

Clean cooking in Haiti

Urban and peri-urban consumer
segmentation

December 2020



Executive Summary (1/2)

Over 90%¹ of households in Haiti use wood or charcoal as their main source of cooking fuel, which has a deleterious effect on the nation's health, environment, and livelihoods. With more than 2.2 million metric tons of charcoal consumed each year nationally², Haiti suffers an estimated 8,000³ premature deaths each year, while many more suffer disabilities and ailments that affect their quality of life. In addition, charcoal production contributes to deforestation and biodiversity loss while also making the population more vulnerable to the impacts of extreme weather events.⁴ Moreover, Haitians lose significant time and money cooking on slow and inefficient stoves, a burden women carry disproportionately.

We have segmented urban and peri-urban cookstove consumers to support the Clean Cooking Alliance (CCA) and its partners' efforts to expand adoption and use of clean cooking technology in Haiti. Our aim is to provide clean cooking enterprises, market builders (i.e., producers), and shapers (i.e., the government, partner NGOs, foreign donors) with the insight they need to design and coordinate the delivery of products, services, programs, and policies rooted in a deeper understanding of consumer behavior. We believe interventions with more tailored design and delivery strategies can better grow demand for, access to, and use of clean cooking solutions. In addition to informing product design and delivery, segmentation and supporting demand-side analysis can enable the development of scalable and sustainable business models.

This report focuses on urban and peri-urban consumers in 6 cities, driven in part by the current and potential reach of CCA's Haiti programming. Additionally, market-based approaches to distributing clean cooking solutions are better suited to urban and peri-urban markets whose residents have financial, demographic, behavioral, and attitudinal characteristics that support adoption and sustained use. For example, urban and peri-urban consumers in Haiti are more likely to have sufficient purchasing power to upgrade their cookstove and to be familiar with the benefits of using clean cooking solutions. They also live in densely populated communities, which reduces marketing and distribution costs. Finally, most cities are coastal and, therefore, better connected to international supply chains.

This report synthesizes primary research, including quantitative consumer survey data (n = 3,105) conducted by Papyrus in early 2020 and qualitative data generated through Human-Centered Design research with consumers and stove merchants in November 2020, alongside market opportunity analysis. We used this data to segment the urban market for clean cookstoves and develop insights and recommendations that support readers to:

- Develop a deeper understanding of the main segments in terms of their demographic, behavioral, and attitudinal characteristics that shape their cooking needs and preferences.
- Identify relevant and actionable product recommendations, as well as pricing, promotion, and placement strategies to reach each consumer segment and support their adoption and use of clean cooking solutions.

1: Global Alliance for Clean Cookstoves: "Haiti – Cookstoves and Fuels Market Assessment", June 2018.

2: *ibid.*

3: *Ibid.*

4: Haiti Energy Sector Development Plan, November 2006.

5: Port au Prince, Cap-Haïtien, Jacmel, Les Cayes, Saint-Marc & Gonaïves.

Executive Summary (2/2)

Five main segments of urban and peri-urban consumers emerged from clustering survey respondents by the most significant and distinctive demographic, behavioral, and attitudinal variables:

1. **Comfortable Modernists** (pages 16 - 21) are mostly affluent, urban and peri-urban households whose primary stove uses LPG and are aware of the positive environmental and health impact of clean and cleaner cooking.
2. **Cautious Upgraders** (pages 22 - 27) are less affluent peri-urban households whose primary stove uses LPG but their economic situation means they're prone to stacking with charcoal.
3. **Affluent Skeptics** (pages 28 - 33) prefer to use basic charcoal stoves despite being wealthier and living in areas with relatively high access to clean cooking solutions, with basic stove familiarity and LPG safety concerns driving behavior.
4. **Stretched Pragmatists** (slides 34 - 39) are poorer, typically live peri-urban neighborhoods, and use the basic biomass stoves as their household purchases are hampered by low and unpredictable daily incomes.
5. **Fixed Burners** (slides 40 - 45) use basic charcoal stoves, are more likely to borrow, and are less aware of the positive environmental and health impact of using an improved or clean stove.

While consumer segments share some characteristics, their diverse cooking behaviors and varied financial means allow us to recommend specific product features and messaging. We evaluated each segment's stove and fuel needs to support recommendations on cooking solutions with a value proposition that is likely to resonate. While affordability and safety were sought by most segments, convenience, efficiency, durability, and familiarity were also considered important value propositions (though their importance varied by segment - see page 48).

The transition to clean cooking solutions will be gradual, with most urban and peri-urban consumers likely to use charcoal in their fuel stack for some time.

However, there are opportunities to consolidate the use of LPG amongst existing users (*Comfortable Modernists* and *Cautious Upgraders*) as well as promote other clean cooking solutions such as electric pressure cookers to more affluent segments (*Comfortable Modernists* and *Affluent Skeptics*) over the medium- to long-term. Further, there are opportunities to promote improved biomass stoves across all segments, in turn delivering significant environmental, livelihood, and gender impacts. Adoption will require products to be marketed using segment-specific channels and messaging, through live demonstrations and peer-to-peer sales models appear to have potential across all segments.

We hope this report serves as a useful resource to the many people who have - and will go on to have - a stake in driving market-based approaches increasing access to clean cooking solutions in Haiti.

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1. Research methods & analysis

Summary of research methods and learning questions



Primary quantitative research through large-scale (n = 3,105) survey by Papyrus, followed by Dalberg analysis

+



Primary qualitative research with consumers and stove merchants (n = 69) using Human-Centered Design methods

+



Secondary market opportunity analysis through semi-structured expert interviews

+



Market opportunity analysis through a literature review and fuel consumption modeling

1. What **demographic and locational characteristics** best define urban and peri-urban cookstove consumers?
2. What **behavioral traits**, including those directly related to household finances and cooking, best define cookstove consumers?
3. What **attitudinal drivers** of consumer preference and behavior best define cookstove consumers?
4. Which variables are most significant in **differentiating cookstove consumers** and support segmentation?

1. How do **cooking behaviors and preferences**, as well as financial and economic considerations, shape consumer perceptions of cookstove **value propositions**?
2. How does consumer experience of **accessing** cookstoves, fuel, and maintenance services affect **adoption and use**?
3. What **information, messaging strategies, and channels** are most resonant and effective in driving consumer adoption and use of clean cooking technology?

1. What are the **primary urban and peri-urban cookstove consumer segments** in Haiti, and which are most likely to adopt and use clean cooking solutions in response to market-based approaches?
2. Which **clean cooking products have the largest market share**, and which have the greatest potential for growth in Haiti?
3. What **pricing, marketing, and distribution strategies** would best drive adoption and use amongst priority segments?

1. Which consumer segments should be **prioritized** by companies promoting clean cooking solutions?
2. Which clean cookstove products are most likely to be **affordable** for urban consumers?
3. What **pricing, promotion, and placement** strategies could increase uptake for each consumer segment?

Quantitative survey

3,105 households were surveyed on their cooking preferences as well as contextual and attitudinal factors that might shape behavior.

The Papyrus survey included a **total of 151 questions grouped into 17 sections** that captured the household roster, cooking behaviors, social influences, financial services and attitudes, and household characteristics. In total Papyrus surveyed 3,105 households across six cities:

- Port au Prince (2,188 respondents)
- Saint Marc (246 respondents)
- Cap Haitian (245 respondents)
- Gonaïves (234 respondents)
- Jacmel (101 respondents)
- Les Cayes (91 respondents).

Papyrus deployed a **three-stage sampling strategy** consisting of selecting:

- Enumerators Areas (EAs) using random selection (25 households in each)
- Households in those EAs
- Heads of household responsible for cooking.

Papyrus used a **random walk strategy combined with interval sampling** that corresponds to the first 20 households in each EAs. For the remaining 5 households, Papyrus used quota sampling to target only households with an improved stove (including LPG or other clean stove).

Gender distribution		
Male	260	8.8%
Female	2709	91.2%
Total	2969	100%
Zone distribution		
Peri-urban	1933	62.3%
Urban	1172	37.7%
Total	3105	100%

Survey analysis & segment weighting

Survey respondents were clustered to form the basis of the consumer segmentation that were then weighted to estimate the number of households in each segment.

Dalberg then **classified the data into distinct segments** sorted for the purpose of the clustering analysis. Clustering is a machine learning algorithm that involves subdividing the dataset into clusters (segments) of data points that are most similar for a predefined attribute. See the illustrative example of clustering graph opposite.¹ We used this algorithm to **compute the number of clusters and assign each data point to a cluster**.

To arrive at segment weights, we treated the sample as if it was stratified in two ways: (i) the urban center and (ii) by improved stove ownership status. To determine weights for each stratification, we estimated the actual size of the population from which our sample is drawn. The population of each region, or “Sections d’Énumération” (SDE), was provided.

The population of improved stove owners within each SDE was unknown but could be estimated from the 2,571 randomly sampled households in this dataset. With this information, we calculated weights in four steps:

1. Estimate the # of households using clean/improved stove within each SDE.
2. Estimate the probability of selection of clean/improved stove users and the probability of selection of traditional stove users from SDE, including both random and quota samples. The household weights for clean and traditional stove users are equal to the inverse of the probabilities.
3. Estimate the probability of selecting SDE from other SDEs in each urban area. This is calculated as a simple ratio of the number of SDEs selected to the total number of SDEs in each city or commune. The SDE weight is the inverse of the probability.
4. Calculate the final sample weight, which is the product of the household and SDE weights.

Note: the estimated size (# of households) of each segment is a subset of the 6 cities surveyed (as detailed on the previous slide).



1: t-distributed Stochastic Neighbor Embedding (t-SNE) graph. Used to visualize high-dimensional data. The idea is to embed high-dimensional points in low dimensions in a way that respects similarities between points.

Defining the socioeconomic status of respondents

Survey respondent socioeconomic status (SES) for respondents was calculated using the Innovations for Poverty Action Poverty Probability Index (PPI) for Haiti in 2012.

Questionnaire		
Questions		Max. score
1.	In which department does the household live [Haiti is divided administratively into ten departments]?	10
2.	How many members does the household have?	32
3.	How many household members who are 10-years-old or older worked for at least one hour in the past week?	4
4.	In the past week, did the female head/spouse work for at least one hour?	7
5.	Does the female head/spouse know how to read and write?	3
6.	Does the male head/spouse know how to read and write?	4
7.	What is the main material of the roof?	12
8.	What is the main sources of drinking water for the household?	7
9.	What is the main source of energy for cooking?	8
10.	Does the household or a household member have a stove?	6
11.	Does the household or a household member have a radio?	7
		100

Based on household characteristics and asset ownership, the index calculates the likelihood of its inhabitants living below the poverty line.

Poverty Probability Index Quintiles Results	Equivalent SES
0 - 20	SES 1
21 - 40	SES 2
41 - 60	SES 3
61 - 80	SES 4
81 - 100	SES 5

For the purposes of this document, PPI results were ranked, split into quintile, and then matched to the corresponding socioeconomic status.

Human-Centered Design (HCD) Research

A combination of in-depth interviews and focus groups to uncover behaviors, explore consumer needs, validate survey findings, and generate segment-specific product concepts that could drive adoption and sustained use of clean cooking solutions.

Dalberg Design worked with a local research partner, Ayiti Nexus, to conduct **6 in-depth individual interviews** and **10 focus group discussions** with a total of 69 participants, including:

- 37 basic stove users
- 17 LPG stove users
- 15 stove merchants

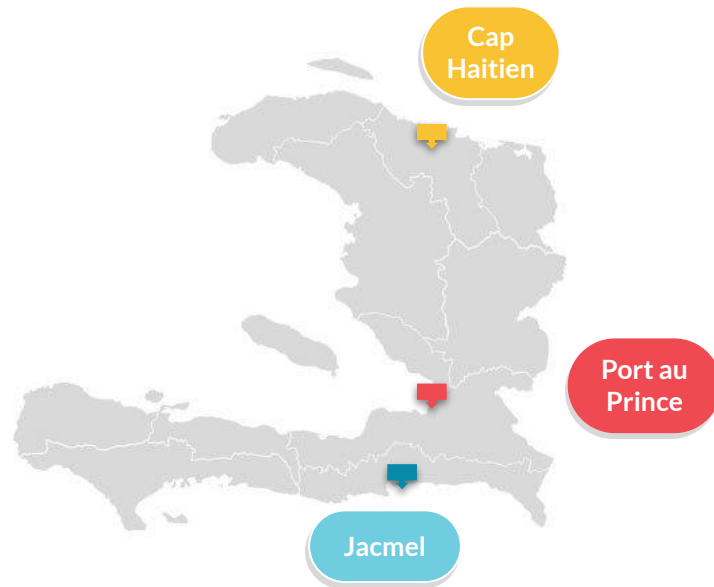
Participants were comprised of **40 women and 29 men**, given women are typically the lead decision-maker on household cooking in Haiti. They were from **3 urban areas** and included both urban and peri-urban neighborhoods:

- **Port au Prince** - Thomassin, Pelerin, Carrefour, Tet Dlo, Peguyville, Brissetout, Route Frere, Canape Vert, and Delmas
- **Cap Haitien** - Champin, Cite Chauvel, Vertieres, 23E, Charlemagne, Barriere Boutielles, Vertieres, and Ruelle Nazon
- **Jacmel** - Siloe, Bremont, and the City Center.

Participants were selected to ensure **diverse representation** in terms of age, gender, primary stove type, household size, education, group affiliation, and savings behavior.

Insights were captured then clustered using a (virtual) Mural board, then mapped against each segment based on behavioral, demographic or attitudinal alignment.

[Click to access the full HCD Research Plan](#), including links to the interview guides and design tools.



Expert interviews

Interview with cooking enterprises that currently or historically worked in Haiti, helping generate hypotheses on priority consumer segments, identify commercially-viable products, and learn from their marketing and distribution models.

We interviewed 3 enterprises to **shape HCD research methods** (e.g., assumptions on product value proposition) and **inform the market opportunity analysis**.

While the interviews were informal and unstructured, we **focused on some key questions**:

- What **products** has your organization offered in the Haitian market and why?
- How would you describe the **main segments** of urban consumers?
- What **existing solutions** do consumers currently use?
- What are consumers' **aspirations and concerns**, and how do they vary by segment?
- What are the **commercial opportunities** to make each segment's cooking clean(er)?
- Which **marketing and distribution models** have the greatest potential to drive uptake?
- What type of information would make it **easier for cooking enterprises** to serve the Haitian urban market?



Stove overview

An introduction to the main stoves used by urban and peri-urban consumers Haiti. You can visit CCA's [Clean Cooking Ecosystem Map](#) for more details on the different cooking solutions.



Basic charcoal stove

- Traditional stoves manufactured with scrap sheet metal typically obtained from drums.
- Widely available across urban and peri-urban areas.
- It can be used with regular charcoal, wood or briquettes.
- Price range: ~\$2 - \$5 USD.



LPG stove & canister

- LPG stove kits containing stove, connectors, and canister.
- Advanced models have cooking stands.
- Typically available in urban areas but also some peri-urban areas, with some Haitian consumers traveling to the Dominican Republic or relying on family living abroad to bring quality LPG stoves.
- Canisters need to be refilled at local LPG stations.
- Price range: ~\$50 - \$120 USD.



