

THE GAMBIA • BUILT TO GROW

FrostHub

The complete business detail

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Future port-linked cold-network concept · the first test rents existing food-cooling capacity.

All sections. All notes. One complete reference.

Includes all expandable details, four-step task assignments, the itemised first-test budget, published financial assumptions and all source references. Evidence dates and qualification limits are retained. These are planning cases, not supplier quotations or confirmed orders.

gambia.lawall.studio

FrostHub · The idea and the plan

Cold space. *A route to the buyer.*

Book suitable cold space and a delivery route. Pay for the capacity and services used.

Proposed venture · evidence dates shown with sources



Future port-linked cold-network concept · the first test rents existing food-cooling capacity.

Future port-linked cold-network concept · the first test rents existing food-cooling capacity.

01 / The customer Produce traders + growers first

02 / What they buy Cold capacity + time + delivery

03 / The first proof

20 positions · 14 days

Rent existing food-cooling capacity. Test one compatible crop.

\$2,444 Proposed test cash · see the scope

01 / Overview · evidence retains its observation date

The first move

Rent suitable cold space. Test one crop and one route before buying a hub.

01

Book

Product + capacity + time

02

Receive

Weigh, identify, inspect

03

Protect

Record conditions + custody

04

Deliver

Compatible loads + time slots

Three numbers to understand

Public evidence

6 sites

Cold stores in ROOTS report

May 2026 field status varied; verify present commissioning and access.

IFAD · ROOTS supervision report

Proposed test / model

400 kg

Proposed static test capacity

20 positions × 20 kg each. Not daily cooling throughput; suitable layout and crop conditions must be checked.

Proposed test / model

4 runs

Proposed delivery test

Four separately costed runs within the 14-day trial. Vehicle and conditions must be quoted.

Cold space + a route to market

The offer.
In three parts.

Book cold space

Pay for compatible capacity and storage time.

Add delivery

A separately priced route with clear custody.

Track every load

Bookings, temperatures, collection and payment.

Where we start

Start with produce traders and grower groups near a usable room. Existing cold stores can be partners as well as competitors.

The question that decides Do paid crate-days and separately priced routes cover their full costs?

Fish, frozen foods, pharmaceuticals and port-export freight require separately designed, qualified chains.

Service scope + market calculation

Storage

One product-compatible zone, intake rules, identity/weight record, temperature monitoring and clear custody/liability. Static room capacity is not daily cooling throughput.

Cold delivery

Price the full route: vehicle, driver, fuel, preconditioning, dwell, empty return and cleaning. Validated insulated boxes can serve selected trips; they do not replace refrigeration on every route.

Connected booking

Start with a simple booking ledger and alerts. Assess Coldtivate for inventory and fees; add routing only after actual roads, compatible loads, capacity and delivery windows are known.

Count paid crate-days, then route contribution.

Occupied compatible positions × days × collected fee = storage sales. For routes, deduct the full run cost from collected delivery charges. Do not count a route's crate fee twice as storage revenue. Size the owned hub from a seasonal calendar.

02 / Capacity + service customers · checked 16 Oct 2026

Real operators.

A service worth paying for.

FrostHub buys or hires cold capacity and sells storage, handling and transport. The customer keeps ownership of the goods.

- 01 Source capacity Room + vehicle operators

- 02 FrostHub Book · monitor · coordinate
- 03 Sell the service Growers · traders · importers

Named research leads, not agreed customers or suppliers. Product fit is our assessment; buying interest, capacity, price and approval are unverified.

4 capacity / grower leads

4 service-buyer leads

6 goods groups + evidence

Our recommended first conversations · no outreach completed

01

Find a working route.

Lamin + Joachim

GHE / NBFA: inspect the active vehicle, suitable room and recent runs; request a full written quote.

View the lead

02

Find a paying goods owner.

Lamin + Dominik

Ko-Arata: identify one costly produce delay or overflow and test paid demand. Existing delivery may already solve it.

View the lead

03

Price both services.

Dominik + Joachim

Separate storage and transport contribution. Investigate Lam's / BBT import-export flows as later chains.

View the lead

A

The supply side.

Transport and grower networks to qualify. Some already sell the service we propose.

Transport supplier Gambia Gambia Horticultural Enterprises 15-tonne refrigerated truck hire

Role to qualify Transport supplier · potential competitor

Public evidence GHE advertises refrigerated trucks for hire throughout Gambia.

Why investigate · our assessment Quote an existing vehicle before purchasing one. A full-size truck may be too costly for the small trial.

First question

What is the minimum hire, all-in run cost and active vehicle availability for our exact crop and route?

Who to ask

Transport / fleet manager

Still unknown

Roadworthiness, payload at required duty, monitoring, cleaning, backup and actual prices.

