

Local Assembly



Funded by:



Agenda

- ▶ Introductions
- ▶ Speakers
 - ▶ **Sean Davy**
 - ▶ **Philip Sandwell**
 - ▶ **Joelle Hangi**
- ▶ Q&A
- ▶ Survey and Closing



Meet our speakers



▶ **Philip Sandwell** – GPA



▶ **Joelle Hangi** – GPA



Sean Davy – Efficiency for Access

Assessment Criteria

Innovation



How does your design compare and improve on solutions that are currently available to your target end-user?

Judges will want to see that you have demonstrated and understood the technological context that you are targeting, and that you have gone through a well-informed design process to improve on solutions currently available to the end user.

- What is the potential of your design to improve energy efficiency compared to existing alternatives? Consider how you define energy efficiency (energy used per service provided) and what the baseline is for comparison.
- What is the potential of your design to reduce production costs compared to existing alternatives? Consider materials used, price of components and cost of assembly.
- What is the potential of your design to improve usability compared to existing alternatives? Consider its ease of use, reliability and safety.

Sustainability



How does your design contribute to a positive impact on the environment?

Judges will want to see that you have understood the effects your solution could have and how you demonstrate your solution is worthwhile and contributes to achieving SDGs.

- Is your design reducing the environmental impact throughout its lifecycle compared to existing alternatives? Consider the whole product lifecycle: materials used, repairability and end of life.
- How does your design contribute towards greenhouse gas emissions reduction compared to other technologies that exist in the market? Consider the sustainability of your business model (including manufacturing, distribution and operating) and its scalability.
- How does your design contribute to the Sustainable Development Goals (SDG), in particular SDG7 – Affordable and clean energy? How well have you demonstrated you understood the potential connections with the other 17 SDGs and its associated targets? Consider how the different areas of this assessment framework are contributing to this.

Social Impact

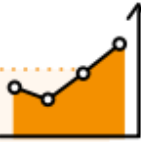


What difference does your design make to people's lives?

Judges will want to see how you have researched the needs of the people your solution could benefit. They will want to understand why you think your design will improve peoples' lives, and how you have considered social inclusion and equality in your solution.

- How well have you considered who will be using the design? How well have you understood their needs?
- What is the likely potential of the design to improve quality of people's lives? How does your design improve the desirability of your target end-user? Consider what their livelihood was before and the improvement your design will bring to them.
- How well has your design considered the Sustainable Development Goals' commitment to 'Leave no one behind'? In particular, consider gender equality and disability inclusion.

Scalability



How feasible is it that your design could get to market at scale?

Judges will want to see that you have considered the business case. Including considering the market opportunity, including market size, for your solution, and demonstrated how people will be able to access and afford this.

- How well have you considered the potential market for your product? Consider the target customer, size of market and customer value proposition.
- How well have you considered how people will be able to access and afford your product? Consider affordability, potential customer payment models and existing financial models.
- How well has your business model considered affordability, payment models, existing supply chains, manufacturing, distribution channels, local partners and services associated? Consider the pricing and costs strategies to make your business model commercially viable.

Local Assembly

- Localisation of manufacturing and supply chains
- Not a blanket approach to be tacked on to a business model or design
- Should be prepared to show that this is a viable option for you.
- Upcoming Efficiency for Access Report
 - Working Title: Examining Fiscal Environment For Increased Localisation Of Off-grid Solar Refrigerators And Walk-in Cold Rooms

Need of Localisation



Supply Chain Stability

Local manufacturing helps to stabilise the supply chain where local companies source materials and other resources. This shortens the lead time on materials, as manufacturers do not need to wait for them to be shipped. Moreover, there is also an increase in revenue for manufacturers since there is reduction in the import logistics cost. Localisation also helps manufacturers become more resilient to supply chain disruptions in pandemic-like situations.



Local Job Creation

Supporting local manufacturing companies directly benefits local labour markets and the local economy as the cost of manufacturing is not being paid to an overseas company. Local manufacturing not only directly creates employment, but indirectly creates it as well. Component manufacturing and the delivery to end users are two such examples.

Main findings

- Viable with adequate demand
- Higher demand paired with localisation reduces the material costs
- Reduces material costs by eliminating associated import taxes
- Reduces break-even volume demand
- Requires lots of capital investment to setup manufacturing facilities

Executive Summary Chart of Recommendations





Ayoola Dominic – Koolboks



Koolboks

Life is Kool!