Improved charcoal stove

- Stoves manufactured with traditional metal on the exterior and heat-retaining insulation, often made from ceramics.
- The port is raised on metal wedged above charcoal bed and a door to control airflow and collect ashes.
- Not widely available apart from some urban and peri-urban areas.
- Can be used with regular charcoal, wood, or briquettes.
- Price range: ~\$10 - \$25 USD.



Electric Pressure Cooker (EPC)

- Electric pressure cookers made for weak-grid contexts, offering low energy consumption features.
- Pressure cookers are sealed airtight to allow pressure to build up and reduce time needed to cook food by raising temperatures above boiling point in less time.
- Available in shops in urban areas, though cheaper models can be hard to find.
- Price range: ~\$40 - \$100 USD.

Market opportunity analysis

Assessment of consumers' cooking needs and behaviors to identify highest potential product opportunities, channels, key messages, and price considerations to increase clean cooking adoption across all urban consumer segments.

We assessed the attractiveness of key product features for each segment to select the **optimal product and marketing strategies mix** that would address their cooking needs:

- Affordability
- Safety
- Accessibility
- Efficiency
- Durability
- Familiarity

The assessment involved gathering insights from the HCD research, quantitative survey, as well as learnings from expert interviews and desk research.

We identified the highest potential **product opportunities, key messaging/promotion strategies, price considerations, and key place/channel considerations** for promoting clean(er) cooking solutions to each segment.

Product opportunities and marketing initiatives were **categorized based on its complexity of deployment and impact in the Haitian clean cooking market.**

Key products	Price / financing
<p>LPG cookstoves with stands, and smaller canisters</p> <ul style="list-style-type: none">• Low-cost LPG stoves equipped with multiple burners aligned with customers' ambitions to upgrade their current stove and reduce time spent cooking. Stoves should be easy-to-use to address concerns about safety and technical challenges while operating the stove• Smaller canisters can serve as a platform similar to "Pay-As-You-Go" models, allowing consumer to refill canisters more frequently at a lower cost <p>Improved charcoal cookstove and charcoal briquettes</p> <ul style="list-style-type: none">• As likelihood of stacking is high due to consumers' lower SES, offer low-cost and fuel-efficient charcoal stoves made of durable material, designed to produce less soot addressing customers' concerns about durability and cleanliness. Charcoal briquettes can improve fuel efficiency and further reduce soot build up and smoke <p>Pre-cooked beans</p> <ul style="list-style-type: none">• Pre-cooked packaged beans to reduce cooking time addressing concerns about LPG spending• Partner with food security/nutrition founders to ensure as part of their programming to ensure its procurement and adoption within household	<p>Community savings groups</p> <ul style="list-style-type: none">• Leverage existing community groups (e.g., church groups) and consumers' ambition to upgrade current stoves to form specific groups where individuals save together and invest in improved charcoal or LPG cookstoves <p>Microcredit products</p> <ul style="list-style-type: none">• Harness consumers' relatively higher socioeconomic status to offer small loans to purchase improved charcoal or LPG cookstoves through microfinance institutions. Consumers may be asked to an initial deposit to reduce default risk and credit payments

Example of segment-specific analysis

2. Consumer segments & product opportunities

Segment overview

We identified five distinct consumer segments by clustering survey participant responses, supplementing quantitative findings with behavioral and attitudinal insights from the Human-Centered Design research.

1

Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households

Comfortable Modernists' use LPG primarily with cleanliness and cooking speed the primary value proposition, though concerns about safety and fuel availability lead to stacking with charcoal.

2

Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households

Cautious Upgraders' use LPG primarily despite low awareness about the health and environmental benefits, but their lower income and limited availability of fuel in peri-urban areas leads to stacking with charcoal.

3

Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households

Affluent Skeptics mainly use charcoal for cooking despite being wealthier and having access to LPG, with safety concerns about using gas and their (or their domestic workers') familiarity with charcoal driving behavior.

4

Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households

Stretched Pragmatists use biomass for cooking with as their low and unpredictable income means they can only buy fuel in small amounts, sometimes collecting wood nearby when finances are particularly tight.

5

Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households

Fixed Burners mainly use charcoal with LPG stoves and fuel being out of reach due to the high capital outlay, though they often want more durable stoves with several burners to make it quicker to cook.

See Annex (slide 65) for further details on each consumer segment in terms of size and proportion of urban and peri-urban locations surveyed.

Cost analysis

As affordability is a key lens for most segments, we compared the average monthly spending to assess each segment's likelihood to transition from charcoal to LPG technologies, then suggest appropriate products.

	Primary fuel	Primary SES	Monthly spending on primary fuel 1
Comfortable Modernists	LPG	SES 4 - 5	\$12.37
Cautious Upgraders		SES 2 - 3	\$12.29
Affluent Skeptics	Charcoal	SES 5	\$15.49
Stretched Pragmatists		SES 1	\$15.48
Fixed Burners		SES 2	\$15.04

LPG potentially offers a long-term, more viable and cheaper solution than charcoal.

On average, LPG users spend less on their primary fuel purchases than charcoal users:

- Transition to cleaner technologies is feasible if value proposition includes a solid and graspable value proposition in terms of cost-savings for families.
- Despite LPG being perceived as a cheaper option than charcoal in the long-run, LPG users indicated low availability and price fluctuations as main barriers to increase its use.

However, further research is needed to clarify other segments' potential to switch to cleaner solutions:

- Evaluate mechanisms to increase its use through subsidies for the upfront cost of LPG stove and canisters.
- Analyse LPG users' stacking behaviors and LPG prices sensibility to exchange rates and external events.

1: Data as of January 2020

Note: The sample size of the primary fuel purchased by the respondent had 7% of missing values.

Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households

Comfortable Modernists make up the majority of LPG users in Haiti, further:

- They are almost equally **split between urban and peri-urban** neighborhoods.
- **Half are in the highest socioeconomic groups** (SES 4 or 5)¹, with most households having a roof made out of cement (75%) or metal (25%), and 92% having access to some kind of power source.
- **Cleanliness and cooking speed** are the most important criteria when buying a new stove.
- Almost half have **no second stove** (47%), with the **most common second stove using charcoal** (41%).
- Most are **aware of the positive environmental and health impacts** of clean cooking.
- They consult **magazines or newspapers** when making a decision on buying a new cookstove at a higher rate than any other segment.
- The vast majority think **safety is a concern** when using LPG, with more than two-thirds fearing an explosion.
- Almost half have experienced **difficulties manually setting up or operating** a LPG stove.

¹ See Annex for background on how Social Economic Status is calculated.



"When we are cooking, we can control the heat, and you can finish quickly. Also, if we have enough gas, in 20 or 30 minutes our food is ready."

Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households

Cooking Preferences

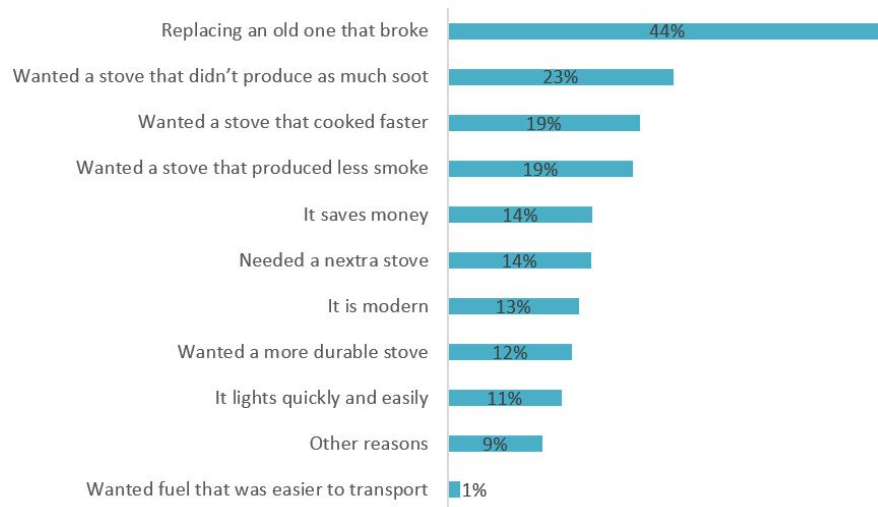
Less soot, cooking speed and less smoke are primary considerations when buying a new stove, with LPG seen as generally meeting these criteria.

Charcoal stoves are used to supplement or back-up LPG stoves as consumers are worried about running out of gas or that their LPG stove will break. Consequently, ingredients that take a long time to cook are more likely to be cooked on the secondary charcoal stove e.g., beans take 3-4 hours.

“*The propane gas oven does not stain cookers like the charcoal does. It cooks faster.*” (Improved stove user, Cap Haitien)

“*Something might happen like the propane gas is not easy to find, or at the moment least expected, there is no more gas, so even if they have an oven, they keep a charcoal stove for emergencies.*” (LPG stove user, Port au Prince)

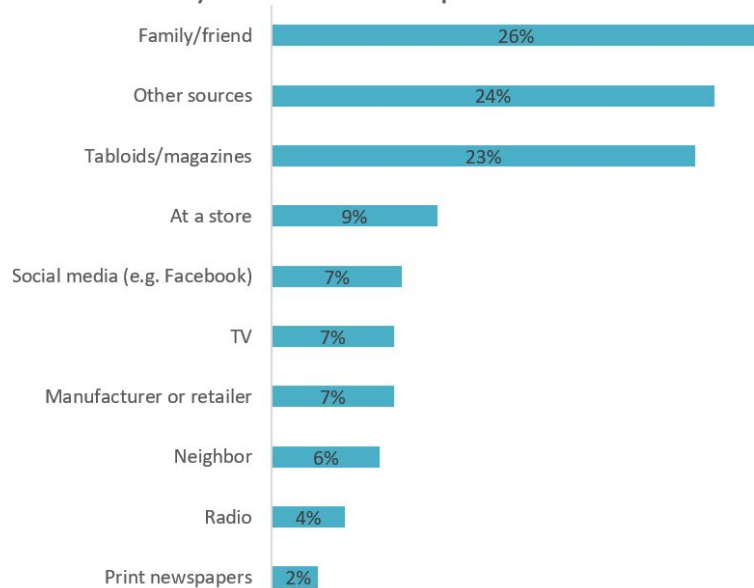
When you bought your last stove, why did you (or a HH member) get a new stove at that time?



Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households

How did you (or a HH member) learn about your latest stove purchase?



Attitudes & Networks

Information about cookstoves in tabloids and magazines is more influential on cookstove purchase decisions than any other segment, with people in this segment often trusting their favorite celebrity for ideas or advice.

Consumers are primarily looking for quality when making household purchases such as cookstoves, which is typically indicated by durability, high price, and affiliation with other trusted brands.

See slide 73 for more details on popular brands and celebrities.

“ I understand that the artist cannot convince you but you have to know that the advertisements have an impact on people. (Improved stove user, Jacmel)

“ Of all the ones we saw at Valerio Canez [department store], it was the most expensive. If something is more expensive you know it is of better quality. (LPG stove user, Cap Haitien)

Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households

Financial behaviors

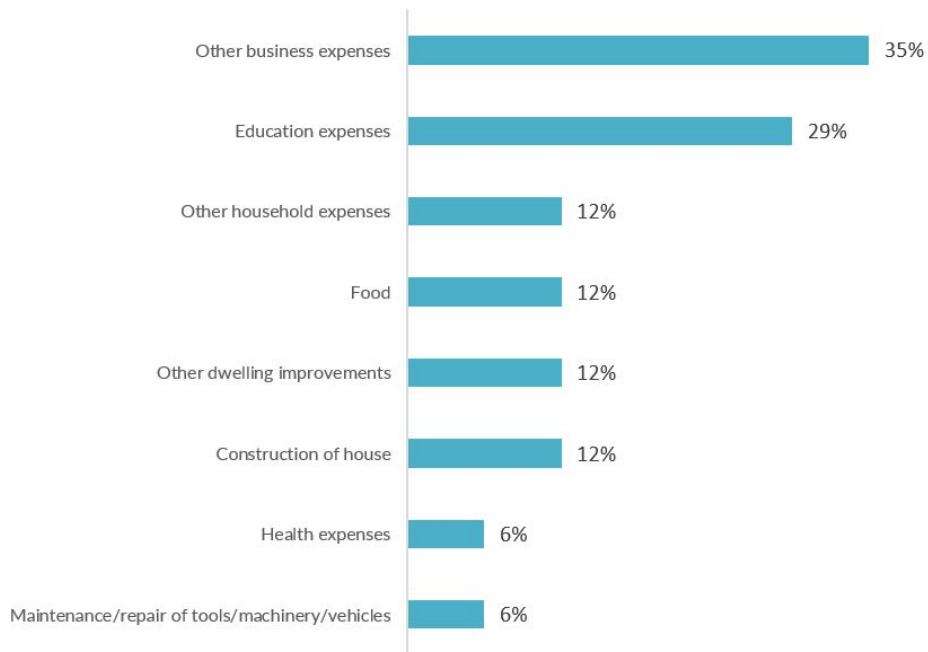
Cooking with LPG is seen as less expensive than charcoal, as most people in this segment can afford the capital outlay of a new stove and canister then buying fuel every month. They believe this unlocks long-term savings (subject to supply and price fluctuations).

Savings and credit are not typically used to buy a new stove, which is likely a consequence of most consumers having enough liquidity to purchase household goods (such as a cookstoves) when needed.

“ Even if LPG does seem more expensive, the amount of charcoal you will use to make food during a week or in a month will surpass the amount you will need to fill the tank for a month. (LPG stove user, Jacmel)

“ No, I wouldn't use my savings to buy a stove because we have a functional stove now. If it was broken, we would go buy another one. (LPG stove user, Cap Haitien)

What was the loan primarily used for (unprompted)?



Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households

Targeted product features and messages:



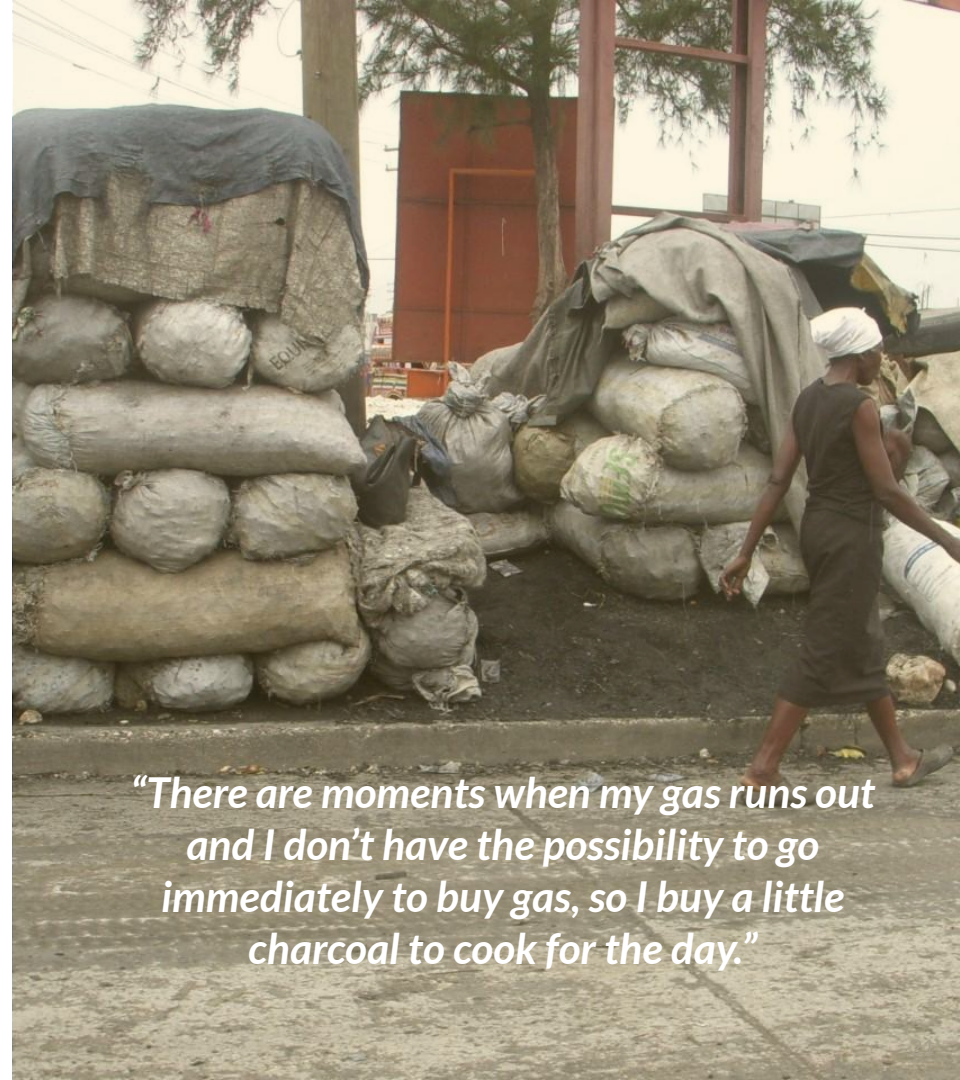
Durability & efficiency - offer stoves made of durable materials (e.g., thick iron) with several burners to cook multiple dishes at the same time and limited soot, aligning to consumer interest in cleanliness.



Safety - highlight stoves' safety features and provide training/tips on its correct usage to ensure maximum safety, both through icon-based labeling, in-person trainings, and support.



Accessibility - offer stove and fuel solutions that are easy-to-use and available in their community, ensuring maintenance services are also readily available to help ensure stove performance.



"There are moments when my gas runs out and I don't have the possibility to go immediately to buy gas, so I buy a little charcoal to cook for the day."



Product



Price



Promotion



Place

Comfortable Modernists

57% peri-urban; 43% urban | 50% SES 4 or 5 | 126,071 households



Key products

LPG cookstove with stands and smaller canisters

- Easy-to-use LPG stove to reduce safety concerns and technical challenges while operating the stove.
- Include stands to ensure stability while using the stove and facilitate its use.
- Smaller canisters can serve as a platform similar to "Pay-As-You-Go" LPG services, allowing consumer to refill canisters more frequently and sustain usage amongst lower income consumers in this segment.

Electric Pressure Cooker (EPC)

- Low-cost EPCs suitable for use in weak-grid contexts, addressing consumer interest in increasing cooking speed.
- Given electricity access is limited, EPCs can be used to cook fuel-intensive dishes (e.g., beans and rice), while LPG stoves could be used for the rest of the meal.

Pre-cooked beans

- Pre-cooked packaged beans to reduce cooking time for a core ingredient, potentially mitigating concerns about LPG availability.
- Partner with food security/nutrition funders or enterprises as part of their programming to drive household adoption.



Price / financing

Microcredit products

- Leverage a combination of interest in more sophisticated stoves and higher purchasing power to offer microcredit products to acquire clean cooking solutions.
- Appeal to consumer trust in recognized brands by partnering with well-known retailers to offer a package of cooking products. *See slide 73 for suggestions on trusted brands, retailers, and celebrities.*

Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households

Cautious Upgraders mainly consist of less affluent peri-urban LPG users in Haiti, further:

- The majority live in **peri-urban neighborhoods** that are typically less affluent and less well served with cooking products than urban areas.
- Over half of this group are in the **lower or middle socioeconomic groups (SES 2 or 3)**, with most households having a roof made out of cement (63%) or metal (36%), and the vast majority have access to some kind of power source (90%).
- Almost half have **no second stove** (49%), with the **most common second stove using charcoal** (40%).
- **Cash-flow is a significant driver for fuel stacking**, along with preferences to cook some ingredients (e.g., beans) with charcoal.
- Under **half see cooking with charcoal as harmful**, and even fewer consider the negative impact on Haiti's natural environment.
- Almost half have experienced **difficulties manually setting up or operating a gas stove**; one reason around half also uses a charcoal stove.
- Many consumers in this segment dream of **upgrading to more sophisticated stoves** e.g., a stove with 4 burners or an oven.



"When the gas price rises or when it is rare, even when we have money to buy it we can't find it... We just get 25 gourdes to buy some charcoal nearby in order to cook."

Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households

Cooking preferences

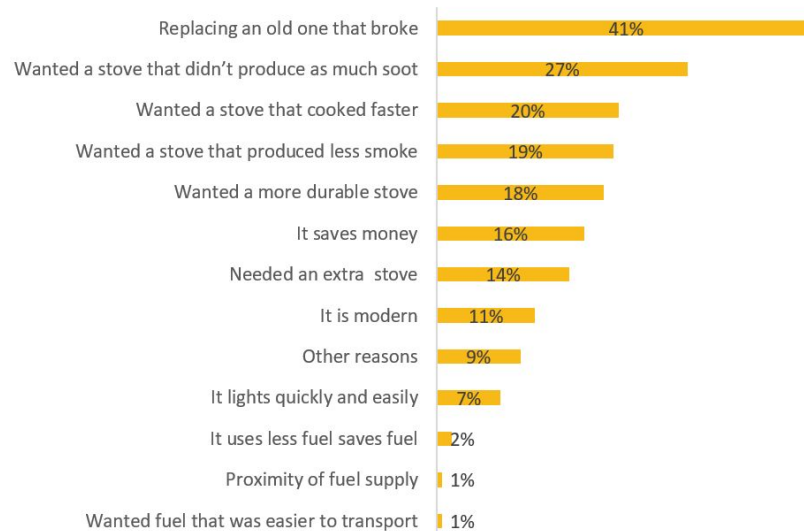
Less soot, cooking speed, and less smoke are primary considerations when buying a new stove, with LPG seen as meeting these criteria by this segment.

Households are often larger, meaning consumers also want stoves that can take large pot dimensions and multiple burners.

“For me, the first criteria is how long it takes to cook. The charcoal takes a long time. (Improved stove user, Cap Haitien)

“At our house, especially on weekends there can be up to 11 people. When you are cooking for 11 people you need a large pot. (LPG stove user, Jacmel)

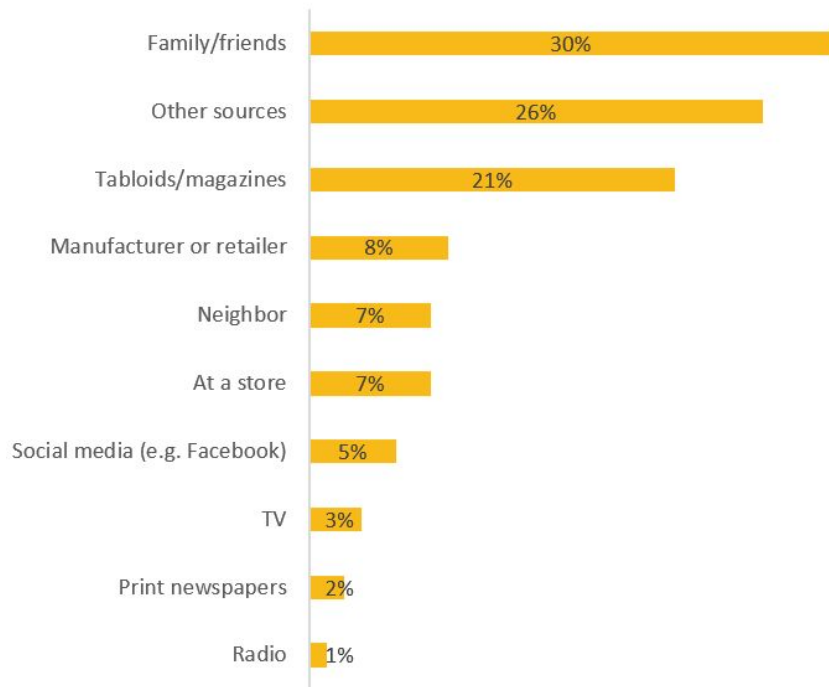
When you bought your last stove, why did you (or a HH member) get a new stove at that time?



Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households

How did you (or a HH member) learn about your latest stove purchase?



Attitudes & networks

Family, friends, and neighbors are more commonly sought for advice when buying a new stove, including the best type, criteria to assess quality and to provide support setting it up.

Options for servicing LPG stoves and buying fuel are limited in peri-urban areas where most people in this segment reside. As a result, they face more friction to access and use LPG, increasing the likelihood of stacking with charcoal and wood.

“My family, my sisters when I go to their places’ I ask them questions about the stove oven. You save time, save money, it’s in your advantage in every way. So, I tried and I use it now. (LPG stove user, Jacmel)

“The way I would like to do it is by ordering on my phone and having it arrive at my place. (LPG stove user, Port au Prince)

Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households

Financial behaviors

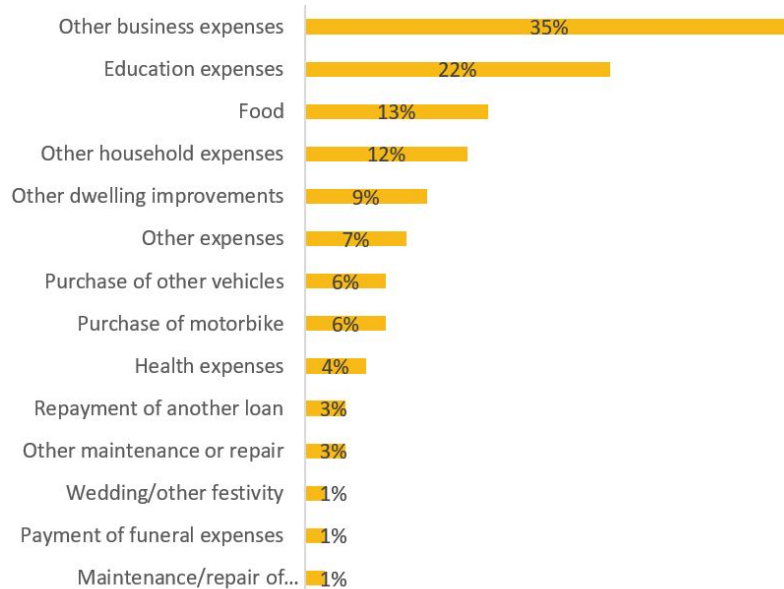
Available credit is not considered for buying a new stove with consumers in this segment preferring to save before making a purchase, however, it's unclear whether lower interest, more favorable repayment terms or product financing would change this behavior.

Cost is the main barrier both to buying more advanced stoves and LPG fuel more consistently. With electric options often too expensive for most of these consumers, given their low incomes, the risk of stacking to charcoal is increased.

“*In general, I am not going to borrow money to buy a stove, I would invest the money borrowed in my business in order to be able to pay it back.* (LPG and Basic user, Jacmel)

“*Someone would upgrade their stove if they get a job, and they have a good salary, or at their work, they give them a bonus, so they decide to change their stove.* (LPG stove merchant, Cap Haitien)

What was the loan primarily used for (unprompted)?



Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households

Targeted product features and messages:



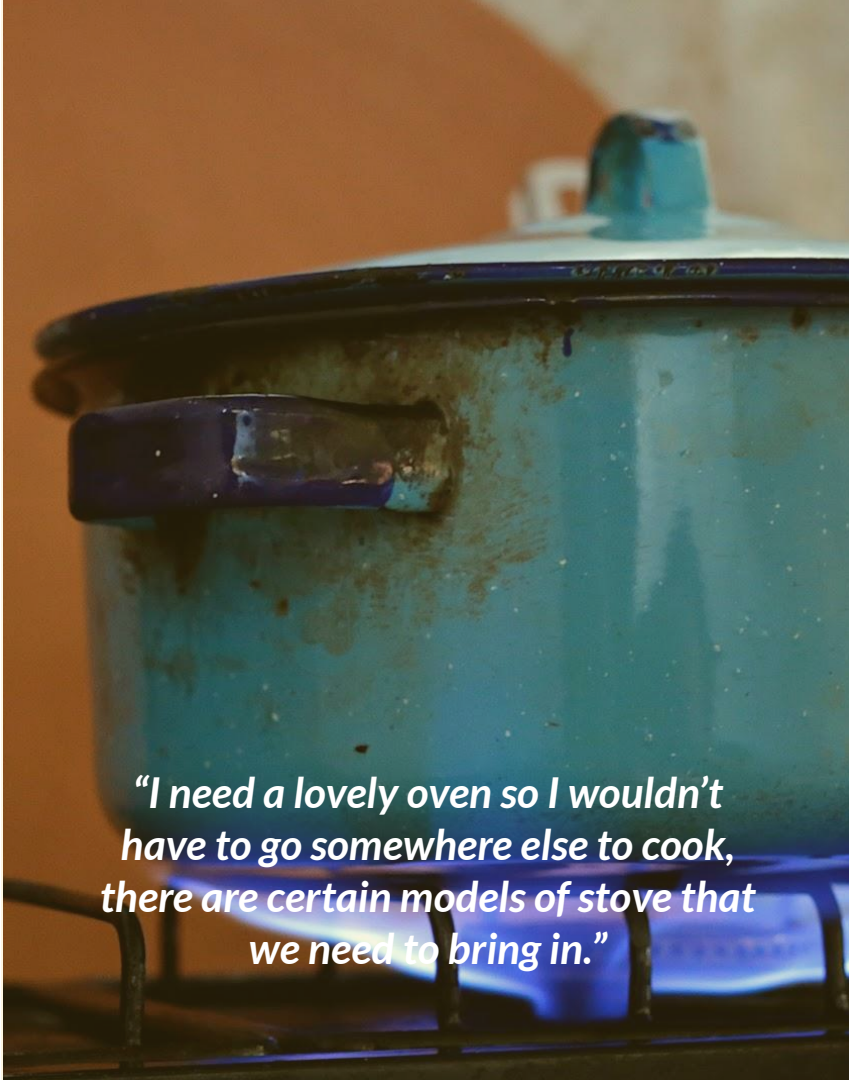
Efficiency - consumers are interested in cooking 2-3 dishes at the same time as households tend to be larger, and some like to host larger meals for their families and friends.



Safety - clearly communicate stove safety features and support setting up, using, and maintaining the stove either directly via merchants or indirectly via the community.



