

Faculty of Design

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Case study: Using a systems design model to bring clean drinking water to rural and slum communities in India

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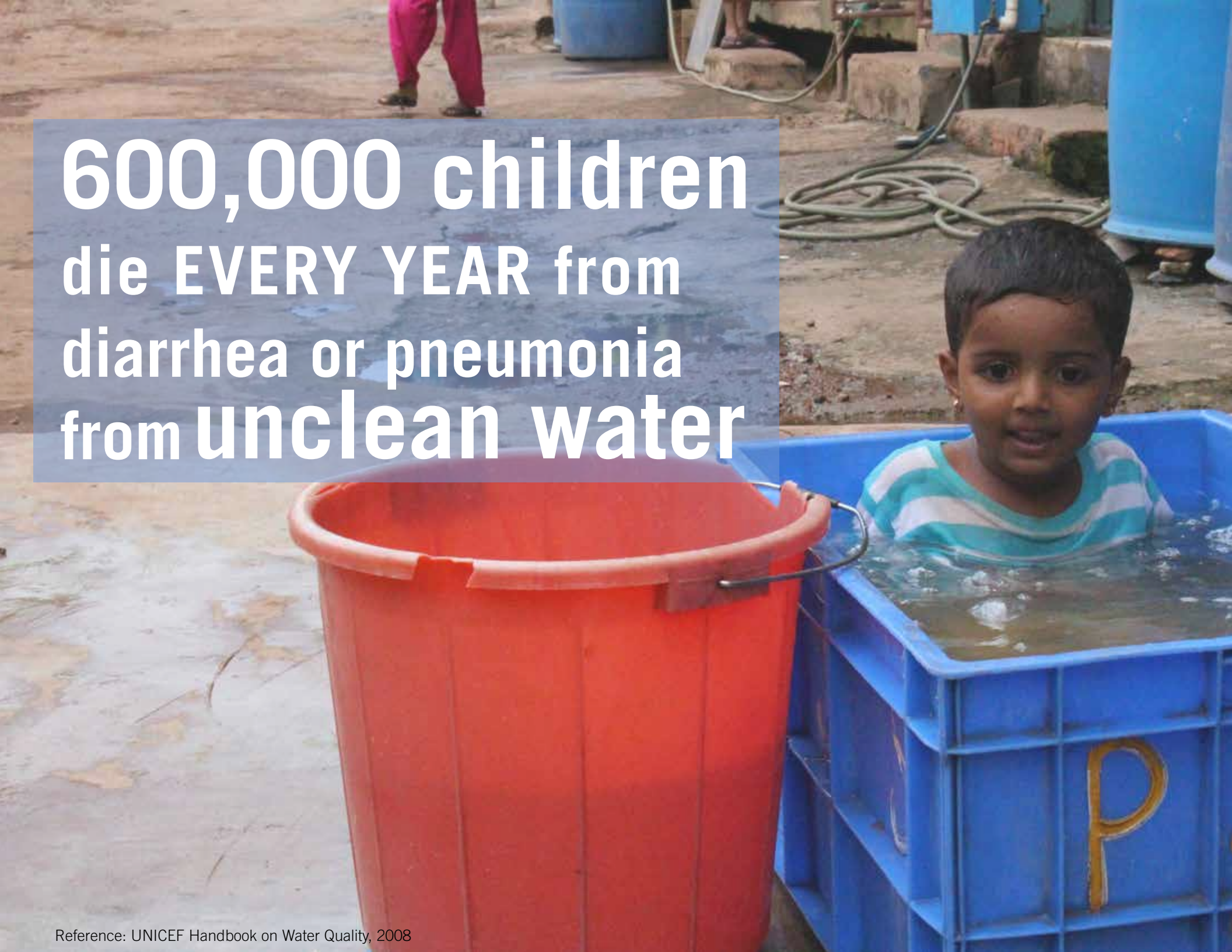
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Case Study: Using a Systems Design Model to Bring Clean Drinking Water to Rural and Slum Communities in India

