



Market opportunities and drivers for investment in Mauritania's cold chain

Market findings and tailored solutions



Prepared by:



Navigating Zoom

The screenshot displays a Zoom meeting interface. The main window shows a presentation slide for the "GLOBAL COLD CHAIN ALLIANCE" dated "February 7, 2023" with the title "International Projects". The slide lists "Amanda Brondy, Vice President of International Projects" and "Madison Jaco, Manager of International Projects". At the top of the Zoom window, it says "You are viewing Amanda Brondy's screen" and "View Options".

Overlaid on the right side are two windows:

- Chat Window:** Contains the text "Please type your question in the Chat Box" and "Please note that your chat can be sent to the Host, Panelists, or to Everyone. If you do not want everyone to see your question, please do not send it to everyone." It also has a dropdown menu for "Who can see your messages?" set to "All panelists" and a note "Your text can only be seen by panelists".
- Question and Answer Window:** Shows "All questions (1)" and "My questions (1)". A question from an "Anonymous Attendee" at "09:12 AM" asks "What is the government's to support cold chain development in the DR?". Below the question is a text input field "Type your question here..." and another dropdown menu for "Who can see your questions?".

At the bottom of the Zoom window, there is a toolbar with icons for "Mute", "Chat", "Raise Hand", "Q&A", and a "Leave" button.

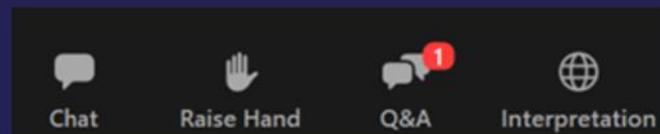
Posez vos questions, répondez aux autres et demandez de l'aide.
Ask questions, respond to others, and request technical assistance.

Fonctionnalité
« Chat »
"Chat" function

Q&A

Interpretation Function / Fonction d'Interprétation

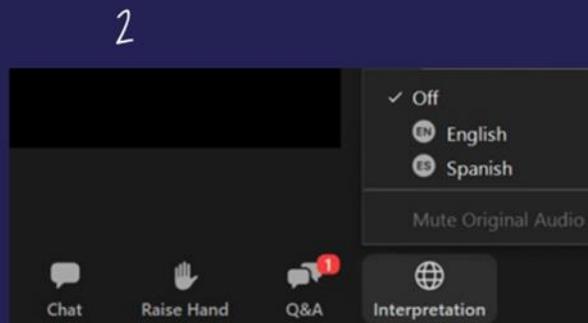
Click Interpretation option



Cliquez sur l'option Interprétation

Then, select your language

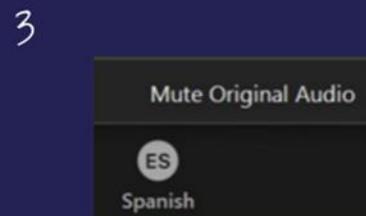
*When speaking, please speak in the selected language.



Puis, sélectionnez votre langue

*Lorsque vous prenez la parole, veuillez vous exprimer dans la langue choisie

Mute Original Audio mutes the background voice



Couper le son original pour éviter d'entendre une autre voix en arrière-plan.



Ian MacNairn



Julie Hanson



Roudy Akiki



Reda.allah Benchama

Introduction



LixCap's expertise and past performance in cold chain assessment & financing

1. Market Assessment to Develop Integrated Regional Cold Chain Infrastructure in North and West Africa for Ifria Cold Chain Development Company in partnership with Global Cold Chain Foundation (GCCF) : USDA – Emerging Markets Program (EMP) -Funded.
2. Master Plan Development for Service Chain & TCL Platform for Perishable Storage in Benin in partnership with GCCF (PACOFIDE /World Bank).
3. Master Plan Development for the Establishment of an International-Class Cold Terminal for Perishable Products in Burundi in partnership with GCCF (PDLE/World Bank).
4. EMP Cold Chain Assessment, Training & Advisory Services for Angola (USDA).

Key outputs of the POA Mauritania Cold Storage Assessment 2024-2025



Market assessment

LixCap conducted a cold chain assessment to evaluate potential, local demand and infrastructure gaps in project areas covering the Senegal River Valley (Trarza, Brakna, Gorgol, Assaba, Guidimakha) and Nouakchott.



Cold chain tailored technical solutions

The study identified infrastructure needs and recommended tailored cold chain solutions and models.



Constraints and opportunities

Evaluated policy gaps and bottlenecks that hinder cold chain development.



Recommendations

Provided strategic recommendations for market development and developed training programs with GCCF to enhance cold chain expertise.

Note: The above are illustrative references of LixCap's experience in cold chain projects.