Affordability - offer financing schemes to appeal to their savings attitude that allow them to purchase multi-burner stoves and improved charcoal stoves.



"I need a lovely oven so I wouldn't have to go somewhere else to cook, there are certain models of stove that we need to bring in."



Product



Price



Promotion



Place

Cautious Upgraders

74% peri-urban; 26% urban | 57% SES 2 or 3 | 35,300 households



Key products

LPG cookstoves with stands and smaller canisters

- Low-cost LPG stoves equipped with multiple burners aligned with consumer ambition to upgrade their current stove and reduce time spent cooking. Stoves should be easy-to-use to address concerns about safety and technical challenges while operating the stove.
- Smaller canisters can serve as a platform similar to 'Pay-As-You-Go' models, allowing consumers to refill more frequently to reflect their low or middle incomes.

Improved charcoal cookstove and charcoal briquettes

- Given there is a high chance of fuel stacking due to middle or lower SES, offer low-cost and fuel-efficient charcoal stoves made of durable material and designed to produce less soot, addressing consumer concerns about durability and cleanliness.
- Charcoal briquettes can improve fuel efficiency and further reduce soot and smoke.

Pre-cooked beans

- Pre-cooked packaged beans to reduce cooking time, helping mitigate concerns about LPG spending or availability.
- Partner with food security/nutrition funders and enterprises as part of their programming to drive household adoption.



Price / financing

Community savings groups

- Leverage existing community groups (e.g., church groups) and consumer ambition to upgrade current stoves to form cooking product layaway groups where individuals save together then bulk buy clean cooking products.

Microcredit products

- Harness strong interest in acquiring more sophisticated stoves and borrowing habits offer small loans for the purchase improved charcoal or LPG cookstoves. Consumers may be asked to an initial deposit to reduce default risk and credit payments.

Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households

Affluent Skeptics tend to be wealthier charcoal users living in urban neighborhoods, further:

- A third are in the **highest socioeconomic group (SES 5)**, with households having a roof made out of cement (50%) or metal (50%), and most households having access to a power source (75%).
- They have **relatively good access to clean cooking products** and services but choose not to use LPG.
- More than half have **no second stove** (57%), with the **most common second stove using charcoal** (27%), but LPG stoves (9%) and liquefied fuel stoves (3%) also sometimes used.
- Most **recognize the harmful impact of using charcoal** on Haiti's natural environment and on their health.
- They **prefer charcoal** because they or their domestic workers are more comfortable using it.
- They are more likely to be **formally financially included**, typically accessing credit from banks.
- Three quarters own a smartphone, and two-thirds have access to the internet, which indicates the potential **opportunity to promote new technology use**.

*"They are dangerous. The cylinder can explode.
The charcoal is way easier."*



Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households

Cooking preferences

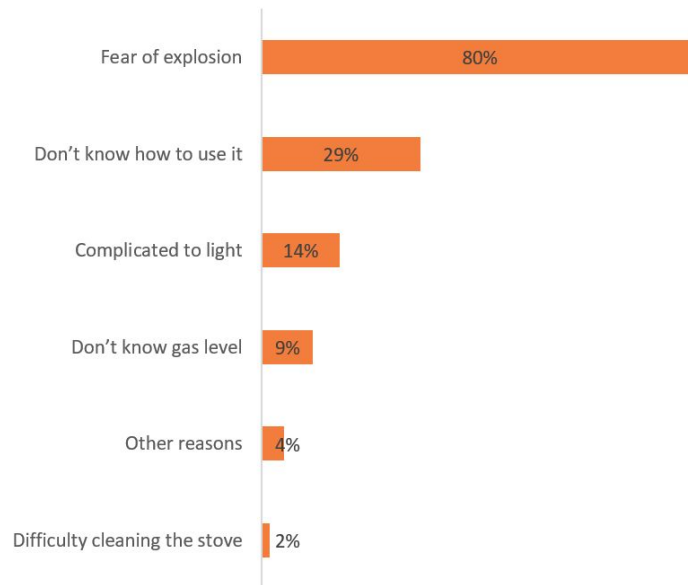
Perceptions of safety and familiarity are the most compelling value propositions for a stove, with the vast majority scared of LPG explosions and/or that cylinder valves won't close properly. Consumers in this segment may also follow their domestic workers' stove preferences, many of whom are familiar with charcoal and, given their poverty, some of whom may steal small amounts of charcoal for themselves.

Households tend to be larger, so consumers look for stoves that can accommodate large pot sizes, though consumers in this segment typically struggle to find them on the market.

“ *What makes a good cook stove is that when you're using it, you're protected.* (Basic stove user, Cap Haitien)

“ *Lots of families have servants who are used to cooking with charcoal and have time to cook.* (Local research partner)

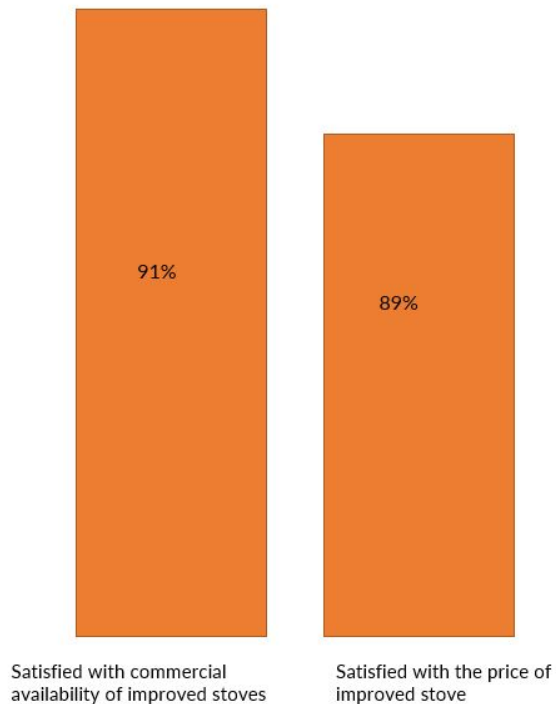
What difficulties do you find using an LPG cookstove?



Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households

Perception on price and commercial availability



Attitudes & networks

The vast majority are happy with the commercial availability and price of improved or LPG stoves; therefore, attitude - not convenience - is likely to be the main barrier to adoption.

It's common for people in this segment to rely on their children for advice on how to use a stove, which is not surprising as they have a strong fear of LPG explosion. In general, they would like more support to learn how to use new stoves.

“ Yes, it's easy to find propane gas because now we have a lot of stations. We have one close to here in Basin Kayiman and one in Bwa bèf. (Basic stove user, Jacmel)

“ When my kids are not there, I just use my little charcoal stove. When they are in the house, I ask them to light up the oven for me. (LPG and basic stove user, Jacmel)

Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households

Financial behaviors

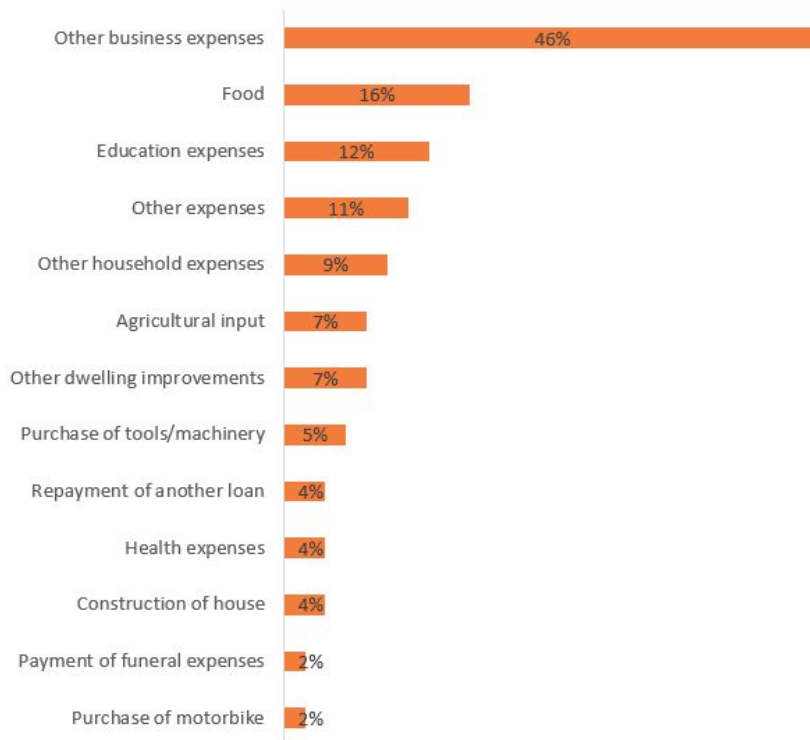
Most experience a feeling of financial scarcity despite having relatively high incomes (SES 5). This is due to broader societal and political instability that can mean consumers prioritize liquidity even if it requires using high-interest loans for everyday household spending.

These consumers are likely to have access to formal financial products in addition to group loans; therefore access to finance is not the main barrier to clean cooking adoption.

“It might be a little hard [to choose a new stove] because there is so much to do with money lately. I guarantee that even if you had cash to go buy the cookstove, you would want to use it in a different way. (LPG stove user, Jacmel)

“They also do group loans. In my neighborhood, I have a cousin who is a successful businessman. Even if you see their business is flourishing, about 60% not to exaggerate are loans through loans. (LPG stove user, Jacmel)

What was the loan primarily used for (unprompted)?



Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households



Targeted product features and messages:



Familiarity - offer cleaner stoves and related products that are familiar and easy-to-use, potentially mimicking features in basic charcoal stoves.



Efficiency - offer fuel-efficient, multi-burner stoves and ovens in order to cook multiple dishes at a faster pace.



Safety - clearly communicate stove safety features and provide support using and maintaining the stove either directly through merchants or indirectly through the community.



Product



Price



Promotion



Place



"I wouldn't consider buying a LPG stove because I don't know how it works."

Affluent Skeptics

70% urban; 30% peri-urban | 34% SES 5 | 110,336 households



Key products

LPG stove with stands and smaller canisters

- LPG stoves with stands and multiple burners to address safety concerns and interest in reducing cooking time.
- Stoves should be easy-to-use and have clear safety features (e.g., safety valves), as safety and technical issues concerns are the main barriers to adoption.

Improved charcoal cookstove and briquettes

- Easy-to-use improved charcoal stoves, potentially mimicking features of basic stoves that are familiar to them / their domestic workers, allowing an incremental transition to more advanced cooking solutions given their fears about LPG and prioritization of familiarity.
- Cookstoves can be paired with charcoal briquettes to improve fuel efficiency and reduce cooking time.

Electric pressure cooker (EPC)

- Electric pressure cookers suitable for use in weak-grid contexts and as an alternative stove for households with more reliable access to electricity and strong safety concerns about LPG.



Price / financing

Microcredit products

- Leverage *Affluent Skeptics'* use of formal credit products by offering small loans to purchase improved charcoal or LPG stoves.
- Appeal to consumers' desire for familiarity and partner with well-known microfinance institutions (e.g., ACME, Sogesol, Fonzoque) to attract more customers.
- Microcredit might also address consumer liquidity concerns and de-prioritization of household purchases by allowing them to smooth spending on household items over a period of time.

Community savings groups

- Leverage both existing community groups (e.g., church groups) and their higher socioeconomic status to form cooking product layaway savings groups where a group of households bulk buys clean cooking products then learn to use them together.

Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households

Stretched Pragmatists typically use basic charcoal stoves, further:

- The majority live in larger households on the outskirts of the city.
- Over a third of this group are in the **lowest socioeconomic group (SES 1)**, with most having a roof made out of metal (52%) or cement (48%), and most having access to some kind of power source (87%).
- Half have **no second stove** while the **most common second stove** uses **charcoal** (29%), with LPG stoves less common (11%).
- The significant majority **recognize the negative health and environmental impacts** of cooking with a basic stove.
- Most of them **rely on their immediate community** for information and advice when buying a new stove.
- The **cost of the stove is the primary consideration** when buying a new stove.
- They are **more likely to borrow** than any other segment, often accessing credit via microfinance institutions.

"You go to church, you hear the sermon, and when you have a problem, there are other members who help you pray. The church becomes a family."



Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households

Cooking preferences

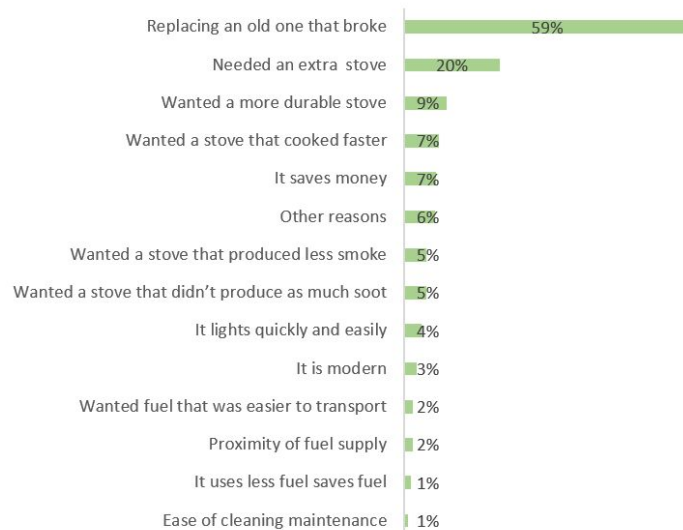
Household meals involve at least 2-3 different dishes, and while it's common to cook each dish consecutively, the vast majority of these consumers would like to have multiple burners to allow concurrent cooking.

While affordability is critical, durability is also an important factor when considering which stove to buy. Consumers are looking at the thickness of the iron, the quality of the welding, and the sturdiness of the grate.

“ *My husband advised me which stove to buy - he said he liked the one with 4 burners more. When I am cooking rice, beans, and chicken, I finish quicker. (Basic stove user, Cap Haitien)*

“ *Some stoves are not good enough. The grate is not solid, and the iron gets rusty very fast. (Basic stove user, Cap Haitien)*

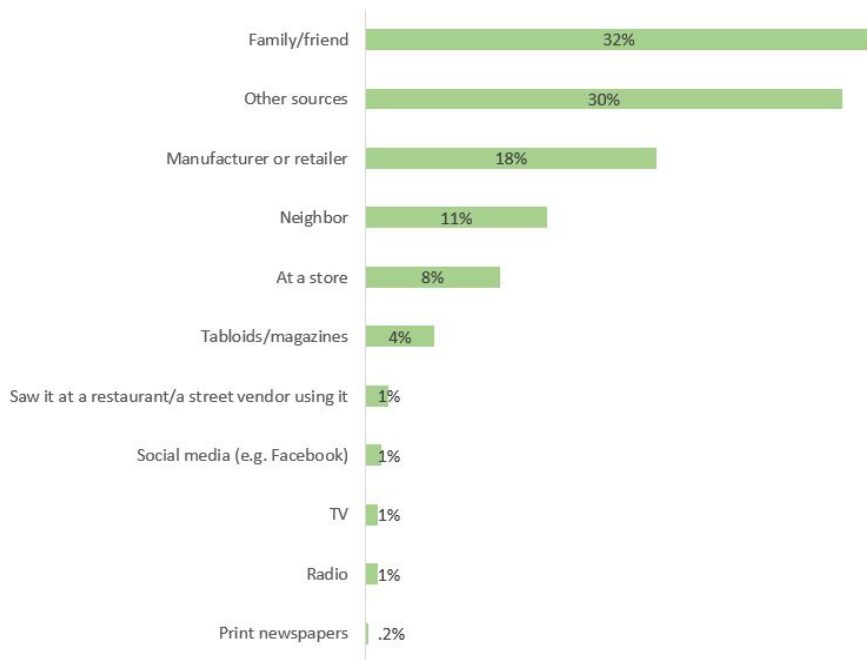
When you bought your last stove, why did you (or a HH member) get a new stove at that time?



Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households

How did you (or a HH member) learn about your latest stove purchase?



Attitudes & networks

Family, friends, and groups (e.g., church) are sought for advice when buying a new stove, and, generally, information broadcast via radio or TV is not influential in decision-making.

Most recognize the negative health and environmental impacts of cooking with charcoal, with many concerned about getting soot in their house or eyes, and others are concerned about deforestation in their surrounding area.

“ When clients come, they like what we do, they tell other people. They refer us to other people. (Basic stove merchant, Port au Prince)

“ The charcoal is dirty, it darkens the bottom of your utensils. The gas stove doesn't do that. (LPG and Basic stove user, Jacmel)

Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households

Financial behaviors

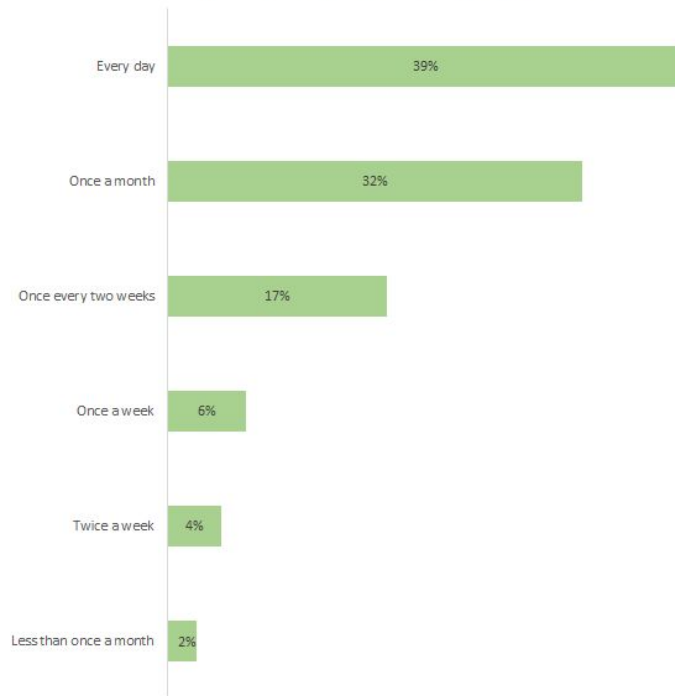
The main clean cooking adoption barrier is **cost** - improved charcoal stoves are ~\$10-30, and LPG stoves with tubing and canister are ~\$50-120, which is often too expensive, even with the potential fuel savings.

Consumers buy charcoal daily or **every few days** because of low or unpredictable income and the wide availability of charcoal.

“*The charcoal stoves sell the most, and it's because the other types are more expensive. Not everyone uses the gas stove, they cannot afford it.* (LPG stove merchant, Port au Prince)

“*You can buy charcoal, and it lasts 2 or 3 days, depending on the stove.* (Basic stove merchant, Port au Prince)

How often do you or does someone in your household go to buy or acquire fuel for PRIMARY stove?



Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households

Targeted product features and messages:



Affordability - offer fuel-efficient charcoal stoves and financing to enable consumers to access financial benefits of cleaner cooking.



Durability and fuel efficiency - offer stoves made out of durable materials (that allow consumers to cook 2-3 dishes at a time) that are cleaner and have higher thermal value fuels.



Safety - clearly communicate stove safety features, and provide set-up, use, and maintenance support directly through merchants or directly through the community.



"We can't always afford Improved charcoal stoves, it's not easy."



Product



Price



Promotion



Place

Stretched Pragmatists

82% peri-urban; 18% urban | 37% SES 1 | 173,284 households



Key products

Improved charcoal cookstove and briquettes

- Low-cost improved charcoal stove with multiple burners and made from sturdy materials, particularly the cooking grates, to address consumer interest in durability and cooking speed. Charcoal briquettes can further improve fuel efficiency and contribute to reducing cooking time.
- Stoves should be designed to reduce soot build-up and smoke as consumers' are increasingly interested in cleanliness and charcoal damaging effects for their health and environment.

Basic charcoal stove

- Traditional charcoal stove made out of more durable materials (e.g., thicker iron) and multiple burners to reduce cooking times. Households with more restricted income can use a mix of basic and improved charcoal stoves to prevent stacking with three-stone fires.

LPG stove and smaller canisters

- Low-cost LPG stoves equipped with multiple burners aligned to consumers' interest in reducing cooking time and available income
- Smaller canisters can serve as a platform similar to 'Pay-As-You-Go' models, allowing consumers to refill canisters more frequently, best suited to their level of available income



Price / financing

Community savings groups

- Leverage existing community groups (e.g., church groups) and consumer ambition to upgrade current stoves to form cooking product layaway groups where individuals save together then bulk buy clean cooking products.

Microcredit products

- Build on existing borrowing habits from microfinance institutions to launch a microcredit product to purchase stoves. Consumers may be asked to an initial deposit to reduce default risk and credit payments.

Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households

Fixed Burners consist of basic charcoal stove users who stack with wood, further:

- Two-thirds **reside in peri-urban areas**, with most living in densely populated neighborhoods.
- A third are in a **low socioeconomic group** (SES 2), with households having roofs made of cement (50%) or metal (50%), and about the significant majority having access to a power source (85%).
- Just over half have **no second stove** (56%) with **second stoves most commonly using charcoal** (22%) and some second stoves use LPG (11%).
- The cost of improved or clean stoves can be prohibitive since most household purchase decisions are limited by **low and volatile day-to-day-income**.
- **Few see charcoal as harmful** to their health or negatively impacting the natural environment.
- **Durability and multiple burners** are factors considered when buying a new stove.



"I'm cool with my charcoal stove. I use it fine."

Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households

Cooking preferences

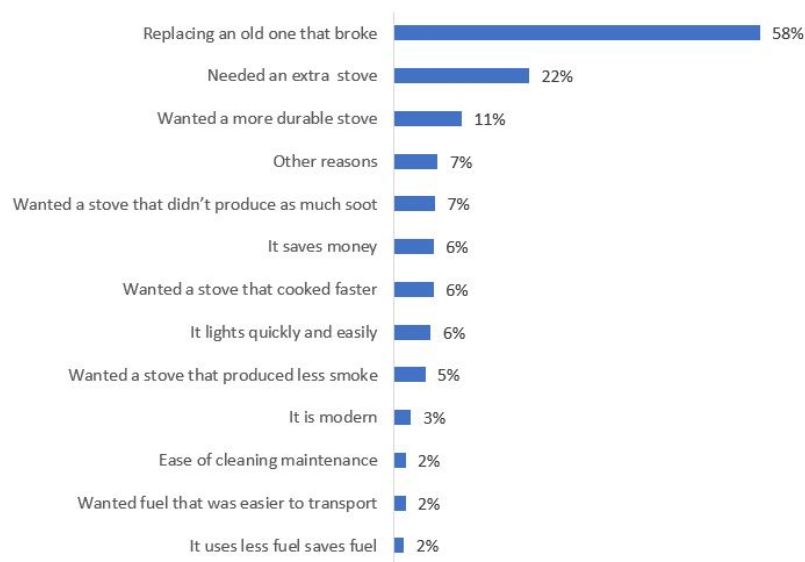
Household purchase decisions (including stoves and fuels) are limited by day-to-day incomes, meaning most consumers save on charcoal consumption by using wood for dishes that take longer to cook e.g., beans.

Households are typically larger, so consumers look for stoves that can take large-size pots, though they struggle to find - or potentially afford - these stoves in the market.

“
I cook the dry beans on woodfire, and the rest on charcoal. (Basic stove user, Jacmel)

“
I'm wondering why they make the burners so small. (Basic stove user, Jacmel)

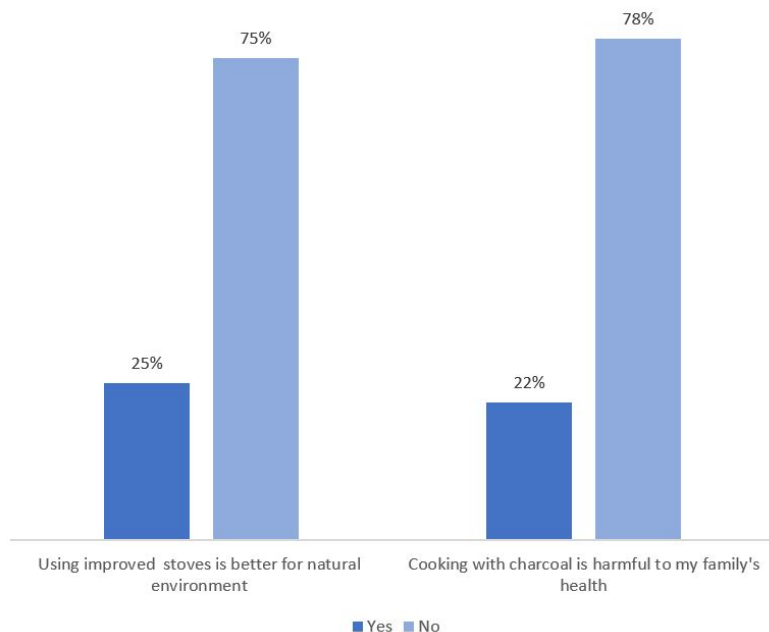
When you bought your last stove, why did you (or a HH member) get a new stove at that time?



Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households

Perception on health and environment



Attitudes & networks

Young people (under 30 years) are particularly interested in using cleaner fuels because similar to the world over, image is key in Haiti.

Most don't see the negative health and environmental impacts of cooking with charcoal, and many collect nearby wood as a back-up for charcoal.

“ Young people, the new generation, don't like cooking on woodfire. They say that they will smell like smoke after cooking. So they prefer a propane gas stove. (Basic stove merchant, Port au Prince)

“ We go to the woods and we cut wood. People in the countryside don't buy wood, they just get wood. (Basic stove user, Jacmel)

Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households

Financial behaviors

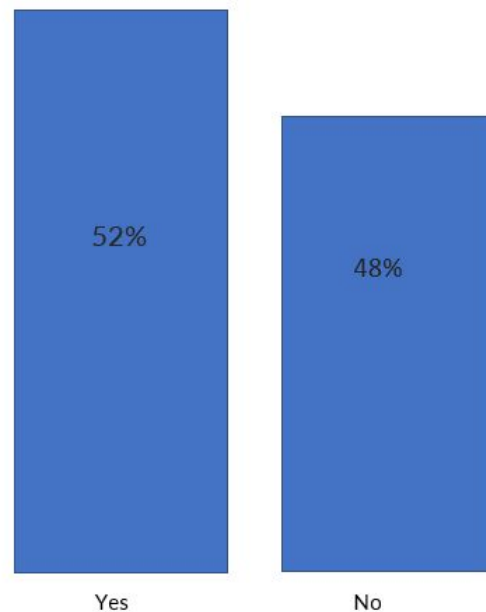
Stove affordability and efficiency are the primary value propositions for a new stove, with consumers focused on finding the most fuel-efficient stove for the least amount of money.

Savings are typically the only option for these consumers to save for higher-cost items in a structured way and are therefore common despite many people having had an experience of their money being stolen from these groups.

“We love Recho Mirak [basic stove] because it improves the charcoal. We do not use a lot of charcoal and the food is cooked quickly. (Basic stove user, Jacmel)

“What I love about savings consortiums is the amount of money that you are receiving in the month. And when you receive the money, it's a good amount, and you can do something serious with it. (Basic stove user, Cap Haitien)

Do you make too little money to save it for anything?



Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households

Targeted product features and messages:



Durability - offer stoves made out of durable and sturdy materials that allow for a long life of constant use with different types of biomass fuel.



Affordability - offer low-cost stoves alongside a financing scheme to enable consumers to purchase an improved charcoal stove and related items e.g., processed wood charcoal, briquettes.



Efficiency - offer multiple-burners stoves and cleaner fuel options to appeal to (particularly young) consumers' interest in cleaner and more efficient technologies.



Product



Price



Promotion



Place

"We look for a metal that is thicker, because the fire doesn't rot them as fast. When we buy a stove with thin metal, it breaks easily."



Fixed Burners

76% peri-urban; 24% urban | 33% SES 2 | 72,920 households



Key products

Improved charcoal cookstove and briquettes

- Low-cost improved charcoal stove with multiple burners and made out of sturdy materials (particularly the cooking grates) to address consumers' interest in durability and efficiency. Charcoal briquettes can further improve fuel efficiency and, in some cases, reduce cooking time.
- Stoves should be designed to reduce soot build-up and smoke to follow consumers' interest in cleaner cooking solutions to improve their image.

Basic charcoal stove

- Traditional charcoal stove made out of more durable materials (e.g., thicker iron) and multiple burners to reduce cooking times. Households with more restricted income can use a mix of basic and improved charcoal stoves to prevent stacking with three-stone fires.

LPG stove and smaller canisters

- Low-cost LPG stoves equipped with multiple burners, harnessing customer interest in acquiring fuel-efficient stoves at affordable prices
- Smaller canisters can serve as a platform similar to 'Pay-As-You-Go' models, allowing consumer to refill canisters more frequently, best suited to their level of available income.



Price / financing

Community savings groups

- Leverage existing community groups, familiarity with saving groups and ambition to use cleaner stoves and fuels, to form specific savings groups to invest in improved charcoal or LPG stoves.

3. Marketing & product strategies

Prioritizing products and defining marketing strategies

To identify the most suitable product opportunity and marketing strategies mix for each consumer, we defined the ideal stove and fuel characteristics for each segment then aligned product recommendations and marketing approaches.

Product needs assessment

Defined key product features across segments, then assessed all product features to identify which ones are more valued by each segment.



Product opportunities and initiatives timeline

Evaluated each product opportunity and marketing strategy by the feasibility of deployment and impact in the market, then categorized based on approximate delivery timeline.



Definition of key products by segment

Selected the most feasible combination of products for each segment based on survey results, qualitative data gathered during the HCD research, and expert interviews.



Identification of marketing strategies

Defined cross-cutting marketing strategies to be tailored according to each segments' most valuable product needs.



Product needs assessment



















Based on HCD research learnings and survey results, we identified cross-cutting product needs for all segments and assessed their specific relevance according to each segments' behavioral and financial characteristics.

