion to USD 153 billion by 2030, at a CAGR of 12%.

Liberica coffee, organically grown with high yields in its native Liberia, has become more visible on the global specialty coffee market.

EXPECTED IMPACT

Increase value added in food chains, strengthen economic growth and generate decent jobs.

DIRECT IMPACT



INDIRECT IMPACT



INDICATIVE RETURN

15-20% (IRR)

Benchmark statistics for the agriculture subsector estimate a rate of return between 13.8% and 17.8%. This rate is a benchmark calculated as a cost of equity with country risk premium, reflecting an average return required by investors.

INVESTMENT TIMEFRAME

Long Term (10+ years)

Producing cash flow from investments in coffee farms need to factor in a minimum of 5 years before trees begin to bear fruit. Initial high CAPEX requirements of greenfield investments dictate long-term cashflow and profit realization.

AVERAGE TICKET SIZE (USD)

<USD 500,000

MARKET RISKS & SCALE OBSTACLES

Capital – CAPEX Intensive

Inadequate infrastructure and processing facilities.

Market – Unregulated

Possible changes in the legislation and regulation governing the project.

Capital – Limited Investor Interest

Limited access to capital.

Fishery & Aquaculture

BUSINESS MODEL DESCRIPTION

Undertake sustainable breeding and production of high-value fish, such as tilapia or catfish.

MARKET SIZE AND ENVIRONMENT

USD 60 million – USD 100 million

In 2018 Liberia imported 28,815 metric tons of fish, with an estimated market value of USD 60 million. Imports in 2020 grew to 30,216 metric tons while exports dropped by 182 metric tons over the same timeframe.

Per capita fish consumption in 2020 was 11.42 kg, a level higher than the regional average; and recent national data supports consumption figures as high as 15 kg per capita.

Liberia has an estimated annual production of 40 metric tons of aquaculture with Tilapia and Catfish accounting for 93% and 7% of total aquaculture production respectively.

EXPECTED IMPACT

Contribute to food security in Liberia, increase value added in food chains and generate decent jobs.

DIRECT IMPACT



INDIRECT IMPACT



INDICATIVE RETURN

20- 25% (IRR)

The return profile of scaling fish breeding may differ depending on the size and kind of investment. A pond breeding project in Ghana generated an internal rate of return of 24%

INVESTMENT TIMEFRAME

Medium Term (5–10 years)

The pond used in a fish breeding project in Zambia had an estimated useful life of 10 years. Given the low-medium CAPEX involved in pond construction/operation, positive net cash flow is expected early in its useful life.

AVERAGE TICKET SIZE (USD)

USD 500,000 – USD 1 million

MARKET RISKS & SCALE OBSTACLES

Lack of government support and training

Location-specific economic, social, political realities in implementation

Business – Supply Chain Constraints

Absence of linkages between farmers, R&D institutes and extension; lack of requirements for training and capacity building

Capital – Limited Investor Interest

Limited access to capital.

Forestry

BUSINESS MODEL DESCRIPTION

Develop inclusive and sustainable forest clusters and transformation of primary timber products into value-added products

MARKET SIZE AND ENVIRONMENT

USD 50 million – USD 100 million

In Liberia, the domestic market for construction and woodworking continues to grow compared to estimated production and domestic lumber prices have skyrocketed in the past 5 years. On average, one cubic meter of sawn wood sold in Monrovia costs \$255 USD in 2022, a 68% increase from market prices recorded in 2017.

According to a survey conducted in 2017, between 207,583 m³ and 276,777 m³ of sawn timber is sold annually on the Liberian domestic market. As the supply of sawn timber increases to meet demand, the estimated minimum domestic market size for sawn timber is in excess of \$50 million USD.

INDICATIVE RETURN

15%- 20% (IRR)

A "greenfield" mill equipped with the latest technology can achieve EBITDA margins above 40% through a lumber market cycle. At that level of profitability an IRR above 20% is possible from a sawmill investment.

MARKET RISKS & SCALE OBSTACLES

Capital – CAPEX Intensive

Inadequate infrastructure, machinery, equipment, and processing facilities

Market – Unregulated & Volatile

Small-scale commercialization remains unchecked driving pockets of unfair competition. Market prices lack full transparency, given the floor set by illegal loggers

Capital – Limited Investor Interest

Limited access to capital.

EXPECTED IMPACT

Promote sustainable forestry economic activities that can bring opportunities to the local communities as well as women.

