

Scalability: accessibility and affordability – a market perspective



Funded by:



Assessment Criteria

• 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.

Scalability

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

Designs 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.

- 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.

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.

- 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.

- 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.



Agenda

- Introductions
- Speakers
 - Moses Nyakoyo
 - Tilak Nathwani
 - Muhammad Shehryar
- Q&A
- Survey and Closing



Meet our speakers



▶ **Moses Nyakoyo** – Kijani Testing



▶ **Tilak Nathwani** – M-KOPA



▶ **Muhammad Shehryar** – Harness Energy



Moses Nyakoyo – Kijani Testing

13 minutes



KIJANI TESTING

YOU DESIGN IT, WE TEST IT

INTRODUCTION

Brief Bio

Moses Machel Nyakoyo-Co-Founder/Director Finance



- Chartered Management Accountant with over 15 Years working with start-ups across Africa.
- Dedicated the last 5 Years working with start-ups in clean tech and renewable energy space.
- Working with innovators of clean tech to enhance product acceptability and scalability.
- Country Winner- 2021 Founder of the Year- East African Start-up Awards.
- Contacts: +254708855852
- Email: moses.nyakoyo@kijanitesting.com
- www.kijanitesting.com



KIJANI TESTING LTD is a Kenyan start up that offers field testing for proto-types, market testing for ready to launch clean tech and after sale technical support for clean tech innovators, manufacturers and distributors.

We have capacity and a network of sites where we test clean tech such as solar powered water pumps, solar cooling systems, solar milling machines among other PUE's.

TOPIC: Scalability: Accessibility and affordability-a market perspective

Accessibility- Why off-grid energy should be within reach for the masses

- 13% of world population do not have access to electricity- about 1 Billion people
- 40% do not have access to clean fuels for cooking-about 3 Billion people
- Energy Access is strongly related to income: poorer households are more likely to lack access

Hannah Ritchie and Max Roser (2020) - "Energy". Published online at [OurWorldInData.org](https://ourworldindata.org). Retrieved from: 'https://ourworldindata.org/energy' [Online Resource]

- Average price of electricity per KWh is \$0.165 across 230 countries studied by Cable.co.uk
- Average electricity needs per poor household globally is about 20Kwh per/month.
- This translates to about \$3.30 per month.
- **Average connection cost to the main grid around the globe is about \$1000- this could vary depending on the distance from existing distribution line.**

Making off-grid appliances accessibility:

A focus on Kenyan Market.

The average monthly electricity consumption of rural households connected to the national grid is a six-kilowatt hour (kWh) that is currently valued at \$0.897

- Close 40% of the population live in extreme poverty- World Bank.
- Cost of electricity \$0.213/KWh about 30% higher than the global Average.

Achieving Accessibility-

- Product Functionality-meet expected performance parameters.
- Product distribution channels that reach the target market.
- Functional product warranty and technical aftersales support.
- Consider end user feedback in designing a product/ modifying the product.
- Continuous dedication to R&D

Income levels in Kenya in relation to affordability of off-grid appliances

Income/month(\$)	Number of Households
0	252000
1-100	7371000
101-250	3024000
251-400	1260000
401-550	378000
551-750 _{KNBS-2020}	126000
750-1000	126000
>1000	63000
	12600000

- Off-grid appliance innovators, manufacturers and distributors ought to factor in the ability of the potential of target market to pay for the appliances.
- Studies have shown that Kenyan market is very price sensitive and the trade off between quality, cost and return trade off is really not one of the key consideration among the rural populace.