Memory lane...



Ayoola, Operations Manager



Deborah, Supply Chain Manager

Ayoola,

Lead R&D
R&D
Engineer



Ayoola & Deborah

Sales Reps



Evolution of Koolboks

2017 - 2019



2017



2018



2019



► La chronique d'Anthony Morel : Les objets connectés de l'été - 08/07





How did come about the Koolboks Solar Chest Freezer ?



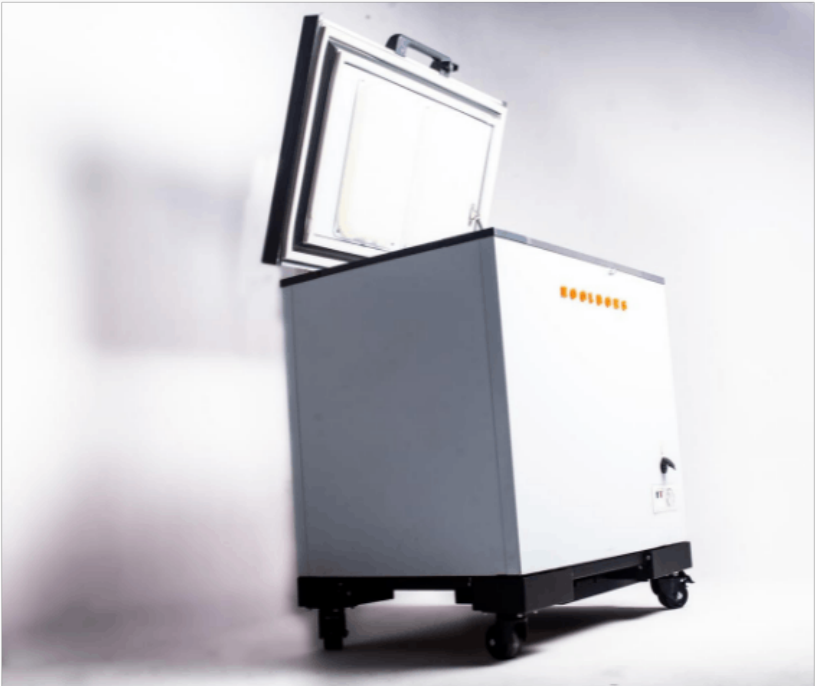
2020

Official Launch





Quality Vs Cost



Vs



KOOLBOKS





Unleashing access to solar refrigeration

Solar Refrigeration



IoT Integration

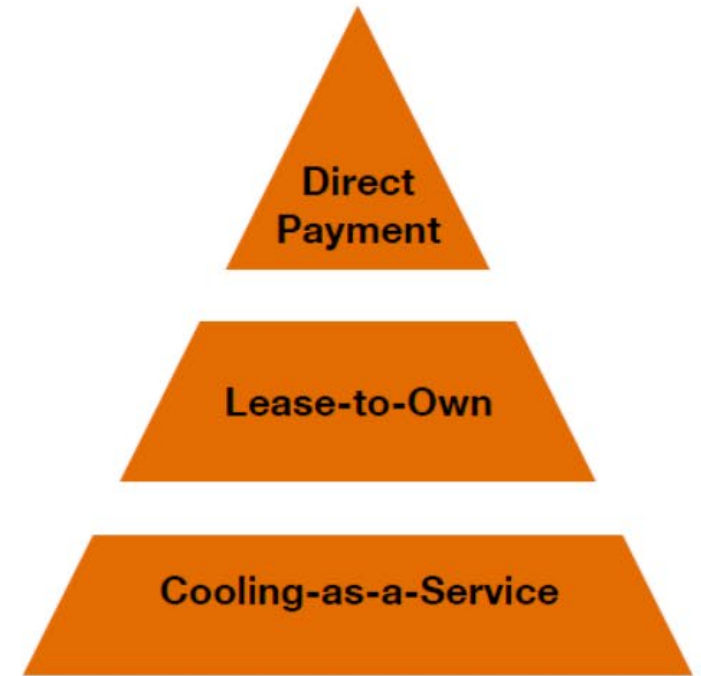


Pay-as-you-Go



Remote
Monitoring

Innovative Financing



“ Ever Since, I got the Koolboks, My Profit Margin has increased.

