Team AgroPristine

ASPR

A youth-sensitive approach, creating jobs through modernizing the agri-food value chain

UK Research and Innovation GCRF

ARUA - COE

ARUA African Research Universities Alliance

PURPOSE

Effectively reduce post harvest losses to 1-2% using scientific intervention before, during, and after harvesting whilst utilizing the youth as primary vehicles of innovation and change.

PROBLEM

HIGH UNEMPLOYMENT RATE IN RURAL KENYA

Most of Kenya's youth live in rural areas.

Not enough job creation opportunities.

LOW ACCEPTANCE OF AGRICULTURE

Poor mans job

High probability of failing and making losses.

LITTLE TO NO TRAINING ON POST HARVEST MITIGATION

Link between education and training institutions and industry in developing curriculum is weak.

90% of the unemployed youth have no vocational or professional skills training.

HIGH POSTHARVEST LOSSES

59% of produce is lost between farm and export market

50% potential revenue lost yearly

LACK OF INVESTMENT IN AGRICUTURAL FIRST-MILE COLD CHAIN

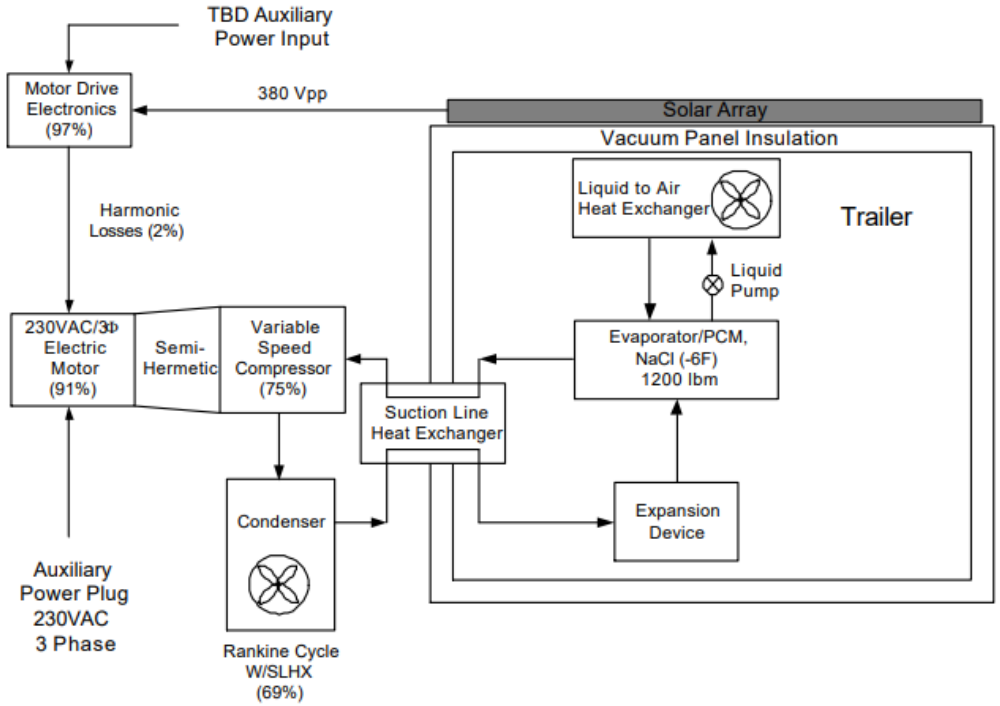
Crops are only seasonally available.

