Jaagran Detectors: Addressing Indoor Air Pollution (IAP) in Rural India

(Names hidden for privacy) | December 3, 2019

Problem and Unmet Need

Problem: IAP contributes to ~480,000 deaths annually in India

- **66%** of rural population in India cook with biomass fuels

- Exposes user to harmful pollutants that cause respiratory illness

- Women and children are most affected

- Lack of understanding of health hazards associated with IAP

Problem: sustained use of IAP solutions is minimal

- Clean cooking programs have initial success with poor sustained use

  - Subsidized LPG program; improved cookstoves

- Behavior change is a major challenge

- Knowledge gap among end-users

- *Innovation alone is not sufficient*

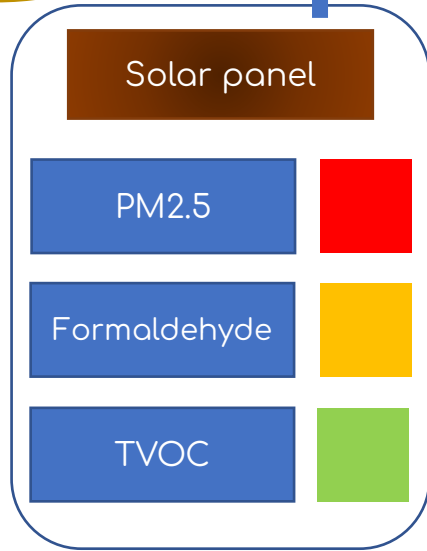# **Need:** education & awareness of IAP

A way to increase awareness of IAP and incentivize alternative cooking options to reduce exposure to IAP in rural, Indian households
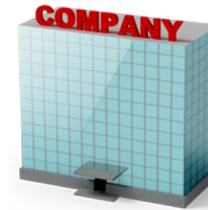
Solution

Jaagran detectors for awareness & incentive

Kitchen wall

Solar panel

PM2.5

Formaldehyde

TVOC

Families

communities

COMPANY

GOVERNMENT

- Alarm when air pollutant concentration almost exceeds standard ('yellow') and exceed standard ('red').
- Send message to APP terminal, record the duration and number of times that exceed standard.

Jaagran detector user interface

Families

Indoor Air pollution level	

10 hours of IAP this month

Better than 20% of local families

Top 3 families that make largest reduction this month! Click to WhatsApp ranking...

Low air quality may cause
lung illness

If you feel bad, report it!

AD: Use clean cooking stove to avoid those disease! Click to…

Community

Duration of IAP in families this month.
1) 1 hours, decrease 10 % (clean cook)
2) 10 hours, increase 20% (x clean cook)

Top 1 family with largest reduction: 1)

Average duration of IAP decrease 10%

Government / research institutions / companies

Average IAP duration in communities this month
1) 0 hours, decrease 10% (10% clean cook)
2) 8 hours, increase 10% (20% clean cook)
3) 2 hours, decrease 30% (50% clean cook)

Average duration of IAP decrease 20%

- Create friendly competitive atmosphere between families

- Health-focused, connect with users

Click the underline:

Family 10 / Community 10
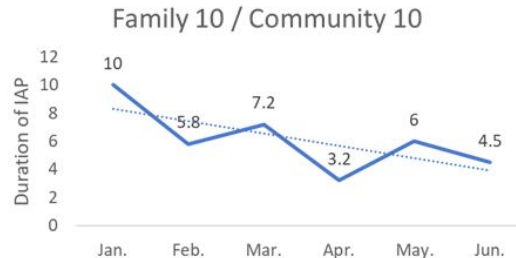
Competition

Nextleaf Analytics: Environment-focused, climate credit payments

StoveTrace sensors detect and upload data on cooking events occuring with clean cookstoves.

Users receive **usage-based deposits** based on reduction in carbon emissions.

