Putting **people** at the centre of the design process

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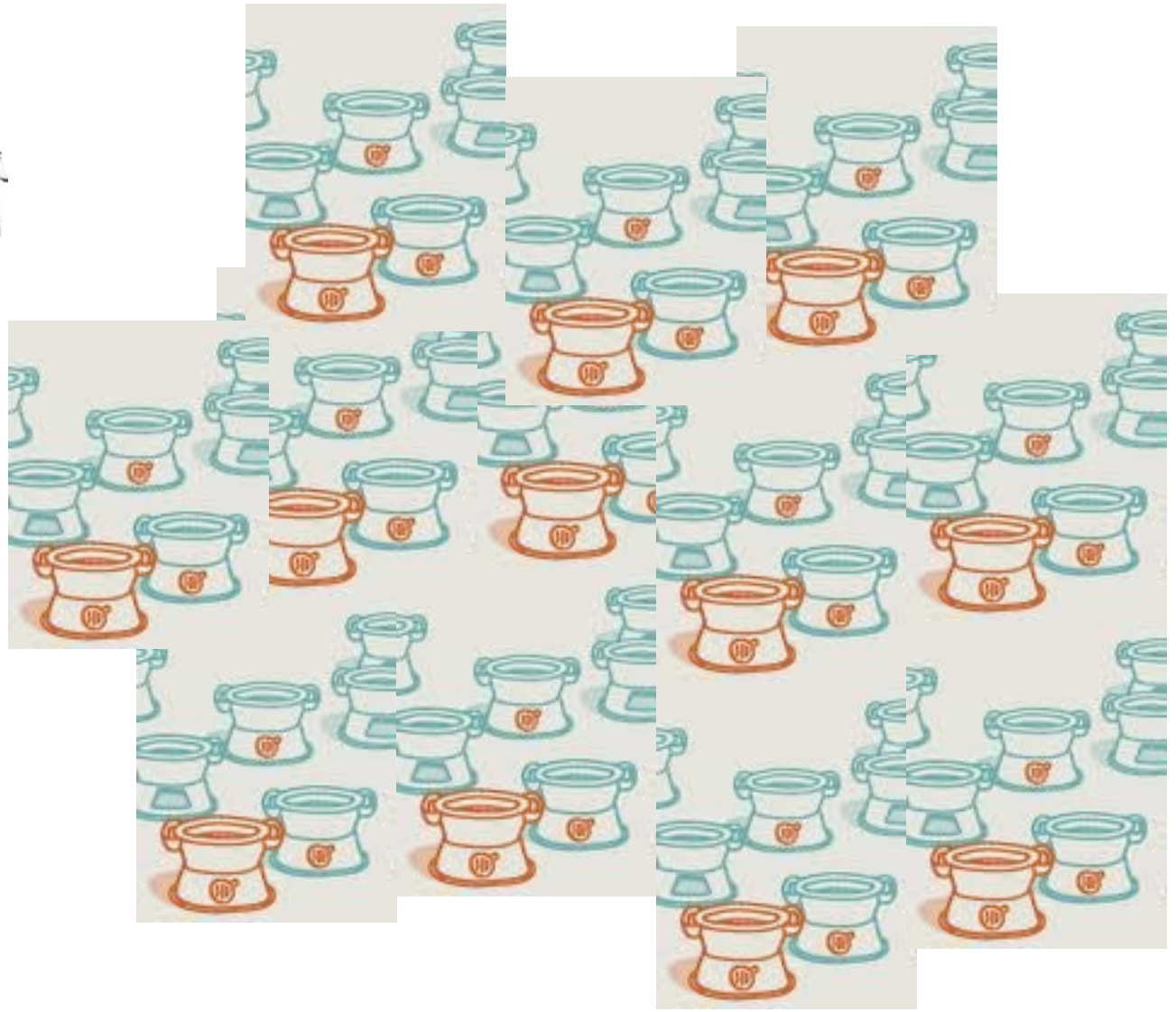
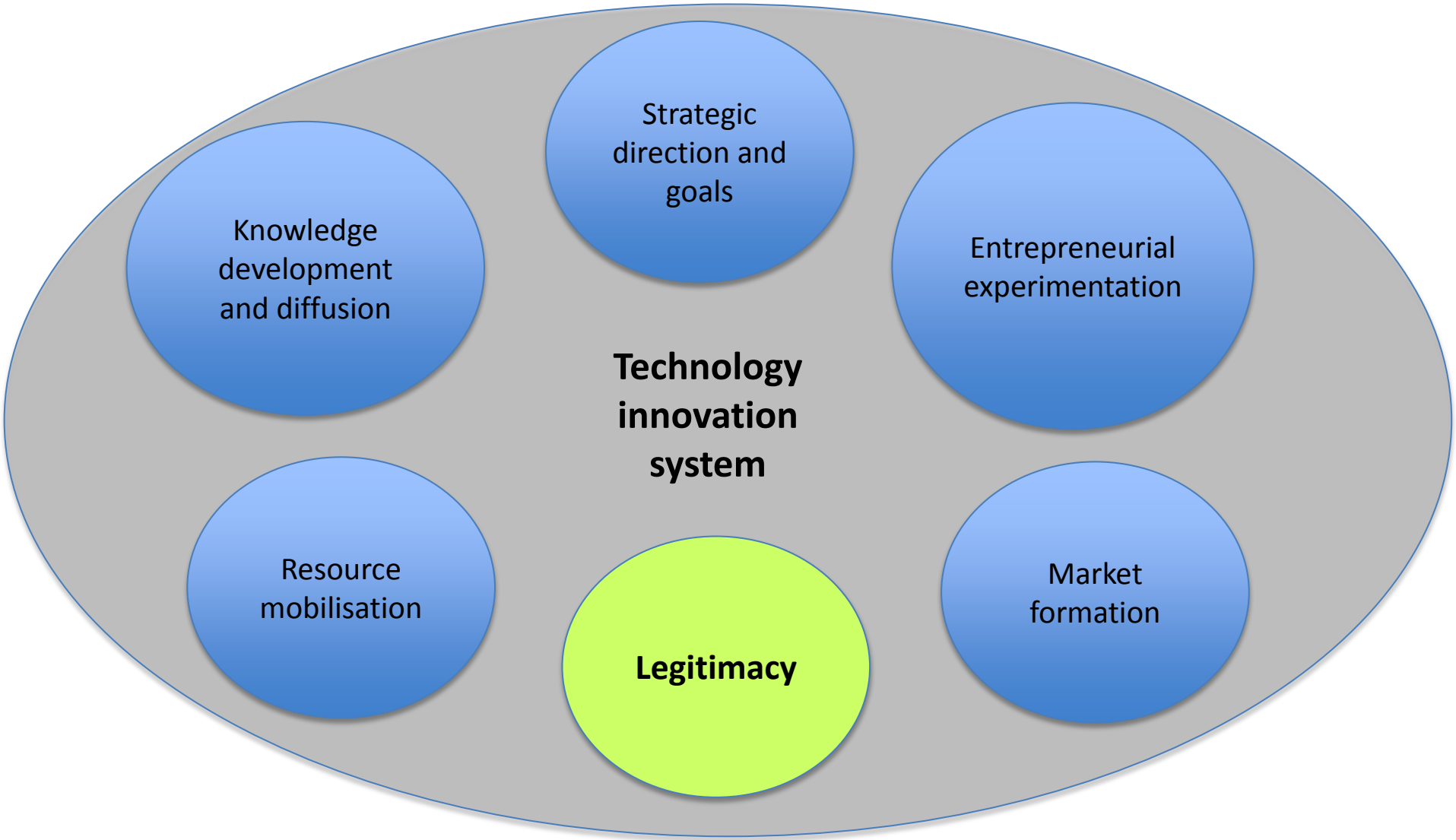
The goal: **market transformation**