Mauritanian market overview

Characteristics and constraints

Mauritania as an investment location

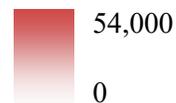
Infrastructure connectivity around cultivated lands

Trans-African Highways

1. Morocco - Dakar
2. Dakar - Ndjamena
3. Dakar - Lagos

★ Nouakchott – Capital city

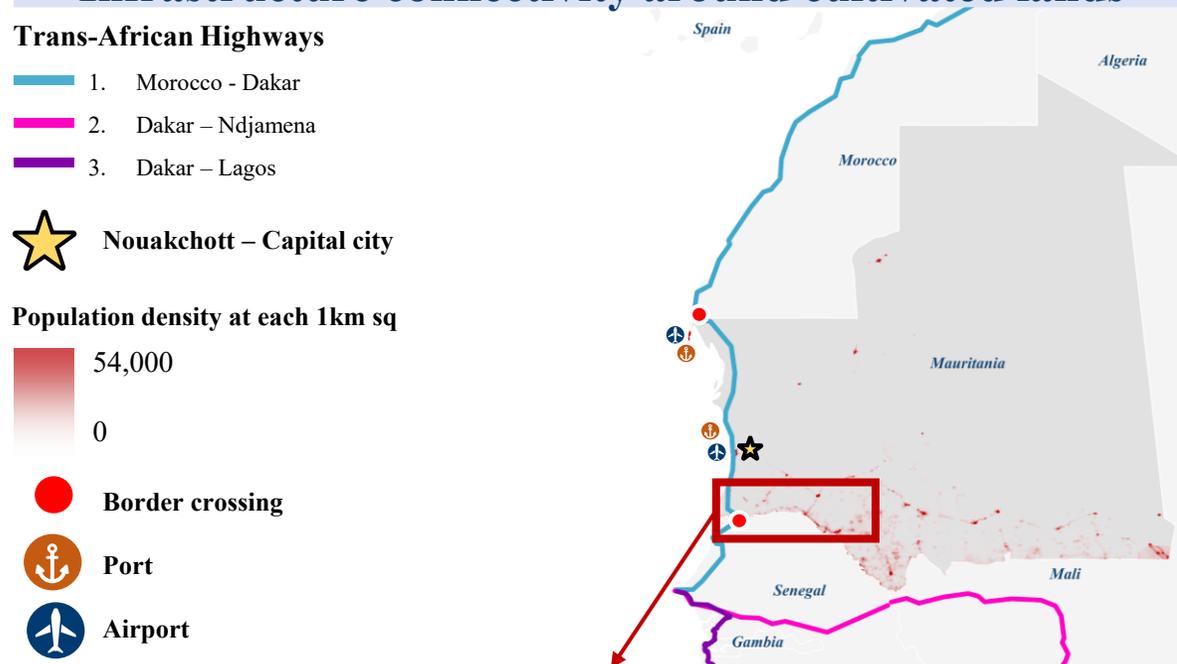
Population density at each 1km sq



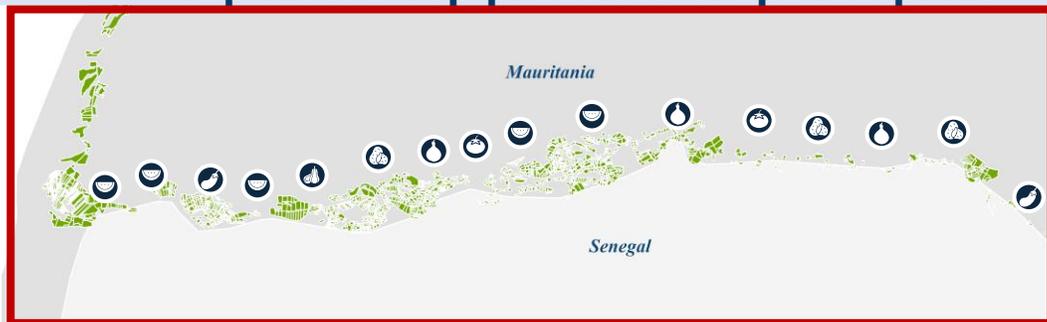
● Border crossing

⚓ Port

✈ Airport



Map inset : Top produced crops footprint



Watermelon
 Tomato
 Potato
 Squash
 Onion
 Eggplant

Production land

Nominal GDP growth

57%

Nominal GDP grew from 7 billion USD to 11 billion USD from 2011 to 2023

Expected population growth

71.2%

Population estimated to grow from around 5.2 million in 2024 to an estimated 8.9 million by 2050

GDP per capita growth

6%*

Nominal GDP per capita grew from 2,072 to USD 2,453 from 2011 to 2023

* Compounded annual growth rate

Identified bottlenecks: What hinders cold chain development in Mauritania?

Absence of coherent national agricultural strategy

01

High electricity cost and unreliable supply

02

Relatively small market size compared to neighboring countries (Morocco and Senegal)

03

Absence of coherent food safety regulation and authority

04

Lack of adequate cold chain expertise (engineering, operations, etc.)