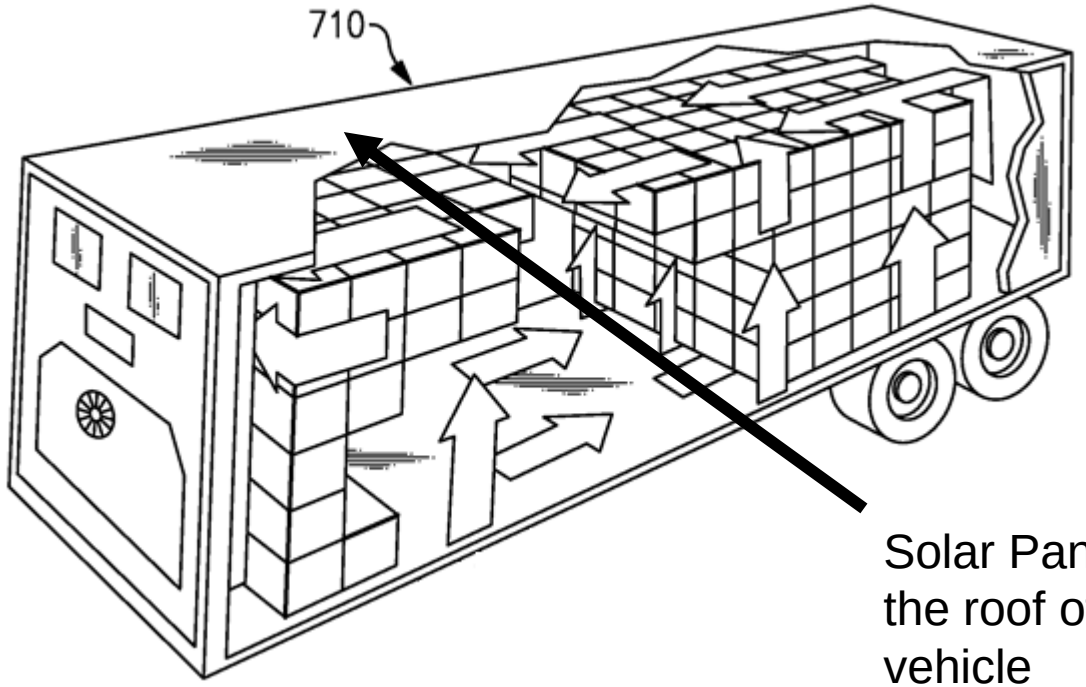
Lack of local manufacturers of cooling technology.

US20130000342A1 – SOLAR POWER ASSISTED TRANSPORT REFRIGERATION SYSTEM

ASPR BOX

The Automatic Solar-powered refrigeration system, built for the suitable Sub-Saharan climate.





Solar Panel on the roof of the vehicle

SANDIA REPORT
SAND2001-3753

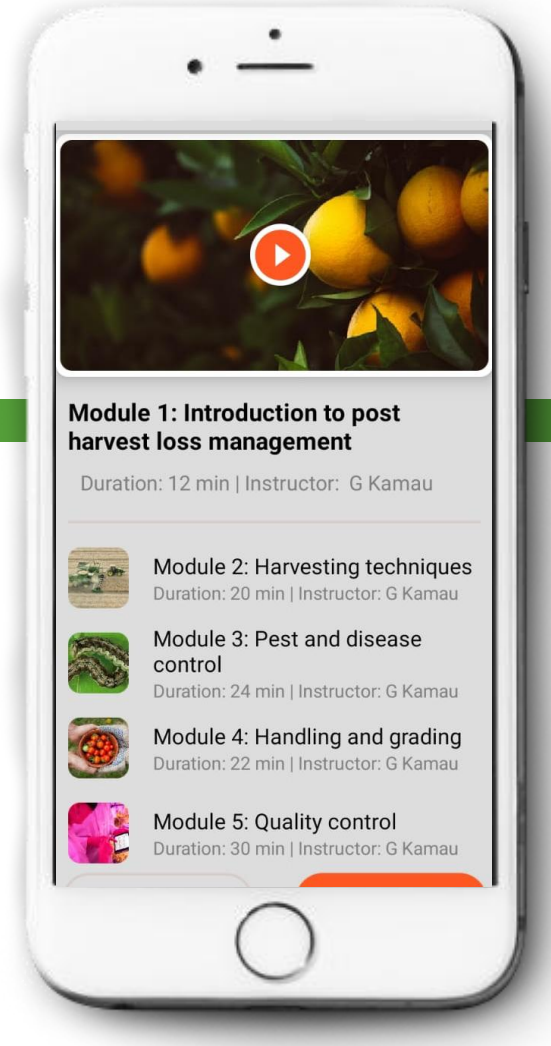
ISUZU FVZ
GVM
25.0ton

Temperatures of 10 - 15°C
Capacity storage of 20,000Kg

- Variable speed compressor
- PCM for energy storage
- Keeps the temperatures constant for longer
- Less maintenance, IOT enabled maintenance
- Lightweight

ASPR APP

The App bringing the cold chain home to high value farmers in an underperforming value chain.



Data Input:

- ✓ Name
- ✓ Location
- ✓ ID Number
- ✓ Average amount of produce harvested
- ✓ Size of farm

ADMINISTRATOR:

- Automatically set the temperature needed for the ASPR Box
- Ensure handling and harvesting is done properly
- Receive MPESA payments
- Check progress and approve certificates
- Alert driver to take the system for service

FARMER:

- Certificate tests, complete all 12 modules to pass
- Set pick up and drop off of produce
- Live location tracking
- MPESA Push service
- Issue a certificate
- Request appointment with an Agronomist

Data protection:

At all stages the farmer will be sign to give permission to the service to safeguard against exploitation.

