



**AFRICAN CLEAN ENERGY**



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**WBA Presentation Deck**

February 2022



## MARKET SIZE AND PROBLEM

Globally 3 billion people have inadequate access to energy, forcing them to cook on open fire, creating a market opportunity of over 600 million households



A substantial majority cooks on open fire using wood or charcoal for reasons related to costs and accessibility of other alternatives causing emissions between 3 and 10 tonnes of CO2 per year



Over 4 million people die every year from illnesses attributable to household air pollution



In most African countries the rapidly growing need for fuelwood and charcoal is the #1 cause of deforestation

The sector that ACE operates in is often referred to as 'Clean Cooking', a framing that doesn't adequately reflect the fact that it represents the **single biggest climate finance opportunity** in almost every emerging market, currently still rapidly expanding, at:

**2.5 Billion tonnes of CO2 emitted globally per annum / ~5% of all human emissions**



### MONTHLY COSTS TO COOK\*

### ACCESSIBILITY

Electricity (grid\*\*) ⚡ EUR 29 ✗

Gas ⚡ EUR 29 ✓

Kerosene ⚡ EUR 22 ✓✓

Biomass 🌳 EUR 0-8 ✓✓

The average budget of low-income households amounts to EUR 60-120 per month

\*<https://iopscience.iop.org/article/10.1088/1748-9326/aa6fd0>  
\*\* Assuming grid connection (note that Africa has a high number of blackouts). Costs for mini-grid are 2 to 4x times higher whereas solar home systems lack the capacity for cooking (thermal energy)

MARKET SIZE AND PROBLEM



Product-Market Fit in Access-to-Energy is Poor

Emerging market electricity gets most attention as a result of a clear business case, but the vast majority of kWh consumed by this segment of the global population is for thermal energy needs

**1hr cooking = ~1,000x 1hr lighting**

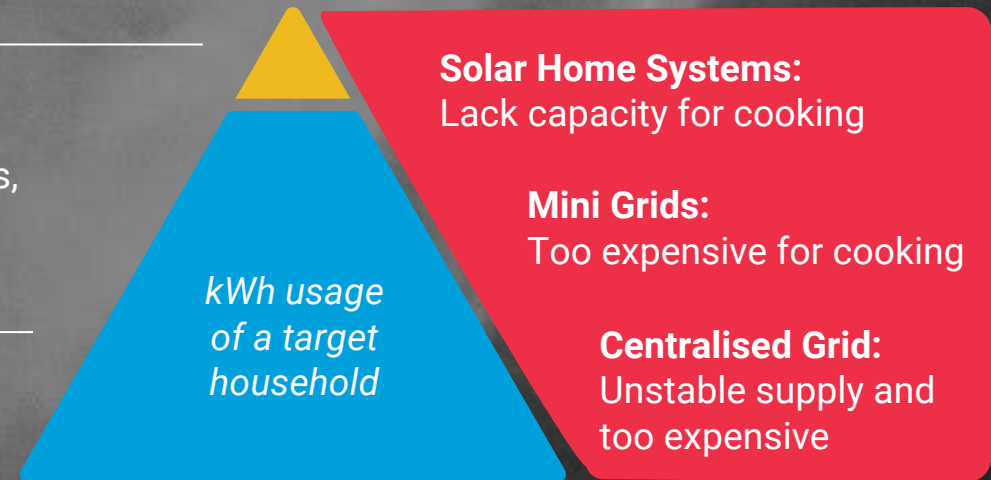


**Electricity 1-5%**

Lighting, charging and powering phones, radios, or other small devices

**Thermal Energy**

95-99% cooking and heating





## The ACE One provides an integrated high-quality solution for both thermal energy and electricity addressing the essential energy needs of low-income households



The ACE One is a modern cooking stove flexible to all biomass products saving 50-85% on fuel use compared to open fire, and by providing customers with sustainably sourced biomass ACE even transforms this market to fully climate neutral



A battery powered fan blows air into the burning chamber causing the biomass to gasify without smoke enabling fuel savings of up to 85% for 20+ hours on a single charge



The package includes an LED light



The ACE One can be paired with any Android smartphone using the ACE Connect app allowing usage data uploads and switch-off in case of default on payments