05

Absence of national logistics and cold chain logistics strategy

06

Access to finance

07

Access to land (especially outside port of Nouakchott)

08

Limited ability to pay for cold chain services

09

Mapping land cultivation and current cold chain infrastructure

Legend

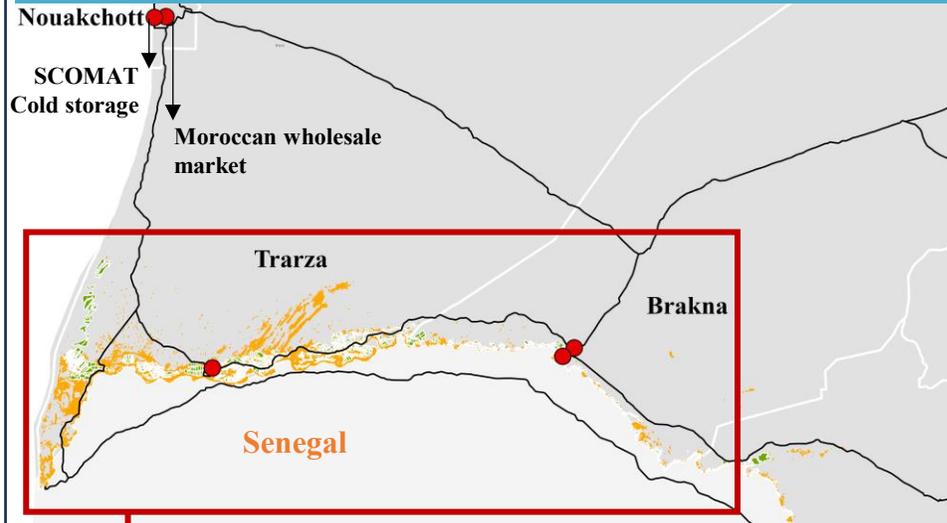
Cultivated lands
88,000 Ha*

Available lands
15,000 Ha*

● Existing cold storages

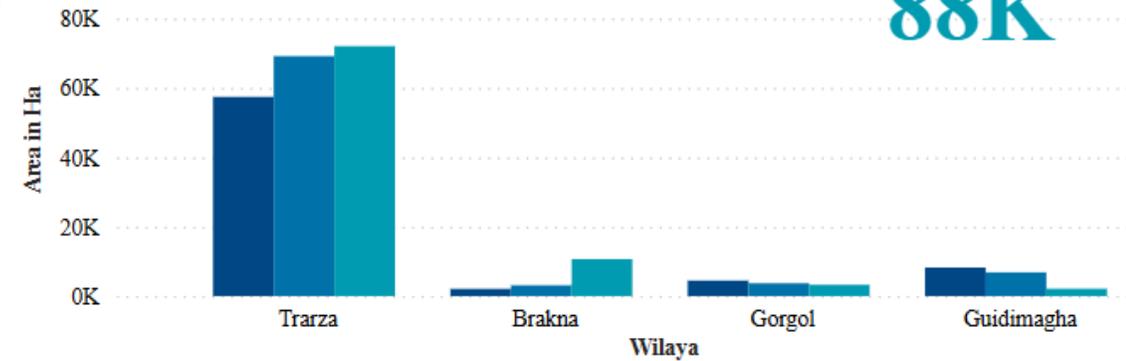
— Connecting roads

Cold storage facilities in the Senegal River Valley: distribution and alignment with key production areas



Trends in cultivated land area in Ha by administrative division (Wilaya) from 2015–2024

● 2015 ● 2020 ● 2024



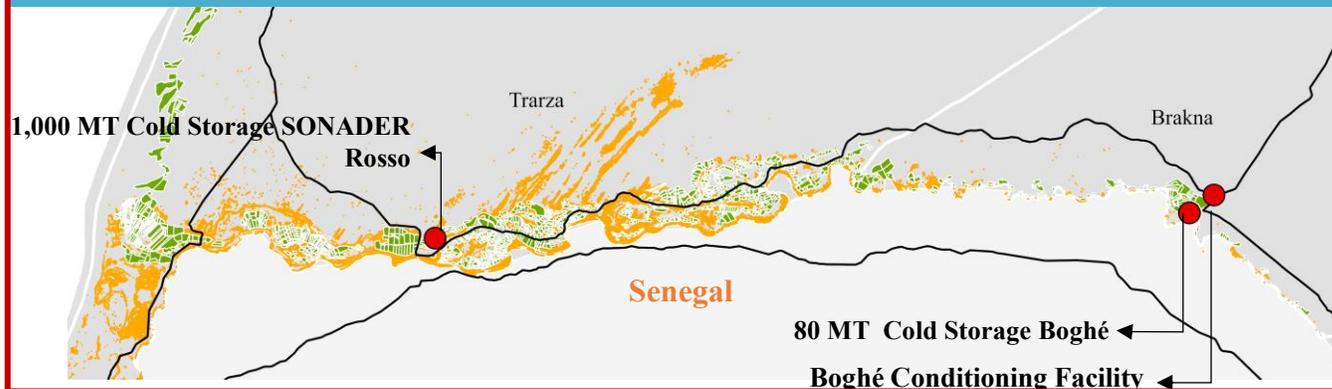
Cultivated land growth

1. Agriculture remains largely artisanal and based on traditional practices.
2. Total area grew by 25 %—from 70,000 ha in 2015 to 88,000 ha in December 2024, per end-of-year surveys.
3. Producers are interested in higher-value crops for local and export markets.