ASPR App will collect data from the ASPR Box and relay information back to the manufacturers using IOT and predictive analytics.

WHY NOW?

HORTICULTURE RATES ARE ROCKETING

- Horticulture production is set to fall by 20-30% due to slowed down production in 2021
- Shortage of fruits and vegetables in Europe

INTEREST IN SHORT INTENSIVE COURSES

University of Nairobi Post Harvest Research Team short course on Postharvest food loss and waste reduction: towards sustainable food systems

YOUTH WILL NOT DO AGRICULTURE

Low farmer productivity level particularly for cereals.

KENYAN BIG FOUR COMMITMENT AGENDA

- 9.2% - 20% GDP by 2022 by enhancing manufacturing.
- 100% food security and nutrition by 2022

MARKET POTENTIAL

100

5-acre French Bean farms in Loitoktok Kajiado county, Kenya, producing 6,000Kg per acre.

80K

Number of unemployed youth in Loitoktok, Kajiado County, that would benefit from our program.

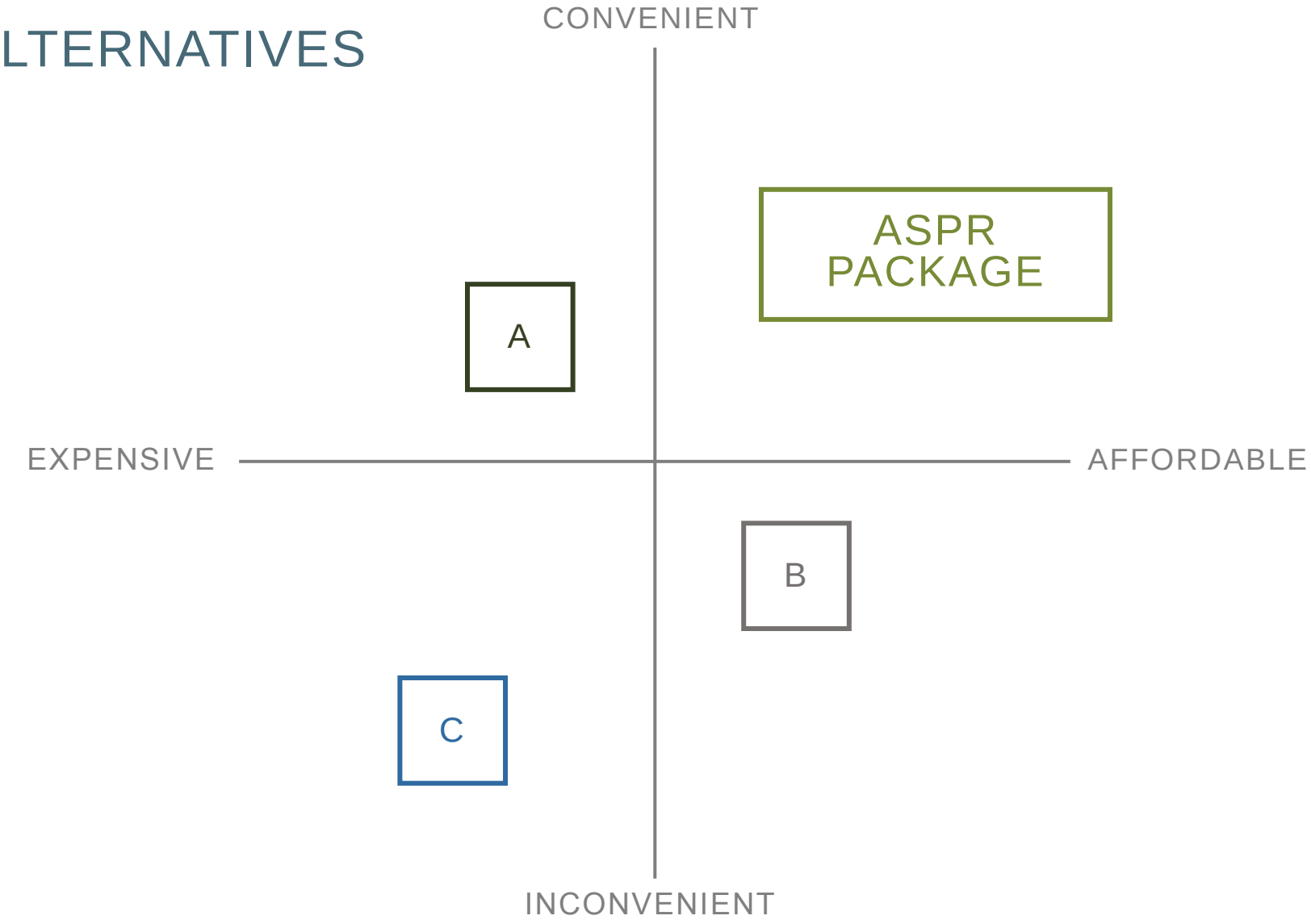
16,530 KSH

Gross margin per acre.