GHE · transport services

Farmer network North Bank · Gambia North Bank Farmers Association Fruit + vegetable transport

Role to qualify Grower access + transport supplier / possible service buyer

Public evidence The association documents a 2025 ROOTS truck handover and offers refrigerated produce transport.

Why investigate · our assessment Combine grower bookings with a qualified existing route; investigate collection and return loads.

First question

Which recent produce runs had spare capacity or waiting goods, and who can approve a paid trial?

Who to ask

Logistics and Transport Coordinator

Still unknown

Current service status, hire rights, routes, loads, payment responsibility and usable capacity.

North Bank Farmers Association · truck handover + service

Transport supplier Gambia · regional haulage SMG Dry Port Powered reefer-container haulage

Role to qualify Port transport supplier · potential competitor

Public evidence SMG advertises powered reefer haulage between ports, borders and customers.

Why investigate · our assessment A port-network partner to investigate after produce proof; not the transport assumed in the small trial.

First question

Which reefer lanes need off-port staging or overflow, and what do power, haulage and waiting time cost?

Who to ask

Reefer / inland-haulage operations

Still unknown

Current lanes, plug capacity, permits, availability, tariffs, power continuity and damage liability.

SMG Dry Port · inland haulage

Cold-capacity supplier Gambia EL MANSOUR Cold-chain transport + storage

Role to qualify Capacity supplier · potential competitor

Public evidence Its cold-chain page offers reefer transport, storage and monitored delivery for food and pharmaceuticals.

Why investigate · our assessment Compare a qualified subcontract against owned equipment. Treat the website as a service claim.

First question

Can you provide an active vehicle, recent temperature logs and a product-specific written quote?

Who to ask

Cold-chain operations / commercial team

Still unknown

Actual assets, references, certificates and scope, availability, operating limits and pricing.

EL MANSOUR · cold-chain transport

B

Who could buy our service?

Goods owners with relevant activity. Their existing systems may already meet the need.

Potential buyer Sohm · Kombo East Ko-Arata Fresh vegetables

Role to qualify Potential produce-service customer

Public evidence The farm explicitly describes delivery of its own fresh produce by refrigerated van.

Why investigate · our assessment A small, concrete operator for testing collection timing or paid overflow; it already has a delivery solution.

First question

Where do rejected produce, delayed collections or van capacity create a cost you would pay to avoid?

Who to ask

Farm owner / delivery manager

Still unknown

Unmet need, weekly loads, seasonality, crop conditions and willingness to outsource.

Ko-Arata · produce and refrigerated delivery

Potential buyer Gambia · regional seafood markets Lam's Fishing Enterprise Fish + seafood

Role to qualify Potential service buyer / logistics partner

Public evidence The company describes fish import/export and temperature-controlled logistics.

Why investigate · our assessment Investigate paid holding and port handover in a separate fish chain.

First question

Which fish flow needs extra holding or a reliable reefer handover, and who owns the goods and rejection risk?

Who to ask

Export / logistics manager

Still unknown

Fresh versus frozen flow, actual transport mode, volumes, approvals and service gap.

Lam's Fishing Enterprise · fish logistics Gambia Ports Authority · fisheries jetty

Potential buyer Gambia market · international trader Banyan Bay Trading Frozen meat · ice cream · butter

Role to qualify Potential import-chain service buyer

Public evidence BBT names Gambia as a market and frozen/refrigerated food shipping as a focus.

Why investigate · our assessment Find the actual Gambian consignee and qualify port-to-store holding or delivery.

First question

Who receives your temperature-sensitive shipments in Gambia, and is third-party cold capacity needed?

Who to ask

West Africa / Gambia logistics and import team

Still unknown

Gambia-specific SKUs, consignee, arrival calendar, temperature duty and existing local contracts.

Banyan Bay Trading · products and markets

Potential buyer Gambia · distribution Sasco Cash and Carry Frozen + chilled goods

Role to qualify Potential overflow customer · possible competitor

Public evidence Sasco advertises frozen/chilled products and national distribution.

Why investigate · our assessment A reserve conversation on peak storage or small deliveries. Its own assets may already cover the need.

First question

Which chilled/frozen SKUs need external storage or delivery, and how are they transported today?

Who to ask

Procurement / warehouse and distribution manager

Still unknown

No refrigerated-delivery method, capacity gap, outsourcing budget or buying interest verified.

Sasco · frozen/chilled portfolio and distribution

Gambia · what the public evidence actually shows

What already moves cold?

A described operation is stronger than a catalogue or service offer. None of these sources establishes current spare capacity or demand for FrostHub.

Refrigerated van / truck described

Fresh fruit + vegetables

Ko-Arata names its van; NBFA documents a truck and produce service. Crop-specific conditions and actual recent runs still need checking.