Crop production trends

1. Within the project's targeted areas, squash, onions, sweet potato, tomato, eggplant, and potato stand out as the key crops produced.
2. ~6,000 ha dedicated to horticulture, ~50,000 ha to rice, remainder for cereals and other crops.
3. Notable increase in cultivated land between 2015 and 2024 (manual and automated mapping confirm this trend).
4. Agricultural activity intensifies as we move upstream along the river.

Map inset: Cold storage & cultivated lands in the Senegal River Valley



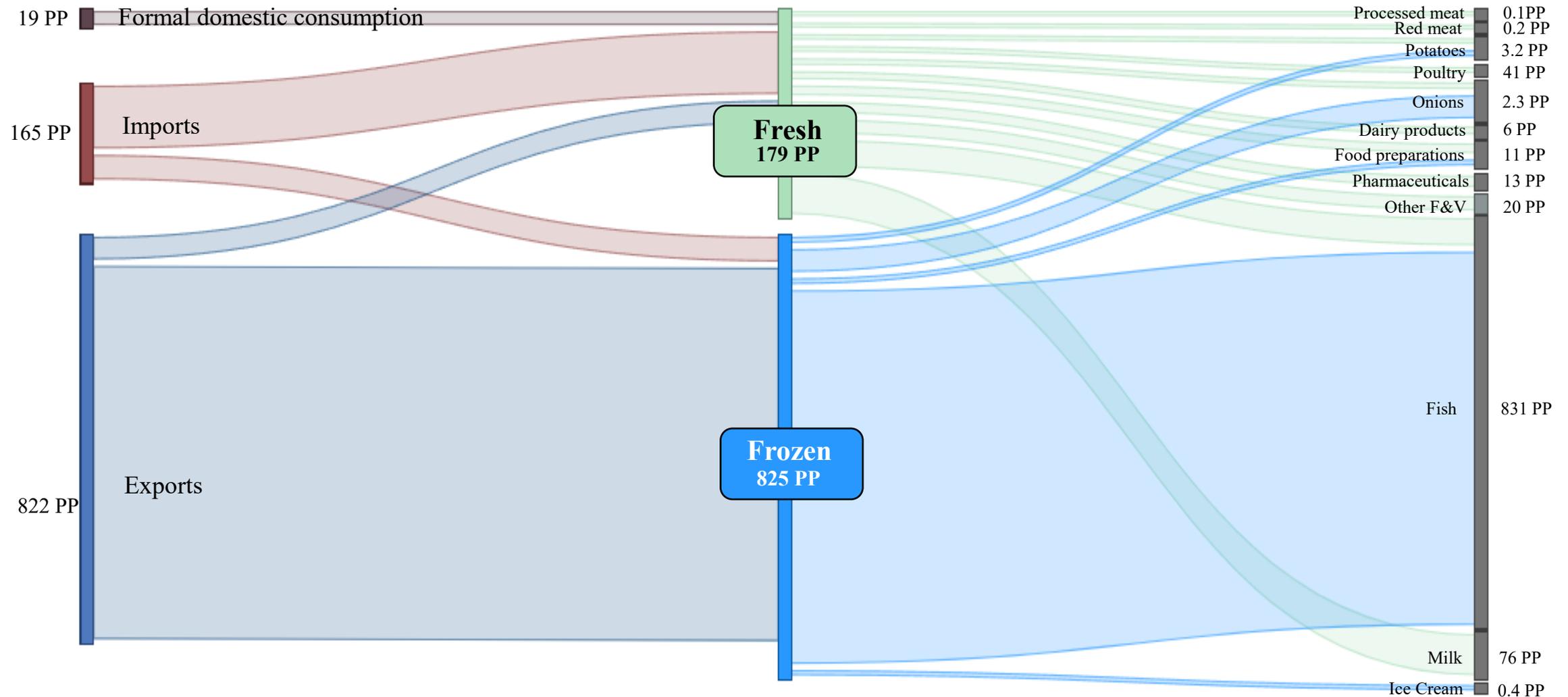
*Ha: Hectares according to 2024 data

Sources: Remote sensing mapping combined with Mauritania Ministry of Agriculture data

Cold chain demand potential in Mauritania by product type and trade flow

In 2024, fruits and vegetables were the fourth most in-demand product category for cold chain services in Mauritania, with an estimated potential demand of 25,000 pallet positions (PP).

Captured storage volumes in thousand pallet positions ('000, in 2024) – by flow, temperature and value chains



Fresh/chilled TCL storage market size and expected growth

Fruits and vegetables represent a strong import market in Mauritania, with untapped potential for growth in both formal domestic consumption and exports within the 2024 fresh TCL market.