Mobile phone app, receive **notification** when receive deposit

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Jaagran Detectors: Health-focused, social incentives via WhatsApp

Jaagran detect, **alarm to remind end-users**, and share data on IAP level in kitchen

Provide manual on detector and info on IAP

Competition: publicize rankings in WhatsApp community groups and reward **largest reduction**

Social reinforcement incentivizes use of cleaner cooking methods

Educate users on IAP via app

End-user mobile phone app, **remind health issue** with high IAP level.

Community, government and research institutions can **track the IAP situation locally**

Unmet Need Validation

Poor sustained adoption without intervention & monitoring

UNSUSTAINED ICS ADOPTION OVER TIME | PERCENTAGE OF HOUSEHOLDS SHOWING ICS USE OVER LAST 60 DAYS

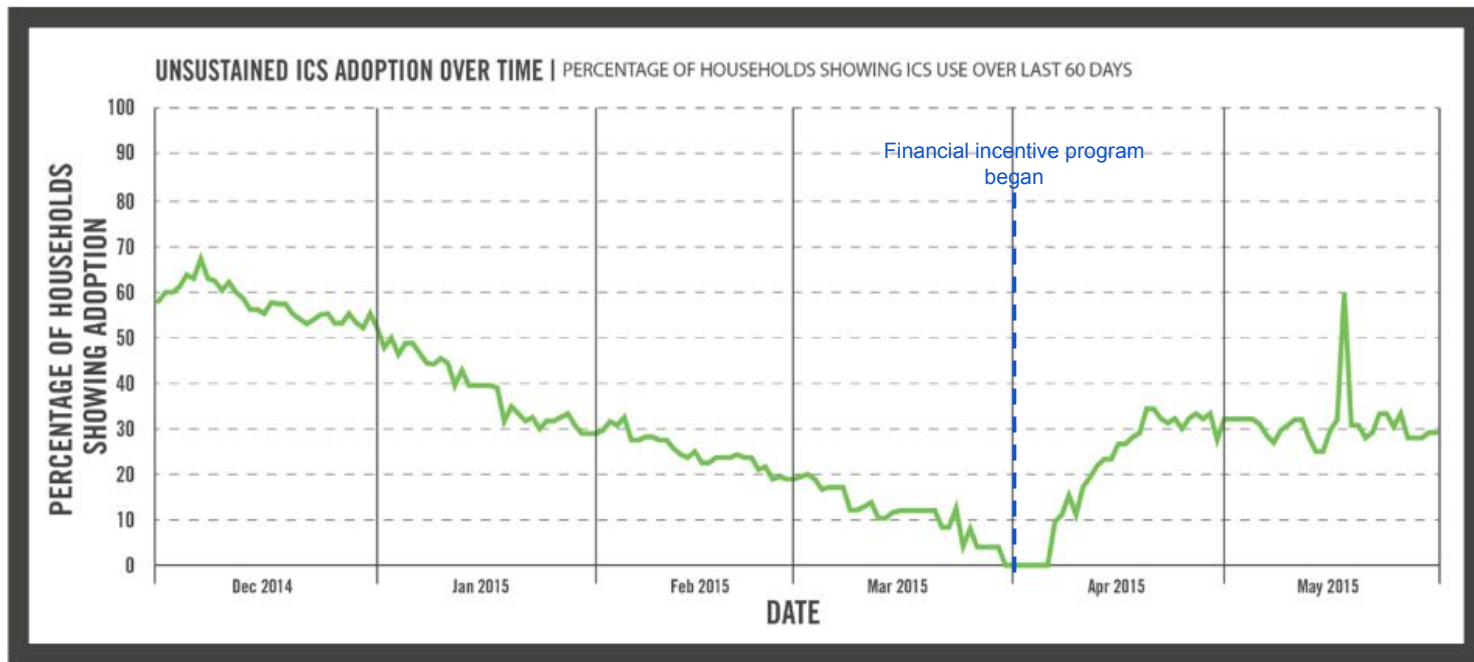Financial incentive program began

FIGURE 1: Unsustained Adoption Over Time

ICS = Improved cookstove.
Source: Nexleaf Analytics and Tata Trusts Joint Learning Series. "Beyond monitoring and evaluation: Tracking improved cookstove adoption continuously and over time to achieve lasting success". Available at: https://nexleaf.org/reports/joint-learning-series/beyond-monitoring-and-evaluation.pdf.