Solar energy charges a LiFePO4 battery powering the fan that controls airflow, and also provides electricity for USB device charging and lighting



ACE has a sophisticated technology platform through its unique Android integration with ACE One solving for all scalability hurdles

ACE's proprietary ACE Connect platform allows Energy-As-A-Service:



### Pay-As-You-Go

Allows **complete switch-off of unit** in case of problematic default on expected payments, and digital customer interaction through customer facing Android application



### Transparent Portfolio Management

Scalable **digitised loan management tool** that incentivises payments on time prevents over-indebtedness and promotes financial inclusion



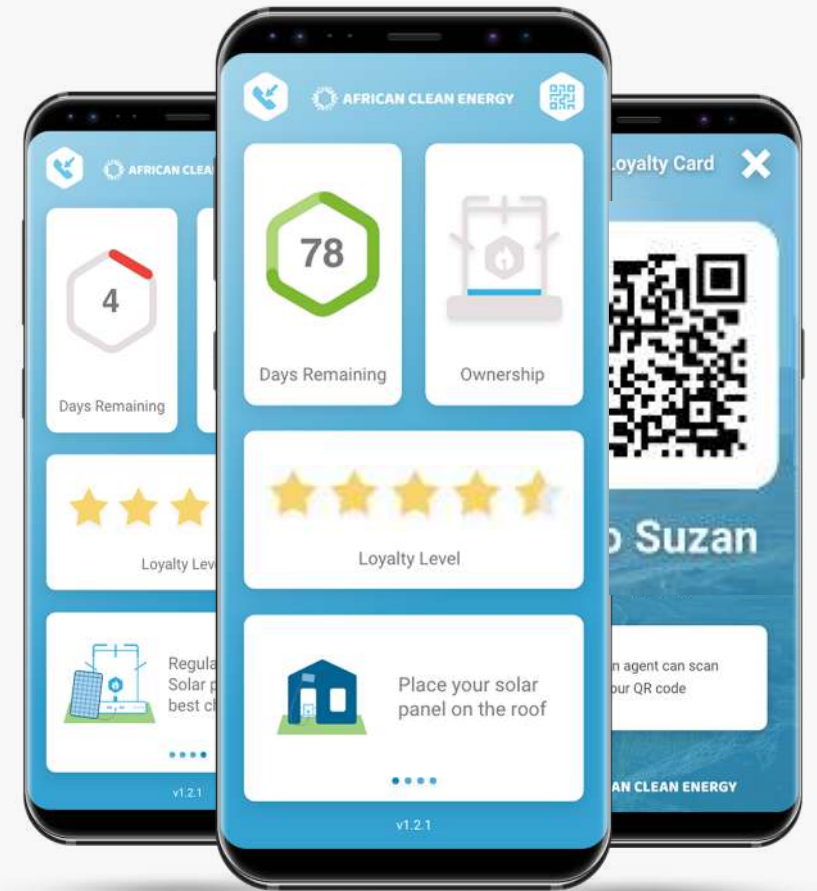
### Live Data Uploading

Usage data is being **captured live** through a fully integrated **cloud-based CRM** allowing dynamic impact assessment based on real data, and use of data for **tokenizing carbon impact**



### Digitally Accessible Fuel

Digital fuel ordering and reward functionalities to establish a sustainably sourced fuel distribution system for **convenient and affordable** pellets and briquettes



