



**"Organic Kernels with low Carbon Footprint Certification:  
Strategies for Processors".**

**Case Study – Cashew Processing Hub at GDIZ, Benin**



# Cashew Processing Hub : Glo-Djigbe Industrial Zone (GDIZ), Benin



SIPI BENIN APRIL 2022



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# General Context

Significant gross Beninese production but still very limited local processing

The production raw cashew nut: one pillar of the Beninese economy



**140,000 - 150,000**

Tonnes de noix de cajou brutes  
produites par an  
(world top 10 and african top 5)



**9%**

Part du secteur de la noix  
de cajou dans les  
exportations

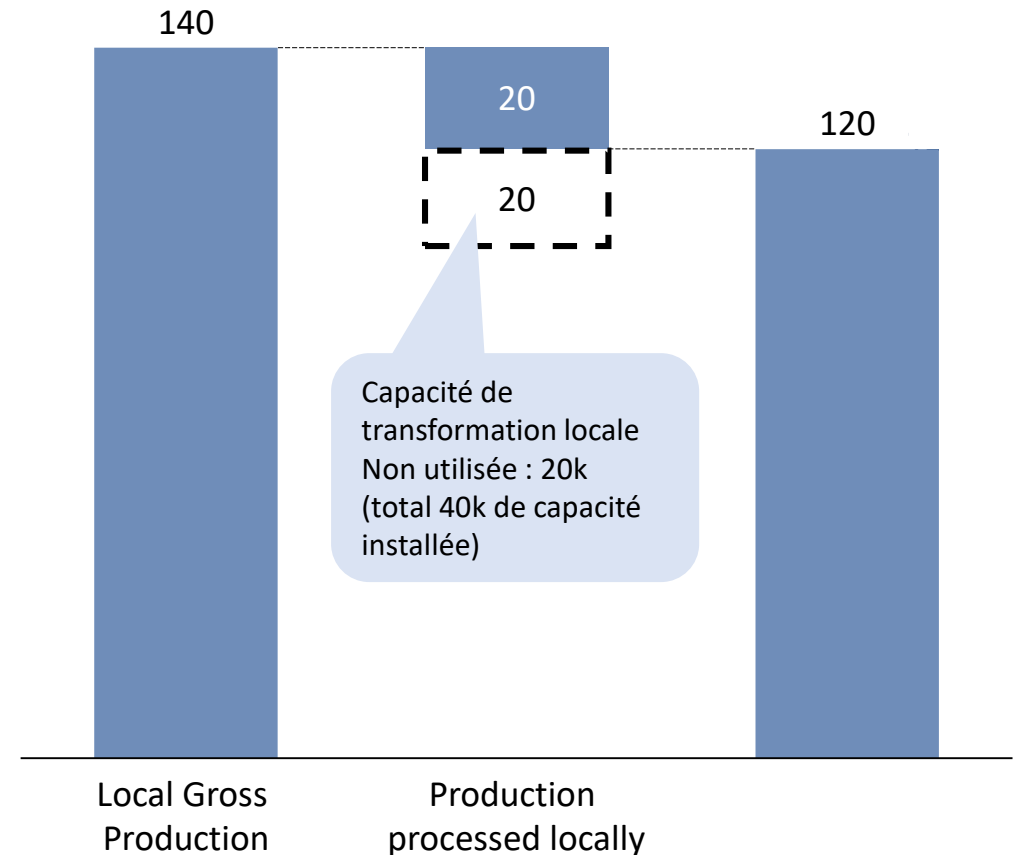


**200,000**

Acteurs impliqués dans le  
secteur noix de cajou

Negligible Local Transformation (c. 14% of production)

Thousands of tons, Raw Cashew



# International trends in the Cashew Sector

1

## Strong Market Growth



- The **global demand for cashew nuts is growing strongly (+ 5.5% /year between 2013 and 2019)** due to the growing popularity of cashews in **developed nations** (cf. trend 2) and due to increase in purchasing power of households in **emerging countries**
- **Cashew nut prices have increased by 2.4% /year since 2005**, with peaks explained by production shocks in the face of growing demand

2

## Sustainable development



- **Consumers, retailers and wholesalers are more and more sensitive to compliance with social and environmental standards**
- Requirement of **traceable** (" from the field to the cupboard ") and **eco-friendly** (eg, manufactured using renewable energy sources) products, especially with regards to **foodstuff**
- **Circularity** as a tool to promote **Ecosystem development** and **Economies of Scale**



3

## "Healthy" trend



- **Vegan / Vegetarian Trend** - consumers are increasingly attracted to cashew nuts for their **nutritional benefits** ( source of protein for vegetarian diets) as well as for the **carbon emission linked to livestock**.
- The **proven health benefits** (reduction of cardiovascular risks) of cashew nuts further increase the attractiveness to consumers



4

## Relocation of Transformation



- The current logistics chain represent nearly **10% of global greenhouse gas emissions**
- **Development of cashew nut processing in Africa**, since African countries are major producers, would thus make it possible to meet the requirements of the SDGs<sub>1</sub> in **reconfiguring logistics chains** (migration of processing activities **from Asia to Africa**, closer to American and European consumption centers)