Solution Validation

Sustained adoption with intervention & monitoring

SUSTAINED ICS ADOPTION OVER TIME | PERCENTAGE OF HOUSEHOLDS SHOWING ICS USE OVER LAST 60 DAYS
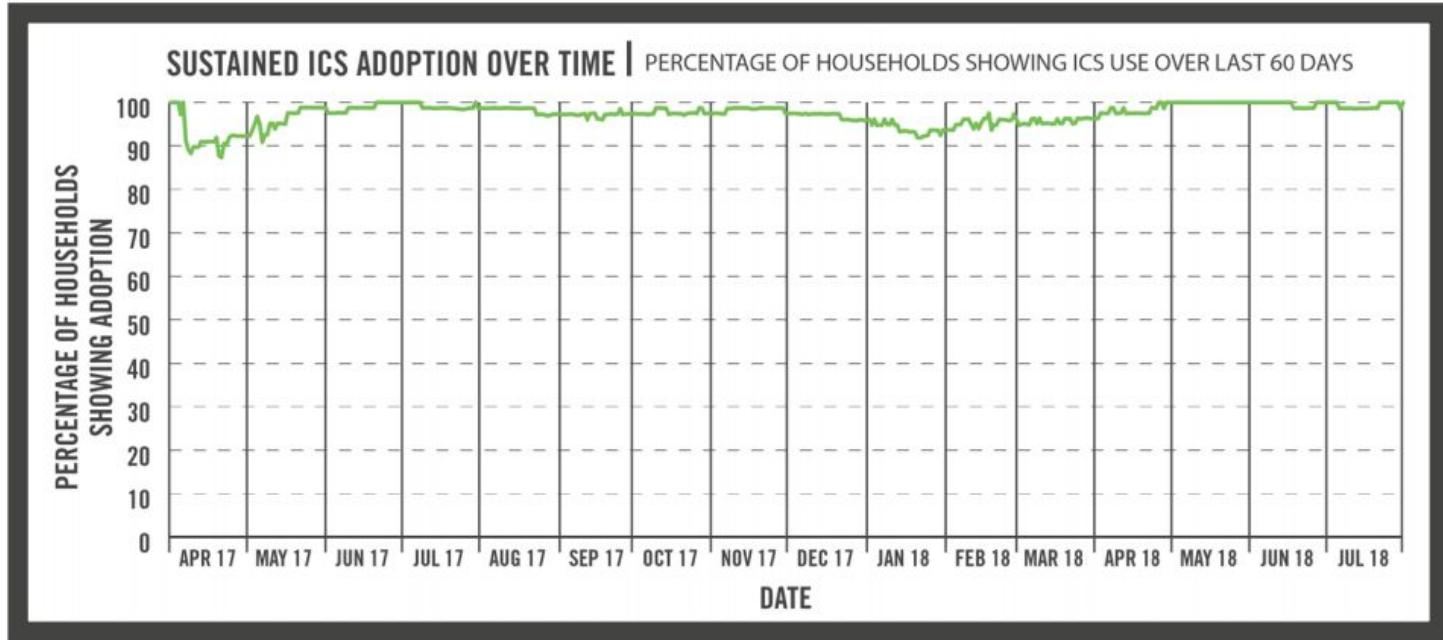
FIGURE 2: Sustained Adoption Over Time

ICS = Improved cookstove.

Source: Nexleaf Analytics and Tata Trusts Joint Learning Series. "Beyond monitoring and evaluation: Tracking improved cookstove adoption continuously and over time to achieve lasting success". Available at: https://nexleaf.org/reports/joint-learning-series/beyond-monitoring-and-evaluation.pdf.