Fresh TCL storage market size by flow, (in Thousand pallet positions)

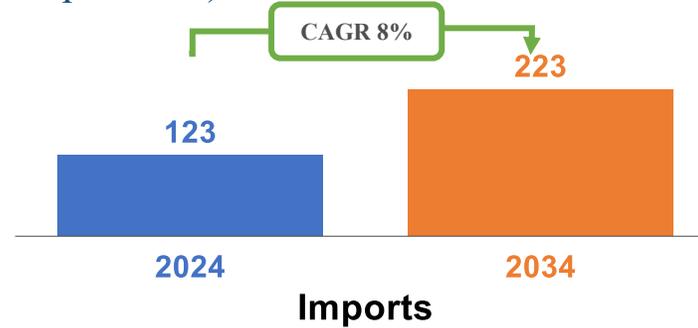


Fresh export storage market size in 2024-34

Thousand PP (%)

Fish	29	(76%)
	48	(76%)
Food preparations	7	(20%)
	11	(18%)
F&V	1	(2%)
	2	(3%)

CAGR (Compound Annual Growth Rate): The average annual growth rate of a value (such as a market or investment) over a period of time, assuming the growth is compounded each year. It helps show consistent growth trends over time.

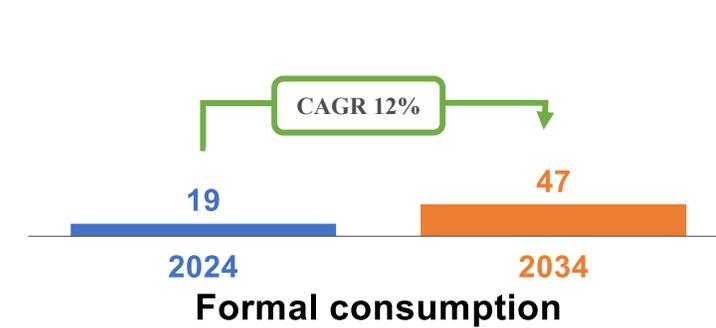


Fresh import storage market size in 2024-34

Thousand PP (%)

Milk	75	(61%)
	141	(63%)
F&V	18	(15%)
	31	(14%)
Pharmaceuticals	13	(10%)
	20	(9%)
Dairy products	6	(5%)
	8	(3%)
Poultry	3	(3%)
	8	(3%)
Others *	6	(6%)
	9	(7%)

* (Food preparations , Potatoes)



Fresh formal consumption storage market size in 2024-34

Thousand PP (%)

Fish	18	(93%)
	44	(93%)
Milk	1	(3%)
	1	(3%)
Red meat	0.2	(1%)
	0.4	(1%)
F&V	0.1	(1%)

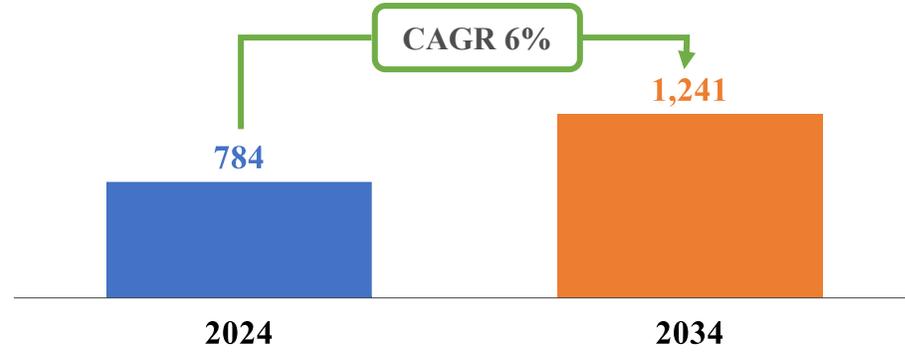
2024 Total Fresh TCL storage market size
179 Thousand Pallets

2034 Total Fresh TCL storage market size
333 Thousand Pallets

Frozen TCL storage market size and expected growth

Fish dominated frozen exports with 826 thousand PP, while poultry led imports with 38 thousand PP in 2024, driving Mauritania's total frozen TCL storage market size

Frozen TCL storage market size by flow, (in Thousand pallet positions)

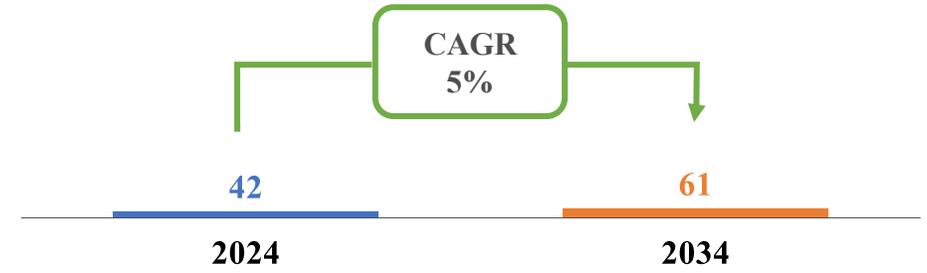


Exports

Frozen export storage market size in 2024-34

Thousand PP (%)