Product needs

Definition	Product needs							
	Affordability	Safety	Accessibility	Efficiency			Durability	Familiarity
				Functionality	Fuel efficiency	Performance		
	Cost of products	Features to reduce danger/risk	Availability/ proximity to consumer location	Physical features e.g., number of burners	Amount of energy released per fuel unit	Average cooking time and maintenance requirements	Quality of construction and stove materials	Recognizability based on similar features to traditional stoves
Comfortable Modernists	Low	High	High	Medium	High	High	High	Medium
Cautious Upgraders	Medium	High	High	High	Medium	Medium	Medium	High
Affluent Skeptics	Low	High	Medium	High	Low	Medium	Medium	High
Stretched Pragmatists	High	Medium	Medium	High	High	Medium	High	Medium
Fixed Burners	High	Medium	Medium	High	Medium	Medium	High	Medium

Value to customers: High ■ Medium ■ Low ■

Product opportunities and initiatives timeline

Quick-wins		Intermediate initiatives	Advanced initiatives
1 - 2 years		2 - 5 years	5 - 10 years
Description	<ul style="list-style-type: none"> Low complexity and low/medium impact in the Haitian clean cooking market. Lower cost initiatives. Most opportunities reflect existing products in the market. 	<ul style="list-style-type: none"> Medium complexity and medium/high impact in the Haitian clean cooking market. Substantial funding requirements and infrastructure investments. Requires significant involvement with local vendors, communities, and government. 	<ul style="list-style-type: none"> High complexity and high impact in the Haitian clean cooking and microfinance markets. Significant infrastructure investment required, particularly for the electric power system. Require development of clear microfinance regulations.
	<p>Product opportunities</p> <ul style="list-style-type: none">  Fuel-efficient charcoal cookstoves at affordable prices.  Improved briquettes made of agricultural waste, sugarcane, or other materials.  Scaling existing LPG stoves and canisters for urban affluent users.  LPG stove stands made out of durable and sturdy materials.  Basic multi-burner charcoal stoves with more durable materials and multiple burners.  Live demonstrations with music and dance activities where the community learns from influential figures and/or peers.  Print and radio campaigns with flyers, magazine ads, jingles, and radio spots.  Employee loans to assist workers with cookstove purchases, mostly offered by large employers. 	<ul style="list-style-type: none">  Widespread use of LPG stove as a primary stove.  Smaller 1-3 kg LPG canisters to allow for smaller and more frequent refills.  Pre-cooked packaged beans as part of food security and nutrition interventions.  Community savings groups where members use savings to invest in improved cookstoves.  Peer-to-peer sales where brand ambassadors sell different products by sharing their positive experience with community members.  Home delivery service in partnership with local motorbike taxis to deliver LPG canisters and cookstoves at remote locations.  Text-message applications to offer customer support, delivery services, and targeted advertisement. 	<ul style="list-style-type: none">  Electric pressure cooker to cook fuel-intensive meals (e.g., beans) in areas with broad electricity access.  Ethanol cookstoves at affordable prices.  Microcredit products offered by financial institutions or merchants for cookstove purchases.

Key products by segment

Based on the key product needs and financial behavior, we identified one short-term and one long-term, more aspirational cookstove option per segment.

		Short-term products	Long-term products	
1	Comfortable Modernists	Modern LPG stove - higher purchasing power and interest in increasing cooking speed.	Electric Pressure Cooker - higher purchasing power and prefer safer stoves.	<i>"We use both charcoal and propane cookstoves, for beans we start with charcoal, and once they are boiled we continue with propane" (Basic stove user, Cap Haitien)</i>
2	Cautious Upgraders	Improved charcoal cookstove - limited purchasing power to continuously use LPG.	Larger LPG cookstove - willingness to save for a multi-burner stove.	<i>"The propane gas oven does not stain cookers like the charcoal does, and it cooks faster" (LPG stove user, Cap Haitien)</i>
3	Affluent Skeptics	Improved charcoal cookstove - preference for charcoal stoves, yet recognize its negative impact.	Electric pressure cooker - higher purchasing power and prefer easy-to-use stoves.	<i>"What I need to know first is how to use the improved stove, I would need someone to show me how it works" (Basic stove user, Cap Haitien)</i>
4	Stretched Pragmatists	Improved charcoal cookstove - limited purchasing power but interested in switching to cleaner fuels.	Low-cost LPG cookstove - interest in cooking speed but unable to pay upfront cost.	<i>"I bought a stove with 3 burners because I spend less time cooking rice, beans, and legumes" (Basic stove user, Cap Haitien)</i>
5	Fixed Burners	Improved charcoal cookstove - limited purchasing power but interested in switching to cleaner fuels.	Low-cost LPG cookstove - interest in cooking speed but unable to pay upfront cost.	<i>"For me the good stoves are made with metal or concrete, and you don't see the ashes" (Mixed user, Jacmel)</i>

Feasibility considerations for product opportunities

Most products are available on the market, however, implementation and adoption barriers need to be further assessed prior to deployment.

	Product opportunity	Feasibility considerations
Quick-hits	Basic charcoal cookstoves	<ul style="list-style-type: none"> Currently available in urban and peri-urban settings, yet significant improvements can be made regarding manufacturing materials and design to extend service life.
	Improved charcoal cookstoves	<ul style="list-style-type: none"> Currently available in large cities, however, price is prohibitive for most consumer segments.
	LPG cookstoves	<ul style="list-style-type: none"> Scarce access to LPG due to weak distribution network and low availability of quality LPG canisters. Increase in gas prices as Venezuela ended Petrocaribe program under which Haiti received around 60,000 barrels of subsidized oil per day. Given LPG is now imported from other countries, price is completely dependent upon exchange rate. Limited legislation to regulate safety features and procedures in place to manage LPG stations and canisters, thus reducing investors' incentives to allocate more resources to developing the Haitian LPG market.
	Improved charcoal briquettes	<ul style="list-style-type: none"> Currently available in the market however quality varies across brands preventing further product adoption.
Intermediate initiatives	Smaller canisters	<ul style="list-style-type: none"> Smallest canisters available are 5-6 kg; canisters of 1-3 kg capacity would have to be imported.
	Pre-cooked beans	<ul style="list-style-type: none"> Pre-cooked beans are not widely available in the market; supply would be increased through partnerships with food security organizations.
Advanced initiatives	Electric Pressure Cookers	<ul style="list-style-type: none"> Currently available in urban settings at prices relatively lower than LPG stoves, however unreliable electricity access narrows EPC opportunity to households with alternative electricity sources e.g., diesel plants. Significant improvements to the electricity grid are needed to make EPC economically viable for widespread use across segments.
	Ethanol cookstoves	<ul style="list-style-type: none"> Limited availability in the market, however significant investments to strengthen local supply chains and consumer adoption.

Cross-cutting promotion and placement strategies

All strategies are segment-agnostic as promotion and selling channels are similar across segments however messaging needs to be tailored according to each segments' demographic characteristics and most valuable product features.



Promotion / messaging

Live demonstrations

- Create inclusive and fun experiences with music and dance (e.g., cooking classes, community parties) where trusted community leaders or influencers (e.g., merchants, teachers, cooks) explain the benefits of clean cooking solutions, and customers can learn along with friends and family.
- Demonstrations should offer detailed explanations of most common technical challenges to increase consumers' confidence when using more advanced cooking solutions.
- Demonstrations should include basic training on safer cooking practices (e.g., cooking next to a window) and tips to improve fuel efficiency (e.g., pre-soak beans to reduce cooking time).

Print, radio and social media campaigns

- Launch print, radio, and social media campaigns to promote clean cooking solutions. Campaigns should include instructional graphics to appeal to consumers' visual learning style, and text should be in Haitian Creole.
- Campaigns should be women-centered as they are the primary decision-maker for household cooking products.



Place / channel

Community peer-to-peer sales

- Engage through community leaders that serve as brand ambassadors and sellers, and leverage their networks to share their experiences to appeal to consumers' trust in friends and family.

Home delivery service

- Address consumer challenges around refilling LPG canisters and servicing stoves by offering a delivery/technical service, potentially in partnership with local motorbike taxis.

Instant messaging applications

- Leverage consumers' increased use of smartphones and social media applications (e.g., Whatsapp) to offer customer support, delivery services, and targeted advertisement.

Messaging & branding 'moodboard'

TV and radio shows, as well as celebrities and brands, which are most commonly trusted and aspired to by consumers, however, as noted in the segment insights these channels and references appear to have influence that is secondary friends and family.

Example of radio stations & hosts followed and appreciated



"I enjoy watching morning debate on Caribe with Louko Desire." (LPG stove user, Jacmel)



"I like Tonton Bicha because He is excellent at marketing. Even if you aren't interested in the product, he has a way of pulling you in." (LPG stove user, Jacmel)

Example of cookstove brands desired and retail store pointed as reference



"I bought it at Valerio Canez. (LPG stove user, Cap Haitien)

"West point is a brand I trust. General electric is a brand I can trust. (LPG stove user, Jacmel)

"When they brought it over, they showed us how to use it. I bought the gas, connected it and lit the stove. (LPG stove user, Cap Haitien)

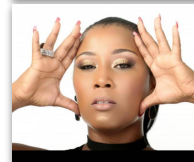
Example of pop stars followed and perceived as trustworthy across all 5 segments



"I like Rutschelle, she is positive. She can convince. She has that capacity." (LPG stove user, Jacmel)



"I love Gazzman, he cares for people." (Basic stove user, Jacmel)



"I love Misty Jean." (Basic stove user, Jacmel)



"Ti Joe advertised the Recho Mirak." (Improved stove merchants, Port au Prince)

Thank you

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Appendix

A. Quantitative survey & analysis

Survey sample distribution

Women living in the city of Port au Prince with an average age of 39 years old constitute the majority of respondents across the 3,150 households surveyed in the six main Haitian cities (Port au Prince, Saint Marc, Cap Haitian, Gonaïves, Les Cayes, Jacmel).

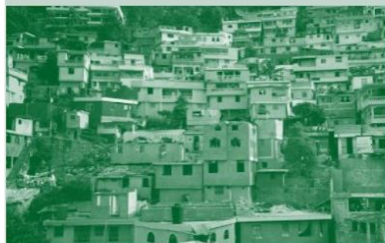
Gender distribution		
Male	260	8.8%
Female	2709	91.2%
Total	2969	100%
Zone distribution		
Peri-urban	1933	62.3%
Urban	1172	37.7%
Total	3105	100%

City breakdown		
Port au Prince	2188	70.5%
Saint Marc	246	7.9%
Cap Haitian	245	7.9%
Gonaives	234	7.5%
Les Cayes	91	2.9%
Jacmel	101	3.3%
Total	3105	100%

Analytical framework: general overview

Exploring cooking and non-cooking behaviors in relation to the consumer's context and psychometrics.

CONTEXT *Understanding WHO*



What are the locational and socioeconomic **characteristics** that best define users?

BEHAVIOR *Understanding HOW*



What are the **cooking-specific** and **other, non-cooking-specific drivers** of how users interact?

PSYCHOLOGY *Understanding WHY*



What are the **values and attitudes** driving why these users think about the world in the way that they do?

Analytical framework: key categories

Each category frames a set of questions to better identify the consumer's context, cooking behavior, non-cooking behavior, and psychology

CONTEXT	HOUSEHOLD DEMOGRAPHICS: where and how big is the HH? what is its socioeconomic status?
	RESPONDENT DEMOGRAPHICS: who is the specific respondent?
COOKING BEHAVIOR	PHYSICAL CONFIGURATION: what does the cooking setting look like?
	COOKING TOOL PREFERENCES: what product factors drive the choice to use one tool over others?
	AVAILABLE/ CURRENT TOOLS: what cooking instruments and fuels does the user have available?
	APPROACH TO BUY INPUTS: how does the user access and purchase fuel for cooking?
	APPROACH TO COOK FOOD: what food is prepared, how, and for whom?
NON-COOKING BEHAVIOR	PRODUCT CHOICE AGENCY: who chooses what products are bought and when?
	FINANCIAL AGENCY: who makes financial decisions and how do they make those decisions?
	SOURCES OF INFLUENCE: what social or technological factors impact the user's preferences?
PSYCHOLOGY	ALTERNATE PRODUCT USAGE: what non-cooking purposes does the user see in a stove?
	SENSE OF OPENNESS: how willing is the user to try new things?
	SENSE OF COMMUNITY: how much does the user trust those around her/him?
	SENSE OF SELF-BELIEF: how much does the user believe in themselves and their own potential?
	FINANCIAL ATTITUDES: how does the user feel about saving, borrowing and spending?

Survey methodology

151 questions (grouped into the below 17 sections) were used as the method to capture the overall needs, preferences, and attitudes of end-users as well as their financial situation and market access.

Sections	Topics
1	Cover page
2	Introduction
3	Household Roster
4	Stove Roster
5	Cookstove Knowledge
6	Cookstove purchasing
7	Cookstove uses
8	Fuel purchasing
9	Meals and cooking practices

Sections	Topics
10	Cookstove preference
11	LPG use and attitudes
12	Stove availability and purchasing decisions
13	Stove financing attitudes A and B
14	Social influences
15	Financial services
16	Attitudes and psychology
17	Household characteristics

Sampling approach

Women living in urban areas were selected as primary research participants to increase the likelihood of informing targeted market strategies and business models of cleaner cooking alternatives in Haiti.

Papyrus deployed a **three-stage sampling strategy**:

1. Selecting enumerators areas (EA) using **random selection** (25 households in each) with probability proportional to size.

At this stage, Papyrus used the total datasets of EAs and **filtered using the location and urban part**, the total sampling frame where the EAs and the households were selected.

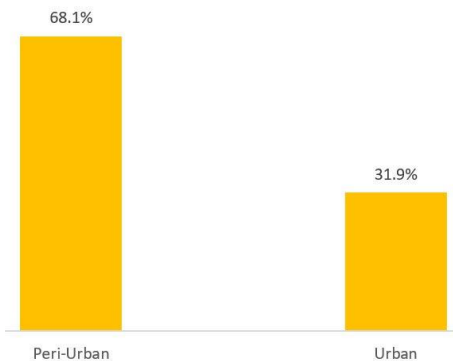
Papyrus used respectively **probability proportional to size** (number of households) strategy and **random walk methodology**.

2. Selecting specific households from within EAs (25 households were targeted in each of the EAs selected).

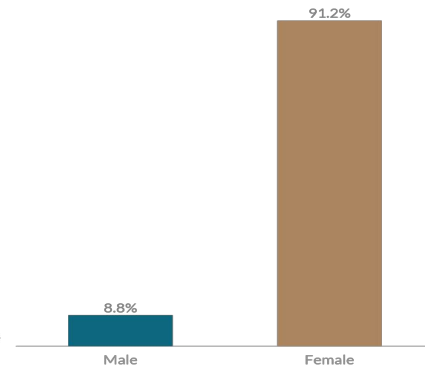
At this stage, Papyrus designed the sampling to meet two research needs:

- Provide an **overall estimation of the cooking technology choices and behavior** of households in urban Haiti
 - Ensure that the **data collection allowed insight into understanding the households** who have improved stoves (improved charcoal, LPG, electric, or ethanol) .
3. Selecting the main person responsible for cooking in the household (**female head of the household, in most of cases**) for solicitation and interview.

What is the respondents main distribution zone?



What is the respondents main gender?