DIRECT IMPACT



INDIRECT IMPACT



INVESTMENT TIMEFRAME

Long Term (10+ years)

Mill construction projects offer long payback periods due to the fact that it normally takes two years to build a new facility – and an additional year to see the mill ramp up to its full production capacity.

AVERAGE TICKET SIZE (USD)

USD 100 million – USD 120 million

Oil Palm

OPPORTUNITY THESIS

Working with all stakeholders to ensure that the sector adheres to sustainability and environmental standards is priority so the GOL is committed to allocating resources to mitigate investor risks and provide incentives to agripreneurs .

MARKET OVERVIEW

Oil Palm covers over 1 million hectares of land and is produced by over 20% of farming households.

The sector employs over 220,000 workers in various aspects of the value chain, which has driven a steady increase in production year on year. In 2019, Liberia produced 22,265 tons of oil palm, up 23% from 18,104 tons in 2018. Four major Oil Palm Concessions include Golden Veroleum in Sinoe County, Sime Darby (Now Mano Palm Oil Industries) In Cape Mount County, Maryland Oil Palm Plantation in Maryland County, and Equatorial Palm Oil in Grand Bassa County. Together they control 519,324 hectares, with 108,601 hectares under outgrowers scheme.

INVESTMENT FRAMEWORK

Investors to fund a credit lending vehicle administered and guaranteed by local banks where the target beneficiaries are established local “agri-preneurs” with packaging and export operations that can meet credit standards.

INVESTMENT TERMS

Fund Size: \$5 million (debt or equity)

Life of Fund: 5-7 years minimum

Average ticket size: \$1.5 million

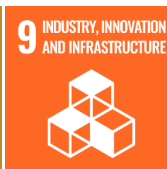
NATIONAL AGENDA OBJECTIVES

- Compliance with National Standards for the Liberian Oil Palm Sector
- Develop an Enabling Regulatory Framework for the Oil Palm Sector
- Develop a 5-Year Financing Mechanism to Guide Sustainable Oil Palm Development.
- Provide Support to Improve Livelihoods for Smallholder Farmers and Communities.
- Develop a Conflict Resolution Mechanism and a Feedback Grievance Redress Mechanism.
- Develop an integrated land use plan in conformity with the Liberian Land Rights Act (2018), with specific focus on the acquisition of deeds for customary land.
- Integrate Sustainable Conservation Practices in Oil Palm Production Landscapes, in conformity with the Liberia National REDD+ Strategy and other Relevant National and International Commitments

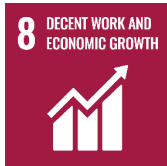
EXPECTED IMPACT

Economic development and job creation from value added processing. Stimulate local investment along multiple aspect of the supply chains.

DIRECT IMPACT



INDIRECT IMPACT



OPERATING LANDSCAPE

Liberian agripreneurs include:

J Palm Liberia: process, package cosmetic products

Atlantic Beverage Company: process, package, export palm oil

Dunia Lotomai Farms: produce, package oil for fine dining



Rice

OPPORTUNITY THESIS

African demand for rice is growing at 6%, faster than any other food staple in sub-Saharan Africa, and Liberia has the highest per capita consumption of rice in Africa.

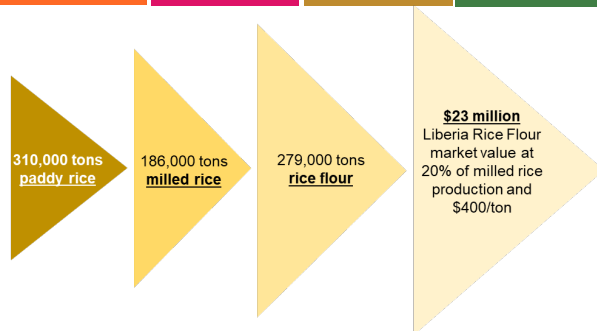
OPPORTUNITY OVERVIEW

Annually, Liberia imports over \$140 million worth of rice alone. Total consumption of rice is over \$220 million.

Meanwhile, Liberia's rice ecosystem is characterized by abundant rainwater, wide uplands, and a temperate climate, making it an ideal location for producing substantial volumes of high quality rice in both lowland and upland areas.

The main weaknesses in the value chain have revolved around low yields, poor infrastructure and a lack of innovation, which together make local smallholder production broadly uneconomical. But demand for rice in Liberia is incessant and growing – the country has the highest per capita consumption in Africa. As such, investments that address costs, production yield, and processing innovations stand to capture worthwhile returns.