Ko-Arata · produce and refrigerated delivery

North Bank Farmers Association · truck handover + service

Cold logistics + port reefer handling described

Fish + seafood

Lam's describes temperature-controlled fish logistics. GPA describes fish discharged into refrigerated containers at the main port; current shipment volumes are unknown.

Lam's Fishing Enterprise · fish logistics

Gambia Ports Authority · fisheries jetty

Current last-mile distribution report

Vaccines

The UN's March 2026 Basse report describes carriers/cold boxes with vehicles and motorcycles. This is a dedicated public-health chain, not proof of refrigerated trucks or an open commercial contract.

UN Gambia · vaccine distribution in Basse

Sea-reefer use described · older company post

Ice cream

Kuehne+Nagel links Polish ice cream in Gambia with sea-reefer logistics. The post is circa 2024; a current shipment, brand and consignee are not identified.

Kuehne+Nagel · ice cream and Gambia

Product-specific service offer

Frozen meat + poultry

EL MANSOUR explicitly offers transport for frozen poultry/meat. BBT ships frozen food and serves Gambia; the sources do not establish a current, named Gambia consignment.

EL MANSOUR · cold-chain transport

Banyan Bay Trading · products and markets

Portfolio + transport offer

Dairy / other chilled food

BBT lists butter and ice cream; EL MANSOUR lists dairy transport. Verify each Gambia SKU and labelled conditions. UHT milk and dry goods do not automatically require a cold chain.

Banyan Bay Trading · products and markets

EL MANSOUR · cold-chain transport

One crop first. Dedicated chains later.

Specify temperature, humidity, ripeness, maximum dwell and segregation for the actual product. Fish, frozen food, produce and medicines are separate designs. Pharma needs its own qualified operator, authorisations and release process; a public immunisation programme is not a confirmed commercial customer.

Competition · what customers already use

Existing public / cooperative rooms

The market is not empty. Verify assets and operator agreements; a management/booking partnership may require less capital than an owned hub.

IFAD · ROOTS supervision report

Traders' own storage and delivery

Compare total handling cost, collection timing and reliability. Bigger businesses may prefer their own equipment; small loads may value shared capacity.

Sasco · wholesale and delivery

Lam's Fishing Enterprise · operator profile

Cooling platforms and PCM projects

Reuse suitable tools and learn from existing interventions. Technology is a delivery method; paid utilisation and product condition are the proof.

BASE / Empa · Coldtivate

UNGM · Gambian cold-chain PCM contract

What we keep from the supplied concept +

The FrostHub concept contributes anchor-first demand, hub-and-route architecture, thermal storage, third-party operation and simple booking. Fixed 2027-2035 rollout dates, quoted-looking GMD tariffs, a "Coast" package return and assumed prepaid anchors remain unvalidated. Pharma does not start on a calendar date alone.

Source: FrostHub · Konzept 2.0, 5 October 2026, supplied by the owner. The German concept and its English summary describe historical internal planning. Later user decisions take precedence. No excluded business idea is restored.

Quality + growth

Prove the essentials. Then repeat.

Technical, quality and expansion requirements

01 First test: one crop, a 14-day operating window +

Rent 20 crate positions, buy suitable crates/loggers and cost four delivery runs. This is up to 400 kg static capacity at 20 kg/position. Agree crop, ripeness, temperature and maximum dwell with a food specialist; the test window does not mean every crop can be held for 14 days. Customers keep title to their goods.

02 A modular network, built from demand +

Audit room condition and usable layout before a rental or operating agreement. After paid proof, quote a removable module with tropical-duty refrigeration, drainage, backup, commissioning, spares and trained operators. Add a second node only if the combined route contribution and seasonal occupancy justify it.

03 Pharma is a separate qualified chain +

Potential future clients are licensed importers and clinics with specific labelled storage requirements. Use dedicated storage/boxes, calibrated monitoring, excursion handling, documented release and a qualified responsible operator. Ask MCA for the actual licence/authorisation route; do not infer an exemption from an old guideline.

04 Port/export is a separate commercial case +

Pre-cooling, pallet consolidation and temperature records may support an exporter. They do not by themselves authorise seafood exports, a bonded facility or customs handling. Price reefer availability, destination, booking cut-offs, dwell and rejected-shipment responsibility with qualified freight and regulatory partners.

Four conditions for moving forward · our decision criteria

01

Demand

A paid, crop-specific booking calendar; free interest is insufficient.

02

Conditions

Compatible intake, safe handling and a documented fault response.

03

Contribution

Storage and route fees separately cover their measured full costs.

04

Repeat

Quiet-season demand and qualified modular-capacity quotes.

03 / Our proposed start plan · not started

Start with a clear plan. Build it together.

The first proof

One crop. Paid cold space. A fully costed route.

Three trader conversations → suitable rented space → a 14-day operating test.