Graphs illustrating the survey focus on women living in urban and peri-urban areas of Haiti

Clustering analysis

Clustering is a machine learning technique that involves grouping a set of objects in such a way that objects in the same group (called a cluster) are more similar (in some sense) to each other than to those in other groups (clusters).

Introduction to clustering

- Clustering can be formulated as a multi-objective optimization problem as it can be achieved by various algorithms that differ significantly in their understanding of what constitutes a cluster and how to efficiently find them.
- Data points that are in the same group should, in theory, have similar properties and/or features, while data points in different groups should have highly dissimilar properties and/or features.
- Clustering algorithms include (Xu & Tian, 2015):
 - K-means/mode/median Clustering
 - Agglomerative Hierarchical Clustering
 - Expectation-maximization (EM) clustering using Gaussian Mixture models (GMM)
 - K-medoids
 - Mean-shift Clustering
 - ROCK
- Algorithm selection depended on the types of the variables.
 - K is commonly used for continuous/numeric variables.
 - K-mode/median and ROCK are preferred for categorical variables.
 - K-medoids is preferred in cases where the data consist of mixed variable types (numeric and categorical variables).

Specific clustering methodology

Dalberg used The K-medoids algorithm or Partitioning Around Medoids (PAM) as a clustering methodology because the data used in the survey consists of both numeric and categorical variables.

- K-medoids is a partitioning clustering algorithm whereby data points are chosen to be medoids (Jin & Han, 2010).
- A medoid can be defined as that object of a cluster, whose average dissimilarity to all the objects in the cluster is minimal.

The idea behind that specific algorithm consisted of:

- Computing first the K representative objects that are labelled medoids.
- Assigning to the nearest medoid each object of the data set after finding all the set of medoids.

Dalberg identified K by using the silhouette¹ value² to measure how similar an object is to its own cluster compared to other clusters (see next slide for more information).

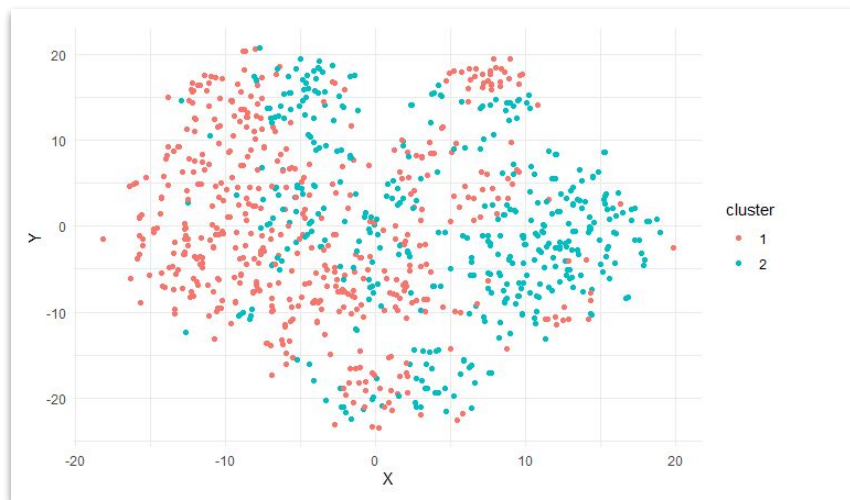
1: The silhouette value is a measure of how similar an object is to its own cluster (cohesion) compared to other clusters (separation).

2: If many points have a low or negative value, then the clustering configuration may have too many or too few clusters.

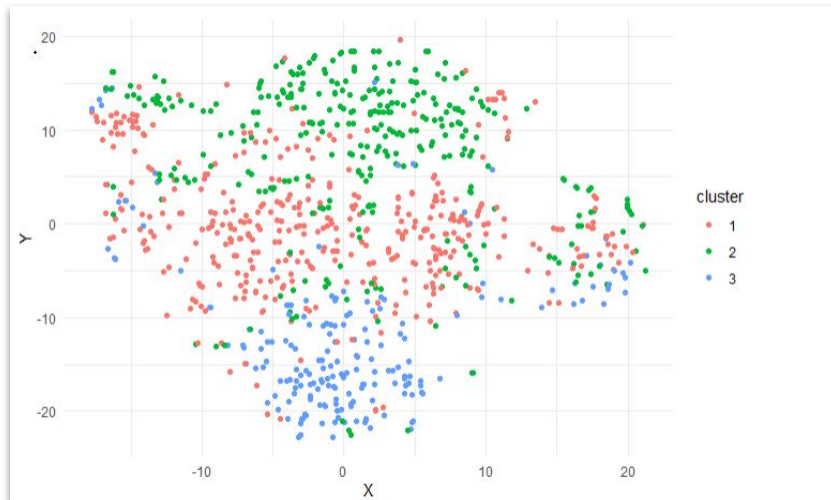
Selection of clusters using t-SNE plots

t-SNE¹ plots visualize cluster distributions on two dimensions, with similar data points proximate to each other and dissimilar data points are distant, thereby illustrating how the data is broadly arranged.

Haiti LPG users t-SNE plot



Haiti other users t-SNE plot

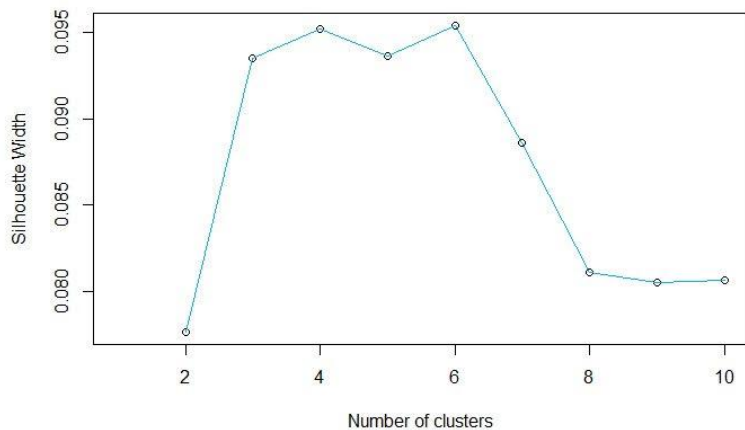


1: t-Distributed Stochastic Neighbor Embedding (t-SNE) is an unsupervised, non-linear technique primarily used for data exploration and visualizing high-dimensional data.

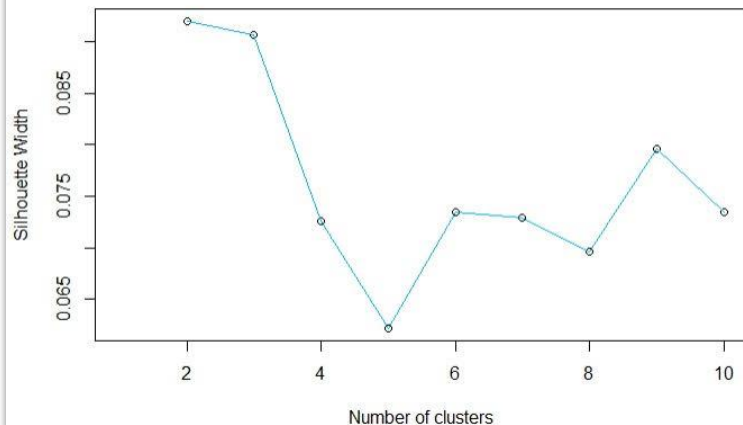
Selection of clusters using silhouette width graphs

Silhouette¹ gives a range from -1 to $+1$, where a high value indicates that the object is well matched to its own cluster and poorly matched to neighboring clusters. The higher the value of the objects, the more appropriate the clustering configuration² is.

Haiti LPG users clean energy silhouette with graph



Haiti other users clean energy silhouette with graph



1: The silhouette value is a measure of how similar an object is to its own cluster (cohesion) compared to other clusters (separation).

2: If many points have a low or negative value, then the clustering configuration may have too many or too few clusters.

Weight analysis & calculations

- The survey sample was selected from a number of “Sections d’Énumération” (SDE) that were randomly sampled from each urban center or communes within urban centers. Each SDE consists of roughly 200 households or 1,000 people. The number selected per commune/city was roughly proportional to population size based on Haiti’s 2011 census.
- The sample included a mix of households randomly selected from six urban centers (n = 2,571) plus a quota sample of households with improved stoves (n = 678). In order to generate results representative of Haiti’s urban population, the data must be weighted.
- To arrive at appropriate weights, we treated the sample as if it was stratified in two ways: first, by urban center, and second, by improved stove ownership status. To determine weights for each stratification, we need to estimate the actual size of the population from which our sample is drawn. The population of each SDE was provided.
- The population of improved stove owners within each SDE was not known but could be estimated from the 2,571 randomly sampled households in this dataset. With this information, we calculated weights in four steps.
 1. Estimate the no. of households using clean/improved stove within each SDE. This was done by calculating the fraction of clean/improved stove users using only the randomly sampled households in each SDE and multiplying the no. of households or people in the SDE by that fraction.
 2. Estimate the probability of selection of clean/improved stove users (Piclean) and the probability of selection of traditional stove users (Pitrad) from SDE_i including both random and quota samples. The household weights for clean and traditional stove users (wiclean and witrad) are equal to the inverse of the probabilities.
 3. Estimate the probability of selecting SDE_i from other SDEs in each urban area (PiSDE). This is calculated as a simple ratio of the number of SDEs selected to the total number of SDEs in each city or commune. The SDE weight (wiSDE) is the inverse of the probability.
 4. Calculate the final sample weight, which is the product of the household and SDE weights.

$$w_i^{\text{sample-clean}} = w_i^{\text{clean}} w_i^{\text{SDE}} \text{ and } w_i^{\text{sample-trad}} = w_i^{\text{trad}} w_i^{\text{SDE}}$$

Lastly, these sample weights can be normalized by dividing each by the average sample weight

$$w_i^{\text{norm}} = \frac{w_i^{\text{sample}} N_{\square}^{\text{sample}}}{\sum_i w_i^{\text{sample}}}$$

Where:

- I. N_i^{clean} is the number of HHs in SDE_i using clean or improved stoves
- II. N_i^{total} is the total number of HHs in SDE_i
- III. f_i^{clean} is the fraction of HHs in SDE_i using clean or improved stoves
- IV. $n_{i-\text{rand}}^{\text{clean}}$ is the number of randomly sampled HHs in SDE_i using clean or improved stoves
- V. $n_{i-\text{rand}}^{\text{trad}}$ is the number of randomly sampled HHs in SDE_i not using clean or improved stoves
- VI. $n_{i-\text{quota}}^{\text{clean}}$ is the number of quota sampled HHs in SDE_i using clean or improved stoves

Weighted consumer segments

Segment household and population weights

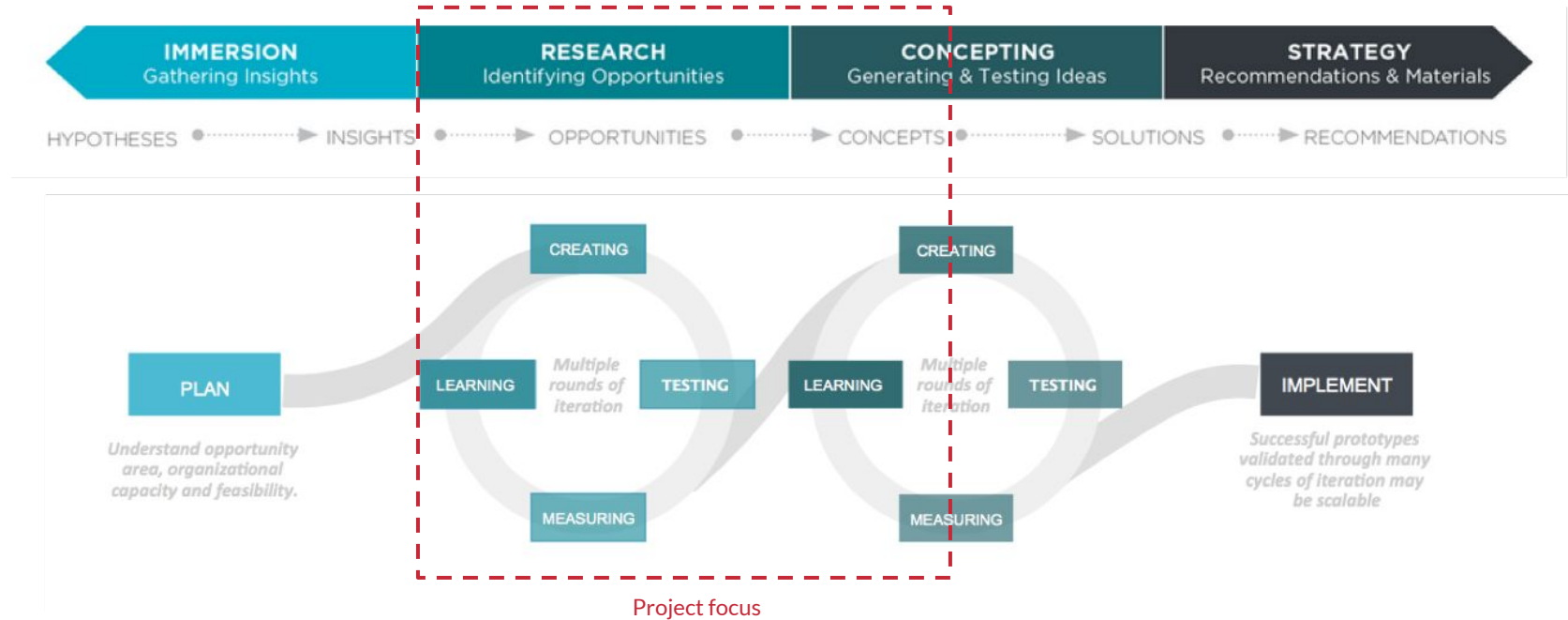
Name of consumer segment	Proportion of segments	Total number of households in the 6 cities	Total population 6 cities
Comfortable Modernists	24%	126,071	616,805
Cautious Upgraders	7%	35,300	172,704
Affluent Skeptics	21%	110,336	539,818
Communal Pragmatists	33%	173,284	847,791
Committed Burners	14%	72,920	356,763
Total	100%	517,911	2,533,881

Source: Population for 6 cities is based on IHSI 2011

B. HCD research methodology

The Human-Centered Design (HCD) process

HCD was applied to uncover behavioral patterns of end-users that limit the adoption of cleaner cooking techniques among Haiti's urban and peri-urban population, develop actionable consumer segments, and generate product opportunities tailored to these segments.



Research methods & tools

Combination of user research methods that enable us to gain deep empathy for users, to question core assumptions, and inspire new solutions to engage the participants and generate the necessary insights to achieve our project objectives.



Focus group discussions with consumers of cookstove products

Activities to explore their perceptions and decision-making processes. Scenario exercises and role playing were used to structure and deepen insights generated. For example, we mapped user's current cooking habits and segmented consumer groups based on contextual and behavioral characteristics.



In-depth interviews with individual consumers of cookstove products

We used in-depth contextual interviews to explore the behaviors, capabilities, aspirations and mindsets of consumers in the Haitian clean cooking market. These semi-structured interviews aimed to identify meaningful differences between users as well as determine features of new products that are essential, optional, or dispensable.