DIRECT IMPACT – UN SDGs



HIGHLIGHTED OPPORTUNITIES

RICE FLOUR

Rice flour is naturally gluten-free, making it a healthier alternative for those who suffer from celiac disease (+100 million people worldwide). The increasing awareness about healthy flour alternatives to wheat flour will drive demand growth.

- Global Market Size (2020): \$880 million
- Exp Market Growth (2022-2027): 4.5%
- Latent Value to Liberia: \$23 million

RICE HUSK ASH (RHA)

An abundantly available renewable agriculture waste found in all rice producing countries, RHA (the product of burning rice husk), is one of the most effective substitutes for cement in concrete due to its high silica content.

- RHA yield from milled rice: 25%
- Global Market Size (2020): \$1.3 billion
- Potential Value to Liberia at 1 million tons of rice production: \$21 million

SEED FILM CULTIVATION (SFC)

SFC is an innovation that increases the sustainability of rice farming. It protects against loss of warmth, moisture, fertilizer, and controls weeds, while minimizing greenhouse gas emissions.

- Liberia yield: 1.5 tons/hectare
- SFC expected yield: 6 tons/hectare
- Post-SFC production: 1 million tons/year
- Post-SFC production value: \$240 million

INVESTMENT IMPACT

1. Augment food security as dependence on imports is reduced
2. Reduce hard currency expenses while increasing reserves of it from reducing imports
3. Jobs created all along the value chain: land preparations, running machines, procuring supplies etc
4. Rural development as farmers develop new skills working with new tools
5. Improvements in infrastructure when roads and warehouses are built

Rubber

OPPORTUNITY THESIS

The true value to stakeholders in the Liberian rubber sector lie in the midstream and downstream verticals of the value chain.

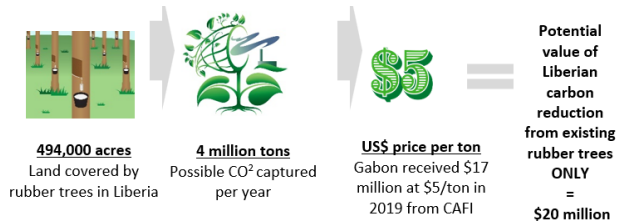
OPPORTUNITY OVERVIEW

With 500,000 acres covered in it, rubber is one of Liberia's strongest foreign exchange earners and primary agricultural export crops.

The estimated combined value of establishing a biodegradable rubber gloves industry that also prints carbon credits is estimated at \$440 million.

Midstream investments in the value chain mean tapping huge reserves of latex in a country that is in close proximity to the second and third largest rubber surgical gloves markets in the world (United Kingdom, \$202 million and Germany, \$227 million). Liberia contains the largest carbon sink in Africa outside of the Congo Basin making the carbon credits potential huge.

DIRECT IMPACT – UN SDGs



HIGHLIGHTED OPPORTUNITIES

RUBBER GLOVES

During the Covid-19 pandemic, demand for gloves worldwide surged over 100% for the first few months of 2020 to more than 200 billion pieces and global rubber gloves market was valued at \$34 billion in 2020

- Amount of producing trees: >75 million
- Productivity: 600kg rubber/year & 200 gloves/kg
- Imported gloves US: \$0.56/dozen pairs
- Addressable Liberia: \$420 million

CARBON CREDITS

Global demand for carbon credits is surging as companies race to offset their emissions. Countries are also striving hard to meet their emissions reduction targets to achieve net-zero emissions by 2050.

- Global Market (2020): \$270 billion
- Carbon reduction revenue to Gabon (2019): \$17 million
- Carbon reduction revenue to Liberian from existing rubber trees alone: \$20 million (~880k cars removed)

RUBBER REHABILITATION

It is through the rehabilitation of unproductive rubber trees that the protection of the biodiversity in the rainforests can be achieved and massive economic windfalls can be tapped for the country and farmers.

- Gross income from rubber: \$67/month
- Given 200,000 hectares (494,000 acres) of land covered by rubber trees in Liberia, this translates into \$32 million/month (\$400 million/year)

INVESTMENT IMPACT

1. Increase in jobs due to the opening of rubber gloves factories and labor-intensive plantation rehabilitation initiatives
2. New carbon credit monitoring and monetizing capabilities will create jobs and new skillsets
3. Quantifiable positive impact on climate change due to forestry management
4. Acquisition and transition into skilled-labor force through the introduction of rubber gloves factories