Validation cash · proposed \$2,444 Budget + scope

01-03 · Qualify + run the test 04 · Decide the next investment separately

01

Before reserving cold space Coordinates · Lamin

Choose one crop and one route.

Establish who needs storage, when they need it and which existing room could safely serve them.

Lamin

Local access + operations

- Seek three trader/grower introductions through the local network.
- Record crop, volumes, collection times and busy/quiet weeks.

Joachim

Technical design + delivery

- Check crop compatibility with a food/refrigeration adviser.
- Assess whether a working room can cool incoming goods, not just hold them.

Dominik

Business + software

- Build a proposed 14-day booking calendar.
- Test a crate-day price and a separately priced delivery offer.

Bring to the next decision

- One crop-specific demand brief
- A candidate operating room
- Priced booking + route proposal

Move forward when Repeat demand, safe crop/room fit and workable access exist before test spending.

Scope + specialist checks

NACOFAG / the National Vegetable Growers Cooperative Association are possible introduction routes, not agreed partners. ROOTS construction progress does not prove that a room is commissioned or available.

The handover Lamin passes the customer and room shortlist to Joachim.

02

Before opening the 14-day window Coordinates · Joachim

Agree the room, operator and four runs.

Quote 20 suitable positions, four delivery runs and the handling system as one bounded test.

Lamin

Local access + operations

- Obtain room, route, crate and operator offers.
- Agree host access, cleaning, custody and daily responsibility.

Joachim

Technical design + delivery

- Audit duty, warm-load cooling and backup with specialists.
- Approve monitoring, dwell limits and the stop-intake response.

Dominik

Business + software

- Agree booking, payment and liability terms.
- Prepare intake/route ledgers and approve the complete quoted cash budget.

Bring to the next decision

- Room + operator agreement
- Four priced runs
- Handling and temperature checklist

Move forward when Capacity, conditions, funding and responsibilities are agreed; unsafe or unsuitable space is rejected.

Scope + specialist checks

The proposed 400 kg is static capacity, not daily pull-down throughput. The \$2,444 test cash remains an allowance. No owned room, truck, pharma qualification or export facility is included.

The handover Joachim hands the operating checklist to Lamin and the host operator.

03

14 days · one compatible crop Coordinates · Lamin

Track every crate, day and collection.

Operate to the agreed conditions and record real use, losses, delivery costs and collected fees.

Lamin

Local access + operations

- Label intake, record weights/condition and reconcile custody daily.
- Coordinate four runs and track actual crate-days and collections.

Joachim

Technical design + delivery

- Review temperatures, incoming loads and excursions.
- Use the specialist response; stop intake when conditions are unsafe.

Dominik

Business + software

- Separate storage fees from delivery income and full route costs.
- Compare bookings with paid use, complaints and repeat demand.

Bring to the next decision

- Paid crate-day record
- Temperature + custody record
- Storage and route contribution

Move forward when Goods meet agreed conditions and custody/cash reconcile. Learn from losses before extending the test.

Scope + specialist checks

At the later model's \$0.65 fee, full test occupancy yields \$182, below the \$280 assumed room rent before other costs. Neither price is validated. Record this learning cost; a rented test does not prove an owned hub return.

The handover Lamin and Joachim pass the operating evidence to Dominik.

04

Next investment · Separate owned-module decision Coordinates · Dominik

Fund capacity from proven bookings.

Compare continuing with a partner room against one owned modular hub, using seasonal demand and real route costs.

Lamin

Local access + operations

- Confirm repeat customers, seasonal volumes and a suitable site.
- Select/train operators and map the next demand cluster.

Joachim

Technical design + delivery

- Quote a removable cold module and power for measured duty.
- Define commissioning, servicing, spares and safe installation/removal.

Dominik

Business + software

- Rebuild full hub cash flow from quotes and seasonal bookings.
- Fund only justified capacity; plan routes from actual loads and travel times.

Bring to the next decision

- Partner-versus-owned comparison
- Quoted modular hub case
- A funded seasonal operating plan

Move forward when Owned-hub operating cash and capital recovery work across the season before purchase.

Scope + specialist checks

Pharmaceuticals, fish/frozen goods, port-export staging and further nodes need separate qualified designs and business cases. The first produce test does not qualify those chains.

Then Add the next module only when repeat demand justifies it.

Preparation + shared working file

Start with these three actions.

Lamin Local access + operations

Request three produce-trader and working-room introductions.

Joachim Technical design + delivery

Prepare a crop, room and handling suitability check.

Dominik Business + software

Prepare the paid booking calendar and separate route-cost sheet.

One shared working file Booking calendar · intake/temperature log · route costs · fee ledger

Qualified help we must bring in

Refrigeration engineer, qualified electrical team and food-handling adviser. Dedicated pharma / port modules need separate qualified operators, validation and permissions.