Fish	784	(100%)
	1,241	(100%)



Imports

Frozen import storage market size in 2024-34

Thousand PP (%)

Poultry	38	(90%)
	55	(90%)
Potatoes	2	(5%)
	3	(5%)
Food preparations	2	(4%)
	2	(4%)
Ice cream	0	(1%)
	1	(1%)

2023 Total Frozen TCL storage market size
826 Thousand Pallets

2031 Total Frozen TCL storage market size
1.3 Million Pallets

What's below the surface: Most F&V traded between Senegal and Mauritania remains unrecorded and informal

Formal Trade

The estimated formal trade of fruits and vegetables between Mauritania and Senegal is around 3,750 MT, based mainly on recorded transactions through official channels.

3,750 MT

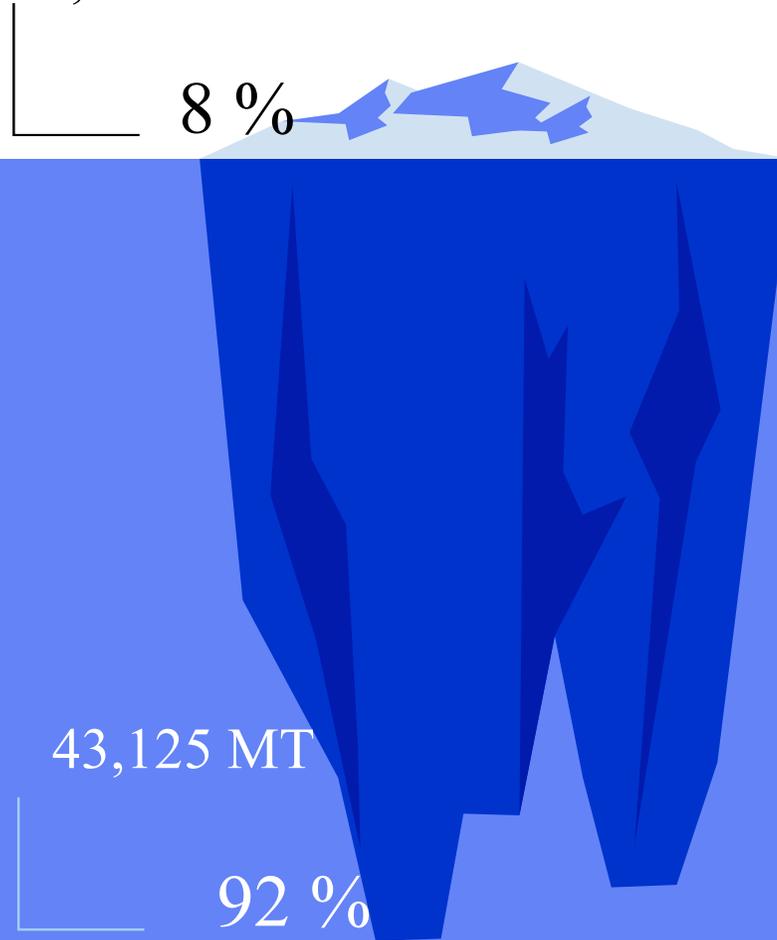
8 %

Informal Trade

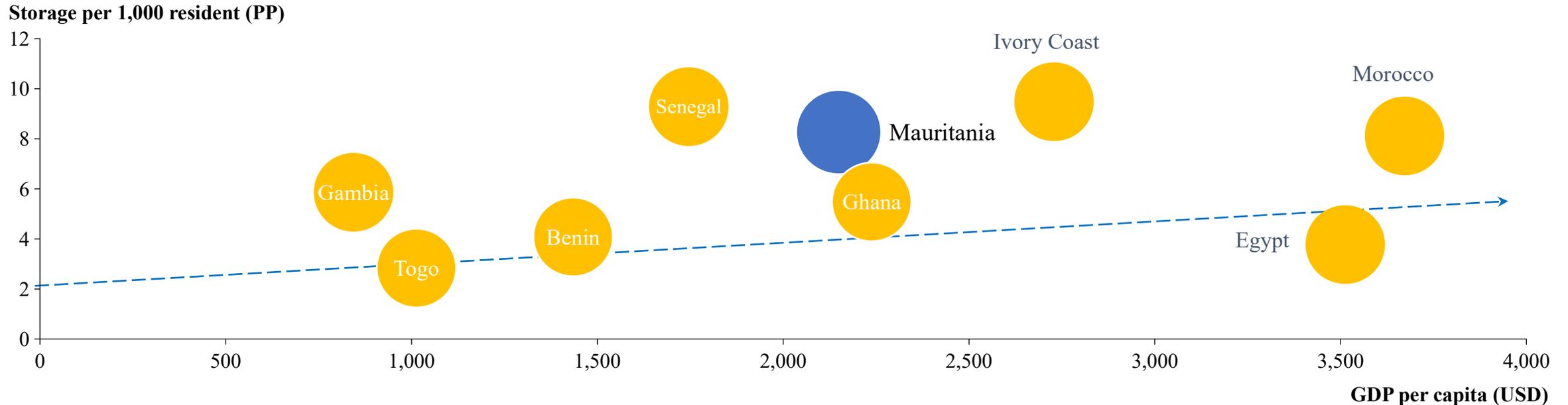
The estimated informal trade of fruits and vegetables between Mauritania and Senegal is about 43,125 MT which is much higher than the formal trade. This includes unrecorded transactions that take place outside official channels.