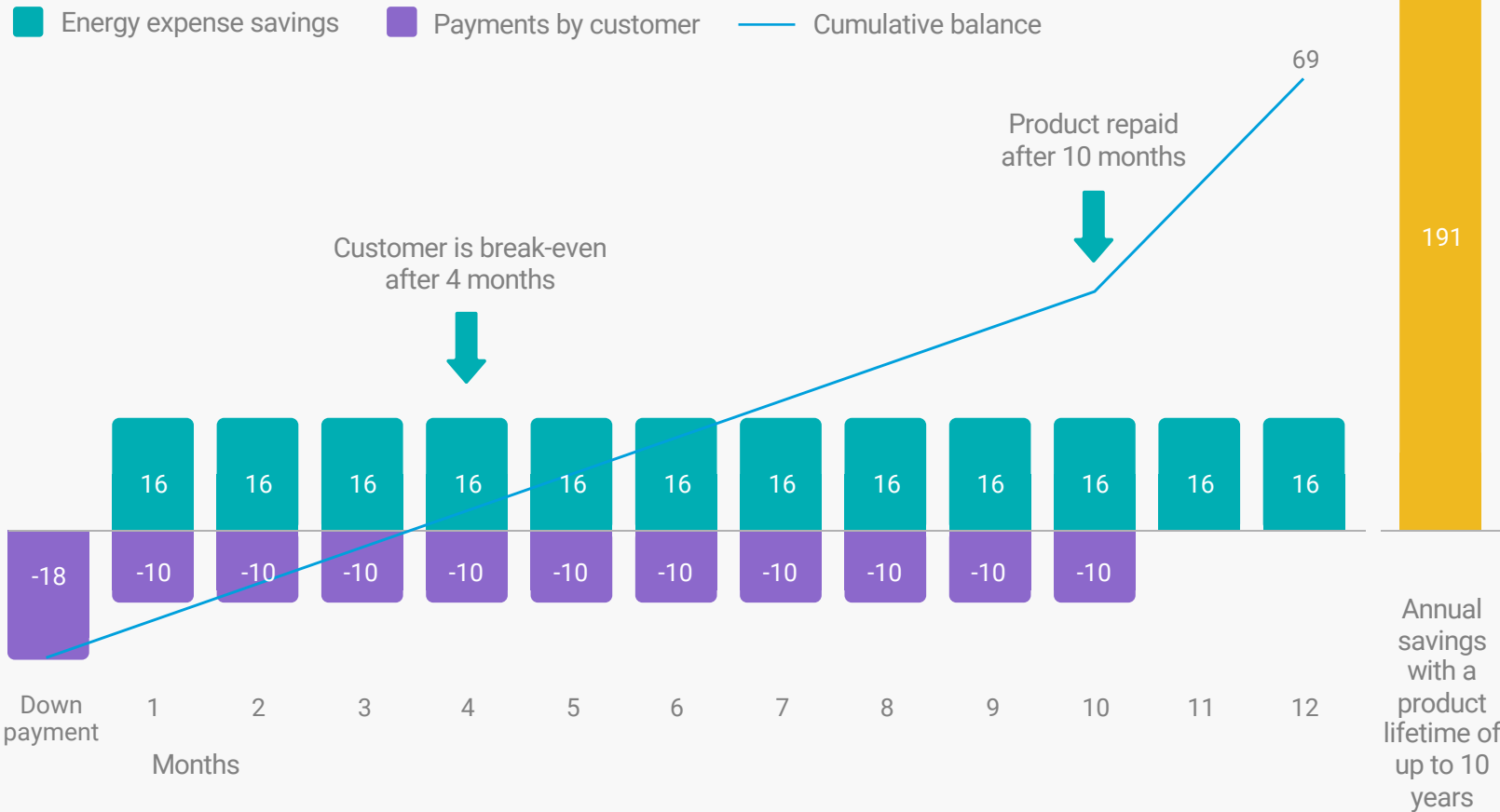
Launched in 2019

**SAMSUNG**

Samsung assists with technical integration, sourcing devices and mobile management

## The ACE One enables customers to substantially save on their energy expenses making a high-quality energy system affordable

### ACE's Pay-As-You-Save (PAYS) model\*:



### Energy Expense Savings

Because of its serving both electric and thermal energy, ACE One's owners report results in **dramatic savings of over 80%** on monthly energy expenses:

- cooking fuel (charcoal, wood)
- lighting (kerosene, candles)
- phone charging in shops
- batteries, etc