COMPETITION/ ALTERNATIVES

French Beans value chain:

1. Small holder farm
2. Brokers
3. Packhouses
4. Cargo companies at the airport



BUSINESS MODEL

KEY METRICS

Number of trips in a month

Number of successfully completed certificate courses

Number of registered Agronomists

Daily Active users

USER ACQUISITION

We want to target the farmers and the youth.

Farmer: Host talks at the county government offices

Youth: Social media campaigns in partnership with Safaricom BLAZE and 400Ksh worth of bundles after signing up.

OPERATIONS

1. Sign up from the ASPR App as a farmer or learner
2. Register harvest period and farm size
3. Set payment timeline and pay first deposit
4. Select number of workers needed for harvest
5. Pick up produce and drop at destination.

REVENUE MODEL

Rent out the ASPR Box at 6Ksh per Kg per 200Km distance

Certificate upon completing our short course – 1200

Ad revenue

Registration of Agronomists at 1000Ksh with a 500Ksh monthly subscription

Cost analysis for the ASPR Box

This is based on a report that has done extensive research, and a study of a refrigeration truck operating in Houston, a city comparable to Nakuru in Kenya.

The prices for solar panels continues to decrease over the years.

Item	Est. Cost	Comments
Solar Panels	28500	5.7kW Thin Profile Panels (Installed) @$5/watt
Vacuum Panels	8,000	2000 sq.ft. @$4/sq.ft
Electric refrigeration unit	12,000	Variable speed system
Aux Power Unit	2,500	W/3.5kW Generator
PCM Container	2,500	800lb PCM
Motor Drive electronics	2,250	3-Phase Drive, DC Input
Total	36,750	

App cost analysis

This is an overview of the costing for the app, conceptualization and deployment.

PROCESS	PROVIDER	COSTS
Conceptualization	In-house	0
Layout design	In-house	0
Algorithms design	In-house	0
Hosting	Digital Ocean	$20 USD (Monthly)
Domain name	Truehost	$12 USD (Annually)
Play-store deployment	Google	$25 (One time)
Website	In-house	0

Total costs

Item	Initial Cost	Total
ASPR App	$47 USD	$79,797 USD
ASPR Box	$36,750 USD	
ISUZU FVZ GVM and modifications	$40,000 USD	
Labor (2.5 FTE); Engineering, Assembly, Test	$3,000 USD	

The labor estimate is based on experience developing systems of similar complexity, and optimization.

GROSS ANNUAL REVENUE

63,000 USD

First year of operations

150 acres served
1000 issued certificates
100 agronomists (1st year, no monthly fee)

97,350 USD

Second year of operations

200 acres served
1800 issued certificates
250 agronomists with monthly fee payments

12.85M USD

Third year of operations

300 acres served
2000 issued certificates
300 agronomists with monthly fee payments

EXECUTION PLAN

Phase 1 - 6 weeks

- First successful prototype of the ASPR box made, ASPR App designed
- Market testing on 1 farm for the ASPR Box
- Beta Tests on the ASPR App, collect data and improve the design.
- Designing the certificate curriculums by the University of Nairobi

Phase 2 – 2 weeks

- Marketing our product to various private investors in the region involved in agriculture, to access contract farmers.
- Marketing the ASPR App through our partners.
- Hold seminars and talks with communities, on the last-mile and cold chain opportunities in agriculture and encourage debates in parastatal universities on the same.

Phase 3 – 2 weeks

- Roll out to 10 selected 5 farms of French Beans in Njukini, Loitokitok Kajiado county through VGP.
- Hold workshops in the area, sensitizing the youth on agriculture and the impact of post-harvest losses. (2,000 youths reached)
- Register smallholder farmers onto the App (Farmland worth 25 acres)
- Register 50 Agronomists through the private sector and awareness talks.

IMPACT ASSESSMENT

Farmers will increase their yield to upwards of *6,000Kg per acre*

Farmers will increase quality of produce of French Bean by *20%*

Price range for 1Kg of French Beans for export will go up to a *minimum of 72Ksh* per Kg during low season

Reduced post-harvest losses to *1 to 2%* per acre.

KSh 17.97M

Total profit earned by the 5 acre farmer in 1 harvest season.

16.5%

Increased profit margin for our farmers using our ASPR package

Meet the team

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