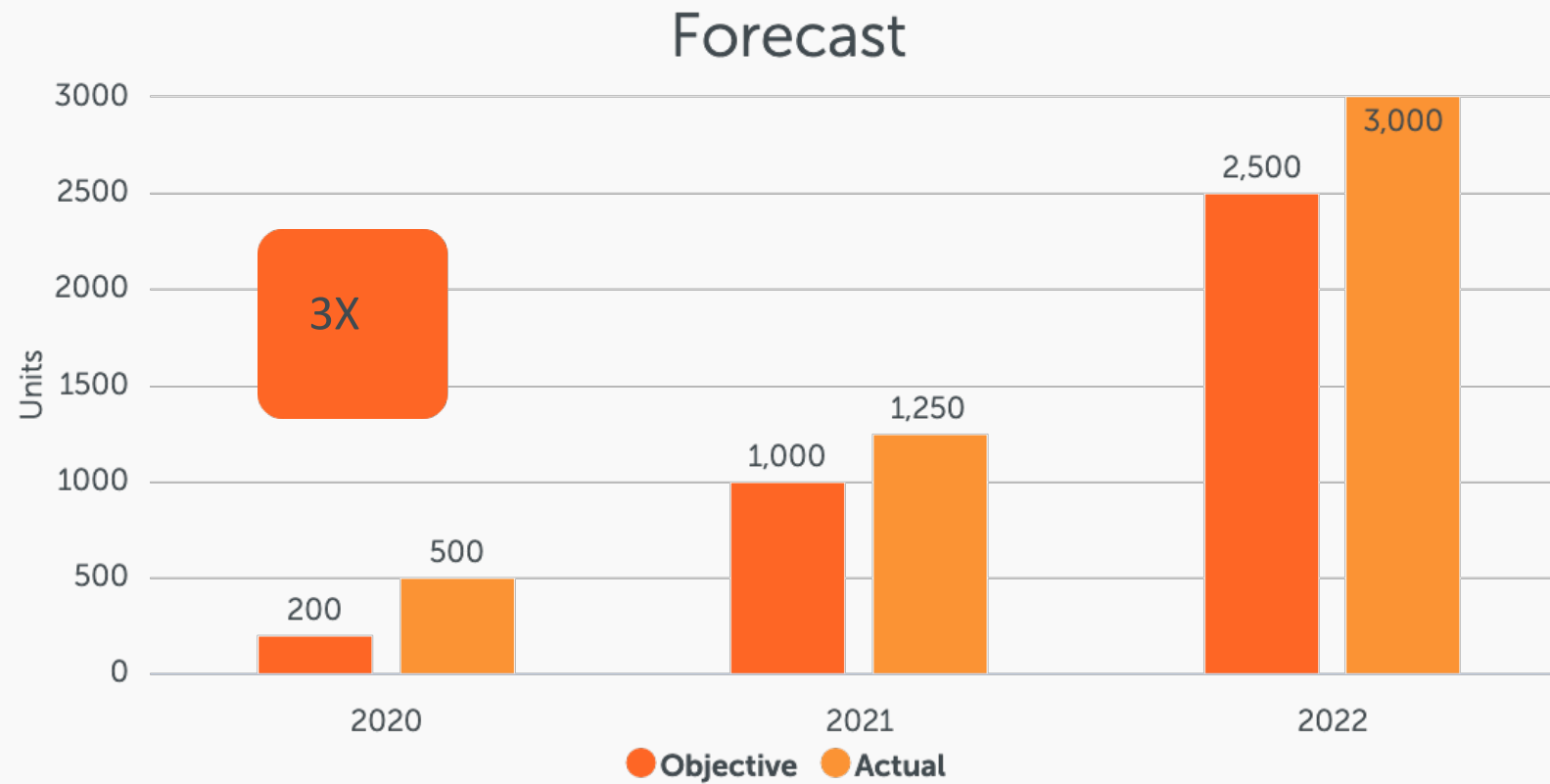
Life Has Been Made Easy. I Easy. I Pay My Monthly Instalments With Ease.