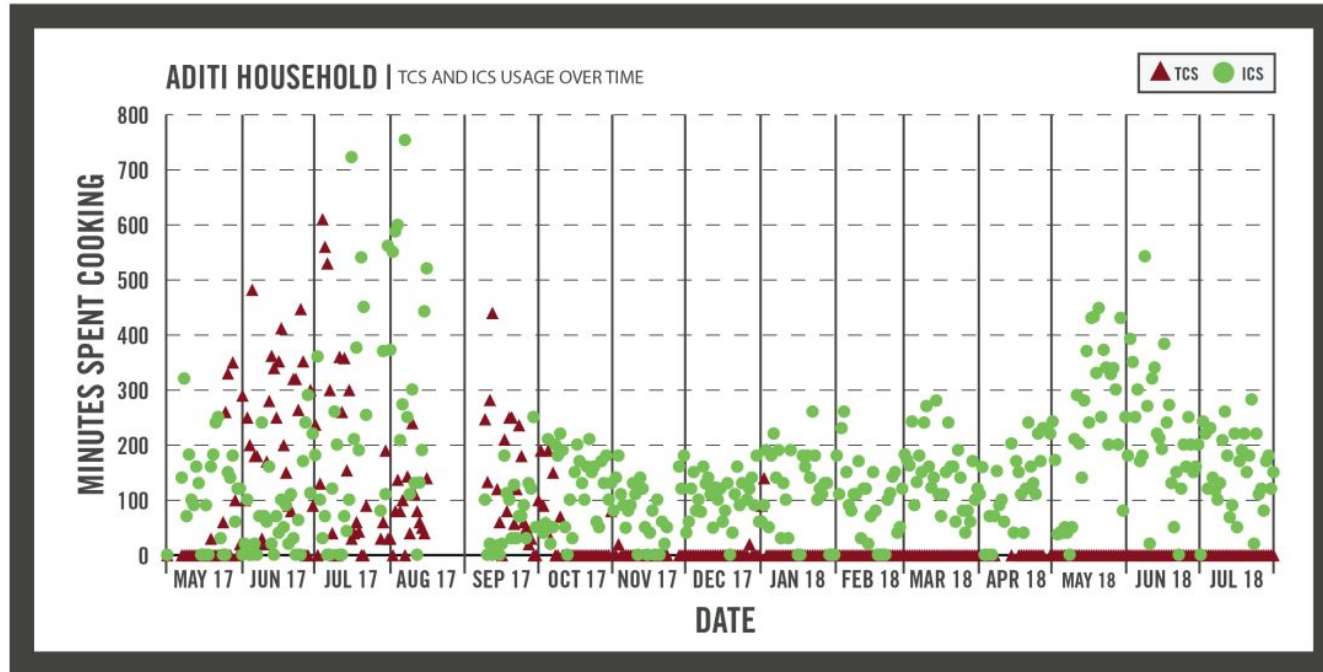# Increased clean cooking with intervention & monitoring

ADITI HOUSEHOLD | TCS AND ICS USAGE OVER TIME

△ TCS ● ICS

FIGURE 5: Aditi Household showing *high ICS usage*.

TCS = Traditional cookstove; ICS = Improved cookstove.
Source: Nexleaf Analytics and Tata Trusts Joint Learning Series. "Beyond monitoring and evaluation: Tracking improved cookstove adoption continuously and over time to achieve lasting success". Available at: https://nexleaf.org/reports/joint-learning-series/beyond-monitoring-and-evaluation.pdf.

Stakeholder Validation

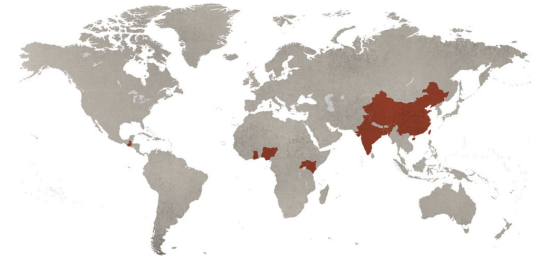# Stakeholders: multiple entities at play in Indian IAP market