Why is a “user-centred” approach important?



Essential system functions to support technology innovation and dissemination (TIS framework: Bergek et al)

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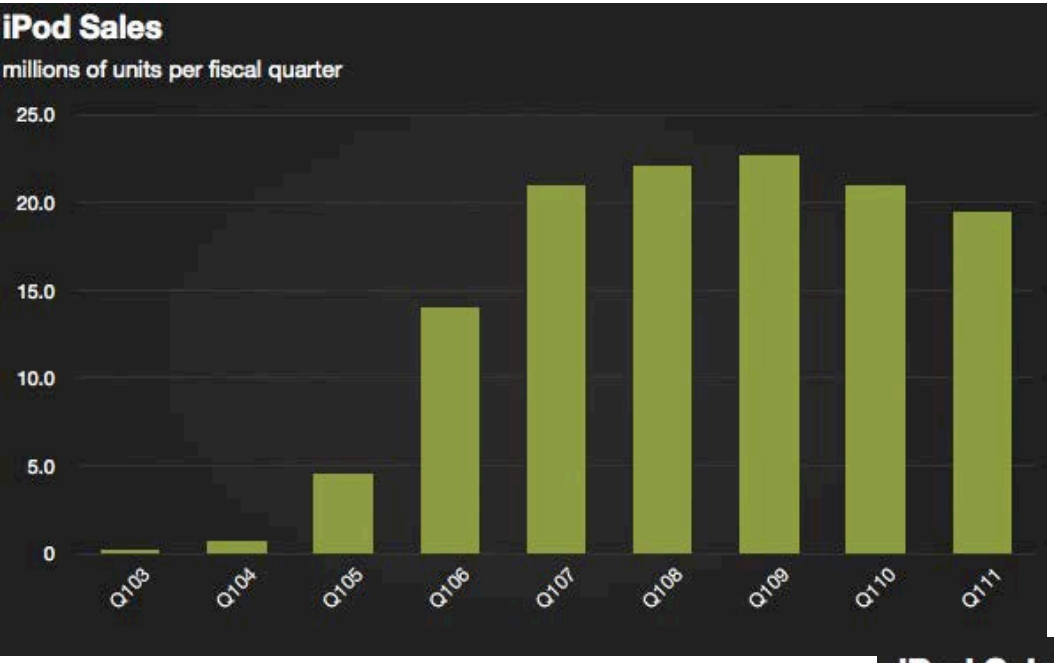
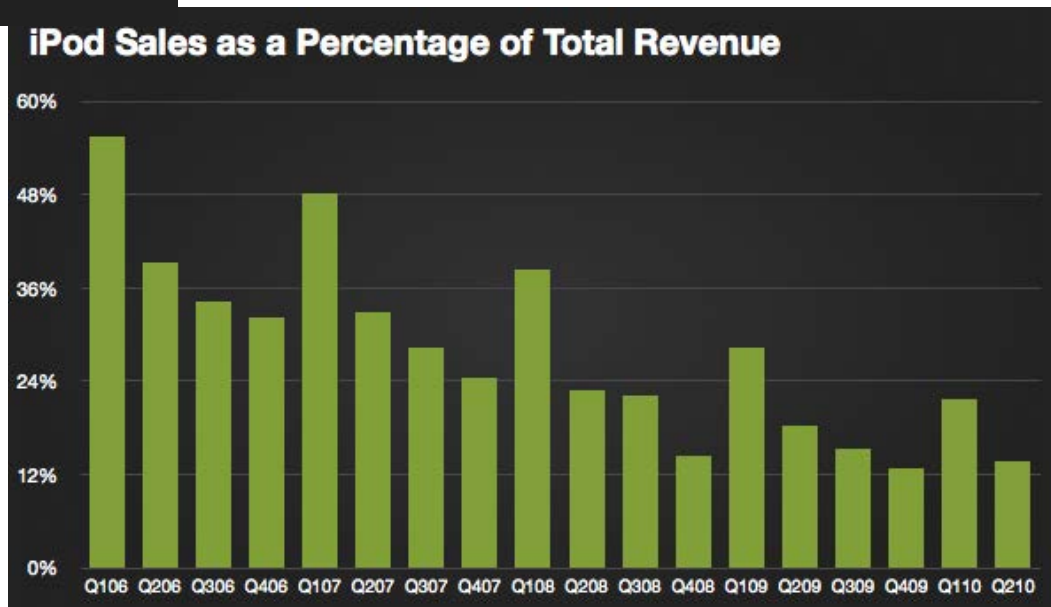