43,125 MT

92 %



2024 Cold chain storage capacity demand : Mauritania vs other African countries benchmark



- 1 GDP & cold chain demand trends:** While influenced by other factors, higher GDP per capita tends to result in increased cold storage demand.
- 2 Mauritania's cold storage demand in the fish sector:** High demand (8 PP/1,000 residents) is driven by offshore fishing, which accounts for 66% of capacity.
- 3 Offshore freezing & cross-docking:** Fish is often frozen at sea in Mauritania, then transferred to reefers onshore, reducing Mauritania's need for extensive onshore storage.
- 4 Impacts of Mauritania's preservations and handling practices:** Offshore processing practices limit onshore value-added services and hinder the development of local processing industries, creating a heavy reliance on port efficiency and rapid cross-docking of reefer containers.

Tailored business models and cold chain investment case studies in West Africa

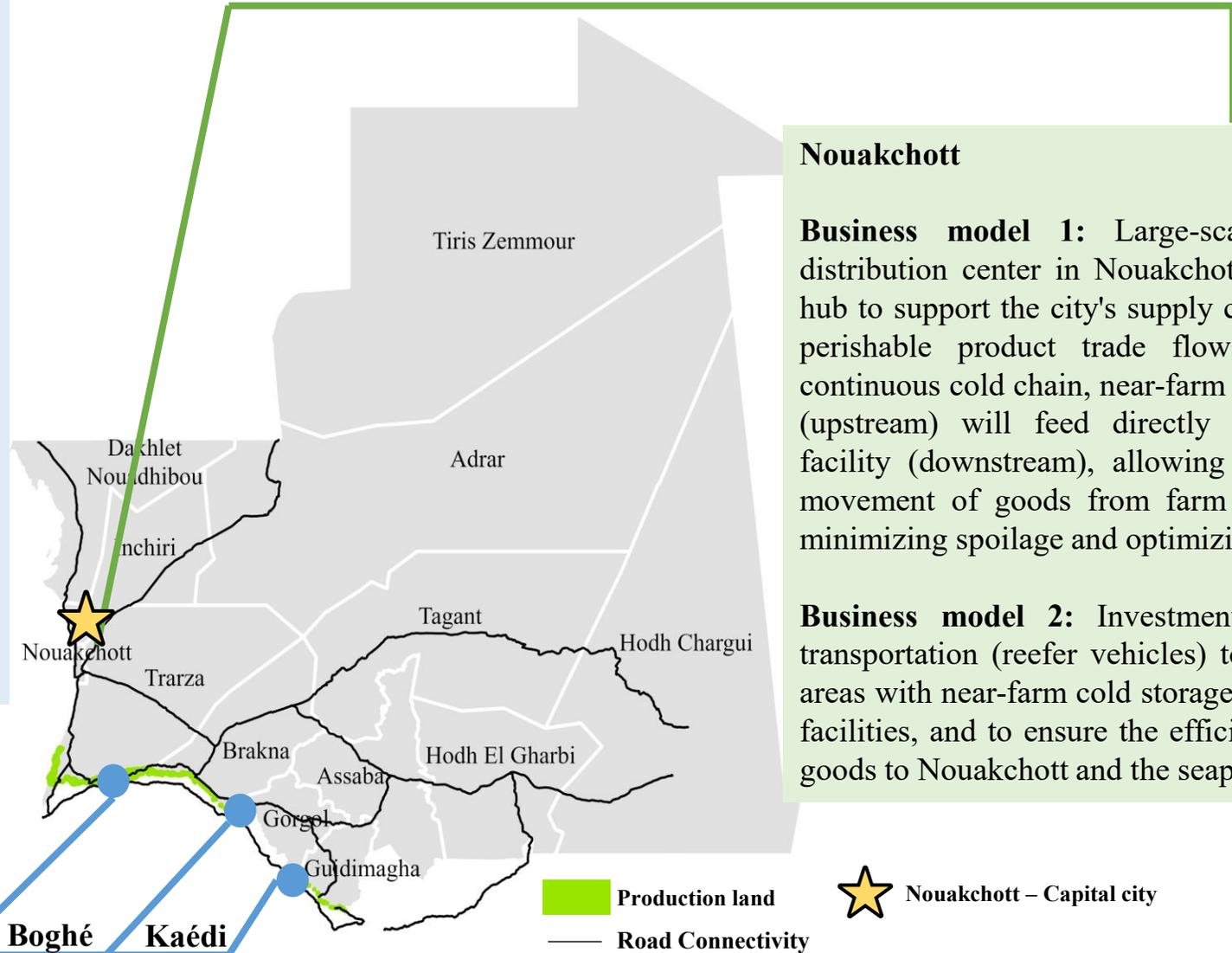


Senegal River Valley

Business model 1: Near farm collection center in the Senegal River Valley for handling and storage of horticultural products.