Achieving affordability

- Materials- Lower cost but sustainable materials.
- Minimise waste in the production line.
- Do away with unnecessary product features.
- Choose the most effective and affordable distribution channels.
- Negotiate favorable terms with suppliers and distributors.
- JIT production- Buy materials on need basis.
- Minimise stock to manage warehouse and distribution cost.
- Offer discounts for cash purchases



Tilak Nathwani – M-KOPA

13 minutes



2. Determining what is affordable in your market

Interviews with your target customer base and secondary datasets will enable you to break down and test affordability

In a pay-as-you-go setting, customers will view gross price of the product as one measure of affordability

Consider whether you are replacing an existing solution for your target customers, or introducing a new product to them – this may influence how you weight the following variables:

$$\text{Gross Price} = \text{Deposit} + (\text{Cost Per Credit} \times \text{Credits})$$

- Gross Price gives customers an important signal of overall value-for-money;
- Deposits will require upfront cash to be available;
- Cost Per Credit helps customers understand how payments can fit into their budgets; and
- (Number of) Credits will signal the commitment length (and, if relevant, breakeven point).

Other models include BNPL, PAYGrow and loans.

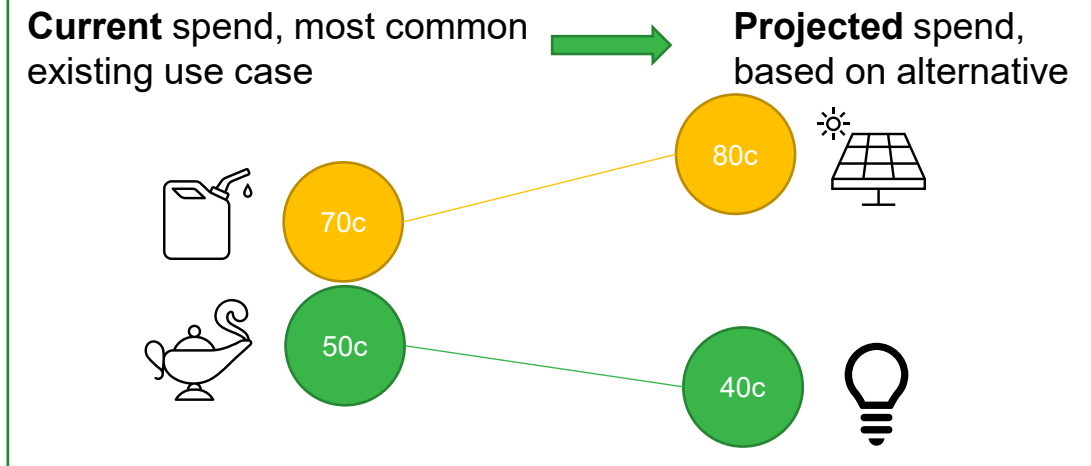
Several markets have existing datasets to leverage when developing early-stage pricing hypotheses



Income distribution and macroeconomic data (for market sizing)



Financial diaries and microeconomic data (to support unit pricing)



Ultimately, **customers should recognise savings** (or incremental incomes) from your product to be deemed affordable, **along with co-benefits** such as improved health and quality of life.



Muhammad Shehryar – Harness Energy

13 minutes



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February 14, 2022



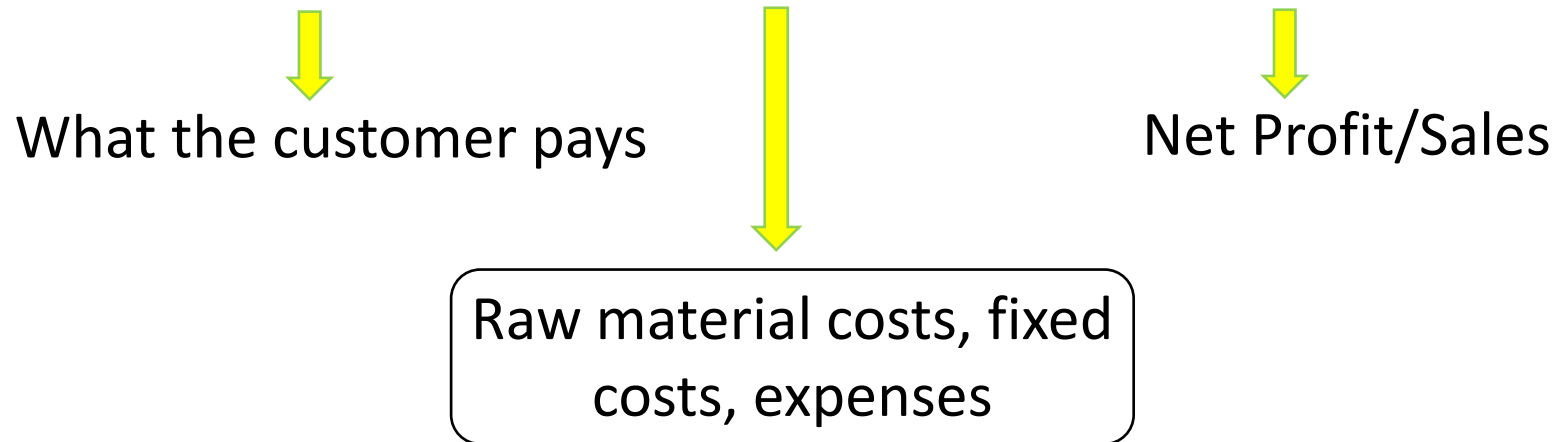
Muhammad Shehryar
Founder and Managing Director,
Harness Energy