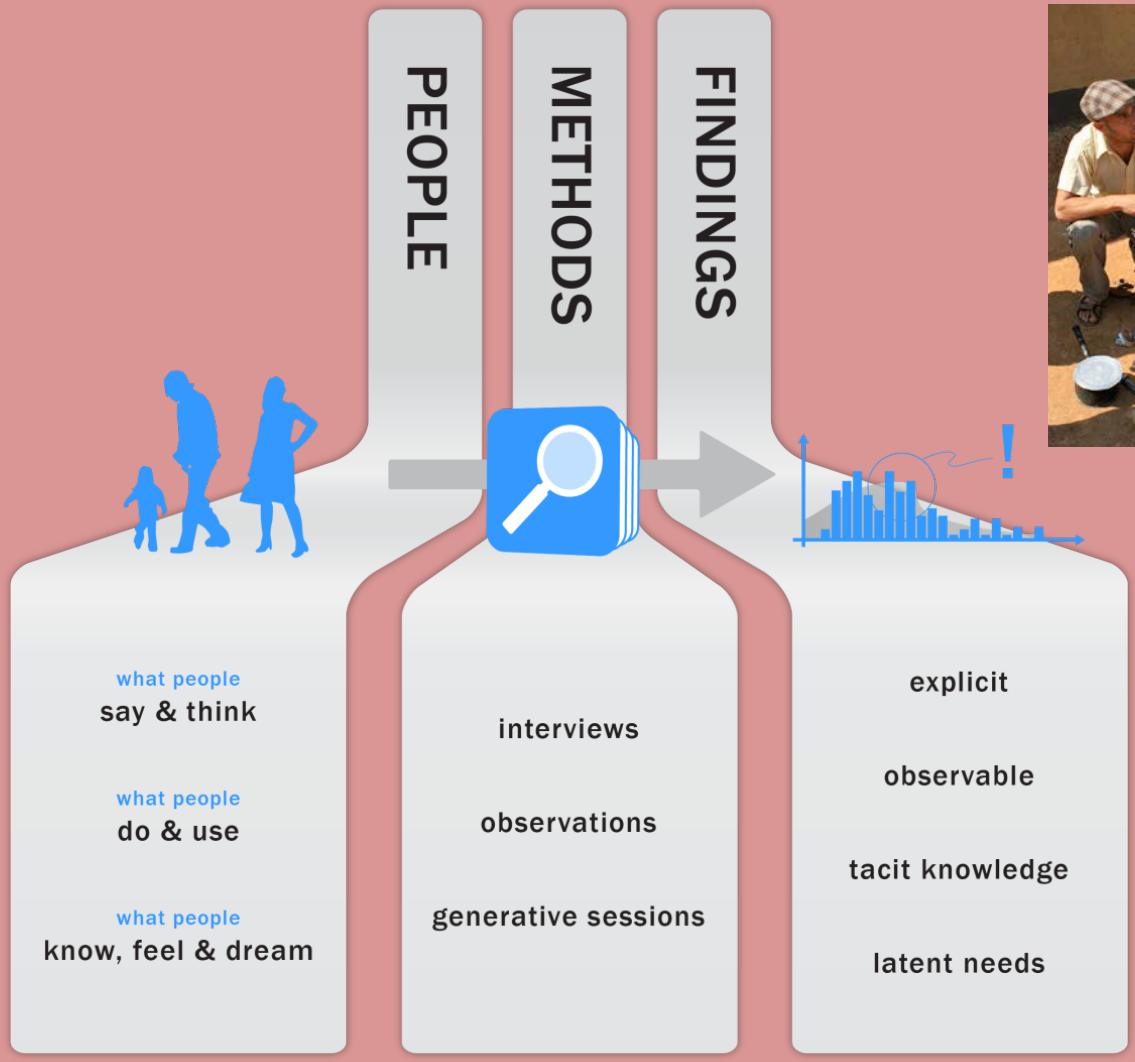
Builds legitimacy for other products… and for innovation (change) in general