At every decision

Continue. Adjust. Or stop.

Review the evidence together. Record the decision, the person responsible, the spending limit and the next review date. Dates follow access, quotes and approvals.

04 / The first test · checked 15 October 2026

The first test. Clearly costed.

14 days · 20 crate positions

Sell cold space before buying a hub.

Rent existing food-cooling capacity. Test one compatible crop.

Full test scope +

Book 20 reusable crate positions for 14 days in an existing suitable cold room: up to 400 kg static capacity at 20 kg per crate, not 400 kg of new intake daily. Use one compatible produce group and four separately costed delivery runs. Customers retain ownership of their goods.

Cash to have available · USD

\$2,444

Proposed budget, not a supplier quotation.

Test costs \$1,350 Consumed inputs + services

Reusable equipment \$520 Assets may remain after the test

20% contingency \$374 Provision on costs + equipment

Stock / deposits / buffer \$200 Cash tied up; not immediate expense

Full item-by-item calculation · USD +

Rented cold-space positions: $280 \times \$1 = \$280$; Subcontracted delivery runs: $4 \times \$70 = \$280$; Local operator: $14 \times \$20 = \$280$; Refrigeration / handling review: \$200; Customer pre-checks: $3 \times \$30 = \$90$; Labels + data: \$50; Cleaning + consumables: \$70; Provisional taxes / permissions: \$100; Reusable food-grade crates: $20 \times \$15 = \$300$; USB-C temperature loggers: $2 \times \$110 = \$220$. Subtotal = \$1,870 ; plus 20% contingency \$374 = \$2,244 of test spending including the reserve. Add refundable room / operator deposit \$200 = \$2,444 cash required . No customer receipts or assumed resale/refunds are deducted.

Quantities, reference prices and quote gaps +

Selected planning allowances · USD · quotes pending

Item + scope	Quantity × unit	Cash
Rented cold-space positions 20 positions × 14 days · \$1/position-day is an unconfirmed procurement allowance, not a Gambian market tariff · test cost	280 × \$1	\$280
Subcontracted delivery runs Quote the full vehicle, driver, fuel, empty return and required temperature control · test cost	4 × \$70	\$280
Local operator Local allowance · written quote required · test cost	14 × \$20	\$280
Refrigeration / handling review Paid specialist review, including suitability of monitoring/calibration · test cost	1 × \$200	\$200
Customer pre-checks Local allowance · written quote required · test cost	3 × \$30	\$90
Labels + data Local allowance · written quote required · test cost	1 × \$50	\$50
Cleaning + consumables Local allowance · written quote required · test cost	1 × \$70	\$70
Provisional taxes / permissions Allowance, not a statutory rate · test cost	1 × \$100	\$100
Reusable food-grade crates Local allowance · written quote required · reusable asset	20 × \$15	\$300
USB-C temperature loggers Manufacturer reference approximately \$96/unit; local delivered/calibrated price must be confirmed · reusable asset	2 × \$110	\$220
Refundable room / operator deposit Not an expense; written refund terms needed · liquidity / inventory	1 × \$200	\$200
20% contingency on \$1,870	20%	\$374
Total cash required	Before receipts	\$2,444

What this test can establish

Actual paid crate-days, temperature records, spoilage observations and route costs. Rented-room results test customer demand and handling; they do not establish the profit of a future owned solar hub.

Outside this budget / conditions

An owned cold room, solar installation, truck, ice line, frozen products, pharmaceutical qualification, port concession and export infrastructure. Product temperatures and ripeness must be approved for the selected crop; never combine incompatible goods.

Planning allowances, not local quotes. Includes a 20% reserve; excludes founder pay and travel. No sales receipts are deducted.

Budget basis, exclusions + next-stage funding

All local prices, specialist day rates and the 20% reserve are proposed allowances until written offers replace them. Relevant overseas references appear in Sources ; they are not Gambian landed quotes. Provisional tax/permission amounts are not legal rates. Founders' time is unpaid in this test; founders' pay and travel are excluded. Add them before approval if needed. There is no supplier commitment or booking yet. No paid goods are released without the applicable qualified checks.

The later deployment case below has a different scale and scope. Do not add both budgets mechanically: reconcile test spending and reusable assets already included in launch lines before funding the next stage.

Read the test correctly · calculated from the stated assumptions

Storage fees alone do not cover this rented trial.

20 positions × 14 days × \$0.65 = \$182, versus \$280 assumed room rent before other costs. The fee and rent are unvalidated allowances.

Calculation + what the test can prove

Even 20 positions occupied for all 14 days generate only \$182 in storage fees at the later model's \$0.65/crate-day assumption, versus \$280 provisional room rent before handling or delivery. That fee is not a validated test tariff. Negotiate procurement and test willingness to pay; record the learning cost separately. The \$2,444 is upfront cash, with no hoped-for sales deducted. A rented-room trial cannot prove an owned solar hub's return.