Affordability – Considerations



$$\text{Selling Price} = \text{Cost} + \text{Profit margin}$$



- How much and for how long are you willing to sacrifice profit margin?
- How do raw material prices fluctuate?
- Calculation of fixed cost/unit
- Control over expenses: marketing, administrative, other

Affordability – Off-Grid Context



- Product Need
- Alternate options
- Customer Profile
- Price sensitivity
- Financing options



Perspective from Pakistan: Solar products



- Product Need
Big off-grid market. Expensive electricity
- Alternate options
Bad-quality generics available
- Customer Profile
Farming, Rs. 20-24k, 5+2 people
- Price sensitivity
Very sensitive. Extra marketing effort req.
- Financing options
Rare. MFIs do not trust quality



Affordability as a key design feature



If your product aims to exclusively target an 'off-grid' audience, end user affordability should be one of the top three most important factors to be considered in product design



\$0.03 - 0.10



\$6

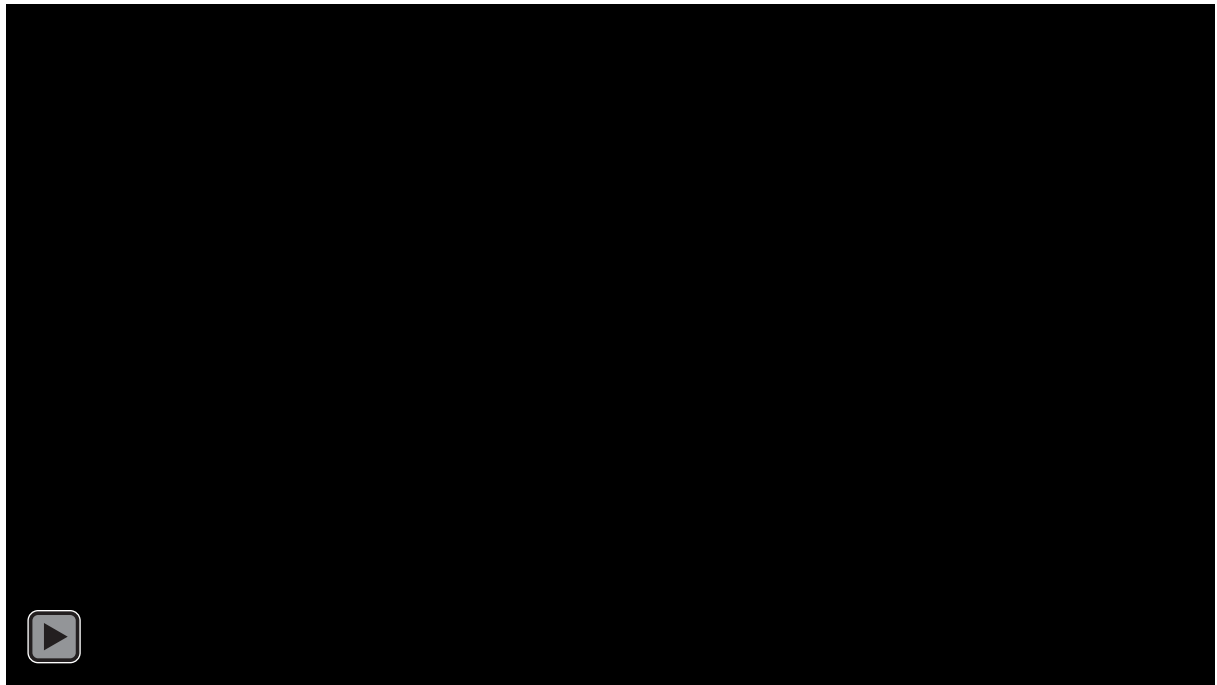


\$2



\$45

Q&A





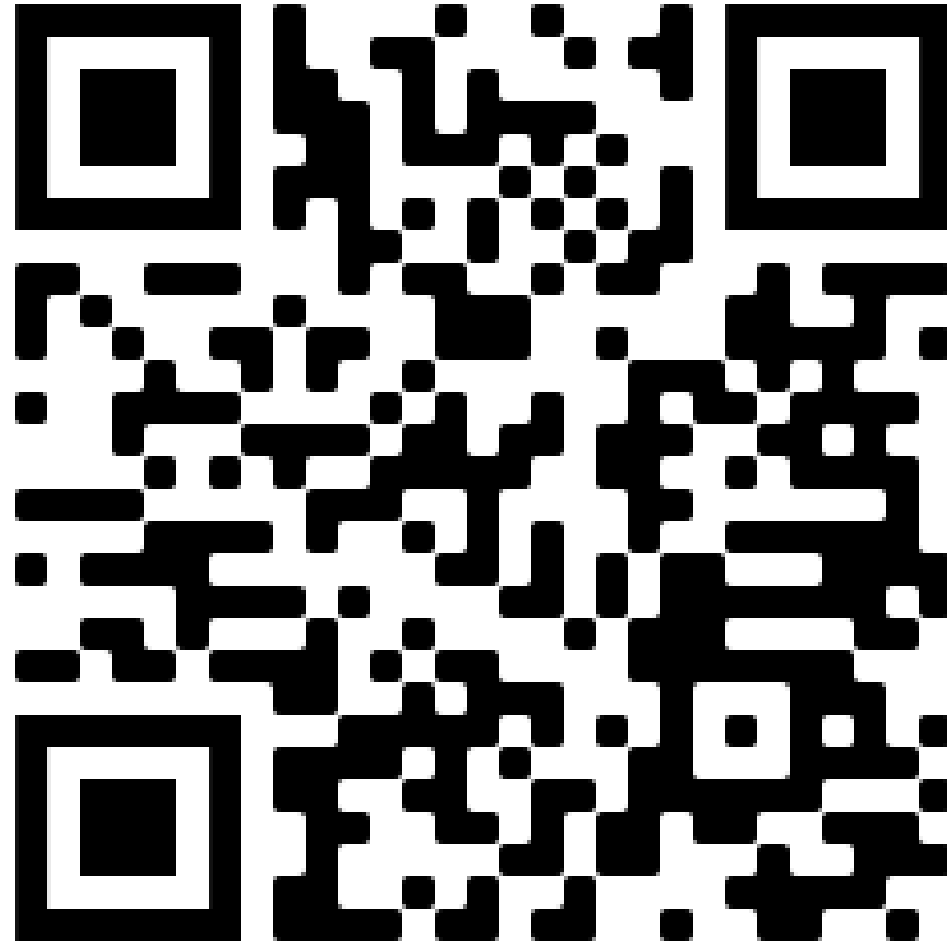
Short feedback survey



[Bit.ly/EforADCFeedbackSurvey2021-22](https://bit.ly/EforADCFeedbackSurvey2021-22)



Newsletter sign up:



bit.ly/DesignChallengeNewsletter



**EFFICIENCY
FOR
ACCESS**