Mrs. Aderinoye - Restaurant Owner

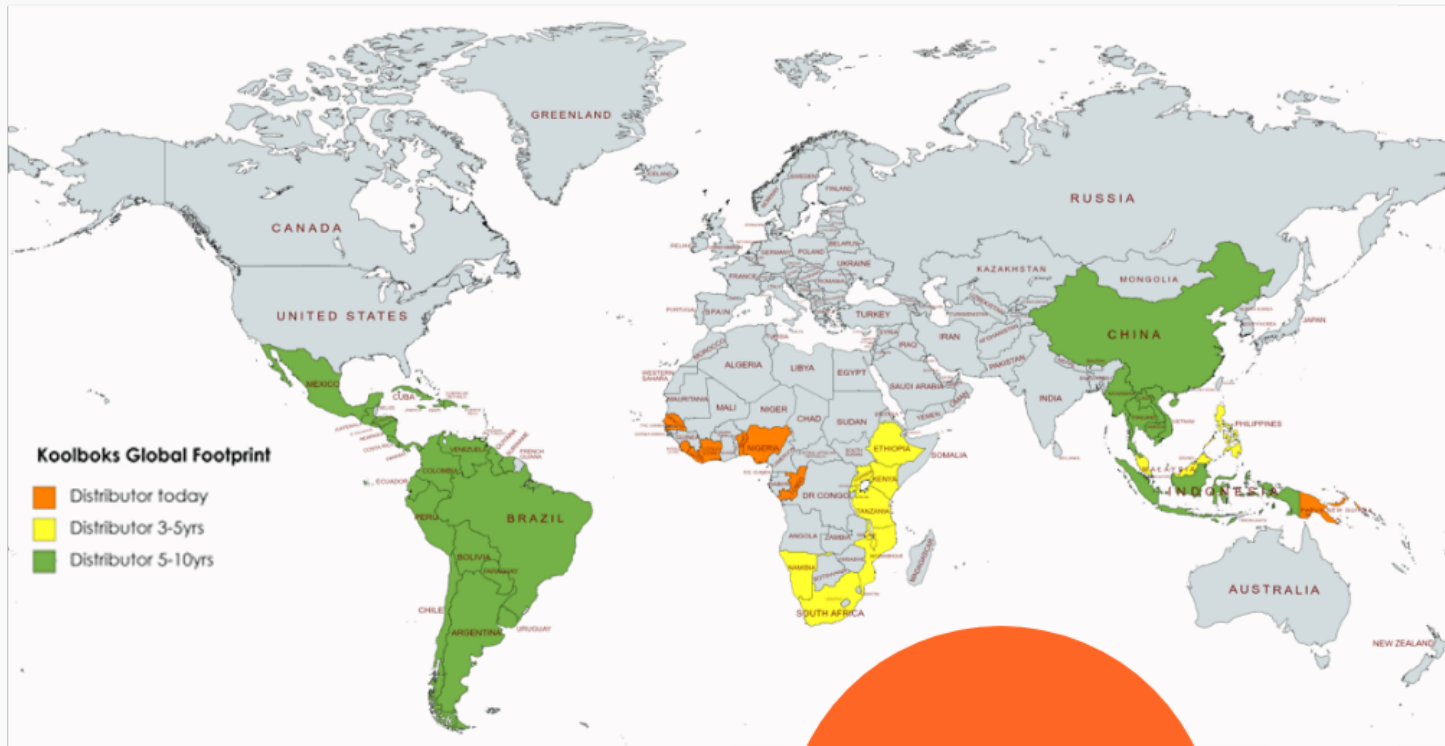


Exceeded Expectations

Product Market Fit Search



Global Distribution



- Ivory Coast
- Senegal
- Liberia
- Sierra Leone
- Ghana
- RDC
- Rwanda
- Namibia
- Madagascar
- Mozambique
- Malawi
- Burkina Faso
- Philippines
- Papua Guinea
- Etc...



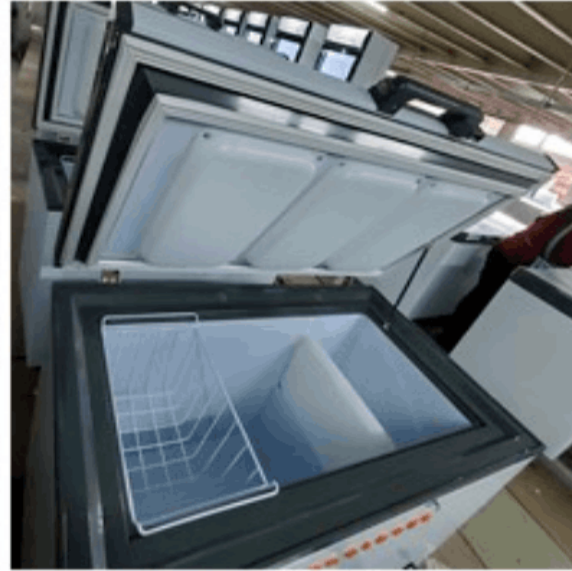
Local Assembly

\$ 2.5M

\$33 M

Market Expansion:

- Cooling As A Service
- Distribution Of Vaccines
- Scale Up Production Capacity







CONFIDENTIAL

KOOLBOKS
L I F E I S K O O L

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Florian Martini– Phaesun GmbH

SelfChill Solar Cooling Solutions



Who we are

A Coalition of 3 Institutions



Wholesaler and system integrator of PV Off-Grid systems



Development and trainings for innovative solar cooling solutions



UNIVERSITY OF HOHENHEIM



Scientific research on agri technologies

SelfChill Systems

Cold Rooms



Milk Tanks



Advanced Ice-Makers



Solar Cooling Unit - SelfChill ®



Advantages:

- Create your own Refrigeration Systems
- Low transport cost
- Duty free in most countries
- Battery free compatible (Direct-Drive)
- Performance per cooling unit: approx. 20 kg ice/day
- Natural refrigerant R600a (already filled)
- Monitoring & PAYG

Key benefits

- The SelfChill concept is very **flexible** and covers not only the product itself, but all areas along the value chain.
- **Modular and scalable:** Use of same key components for a variety of applications (e.g. refrigerators, ice-makers, milk tanks, cold rooms up to 40 m³)
- **Self-assembly kit:** saving volume, transport costs, duties, CO₂ emissions and keeping added value in the target countries.
- **Local assembly** and use of local material
- **Easy to maintain** since broken cooling units can be substituted and repaired locally
- High cooling power through the **ice storage** and compensation of solar fluctuations
- **Intelligent control** system developed by SCE
- Mobile phone based payment option (**PayG**)

How it works

PV Panels



- PV System provides electrical energy

Water chiller =Ice storage



- Several SelfChill Cooling Units serve the Water Chiller
- They convert electrical energy into thermal energy
- Ice is produced as energy storage with surplus solar energy

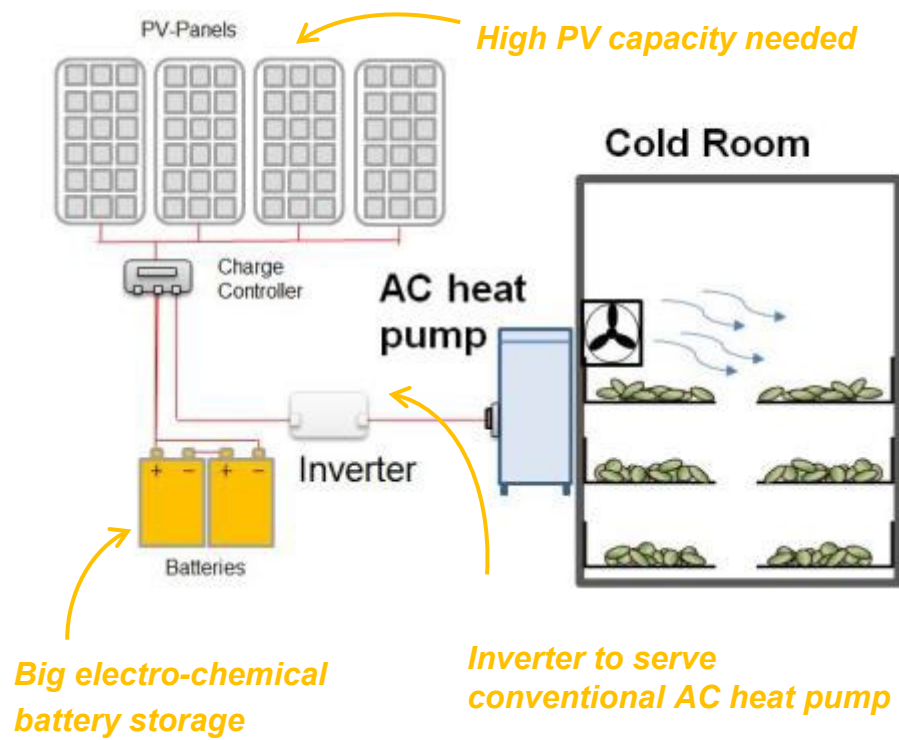
Consumer



- Cold water (~2°C) is pumped to the cooling appliance
- Variety of possible cooling appliances: cold rooms, milk tanks, air conditioning, etc.