Business model 2: Conditioning hub for preliminary value-added services and high value processing (such as pre-cooling, washing, sorting, cold storage and packaging) of locally grown fruits and vegetables among other products. Oriented towards trade with neighboring countries and local market.

Business model 3: Public-Private Partnership (PPP) with the existing cold storage facilities in Rosso and Boghé, owned by SONADER and Patam. The 1,000 MT cold storage in Rosso and the 80 MT cold storage in Boghé are operational but require further investment to modernize and expand their capacity.



Nouakchott

Business model 1: Large-scale storage and distribution center in Nouakchott will serve as a hub to support the city's supply chain and manage perishable product trade flows. To ensure a continuous cold chain, near-farm collection centers (upstream) will feed directly into the storage facility (downstream), allowing for the efficient movement of goods from farm to market while minimizing spoilage and optimizing distribution.

Business model 2: Investment in refrigerated transportation (reefer vehicles) to link production areas with near-farm cold storage and conditioning facilities, and to ensure the efficient movement of goods to Nouakchott and the seaport.

Case study 1: Modular cold storage solution

“Cold Hubs” solar-powered cold storage unit



Source: Cold Hubs

Modular cold storage units

1. Centralized cold storage units for crop collection, initial processing and storage.
2. Off-grid, solar-powered units (with option for grid connection).
3. Storing products quickly after harvest to preserve their freshness
4. Reduce post-harvest losses and extend shelf life.
5. Improve productivity for small and mid-sized farmers.
6. Scalable, energy-efficient, and climate-smart cold chain solutions.

Case study 2: Cold chain logistics facility with diversified business model

Project summary

Project size: USD 5 - USD 7 million investment

Operational launch: 2016

Impact: increased national cold storage capacity by 5,350 pallets, created 30 direct jobs and more than 100 indirect jobs.

A **temperature-controlled logistics (TCL) facility designed**, developed and launched by **LixCap** following a market assessment.

Launched in **2016** and adds approximately **33,275 m³** to Morocco's cold storage capacity.

Sales

USD 2 million
(Average 2021-2023)

Utilization
rate

~ 90%
(Average 2021-2023)

EBIDTA
margin

> 50%
(average 2021-2023)

Net
margin

> 35%
(Average 2021-2023)

IRR

> 17%

Revenue
Per PP

~ USD 400
(Average 2021-2023)

Technical specifications



5,500 sqm



5,350 pallets



-21°C/+14°C

Cold chain services



Storage for
frozen cargo



Cross-docking



Labeling & co
packing



Storage for
chilled cargo



Export loading
Of containers



Picking



Container
hauling



Import loading
Of containers



Transport &
distribution

Case study 3: Modern high-capacity cold storage

Project summary

Project size: USD 4 - USD 5 million investment

Operational launch: 2017

Impact: increased national cold storage capacity by 9,470 pallets, created 20 direct jobs.

A cold storage established in 2017, specializing in the storage, handling, and transportation of perishable goods.

The facility offers a total **capacity of 9,470 pallets**, with a combination of **negative, positive, and ambient temperature storage**;

Sales

~ **USD 1,8 million**
(Average 2021-2023)

Utilization
rate

> **75%**
(Average 2021-2023)

EBIDTA
margin

~ **50%**
(average 2021-2023)

Net
margin

~ **30%**
(average 2021-2023)

IRR

> **20%**
(average 2021-2023)

Revenue
per PP

~ **USD 180**
(average 2021-2023)

Technical specifications



5,000 sqm



9,470 pallets



-18°C/+14°C/ +16°C

Coldstore services



-

Storage for
frozen cargo



Export loading
of containers



+

Storage for
Chilled cargo



Import loading
of containers



+

Storage for
Ambient cargo



Transport &
distribution

Key takeaways of benchmarking analysis

Moroccan benchmark

International benchmark

	Company 1	Company 2	
Number of PP	5,350 pp	9,470 pp	
Revenue per pp	~ USD 400 (average 2021-2023)	~ USD 180 (average 2021-2023)	USD 100 up to USD 450
EBITDA Margin	> 50% (average 2021-2023)	~ 50% (average 2021-2023)	25 to 50%
Value added services contribution to total revenues	31% (Average 2020-2022)	0%	

Whether through a diversified service model like company 1 or a streamlined approach like company 2, both strategies can be effective when adapted to the specific demands and expertise of their respective markets.

Q&A session

We appreciate your time and
look forward to any questions!



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Disclaimer

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Thank you!