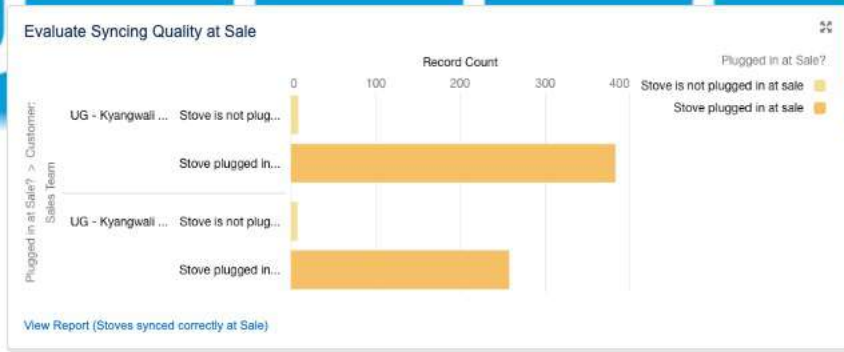
### Payments

Affordable monthly payments **foster willingness-to-pay** and **improve affordability to customers extensively.**

\*ACE currently partners with Kiva and SDG ACE Foundation for micro financing. ACE is exploring partnerships with other micro financing parties that can support the growth plan



Search...

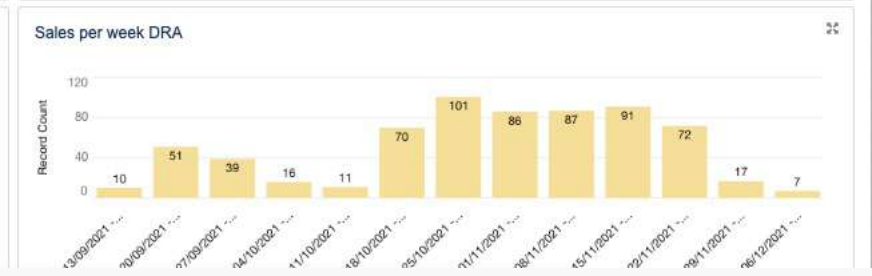
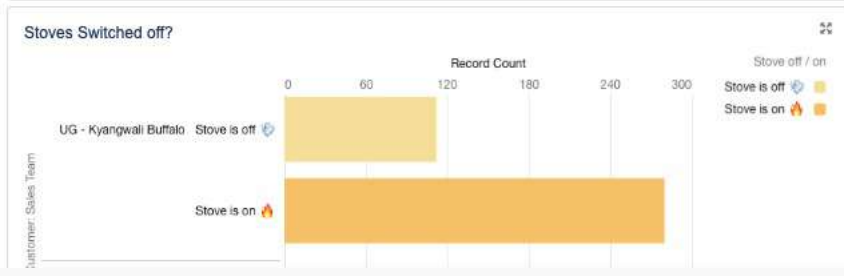
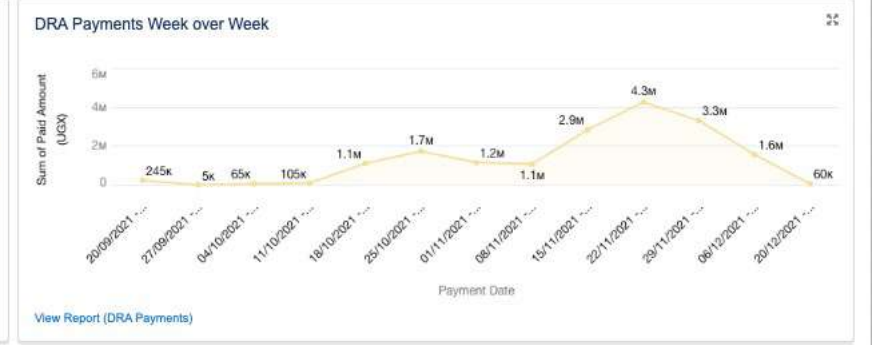
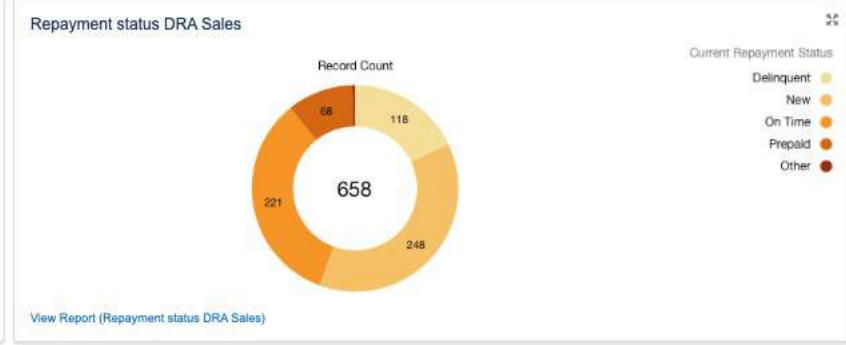