Relating Systems Thinking and Design Symposium (RSD5)
October 15, 2016

Sarah Trantum, OCAD University/TrickleUp Design Inc. Toronto, Canada



**600,000 children
die EVERY YEAR from
diarrhea or pneumonia
from **unclean water****



Examples of water cleaning solutions available



FIT

SCALE

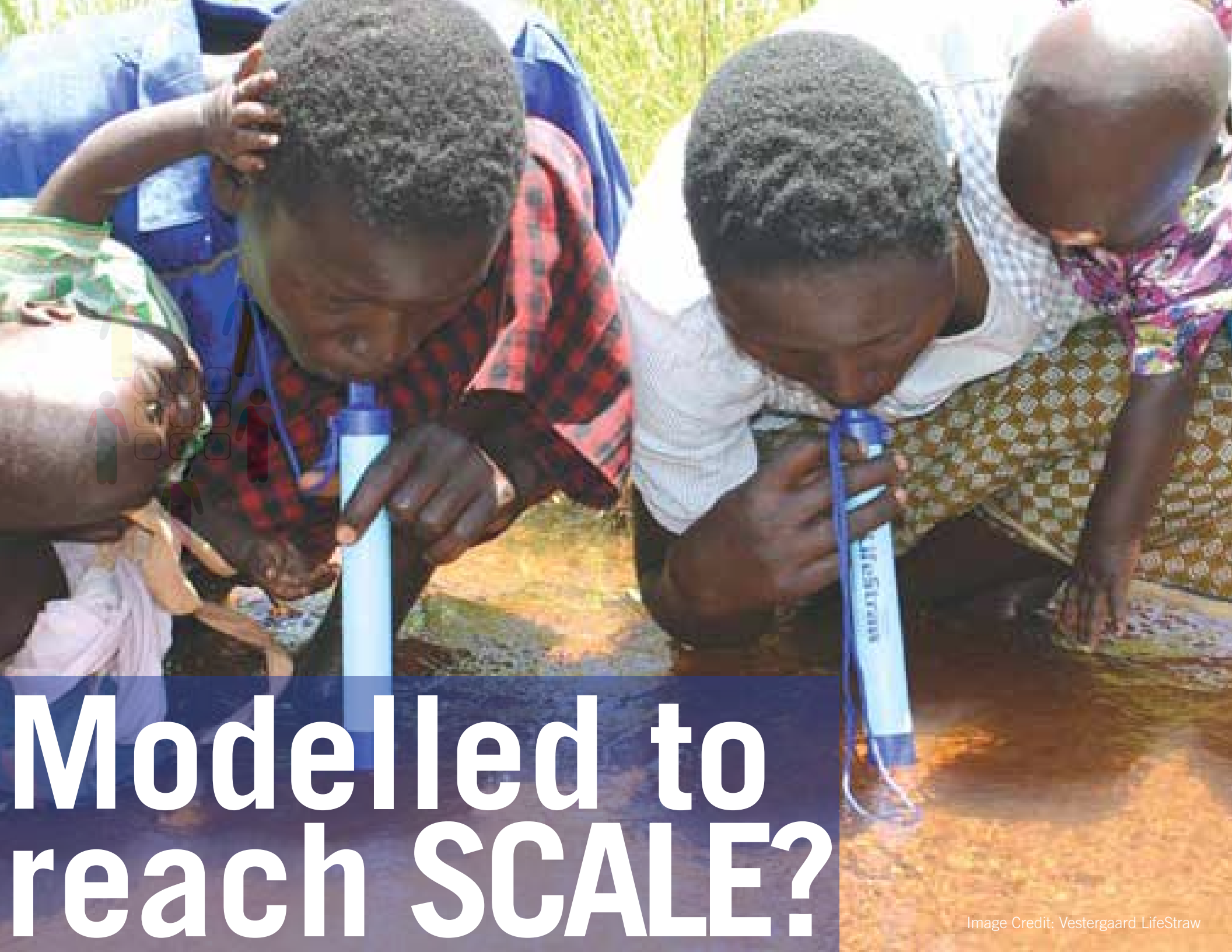
SUSTAINABILITY

Affordable?



FIT
with
REALITIES and
OPPORTUNITIES?



