The Price You Pay Without Data

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Nexleaf Analytics is a mission-driven technology company. We work to preserve human life and protect our planet by designing sensors and data analytics.

10 years of proven experience in clean cooking and immunization, and actively engaged in 9 countries across Asia and Africa

with partners and supporters from....
STOVE 1

**UNSUSTAINED ICS ADOPTION OVER TIME**

PERCENTAGE OF HOUSEHOLDS SHOWING ICS USE OVER LAST 60 DAYS

PERCENTAGE OF HOUSEHOLDS SHOWING ADOPTION

DATE

All the waste of scaling to 4K before proving this stove was user-friendly.
Barriers to Impact

- Poor equipment design
- Little/no maintenance
- Limited impact on health
- Inappropriate financing & pricing
Evidence-based Iteration (Stove 2)

**STEP 1**
Ensure only Tier 3+ solutions are deployed to households

**STEP 2**
Prove initial uptake in 10 households through field testing

**STEP 3**
Prove sustained adoption in 100 households through field testing
Evidence-based Iteration (Stove 3)

**STEP 1**
Ensure only Tier 3+ solutions are deployed to households

**STEP 2**
Prove initial uptake in 10 households through field testing

**STEP 3**
Prove sustained adoption in 100 households through field testing
Proven Results (Stove 3)

• Adoption
  • Sensor data showed 100% of households cook on the ICS at least 1 hour per day on average over the most recent 60 days

• Affordability
  • Affordable compared to other stoves tested

• Emissions
  • Tier 3 & Reduces Black Carbon by 78%

• Durability
  • 2 households experienced battery failures and 1 had a stove failure
Next Step (Stove 3)

**STEP 1**
Ensure only Tier 3+ solutions are deployed to households

**STEP 2**
Prove initial uptake in 10 households through field testing

**STEP 3**
Prove sustained adoption in 100 households through field testing
Decline in Cooking Activity

![Graph showing decline in cooking activity from July to January 2019. The total cooking time decreases significantly from July to December, with a slight increase in December. The graph indicates a trend of decreasing cooking activity over the period.]
# The Price you Pay

## PRICES WE PAID WITH DATA + SLOW SCALE UP

- $500/HH for 100 HH (This is just a very rough estimate which includes the cost of off-the-shelf sensor, trainings, installations, data collection and analysis, repairs/aftersales service)
- Time consuming
- Messy and confusing at times
- Less impressive numbers in terms of the households we've reached

## PRICE WE WOULD HAVE PAID WITHOUT DATA

- We wouldn't know where we were failing, and would have scaled up an ineffective solution
- Failing at a large scale is a waste of time, money and resources (stoves)
- Loss of funds needed to repay HHs
- Lack of accuracy with adoption measurement & false sense of accomplishing sustained adoption
- Conducting an expensive health study without proving adoption first (Malawi study)
- Ruined reputation for implementers
- Acquisition of households (lost ability to use those households again)
- **Increased stagnation and skepticism in the sector! Every time an intervention fails, oxygen is sucked out of the industry.**
Evidence-based Implementation Process

**STEP 1**
Ensure only Tier 3+ solutions are deployed to households

**STEP 2**
Prove initial uptake in 10 households through field testing

**STEP 3**
Prove sustained adoption in 100 households through field testing

**STEP 4**
Test air quality in 1000 households

**STEP 5**
Demonstrate health impact and scale data visibility in 10,000 households
## Stove Scorecard: Model X

### Phase 1 Overview

**Stove Model**
- Model X
- Product Description: Dimensions

**Population**
- India: 10 households (average household size of 5), average income $3 USD/day (180 INR/day)

**Duration of Study**
- 3 Months

**Distribution Model**
- Women receive up to a maximum of $6 USD/month (360 INR/month) for using the ICS, based on sensor reports.

**Benefits**
1. Initial adoption rate was very high.
2. Affordable compared to other ICS tested.
3. BC reduction score almost meets target.

**Main Issues Discovered**
1. 2 households experienced battery failures and 1 household reported a stove failure.

### Adoptions

<table>
<thead>
<tr>
<th>Measure</th>
<th>Indicator</th>
<th>Method</th>
<th>Target</th>
<th>Stove Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICS is used regularly</td>
<td>% HH that cook on ICS at least 1 hour per day on average over the most recent 60 days</td>
<td>Sensor</td>
<td>Aspirational: 100% Intermediate: 80%</td>
<td>100%¹</td>
</tr>
<tr>
<td>TCS is no longer used</td>
<td>% disuse of the TCS in the most recent 60 days of data</td>
<td>Sensor</td>
<td>100%</td>
<td>Stove stacking was detected by the sensor data. *Only 5 TCS monitored</td>
</tr>
<tr>
<td>ICS is capable of being used to cook all the household’s meals</td>
<td>% women that find ICS can cook the food the household wants</td>
<td>Survey</td>
<td>&gt;80%</td>
<td>100%²</td>
</tr>
<tr>
<td></td>
<td>% of women that experienced little to no disruption in cooking due to build / durability issues</td>
<td></td>
<td>&gt;80%</td>
<td>70%³</td>
</tr>
<tr>
<td></td>
<td>% of women that find ICS reasonable in fuel requirements (from both cost and convenience perspectives)</td>
<td></td>
<td>&gt;80%</td>
<td>90%⁴</td>
</tr>
<tr>
<td>Reduction in climate and health related emissions compared to regional TCS</td>
<td>Measured BC emissions reduction</td>
<td>Lab</td>
<td>80%</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>Cookstove Tier status (according to ISO standards for Tiered stoves)</td>
<td></td>
<td>Tier 3 + in terms of PM_{2.5} and CO Tier 3 % reduction in PM_{2.5} compared to 3-stone fire: 84%</td>
<td></td>
</tr>
</tbody>
</table>

### Affordability

<table>
<thead>
<tr>
<th>Measure</th>
<th>Stove Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICS cost</td>
<td>$62 USD²</td>
</tr>
<tr>
<td>Cost of acquiring fuel</td>
<td>$0 USD</td>
</tr>
<tr>
<td>Cost of maintenance to women</td>
<td>$0 USD</td>
</tr>
<tr>
<td>Cost of maintenance to Last Mile Entrepreneur</td>
<td>$0 USD</td>
</tr>
</tbody>
</table>

### Durability

<table>
<thead>
<tr>
<th>Measure</th>
<th>Stove Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs for small user / household repairs</td>
<td>&lt;50%⁵</td>
</tr>
<tr>
<td>Last Mile Entrepreneur's perception of ease of maintenance and acquisition of spare parts</td>
<td>100%</td>
</tr>
</tbody>
</table>