User

Influencer

Recommender

Decision Maker

Stakeholders: identifying possible allies

CLEAN COOKING ALLIANCE

- Goal - to make clean cooking accessible for all
- Conducts research and develops technology
- Provides funds

ATAL INCUBATION CENTRE-SANGAM
SUPPORTED BY AIM, NITI AAYOG

- Connect minds, resources, capital to achieve sustainability goals
- Incubator and accelerator based in India
- Supports business plan, market strategy, product development

Value Proposition

Value proposition for central stakeholders

End-users

- Increases awareness of IAP health hazard by 75% in 1 yr

- Reduces IAP-related illness by 20% in 2 yrs post-launch in targeted communities

Government & NGO's

- Sustained use with 75% installed detectors still in use after 2 yrs

- Reduces government spending on IAP-related illness by 10% in 5 yrs
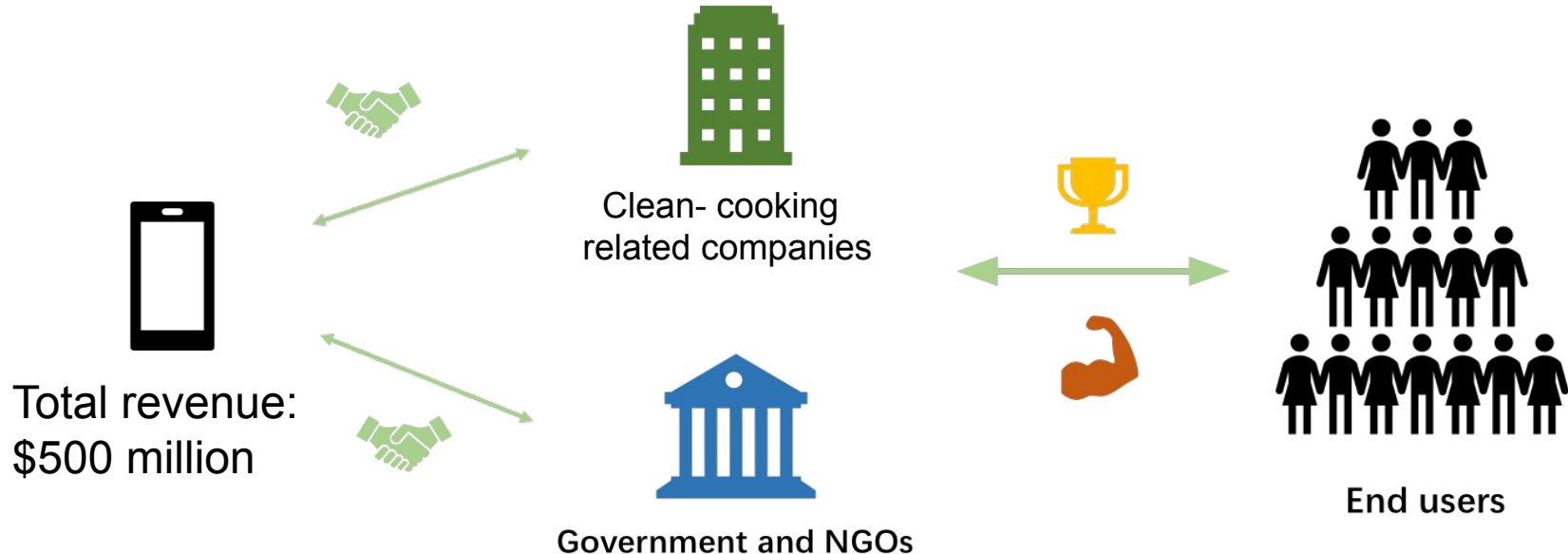
Manufacturers & Distributors