What the later investment model includes

Illustrative 150-crate hub, up to 20 kg per crate, roughly 3 tonnes static capacity. Product compatibility, usable layout and daily warm-load pull-down need separate design. Start with one compatible produce group; no mixed fish/produce/pharma room.

05 / The later investment case

The numbers. With the assumptions visible.

Our first recommendation

Paid occupancy is the engine. Measure compatible demand across busy and quiet weeks; price delivery separately.

How this business earns

Paid volume × Collected price - Full operating costs = Cash to fund the business

Planning cases below are team assumptions , not verified Gambian offers or customer prices. Reference facts and their limits appear in the source cards.

Downside

-\$134

Cash after operation + reserve
per month · before tax

Average paid occupancy

40 %

Collected storage fee

0.45 USD / crate-day

Planning case

\$996

Cash after operation + reserve
per month · before tax

All inputs

As listed below

Stronger case

\$1,763

Cash after operation + reserve
per month · before tax

Average paid occupancy

85 %

Collected storage fee

0.75 USD / crate-day

One illustrative operating month, not a full seasonal forecast. Do not multiply peak-month results by twelve. Figures are USD, before income tax and founders' pay/travel; debt defaults to zero. Negative scenarios are intentionally retained.

Separate scale · later deployment / launch

Deployment is only part
of the cash needed.

\$61,000 Selected planning case

Deployment \$40-70k + liquidity \$4-8k = \$44-78k. No owned refrigerated truck or pharmaceutical qualification is included.

Deployment / launch \$55,000

Liquidity \$6,000

See every budget line +

Team allowances · USD · not quotations

Scope	Allowance range	Selected case
Insulated room + suitable refrigeration Team allowance · exact duty / pull-down to quote	\$12,000-\$20,000	\$16,000
Solar, storage + controls Team allowance · thermal design first	\$12,000-\$20,000	\$16,000
Site, drainage + installation Local scope to quote	\$4,000-\$8,000	\$6,000
Crates, sensors, booking + handling kit No custom software platform build assumed	\$3,000-\$6,000	\$4,500
Freight, clearance + provisional taxes Product-code / route-specific quote	\$4,000-\$8,000	\$6,000
Design, commissioning + contingency Includes first validation work	\$5,000-\$8,000	\$6,500
Deployment / launch total	\$40,000-\$70,000	\$55,000
Operating, collection and subcontract buffer	\$4,000-\$8,000	\$6,000
Combined funding	\$44,000-\$78,000	\$61,000

Outside the scope: Owned truck, ice-making line, frozen storage, port concession, customs-bonded facility, pharma qualification, land purchase and founders' travel/pay. Each expansion has a separate budget.

Freight and provisional non-recoverable tax/clearance costs are inside the stated allowances where listed. Actual duty, VAT treatment, permits and charges still need a broker/accountant assessment. No tax exemption is assumed. Recoverable VAT, if any, can create an additional timing gap.

Full calculation + editable assumptions

The selected case · change any input

See what has to work.

150 spaces × 30 days × 70% occupied × \$0.65 per crate-day.

Sales income / month \$2,048

Operating costs + reserve \$1,052

Cash before tax / month \$996

Positive operating cash does not prove an investable return.

Variable handling + energy \$252

Fixed operation \$650

Replacement reserve \$150

Debt payment \$0

Operating cash break-even

31.189% occupancy

Includes operation, reserve and the financing input. Does not recover the initial deployment.

Occupancy for the capital target · %

64.683% occupancy

Unlevered illustration: deployment recovered over the input horizon at the input hurdle, after operation and replacement reserve. Working capital is separate. This is not a loan quote or promised return.

[Edit the assumptions +](#)

Sellable crate spaces 20 kg-equivalent crates 150 Static storage positions, not daily new throughput.

Operating days days / month 30 Use a seasonal calendar before annualising.

Average paid occupancy % 70 70% is an unconfirmed demand assumption.

Collected storage fee USD / crate-day 0.65 The \$0.65 case is a pricing test, not a Gambian market tariff.

Variable handling + energy USD / occupied crate-day 0.08 Allowance \$0.08; include grid/fuel if required.

Fixed operation USD / month 650 Allowance: \$300 team, \$150 site/security, \$100 monitoring/admin, \$100 maintenance/hygiene.

Replacement reserve USD / month 150 Allowance for refrigeration, energy-system and crate replacement.

One-time deployment / launch spend USD 55000 Selected planning allowance, not an installed quotation.

Working capital + cash buffer USD 6000 Separate from equipment and launch spending.

Debt / financing payment USD / period 0 Zero means an unlevered model, not free financing.

Capital-recovery horizon years 8 An internal target, not a loan term.