### Customers Stoves About to Turn Off

Stove turns off within 3 days

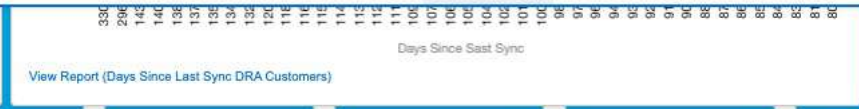
Days Until Stove is Off	Customer: Customer Photo	Customer: Customer Name	Stove_Off_At
-47		Kiza Kasaki	22/10/2021 23:59

Unless payment is made or sync is done.  
View Report (Customers Stoves About to Turn Off DRA)





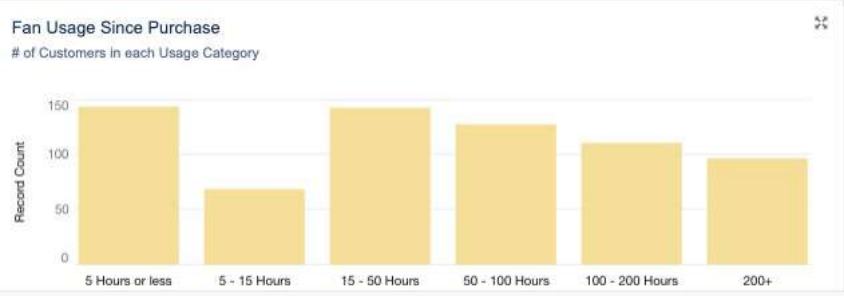
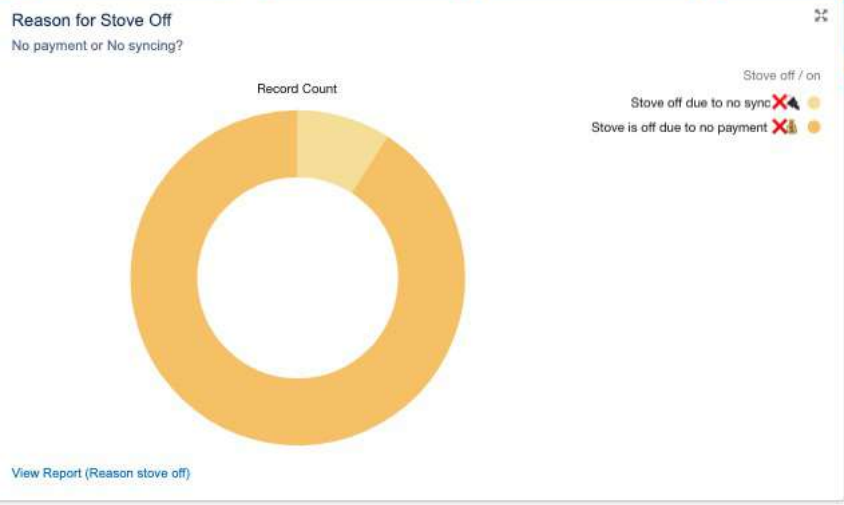
Q Search...



Customer: Referral Customer

Customer Name	Record Count
Rafiki Jonathan	9
Phillip Byamungu	9
Nsazimana Vensa	9
Maniragaba Abud rashidi	9
Habuba Bucha	9
Habakubaho Theogene	9
Emmanuel Barack	9
Damascene Bagirakarekezi	9
Chance Devota	9
Busigye John	9
Bero Neema	9
Vestine Mutezi	8

View Report (# of Referrals DRA)