- Increases clean cooking product demand 10% in 2 yrs

- Provides quantified data on local usage and demand for clean cooking

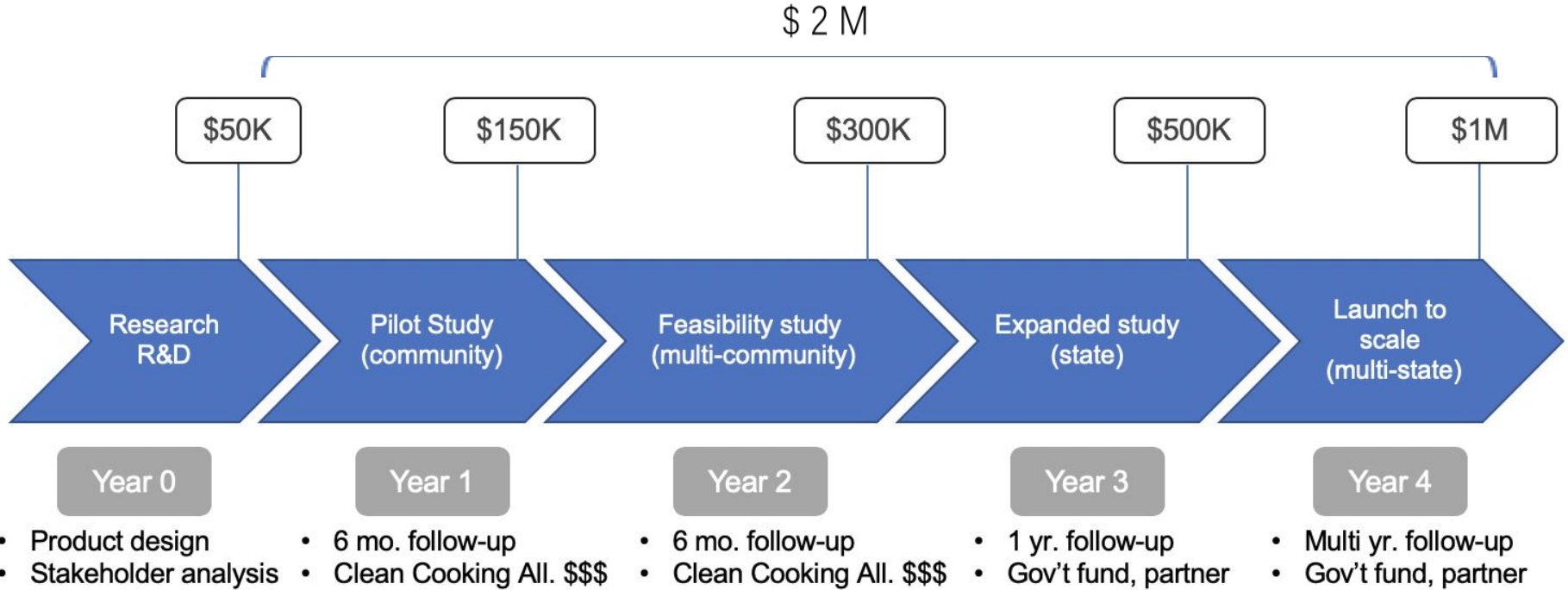Ongoing testing/validation of value propositions through stakeholder interviews

Business model & Path-to-market

Razor and razor blade & Data-driven models

- Detector is accessory item to clean cooking-related item
- Data collected by detectors indicates what end-users need

Total revenue: $500 million

Clean- cooking related companies

Government and NGOs

End users

Path-to-market:

$ 2 M

| $50K | $150K | $300K | $500K | $1M |

| Research R&D | Pilot Study (community) | Feasibility study (multi-community) | Expanded study (state) | Launch to scale (multi-state) |

| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |

- Product design
- Stakeholder analysis

- 6 mo. follow-up
- Clean Cooking All. $$$

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- Clean Cooking All. $$$

- 1 yr. follow-up
- Gov't fund, partner

- Multi yr. follow-up
- Gov't fund, partner

Summary & Call to Action

Identified IAP as a serious problem in rural India

Engaged with stakeholders to define viable solution

Developed a detector to increase awareness, behavior change

Razor blade & data-driven business model

Dedicated team with expertise in public health, engineering

We seek feedback, guidance, funds to launch solution on the ground

Thank You!