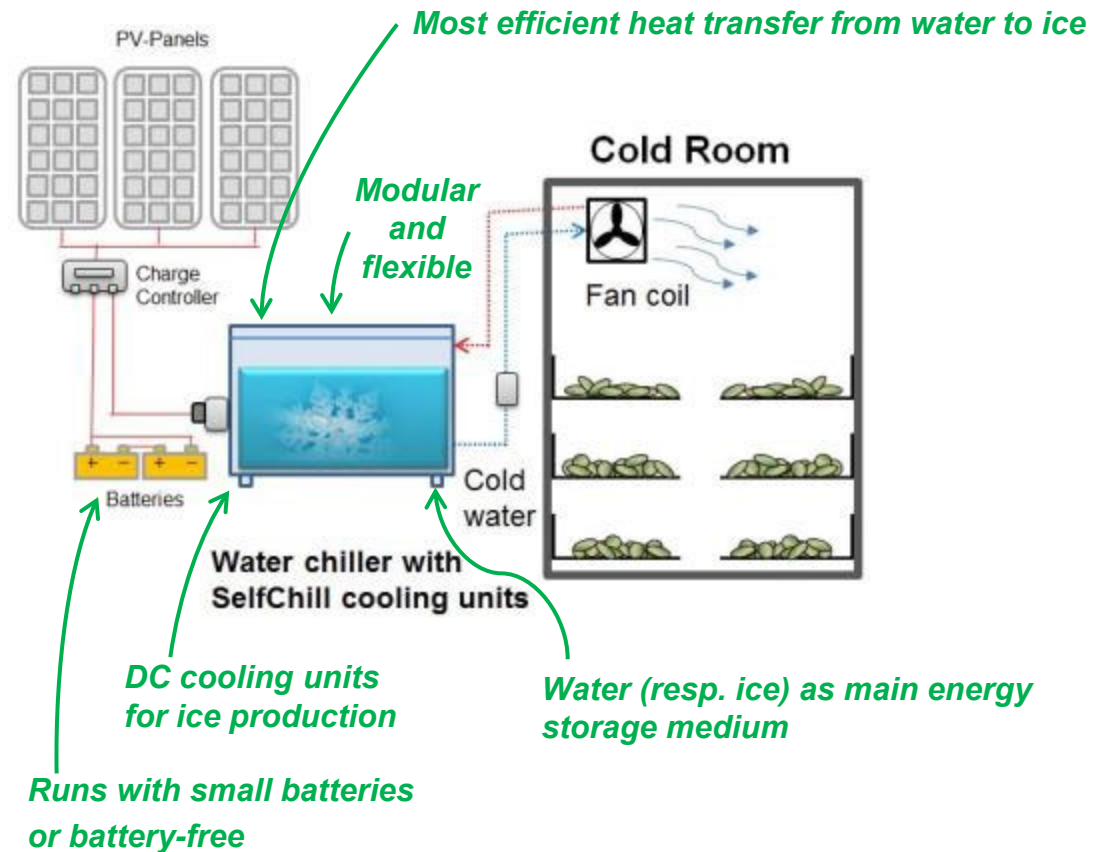
How it works

Conventional solar cooling system



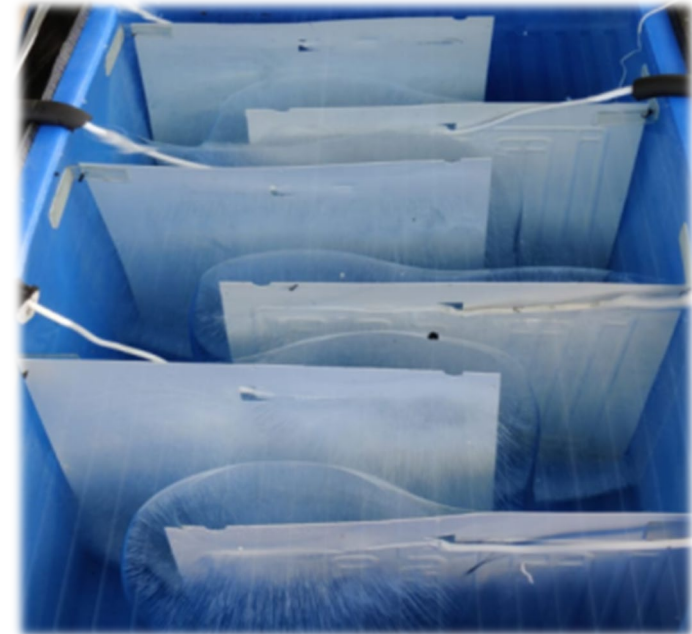
vs.