Focus group discussions with cookstove merchants

The focus here was on exploring barriers and opportunities to providing consumers access and merchant perspectives on consumer preferences and channels / messaging to engage them.

Discussion guides & materials

Research coordination with stakeholders has been optimized by the development of clear research questionnaires and maps in English and in Creole (language most spoken in Haiti) to support local partner reach each identified consumer segments.

FOCUS GROUP DISCUSSIONS

Part 0: Immersion (10 mins)

- What's your favourite dish you cook in your household? What type of stove and fuel do you use to make it and why?
- What's the best thing about being a stove merchant in your community? What's the hardest thing? Why?

Part 1: Exploring consumer preferences (20 mins)

- What type of stoves / fuels do you sell? Why?
- What are the main things your customers are thinking about when deciding whether to buy a new stove? Why?
- What's their mood like when they're buying a stove? Does it vary by type of customer? E.g. old vs young, men vs women, busy market vs quiet street
- What benchmarks or references do your customers to measure how good the stove is?
 - Prompt: If qualitative, what constitutes good and what constitutes bad for them? E.g. good stoves are made of metal and don't wobble when you shake them
 - Prompt: If quantitative, how much is considered good? E.g. The stove lasts for 2 years before it needs to be repaired.
- What are the main questions customers ask when deciding whether to buy a stove?
- What are your best selling stoves? Why?
- Which types of stoves are becoming increasingly popular? Why?
- Under which circumstances does a household decide to upgrade to a better stove / fuel? Why?
- What's the main reason you don't have more customers? How was this different before the pandemic? Why?
- How often do your customers typically buy a new stove? Why that often?

[Click to access the full stove merchants FGD guide.](#)

[Click to access the full consumers FGD guide.](#)

HAITI CONSUMER PREFERENCES
COOKSTOVE PURCHASE JOURNEY

Name: _____ Date: _____

1 Becoming aware of the need to buy a stove

2 Finding out what's available and getting advanced information about stove options?

3 Getting money and buying the stove from the merchants

4 Using the stove for the first time/Learning to use it

5 Sustained use / dislike of the stove

	1	2	3	4	5
What happened? 1. Activities 2. Actors 3. Channels					
How were you feeling? (Rate 1-10 and explain why)					
How could your experience be improved?					

[Click to access the full cookstove buyer journey map template.](#)

JOURNEY MAPS

IN DEPTH INTERVIEWS

Part 0: Immersion (15 mins)

- What do you do for a living? What's the best and worst thing about your role?
- How would you compare to where you were 2 - 3 years ago?
- Tell us about challenges or difficulties you have faced - what sustained you and gave you the strength to keep moving?
- Where do you want to be in 2-3 years? What will it take to get there?
- Would your house look any different? What about your kitchen? What about your cookstove? Why?
- What's your favourite dish you cook in your household? What type of stove and fuel do you use to make it and why?

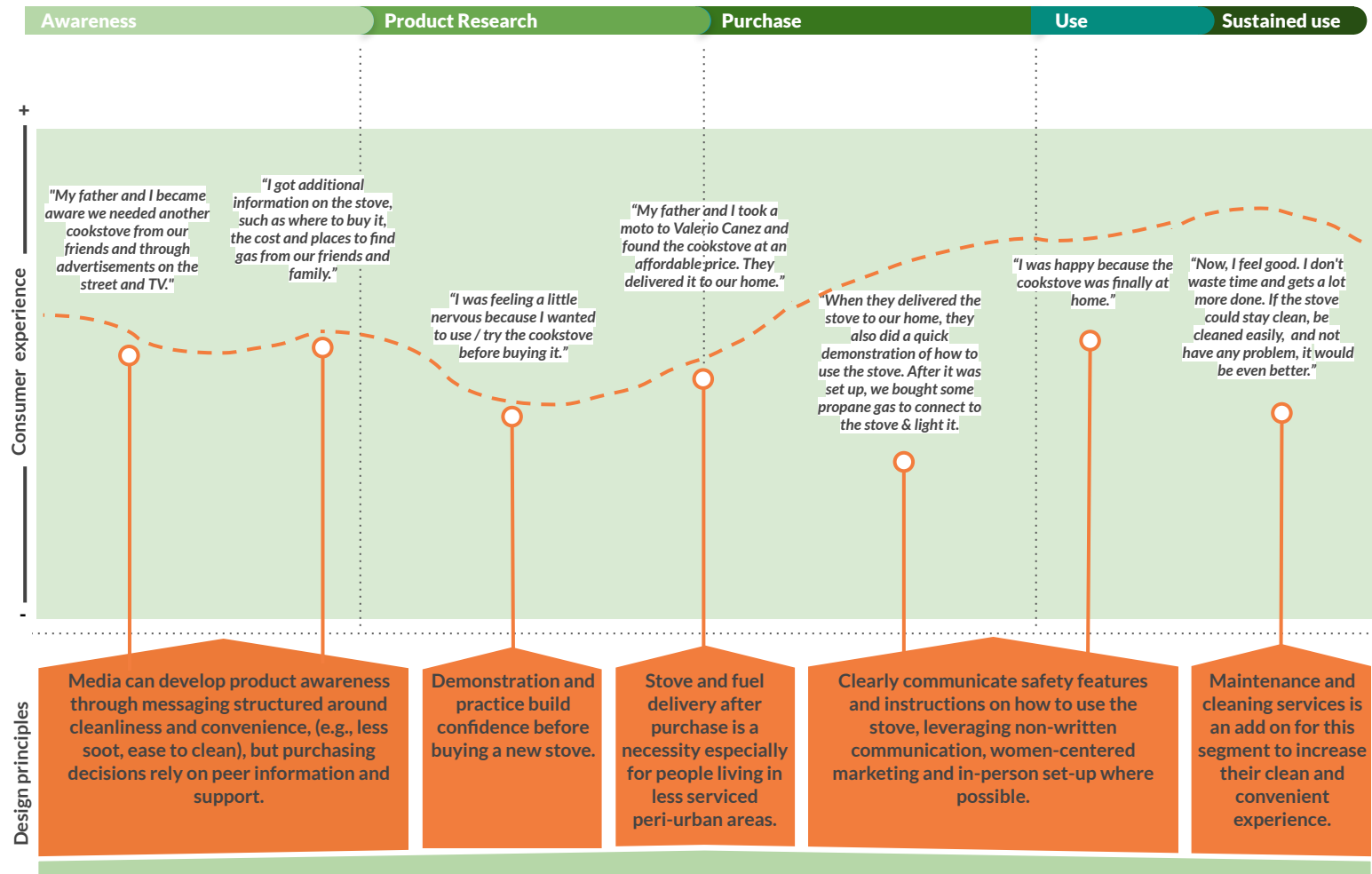
Part 1: Understanding their cookstove preferences (15 mins)

- What makes a good cookstove and why?
- What benchmarks or references do you use to measure how good the stove is?
 - Prompt: If qualitative, what constitutes good and what constitutes bad for them? E.g. good stoves are made of metal and don't wobble when you shake them
 - Prompt: If quantitative, how much is considered good? E.g. The stove lasts for 2 years before it needs to be repaired.
- What is your dream cookstove? Why? What prevents you from buying it today?

[Click to access the full in depth consumer interview guide.](#)

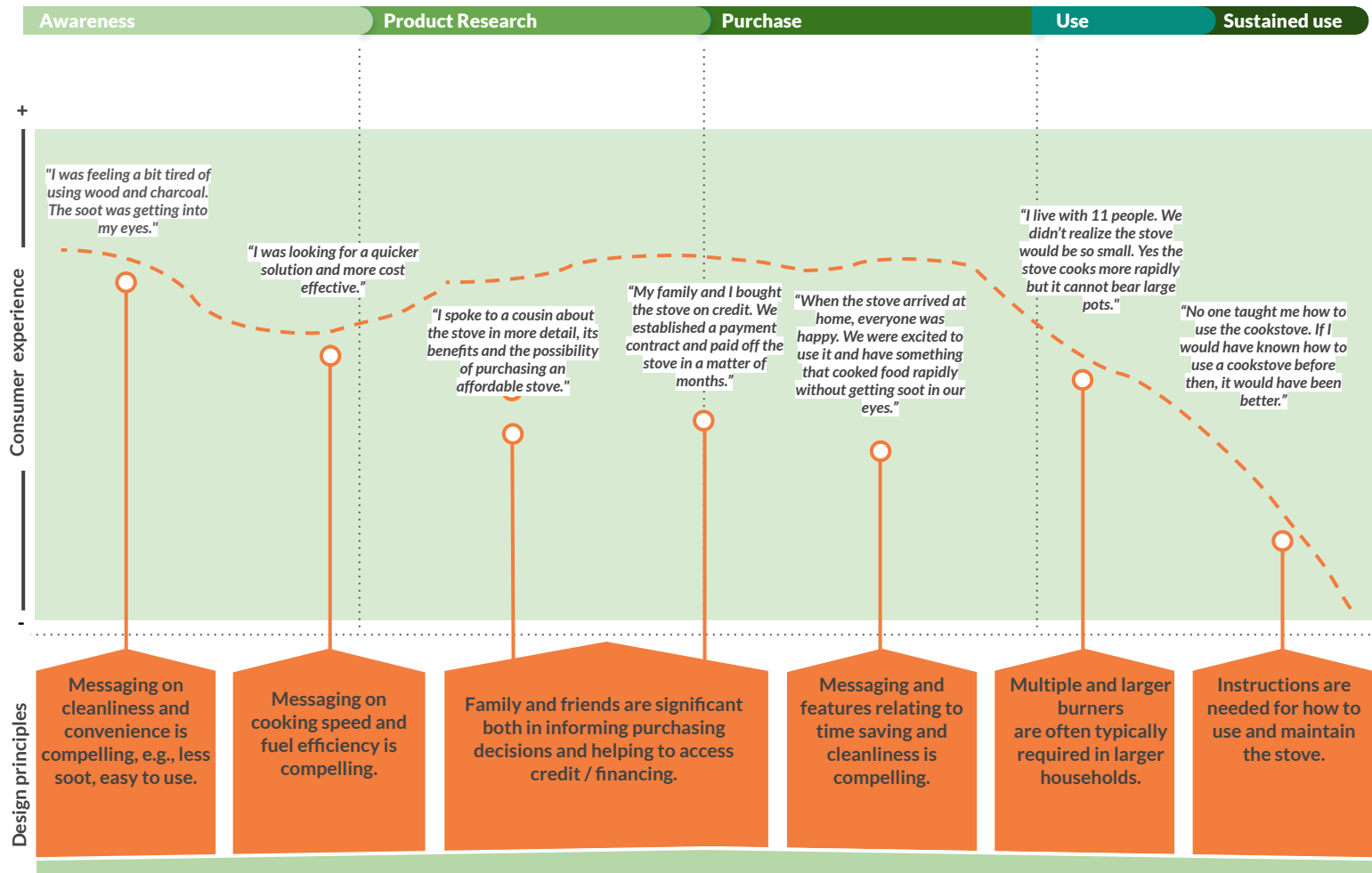
Journey mapping: LPG user

This visualization shows a typical LPG stove user's journey, representative of both *Comfortable Modernists* and *Cautious Upgraders*. It maps the main steps of their journey from awareness to sustained use as well as their emotional response and some representative quotes. We then identified and mapped relevant design principles that could be applied to marketing and distribution models when offering LPG products to *Comfortable Modernists* or *Cautious Upgraders* as well as considered for other segments targeted with LPG.



Journey mapping: basic stove user

This visualization shows a typical **basic stove user's journey**, representative of *Affluent Skeptics*, *Stretched Pragmatists*, and *Fixed Burners*. It maps the main steps of their journey from awareness to sustained use as well as their emotional response and some representative quotes. We then identified and mapped relevant design principles that could be applied when marketing and distributing basic stove products to *Affluent Skeptics*, *Stretched Pragmatists*, and *Fixed Burners*.



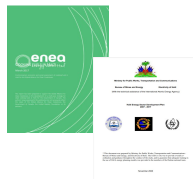
1: Segment 3, 4 & 5 refer to *Affluent Skeptics*, *Stretched Pragmatists* and *Fixed Burners*.

C. Product landscaping methodology

Approach and methodology

We aggregated insights from the HCD research and survey results to identify highest potential product opportunities, and corresponding promotion, distribution channels, and price considerations for each segment

1. Desk Research



Document review on Haiti's energy and clean cooking sectors, previous interventions by CCA and other stakeholders, as well as a detailed review of the survey and HCD research results.

2. Expert interviews



In-depth interviews with industry leaders in the Haitian energy markets to identify potential product opportunities and implementation challenges in the Haitian market.

3. Key feature analysis



Key demographics	HCD Insights	Priority features
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural
• 100% of the population is rural	• 100% of the population is rural	• 100% of the population is rural

Definition and assessment of key cookstoves features across segments based on HCD findings and demographic characteristics.

4. Product opportunities definition



Definition of:

- Key products
- Promotion / messages
- Price / financing schemes
- Place / channels

Both across and specific to each segment.

Analysis of product needs

The definition of the priority features for each segment draw learnings from the survey results and HCD Research focus groups and stakeholder interviews.

	Key demographics	HCD insights	Priority features
1	Comfortable Modernists <ul style="list-style-type: none"> 25% are SES 5 37% have a low savings attitude and 24% borrow from friends/private lender 76% fear LPG explosions 	<ul style="list-style-type: none"> Cooking speed and durability are key criteria when buying a stove. Interested in reducing smoke and soot build up. Supplement with charcoal stoves due to fears of running out of gas. 	Safety Accessibility Efficiency Durability
2	Cautious Upgraders <ul style="list-style-type: none"> 33% are SES 2 48% have a low savings attitude and 19% borrow from banks 83% fear LPG explosions 	<ul style="list-style-type: none"> Ambition to upgrade to larger and more sophisticated stoves. Cleanliness, familiarity and number of burners are key criteria when buying a stove. Limited cash flow to buy more advanced stores. 	Safety Accessibility Efficiency Familiarity
3	Affluent Skeptics <ul style="list-style-type: none"> 34% are SES 5 23% borrow from banks 86% wish to spend less time cooking 	<ul style="list-style-type: none"> Most prefer charcoal stoves due to fear of LPG explosions and concerns about technical challenges using advanced stoves. Prefer to have larger stoves as households are often larger. 	Safety Efficiency Familiarity
4	Stretched Pragmatists <ul style="list-style-type: none"> 37% are SES 1 24% of them access credit from MFIs 85% agree improved stoves are better for Haiti's environment 	<ul style="list-style-type: none"> Cost and number of burners are primary criteria when buying a new stove. Durability is also a key criteria with consumers often looking at materials used for grates. 	Affordability Efficiency Durability
5	Fixed Burners <ul style="list-style-type: none"> 33% are SES 2 87% wish to spend less time cooking Only 25% agree improved stoves are better for Haiti's environment 	<ul style="list-style-type: none"> Cost and number of burners are primary criteria when buying a new stove. Strong interest on improved stoves due to cleanliness reasons. 	Affordability Efficiency Durability

Product opportunities and initiatives mapping

Product opportunities and initiatives are mapped according to complexity of deployment and impact in the Haitian clean cooking market.