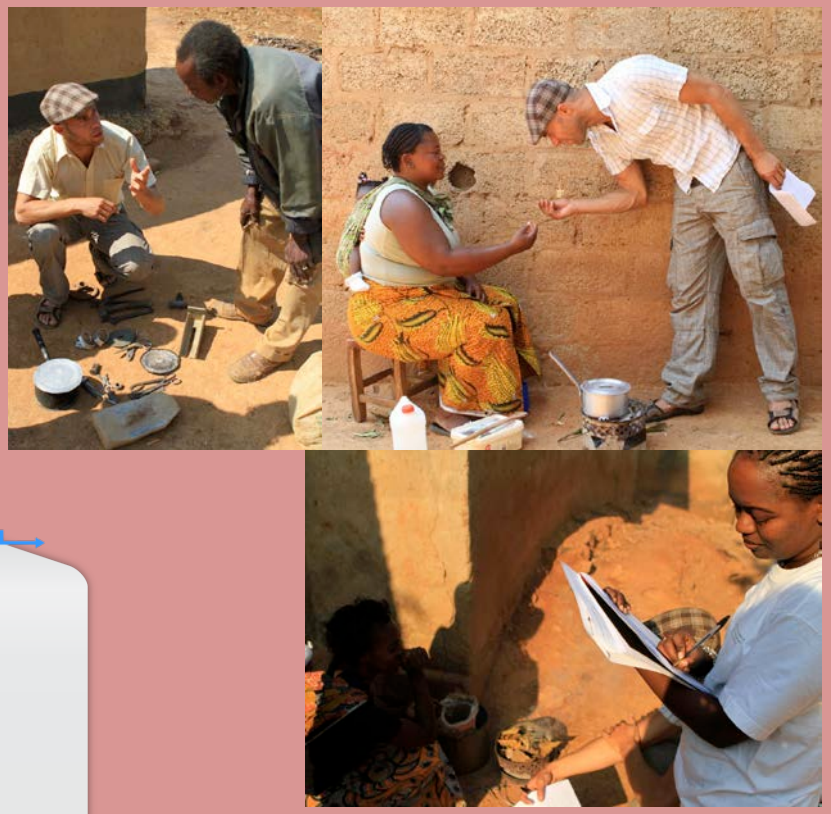


Why is a “user-centred” approach important?

The **household cooking system** is broader than the "user"

What are “user-centred” methods?





Use Sequence

Find/collect kindling

Matches or lighter, twigs, wood chips, paraffin oil, plastic bags, leaves, etc.