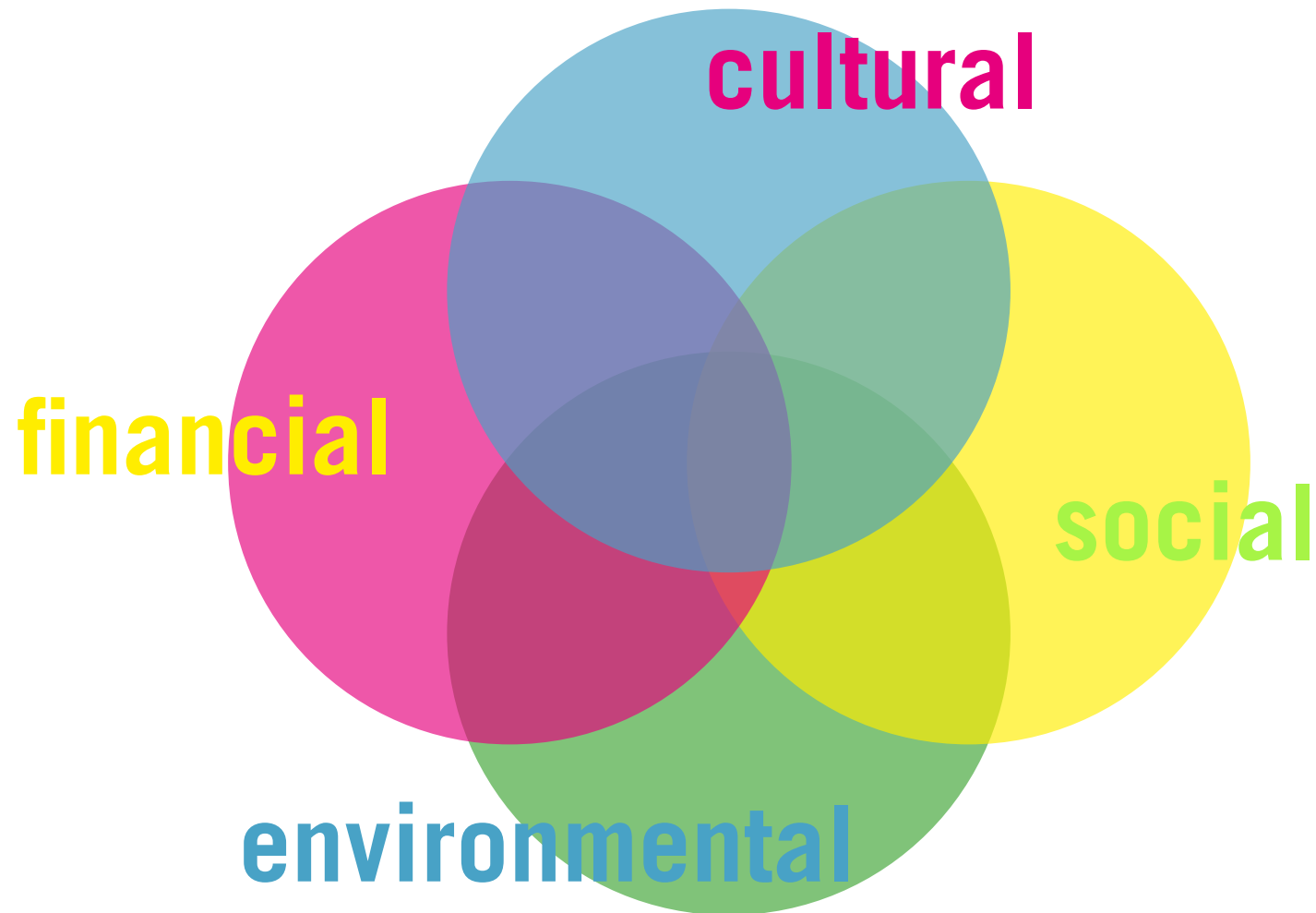


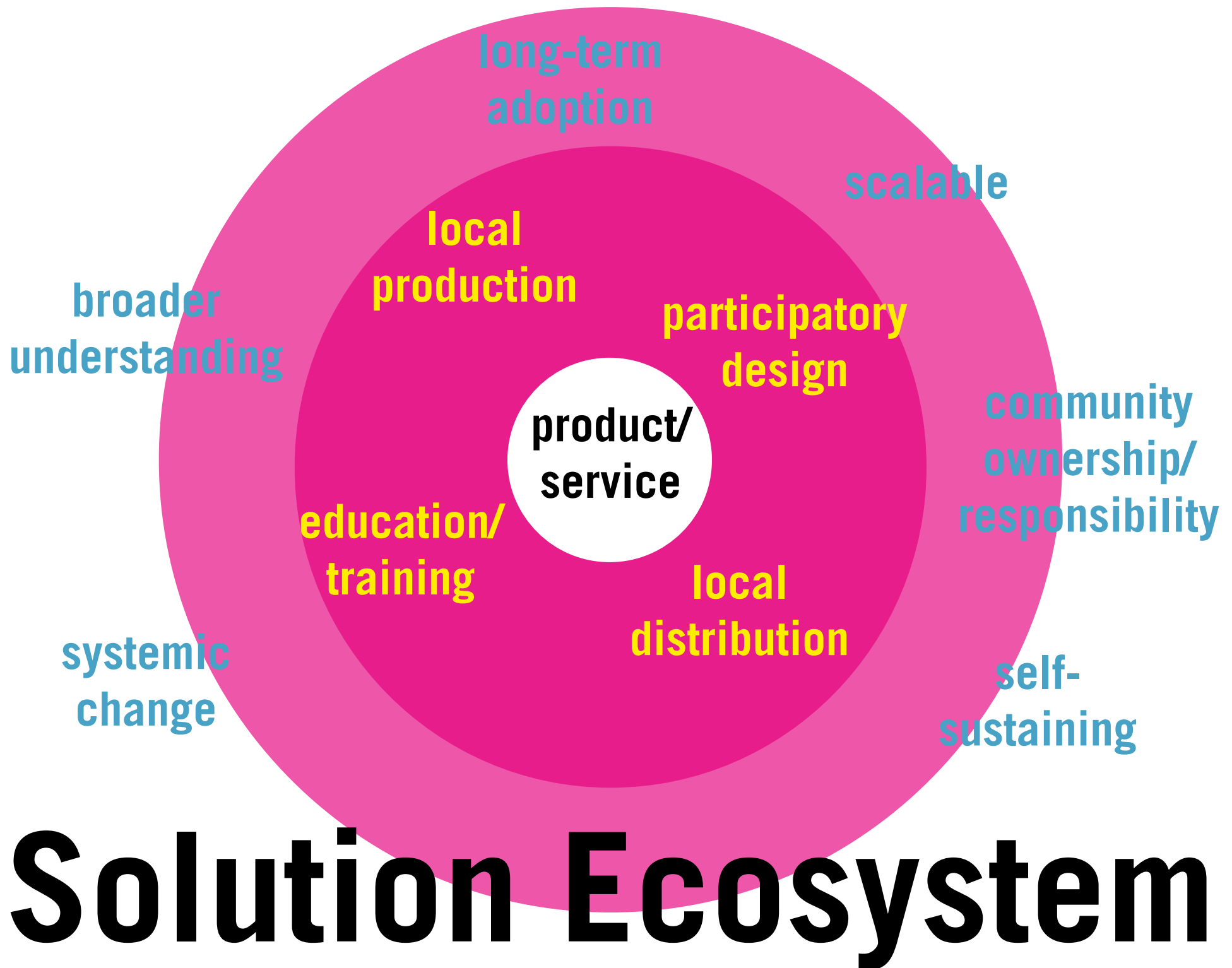
Modelled to reach SCALE?

Image Credit: Vestergaard LifeStraw

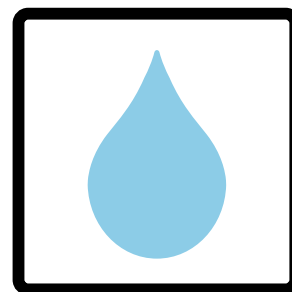


Sustainable?