39.69  
Avg of Days Since Last Upload

691  
Stoves With Data

% of Usage Received



### Usage Insights Dashboard

Average Fan Hours Per Day  
Based on Detailed Usage



Average USB Hours Per Day  
Based on Detailed Usage



Fan Hours Uploaded Last Days  
Based on Detailed Usage



Territory: All | Country: All | Date of Usage: All | Sales Team: All | Loan\_Type\_c: All | Minimum entryCount: All

Stove Off (275)

Stove On (419)

ACE Connect(605)

Non-ACE Connect(89)

Female(255)

Male(439)

Users per Country



Country: South Africa (ZAF)  
Count of Rows: -  
Avg of Avg Daily Fan Hours Used: -

USB Hours Logged (Filtered)  
Based on Detailed Usage



Fan Hours Logged (Filtered)  
Based on Detailed Usage



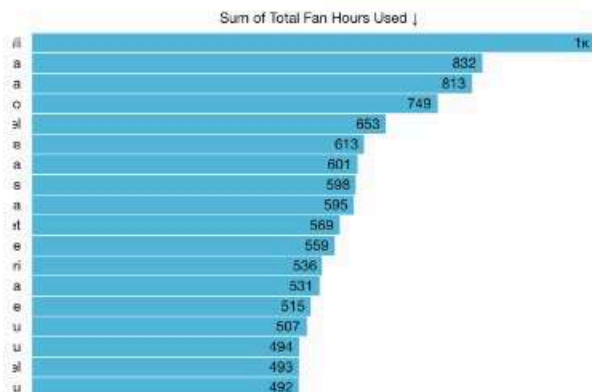
USB Hours Logged (All)  
Based on End Counter Usage



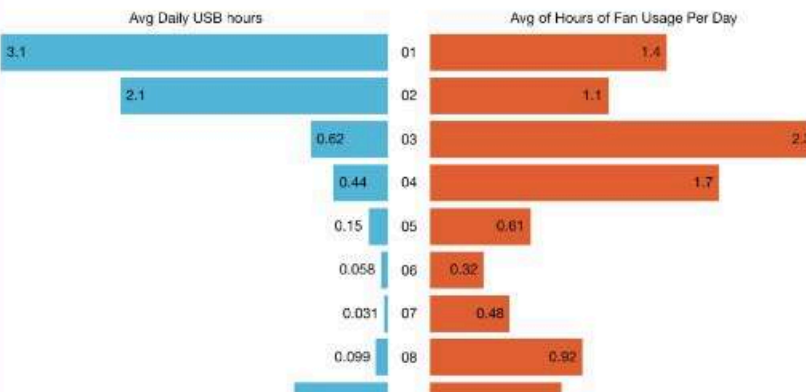
Fan Hours Logged (All)  
Based on End Counter Usage



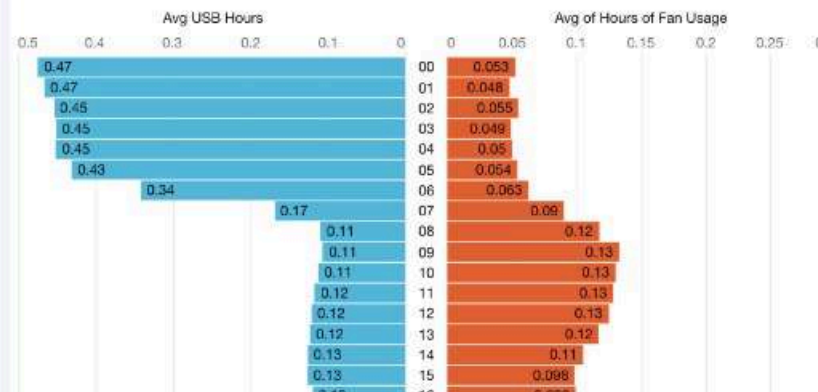
Total Usage Per Customer  
Based on End Counter Usage