Capital hurdle % / year 10 Illustrative 10% target, not a bank rate.

Changes stay in this page only. They are not uploaded or saved. Reset restores the selected case; the three scenario cards above remain the published comparisons. Editing investment/working capital changes the calculator, not the published budget allowances.

Selected funding inputs: \$61,000. Output: 3,150 occupied crate-days per month.

How to interpret and stress-test the result

What the result means.

Only storage is modelled. The occupancy target must be met with compatible products and collected fees, not nominal tonnage. Daily intake cooling may constrain throughput well before the room looks full. The capital target includes a provision for asset recovery as well as operation and reserve.

Stress the case

First test: map daily crate-days over both busy and quiet weeks. Price a route only after vehicle, driver, fuel, empty return and temperature-control costs are known.

Watch the cash timing

Use prepaid bookings where customers accept them; reconcile intake, days and collections daily. Hold an operating buffer for quiet weeks and repairs. Do not multiply a high-season month by twelve.

06 / Evidence register · dated references

Facts with context. Assumptions you can replace.

Sources retain their observation dates. Test allowances: 15 Oct 2026. Named counterparties and cold-chain evidence: 16 Oct. No customer, supplier, financing or partnership agreement is implied.

Market + operating sources · 9 references

Market / operating evidence IFAD · ROOTS supervision report 14 Aug 2026 document · May 2026 field mission

Reports uneven progress at six cold-store sites and operational/business-planning gaps in processing investments. The field observations are not October commissioning evidence.

Read the original source

Market / operating evidence UNGM · Gambian cold-chain PCM contract Award dated 19 Mar 2026

Records a phase-change-material cold-chain intervention in The Gambia. An award establishes neither completed deployment nor capacity available to FrostHub.

Read the original source

Market / operating evidence BASE / Empa · Coldtivate Project team · checked 15 Oct 2026

Open-source cooling-service software includes inventory, occupancy and storage-fee management. Evaluate it before commissioning a custom platform; integration and support are still work.

Read the original source

Market / operating evidence MCA · storage and distribution guideline MCA-GL-301 · 13 Dec 2017 · still linked

Medicines need manufacturer-specified conditions, monitoring, records and calibrated equipment. Confirm the current regulatory route with MCA; no transport-licence exemption is asserted.

Read the original source

Market / operating evidence Gambia Ports Authority · fisheries jetty Authority facility description · checked 15 Oct 2026

Describes the fisheries jetty and space intended for service/processing facilities. This is not an available concession, export approval or guaranteed reefer service.

Read the original source

Market / operating evidence Lam's Fishing Enterprise · operator profile Operator page · checked 15 Oct 2026

Describes seafood import/export and temperature-controlled logistics. Certification, present capacity and procurement needs have not been independently verified.

Read the original source

Market / operating evidence Sasco · wholesale and delivery Operator search content · 15 Oct 2026; direct fetch failed

Advertises FMCG, frozen/chilled products and nationwide distribution. A discovery lead and competitor reference, not evidence that it needs our storage or offers particular wholesale prices.

Read the original source

Market / operating evidence European Commission · authorised establishments Official framework · checked 15 Oct 2026

Animal-origin exports need the applicable country, establishment and shipment compliance. A generic cold-store design is not an EU-approved seafood export facility.

Read the original source

Market / operating evidence FSQA · startup food-business guideline 2019 guideline · official page checked 15 Oct 2026

Provides a food-business startup/registration route. Confirm applicable site, handling, water, processing and inspection requirements with FSQA before operations.

Read the original source

Cold-chain operators + goods · 11 source references

Checked 16 October 2026. Dates distinguish current retrieval from publication. Company claims are not site audits or purchase commitments. No company has been contacted. Roles are suggested enquiry routes, not introductions.

Counterparty / goods evidence GHE · transport services Undated · checked 16 Oct 2026

Operator advertises 15-tonne refrigerated trucks for hire. Fleet range is not a refrigerated-fleet count or evidence of a particular shipment.

[Read the original source](#)

Counterparty / goods evidence North Bank Farmers Association · truck handover + service 2025 handover · checked 16 Oct 2026

Association documents a ROOTS-funded refrigerated truck and offers produce transport. Current roadworthiness, availability and rental terms require confirmation.

[Read the original source](#)

Counterparty / goods evidence SMG Dry Port · inland haulage Undated · checked 16 Oct 2026

Operator offers powered reefer-container transport. Its total truck count does not establish the number of refrigerated vehicles.

[Read the original source](#)

Counterparty / goods evidence EL MANSOUR · cold-chain transport Undated · checked 16 Oct 2026

Self-described product coverage and transport offer. No independent shipment, temperature or certification audit; generic temperature tables are not product specifications.