Place mbaula

Judge weather conditions
Place in/outdoors
Place in bucket to protect from wind

Fill with charcoal

Adjust amount
Level out charcoal
Split big chunks

Apply kindling

Lift coals and place twigs etc.
Melt plastic

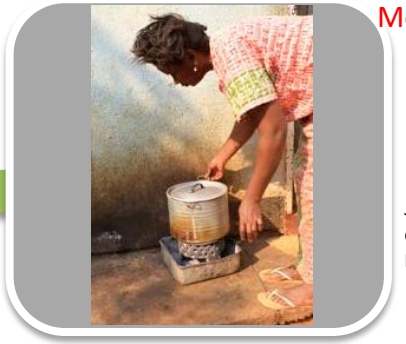
Light charcoal

Using matches and sometimes fluid;
Attend the fire

Wait for mature glow

Poke the charcoal
Await the charcoal turning white

Move mbaula to cooking place

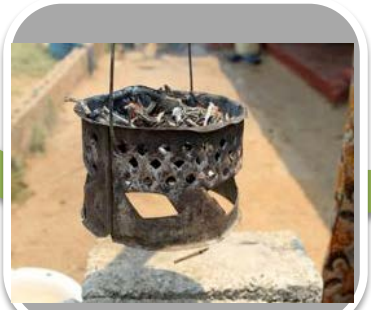


Judge weather conditions
Place in/outdoors

Place pot on mbaula

Cook food and/or heat water

Shake mbaula, add/remove charcoal



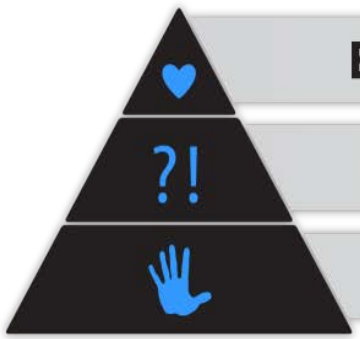
Intensify fire
Sift ash through to base
Use finger or spoon to move coals around

Empty mbaula

Coals are saved
Ashes are disposed of

Store mbaula

How people relate to cooking and energy practices



Satisfied with the mbaula ("always had it"), and it cannot be improved.

A stove must look like an mbaula to be trusted.

Any claims of more efficient fuel use by a new stove would need to be tested, to be believed.

Don't like that the fuel finishes so quickly.

Choosing an mbaula

Round shape. Prefers round to the alternatives (square and rectangular ones).

Big holes. Wouldn't use a mbaula without holes because then it will not be a mbaula. It needs holes for air to come through, to burn the charcoal. Big holes are better. Small holes are not good, charcoal doesn't burn as well.

Heavy weight. The heavier the mbaula, the longer it lasts.

Strong middle tray. The most important part to check (the piece that holds the charcoal).

Not painted. Some mbaulas are painted on the outside, wouldn't buy a painted one.

Using the mbaula

Smaller mbaula uses less fuel, therefore use it more often (when they have more than one).

Use indoors creates health problems, fumes from the charcoal give headaches and heart pains.

Improving the mbaula

It is **not possible to make a more efficient mbaula**. Cannot identify any way to make the mbaula better.

Knows of a different mbaula with a clay liner, it is **faster to cook with** but very expensive.

Users modify certain components or features:

Most women place the stove in a metal bucket to reduce the effects of wind on fuel consumption, and sometimes to reduce ash spreading and/or prevent floor damage (when inside).

One woman uses a steel pipe to create a vacuum over the charcoal/kindling during lighting of the stove, it helps to ignite the coals.

All women use the stove outdoors even though most expressed a preference for cooking indoors.

From "Transforming household energy practices among charcoal users in Lusaka, Zambia: A user-centred approach to understanding constraints and opportunities for change" (SEI, 2013)