Monthly Usage Patterns (Month of Year)  
Based on Detailed Usage



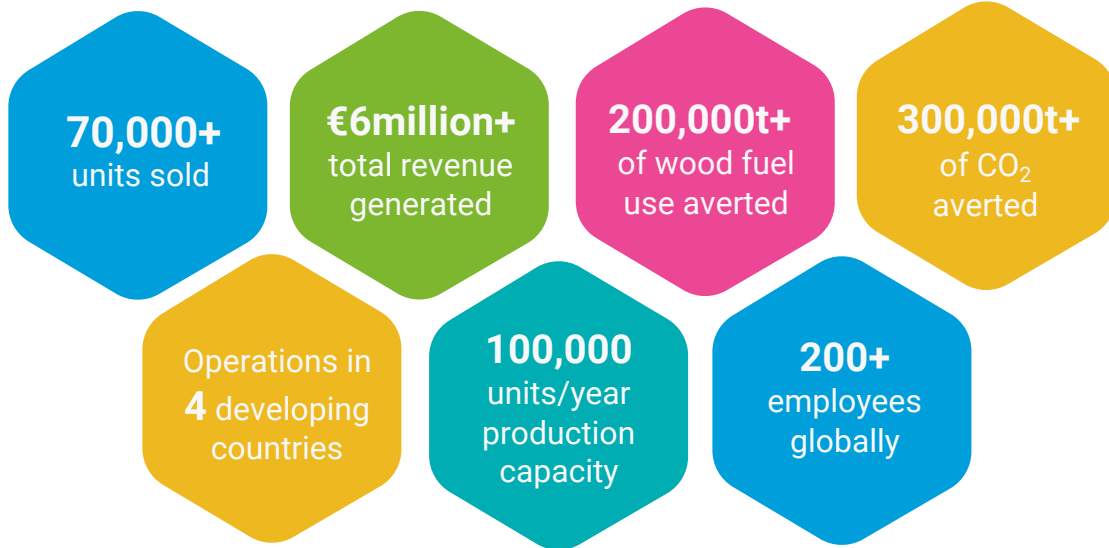
Daily Usage Patterns (Hour of Day)  
Based on Detailed Usage



Customer Name

COMPANY PROFILE

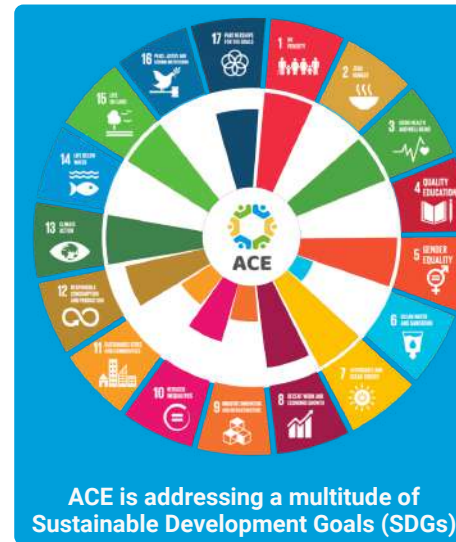
ACE has gained significant traction in developing economies and is well positioned to become the global leader in its market



Key partners, funders and recognition



ACE is the #2 highest rated B Corp in the world (out of 4000+)



## COMPANY PROFILE

ACE has more than 200 employees in its 4 operating countries and is primed for further roll-out



### Netherlands

Global support team



### Vietnam

1 consolidation centre  
*To efficiently manage procurement (mainly in Asia)*



### Uganda & Kenya

3 sales offices



### Lesotho

6 sales offices  
1 manufacturing facility



### Cambodia

2 sales offices  
1 manufacturing facility



Entered in 2017  
19,500+ units sold  
in East Africa



ACE's first market,  
where proof of concept  
was developed in 2014  
30,000+ units sold  
in Southern Africa



Entered in 2016  
6,000+ units sold  
in South East Asia

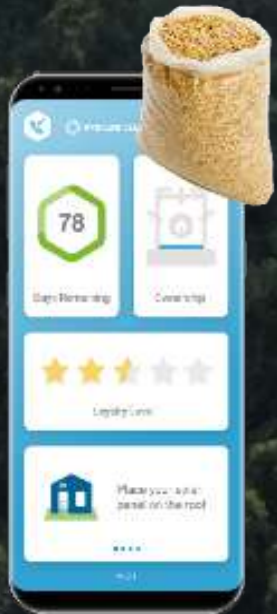


Ca. 4,500+ units  
sold across the  
rest of the world



## BUSINESS MODEL

To maximise (carbon) impact customers must switch to domestically sourced sustainable feedstock for cooking, which in turn can be made affordable by the carbon markets