CleanCube





Project supported by:

Grand Challenges Canada®
Grands Défis Canada

Pilot Community South Goa



A healthcare worker in a white lab coat and white gloves is examining the arm of a woman wearing a yellow sari. The woman has a bindi on her forehead and is looking towards the healthcare worker. In the background, several children are visible, some wearing red shirts. The scene appears to be a community health check-up or a clinic setting. A semi-transparent red box with white text is overlaid on the left side of the image.

Connecting health, water, sanitation, hygiene, & economics





WOMEN & WATER interconnected



WATER & WASTE interconnected







WATER
storage is **KEY**

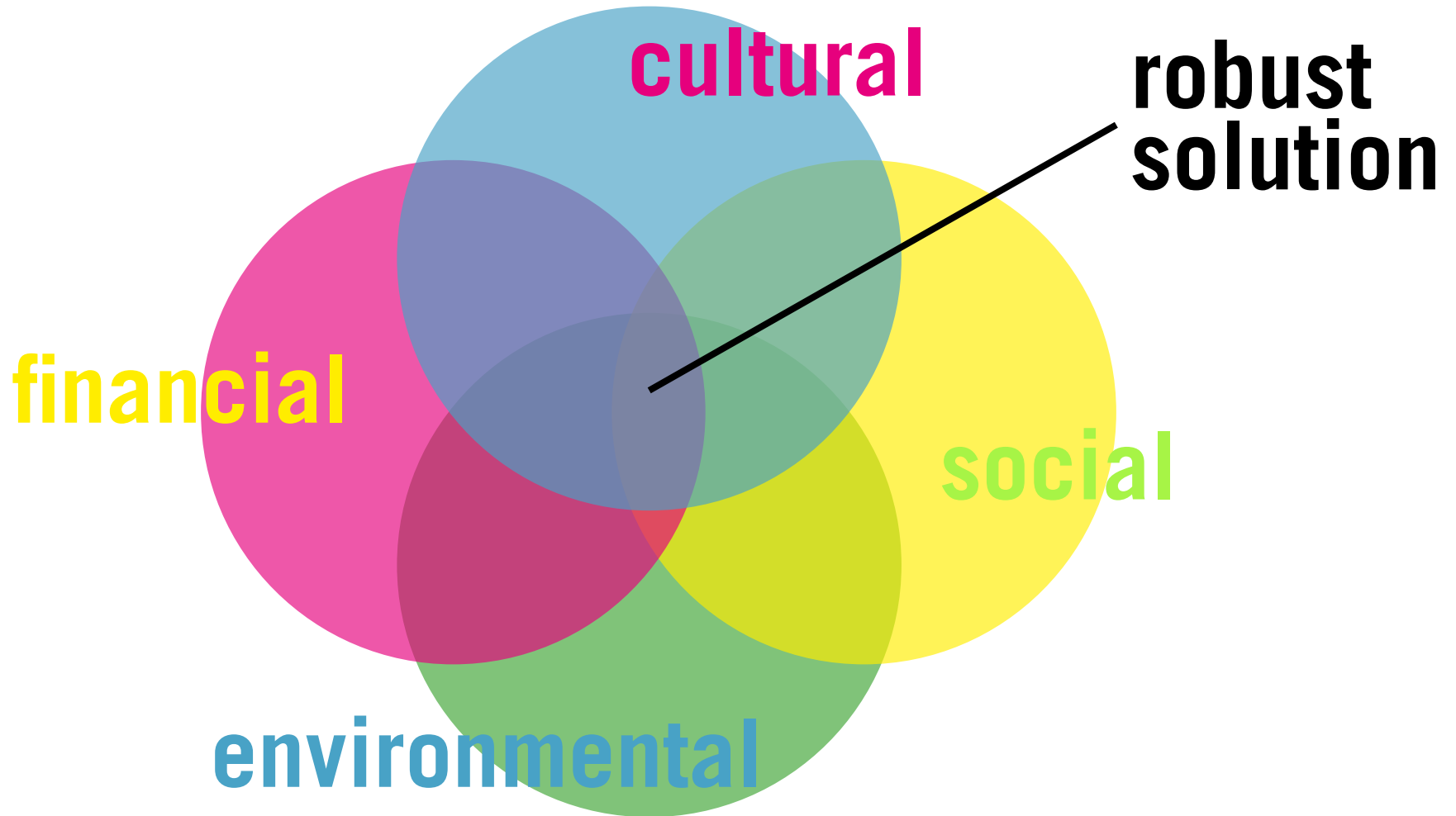


**Especially
Drinking
WATER**

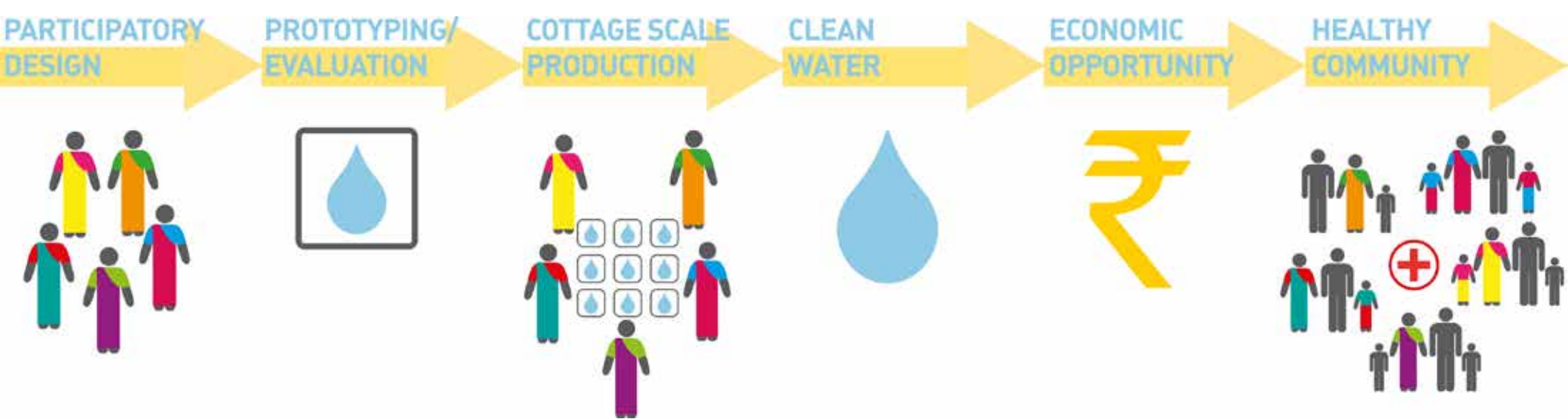
INTUITIVE Practices



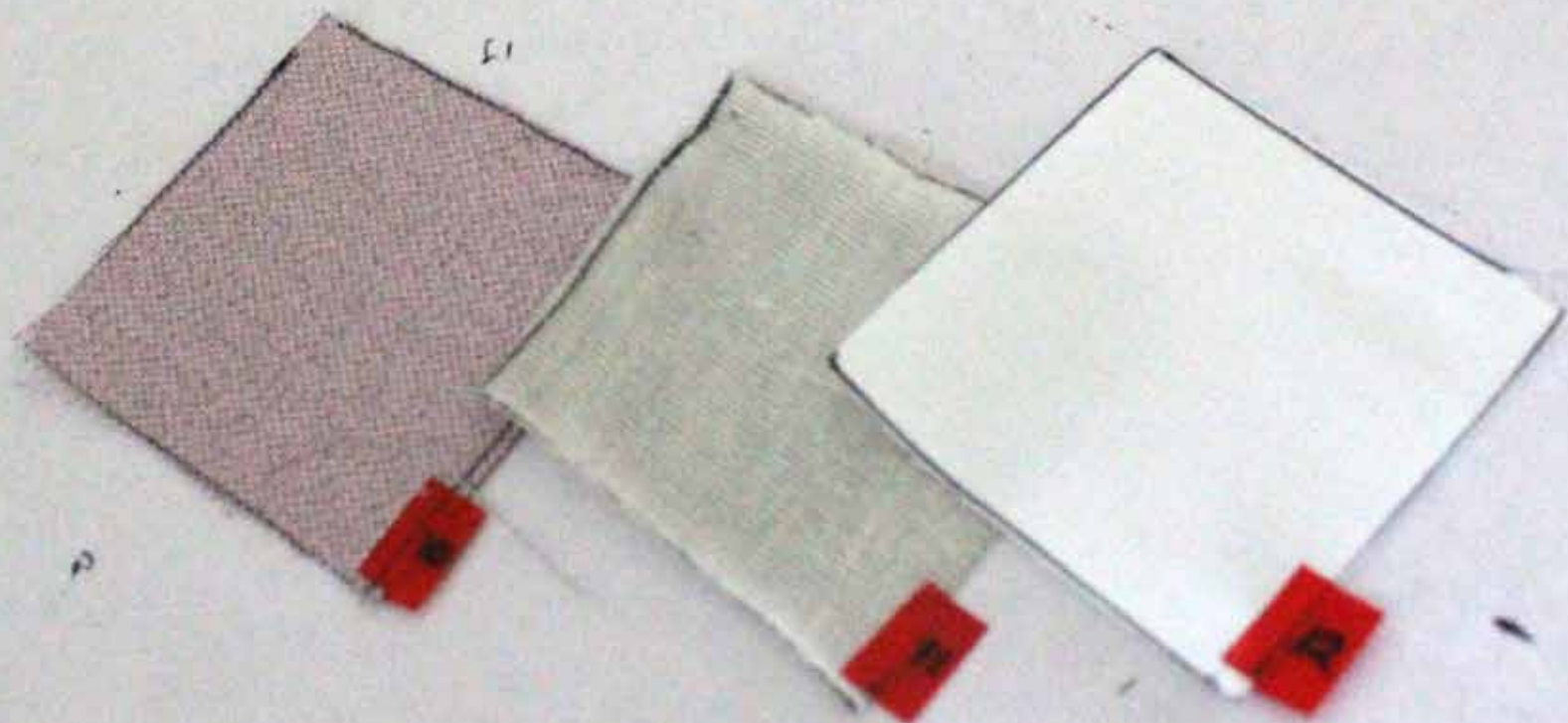
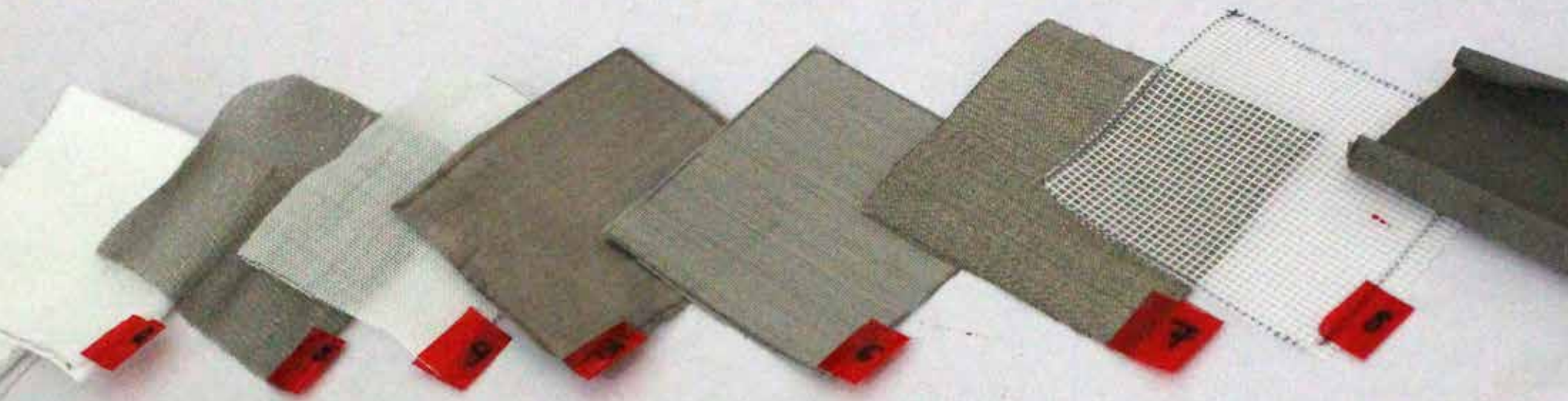
Sustainable