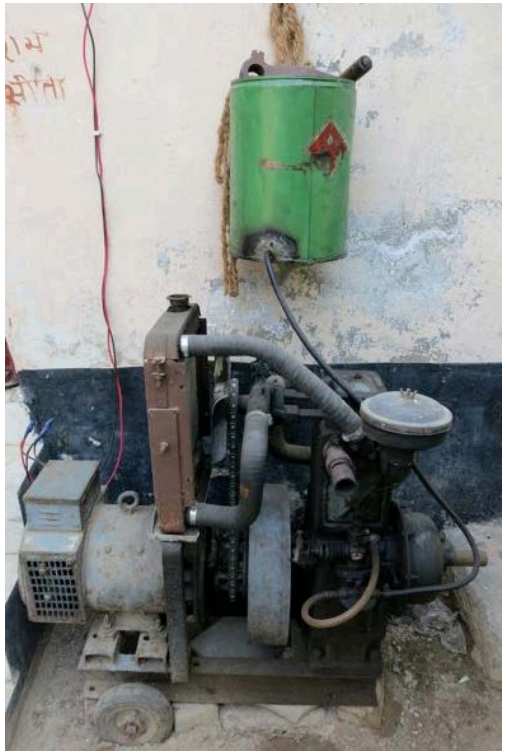
Tacit information

e.g. How users have innovated to deal with problems they experience






Observe actual expenditure behaviour



Special needs such as particular foods

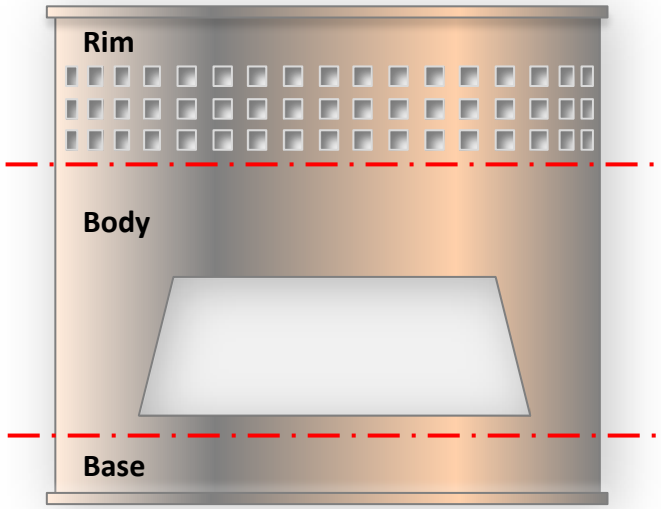
Fuel use preferences

How can we use these to design cleaner stoves and fuels?

Task analysis – sequence of cooking process and decisions

Ergonomic factors – physical, cognitive and emotional relations to the existing stove/practices

Blueprint for an improved cookstove



Financial aspects – fiscal capacity, willingness to pay, cash flow matched to payment options

Manufacturing considerations – the technical capacity of tinsmiths (tools, skills, access to raw materials and their costs), incentives for producing new models of stove

Fuel supply – availability and reliability

Design platform for improved household stoves

Simple assessment of approved stoves in India against user needs and desires

Technical Parameters	Vikram	Harsha	Philips	Oorja
				
Must be able to use multiple fuels, or to regulate the heat	✓	✓	Prepared fuelwood only	Can be regulated
Must be able to burn currently available fuels	✓	✓	Prepared fuelwood only	✖
Must reduce smoke	✓	✓	✓	✓
Must save fuel	✓	✓	✓	✓
Should have a large enough chamber to fit roti	✓	✓	✖	✖
Should be portable	✓	✓	✓	✓
Should be safe to leave unattended	✓	✓	?	✖
Preferably not require fuel preparation / specialised fuel	✓	✓	✖	✖
Should resemble a chulha	✓	✓	✖	✖
Preferably not metal	✖	✖	✖	✖

From “Putting the Cook Before the Stove: a User-Centred Approach to Understanding Household Energy Decision-Making – A Case Study of Haryana State, Northern India ” (SEI, 2012)

Some general insights from SEI's work

- **The "need" for financial subsidies is often assumed**

  …. but in reality, a large portion of biomass users probably do have capacity to pay more for stoves.

- **Traditional stoves/practices are usually appreciated and make sense in their context, even though they do have failings**

  … therefore need to understand what would motivate a change among users.

- **The role of aspiration in creating a "real product" category.**

  … frame clean stoves in these terms, rather than just "problem solving"

Workshop discussion questions

What are research gaps around understanding the factors that impact usage and adoption? = **What do we need to know about people's needs and their decision making?**	Context-specific, therefore need research in each location (no generic "results") Should produce information about not only explicit but also tacit, latent needs
What are areas for harmonization for identifying best and standardized practices for evaluating usage and behavior? = **How can we understand people's needs and their decision making**	Develop/apply methods for producing the "insights" about users that should form the basis of stove and program design
How can we ensure widespread use of best and standardized practices for evaluating usage and behavior and informing cookstoves programs and entrepreneurs? = **How can we encourage stove developers/funders to ensure they understand the market before they design a cleaner stove and a business model?**	Make better use of disciplines that have expertise in understanding people/users International standards for cookstoves relate to emissions performance; publicly funded programs should also consider "useability" metrics, to assess whether a stove is well designed from the user's perspective. The programs and practitioners should be the ones doing this research, since it should to feed into the design of the product and the business model.