- The ACE One already saves 50 - 85% of charcoal/wood and by providing customers with sustainably sourced biomass ACE even transforms this market to fully climate neutral
- Leveraging the established sales location network for last-mile distribution
- Sustainable feedstock is widely available; ACE has performed successful pilots with pellets and briquettes and is preparing for larger scale cooperation with suppliers
- ACE is currently initiating offline distribution through its sales locations, preparing for roll-out at scale through ordering functionalities on the ACE Connect platform in 2022

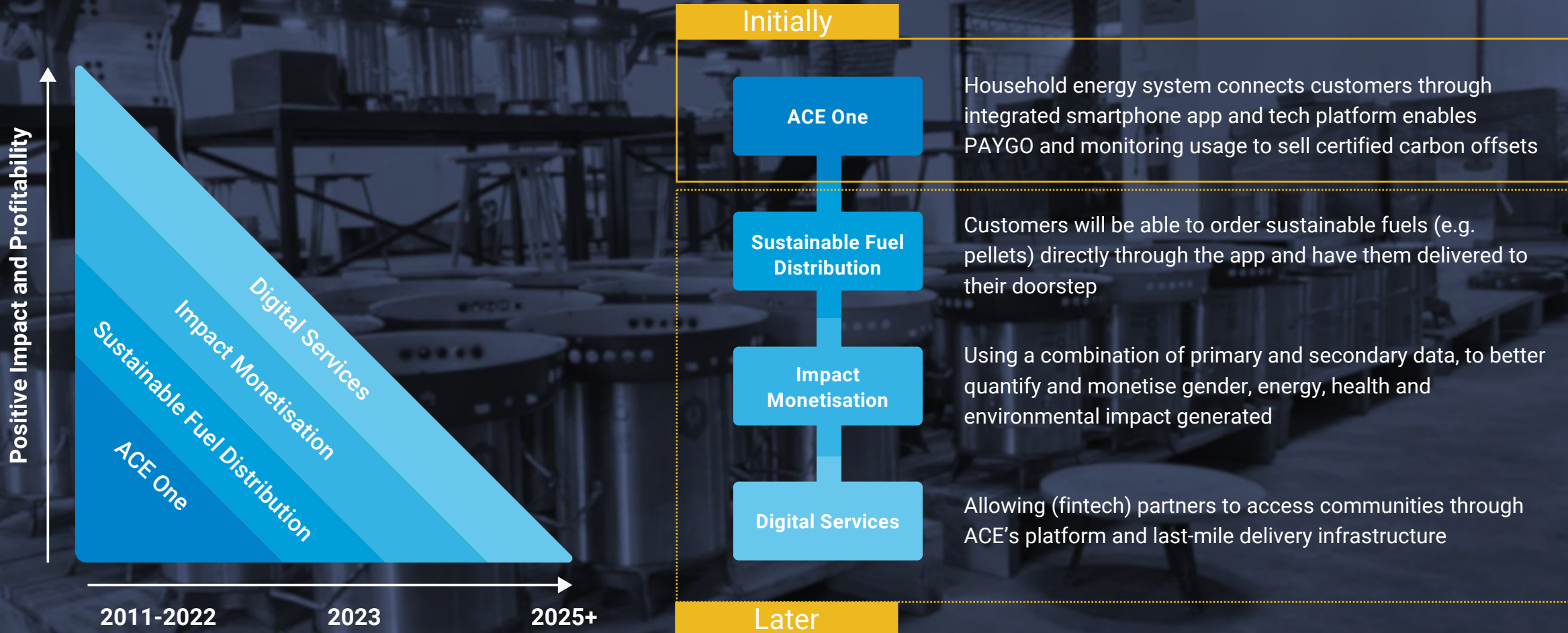


*The ACE One works with every biomass source. Even in case of supply shortages\* customers can use their system which is a strong advantage over single-fuel solutions*

\* which might be inevitable for any business in these regions

## BUSINESS MODEL

ACE is building a business model that will allow for sustainable growth, increased profitability and positive impact



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