Sources : Olam, INC, Clipper Mag, UNCTAD

Note : (1) Sustainable Development Goals

# The Project – GDIZ

Development of an integrated cashew processing hub



- Cashew Processing Units
- Complementary Units: Plastic Bags, Laboratory Carton Box Packing Unit, Cashew Milk, etc.
- Warehouses
- Cashew Drying Area
- CNSL Plant

## CHARACTERISTICS



**Number of processing units : 10**



**Complementary units:** Laboratory, Carton packaging units, Plastic bags, CNSL Unit, Briquette & Charcoal: 5



**Status : Under construction**



**Start of operations:**

August 2022 - 2 units each 15,000 tonnes/year  
Jan 2022 - 2 units each 15,000 tonnes/year  
Mar 2023 - 6 units each of 10,000 tonnes/year



**Environment Approval :**

IFC Compliant Land compensation and Environment Impact Assessment & Monitoring



# GDIZ Warehousing & Logistics

Improve the logistics of the sector - Development of storage capacities

## Project description



Warehouses under construction - GDIZ

## CHARACTERISTICS



Area : 100,000 m<sup>2</sup>



Number of warehouses: 14



Status : Under construction



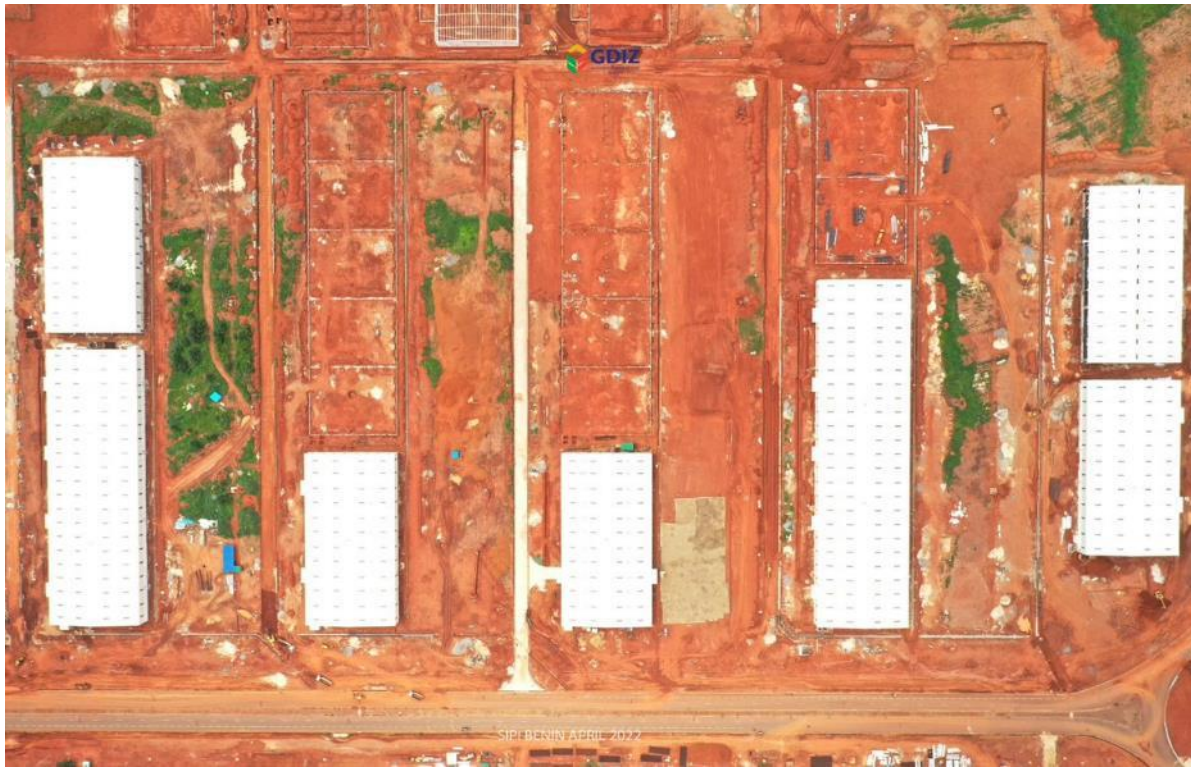
Operations Start date :  
March 2022 (30,000 m<sup>2</sup>)  
April 2022 (70,000 m<sup>2</sup>)



Roof Top Solar Power:

- 100,000 Sqm roof Top Solar on Warehouses
- 125,000 Sqm roof Top Solar on Industries







# The Project – GDIZ

Development of an integrated cashew processing hub

Presentation of complementary units

**Food**  
**Ingredient's laboratory**  
for products  
derivatives (eg, milk, butter)

**Packaging Units**  
**processed cashews**

Unit of **shell processing**  
nuts and husk Charcoal,  
briquettes, color pigment