SelfChill system



How it works

Water chiller to produce and store thermal energy:

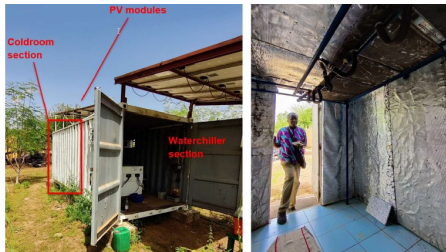


SelfChill Cold Room

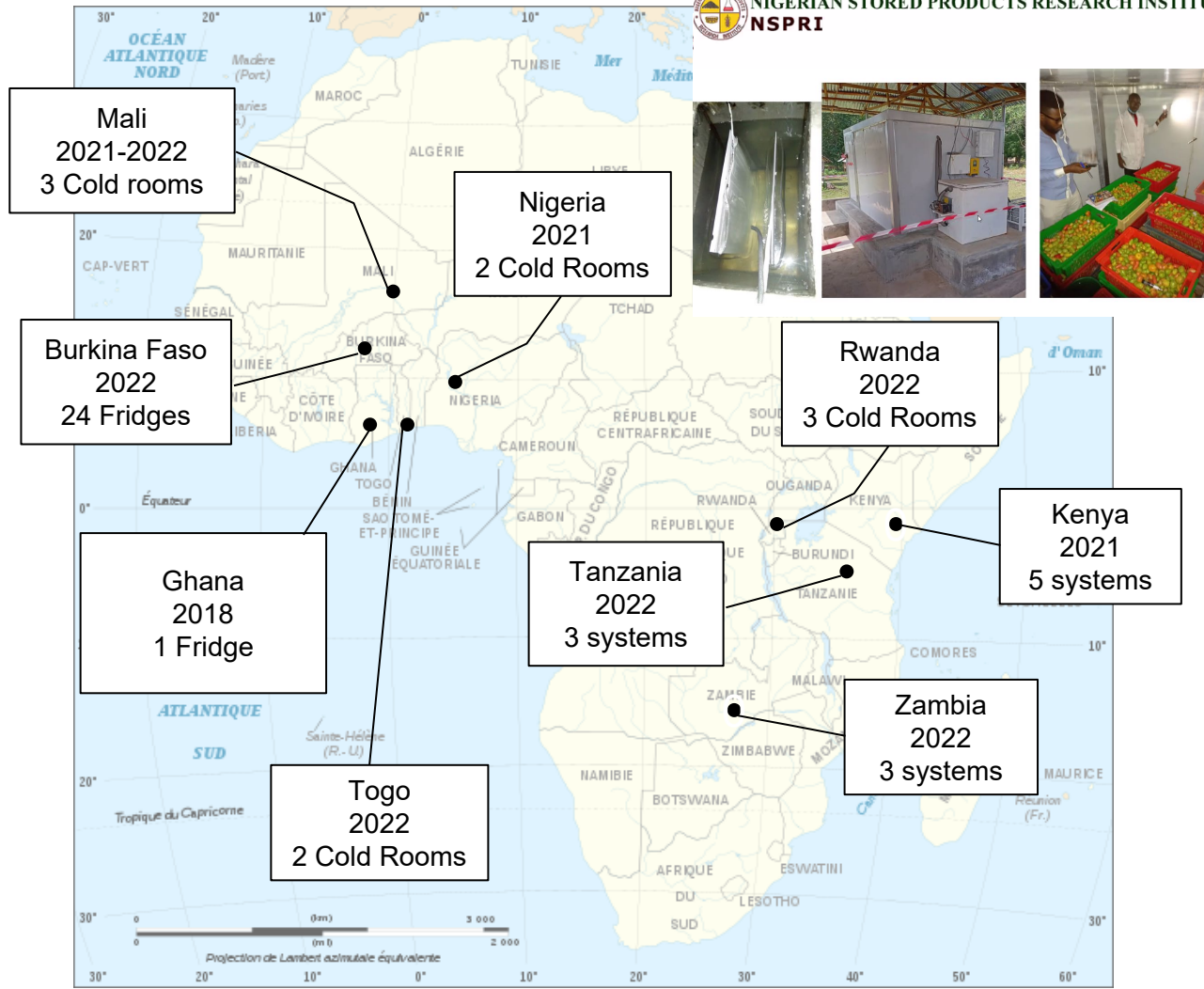
- Cooling 24 h /day
- Compressors work only during the day