[Read the original source](#)

Counterparty / goods evidence Ko-Arata · produce and refrigerated delivery Undated · checked 16 Oct 2026

Operator describes its own produce delivery by refrigerated van; no tour records or spare capacity verified.

[Read the original source](#)

Counterparty / goods evidence Lam's Fishing Enterprise · fish logistics Undated · checked 16 Oct 2026

Operator describes temperature-controlled fish logistics. No vehicle type, current volumes, shipment records or certificate scope independently verified.

[Read the original source](#)

Counterparty / goods evidence Gambia Ports Authority · fisheries jetty Undated · checked 16 Oct 2026

Official search-index text describes fish discharged into refrigerated containers at the main port. Direct page retrieval failed; no current volumes or named shipments supplied.

[Read the original source](#)

Counterparty / goods evidence Banyan Bay Trading · products and markets Undated · checked 16 Oct 2026

Names Gambia as a market and frozen/chilled food shipping as a focus. Does not assign each SKU to Gambia or establish its local delivery method.

[Read the original source](#)

Counterparty / goods evidence Sasco · frozen/chilled portfolio and distribution Undated · checked 16 Oct 2026

Own-site search-index content describes frozen/chilled products and national distribution; it does not prove refrigerated road delivery.

[Read the original source](#)

Counterparty / goods evidence UN Gambia · vaccine distribution in Basse 18 Mar 2026 · checked 16 Oct 2026

Current programme report describes vaccine carriers/cold boxes with vehicles and motorcycles. It does not call those vehicles refrigerated trucks.

[Read the original source](#)

Counterparty / goods evidence Kuehne+Nagel · ice cream and Gambia Company post · circa 2024 · checked 16 Oct 2026

Company describes Polish ice cream in Gambia and sea-reefer logistics. Exact shipment date, brand and importer are not identified; not proof of a current contract.

[Read the original source](#)

The supplied concept contributes planning ideas; it is not independent market verification. Public programmes and investments are not funding commitments to us. No grant, subsidy, customer prepayment, credit facility or certification is included unless the financial scope explicitly says so.

Cost + finance sources · 7 references

Historical operating reference ColdHubs / BASE · operating case Nigeria · historical 2015-2019 case, rehosted July 2025

The case describes 150 × 20 kg crates and daily per-crate charging. Its historical US\$0.50 equivalent is not a current Nigerian or Gambian tariff. It supports the capacity/time model, not our assumed fee or cost.

[Read the original source](#)

Partial equipment reference Inacio · basic cold room listing South Africa · public listing checked 14 Oct 2026

Advertised R60,000, roughly \$3,636 at the dated indicative cross-rate. A basic listing with insufficient design scope for our hub. Solar, tropical duty, usable capacity, freight, taxes and installed service scope are not established; it is not a turnkey FrostHub quote.

[Read the original source](#)

Technical scope SelfChill · modular cold room Manufacturer · current product page

Shows modular solar cooling designed for selected products and conditions. Obtain a site-specific duty and installation quote; no public price is transferred into this model.

[Read the original source](#)

First-test equipment benchmark Testo · USB-C temperature logger 15 Oct 2026 · manufacturer / UAE

Listed at AED 351, approximately \$96 at the dated CBG cross-rate, before any extra delivery/import cost. ISO calibration is extra. The \$110 local procurement allowance is unconfirmed; confirm calibration, availability and landed cost. This component does not qualify a cold chain.

[Read the original source](#)

Dated FX reference CBG · first-test currency conversion 15 Oct 2026 · daily valuation

GMD per currency unit: USD 73.22; GBP 96.94; AED 19.94; EUR 83.67. Rounded USD cross-rates are used only for the new first-test references. Valuation is not a bank dealing rate. Earlier investment references retain their original dated conversions.

[Read the original source](#)

FX reference CBG · daily valuation 15 Oct 2026 · The Gambia

The CBG homepage displayed GMD 73.22/USD, 83.67/EUR and 4.40/ZAR. Indicative cross-rates: USD 1.143/EUR and USD 0.06009/ZAR. Valuation rates are not dealing rates. Earlier equipment-reference conversions retain their original observation date; no planning allowance is a binding offer.

[Read the original source](#)

Local confirmation Gambia Revenue Authority · tax and customs Current official document portal

Obtain a product-code-specific landed-cost and tax assessment. No import-duty exemption, recoverable VAT or investment incentive is assumed. Tax and clearance allowances below are provisional amounts, not statutory rates.

[Read the original source](#)

Before an investment decision

Replace the allowances with complete local/landed quotes, the sales inputs with customer or buyer evidence, and the operating inputs with a measured pilot. Add taxes, founder costs, month-by-month seasonality, exchange exposure and financing terms to the full cash-flow forecast. These transparent pre-feasibility cases are the starting point for that work.

FrostHub

Prove one. Build from what works.