Unit of **oil production**  
**cashew nut (CNSL<sup>1</sup>)**



Development of  
**local know-how**, and  
some **quality** finished  
products



Integration toward  
downstream, creation of  
**value local**



Optimization of **rate**  
**of use** of the  
raw material



the **best of**  
**waste** - product  
organic chemical



**Note :** (1) CNSL = Cashew Nutshell Liquid

# Facility: Single Window Clearance...

LEED Certified Single Window Clearance (SWC) building



## Design Concept

SWC Building  
Designed to be built  
as **GREEN LEED  
CERTIFIED GOLD  
BUILDING**



1<sup>st</sup>

Building  
in Benin  
(Proposed)



# Sustainable Development Policy

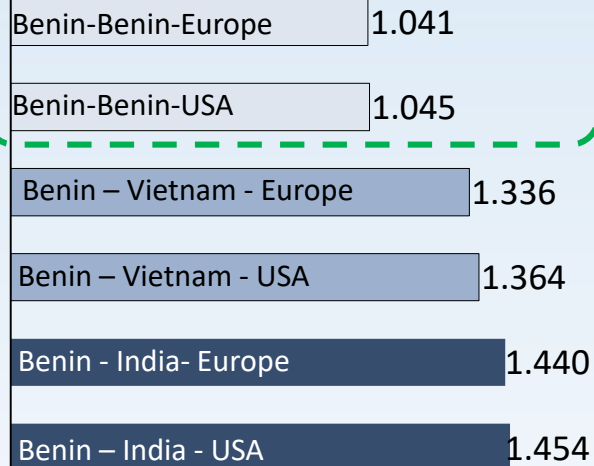
Adopt a sustainable development policy

## Lowest Carbon Footprint

Life Cycle Assessment Study of  
Cashew Processing

Production-Processing-Market

Co2 emitted per Kg



~38% higher carbon footprint if  
processing from India

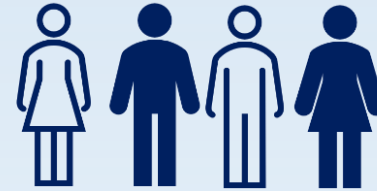
~28% higher carbon footprint if  
processing from Vietnam

## Achieve Zero Waste



- Create a zone with **zero waste loss**.
- Options being developed to **reuse waste** (industrial symbiosis) especially Cashew Shells and husk.

## Diversity & Inclusion



- Target 30% workforce with women employees.
- Setting up a Vocational Training Center in GDIZ SEZ.
- **Nationally accredited** vocational training programmes for workforce training.

## Responsible Supply Chain Management



- Organically Sourced Traceable Cashew
- 3<sup>rd</sup> Party Verification & Certification
- Product are sourced from a responsible supply chain.
- Track how the product was grown, harvested and processed.

# Cashew – Life Cycle Assessment

## LCA assessment - Methodology



### Goal

Determine the environmental impact of production and some processing of cashew nuts in Benin compared to other countries

Partnership with the independent consulting firm to do a life cycle assessment according to ISO 14040 and ISO 14044 standards :

- **Purpose and scope** : multi-country benchmarking study to assess the carbon and water footprint of processed cashew production
- **Stock analysis** : assessment of inputs and outputs of raw materials and energy at all stages of the value chain
- **Impact assessment across the entire value chain**
- **Results interpretation**

### Collection and analysis of data across the entire value chain



#### Agricultural phase

##### Cashew nut production rough

- Water consumption
- Wastewater production
- Use of pesticides
- Average production over 5 years
- Production of organic waste

##### Storage in warehouses

- Capacity
- Distance from the farm
- Electricity consumption
- Type of energy



#### Transformation phase

- Equipment power
- Usage time
- Energy consumption

- Drying
- Steam cooking
- Cooling and soaking
- Shelling and separation
- Drying almonds
- Cooling almonds
- Peeling almonds
- Sorting and packing



#### Transport

- Type of transport
- Fuel type
- Distance traveled

- From producer to warehouse
- From the warehouse to the national or international processing plant
- From the country of processing to the country of consumption



# Cashew – Transport comparison

West African Cashew Logistics



Beninese Cashew Processed in Vietnam	Beninese Cashew Processed in West Africa
Cotonou (Benin) -> Ho Chi Minh City (Vietnam) 16470 kms <b>For 1000 tons of RCN = 16.47 million ton-km</b>	Cotonou(Benin) -> New York 8991 kms <b>For 230 tons of Kernel = 2.07 million ton-km</b>
Ho Chi Minh City -> New York 20079kms <b>For 230 tons of Kernel = 4.62 million ton-km</b>	
<b>TOTAL</b> <b>= 21.09 MILLION ton-km of logistics</b>	<b>TOTAL</b> <b>= 2.07 MILLION ton-km of logistics</b>



**LOGISTICS 10 TIMES HIGHER FOR ASIAN PROCESSING VS WEST AFRICAN PROCESSING**

# GDIZ Growing Client list

Snapshot of Signed Clients for the cashew processing zone





**THANK YOU**