SelfChill in the field



 **NIGERIAN STORED PRODUCTS RESEARCH INSTITUTE
NSPRI**



 **ANTENNA
FOUNDATION**



 **Strathmore University**
Energy Research Centre



Cold room in Mali 2019



Ice maker (Takaungu, Kenya) 2020



Cold room 20m³ (Strathmore, Kenya) 2021



Advanced Ice-Maker (Kisumu, Kenya) 2021



Milk tank 500 l (Bungoma, Kenya) 2021



Cold room 18m³ (Thika, Kenya) 2021



Cold room 15m³ (Lusaka, Zambia) 2022



Cold room 12m³ (Fountain Gate, Lusaka, Zambia) 2022



Q&A





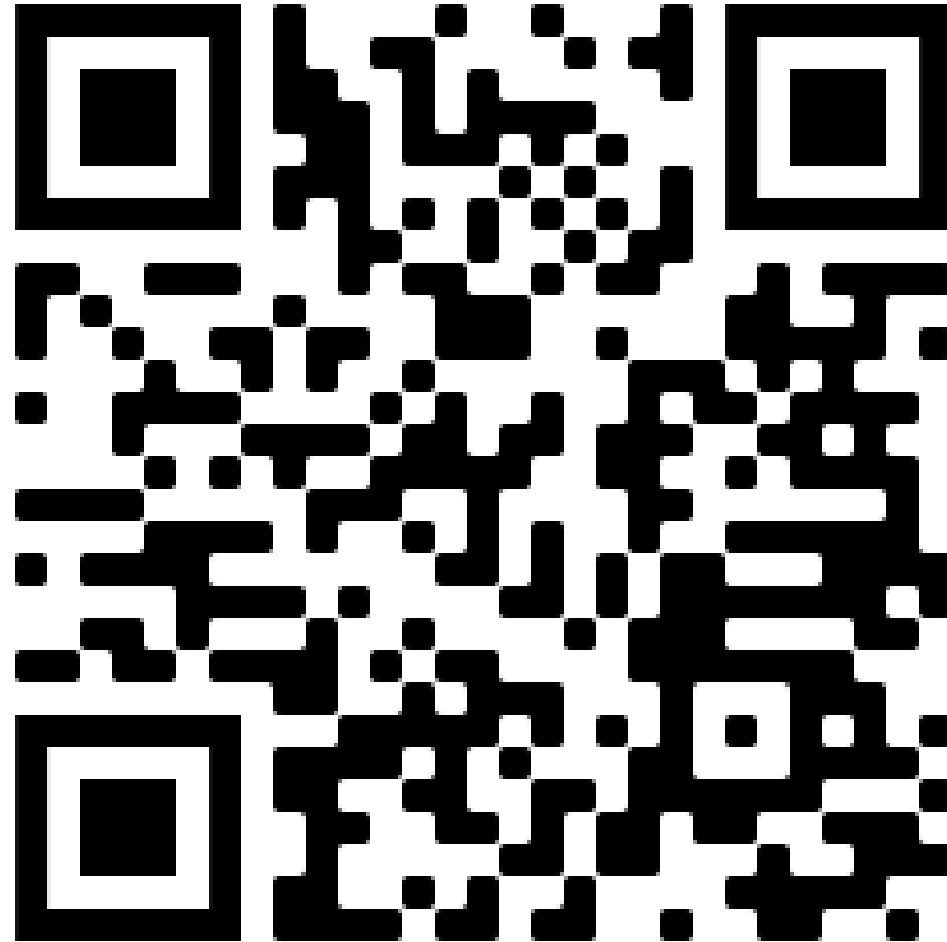
Short feedback survey



<https://response.questback.com/energysavingtrust/eforawebinarfeedback>



Newsletter sign up:



bit.ly/DesignChallengeNewsletter



**EFFICIENCY
FOR
ACCESS**