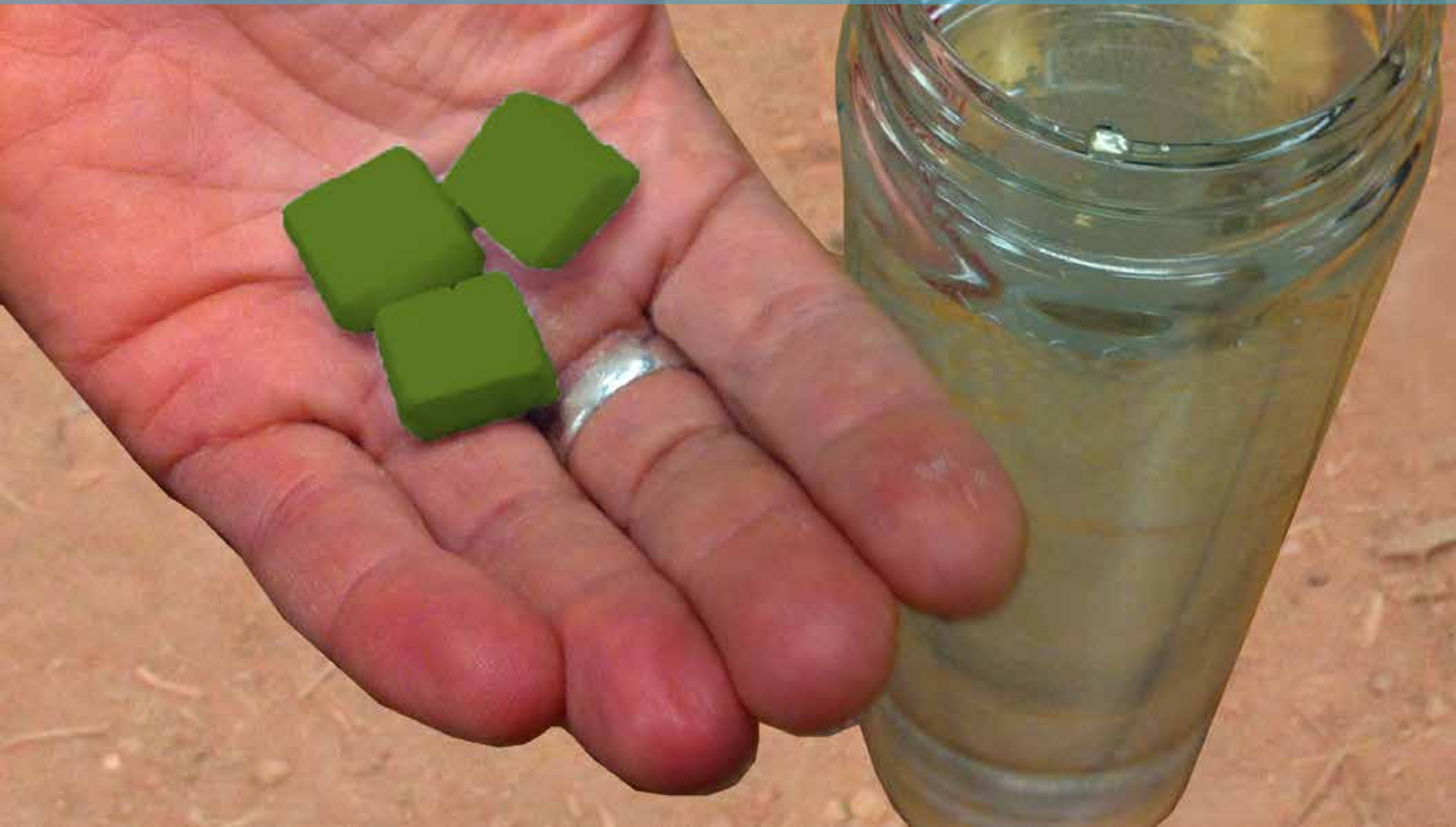
CleanCube PROCESS

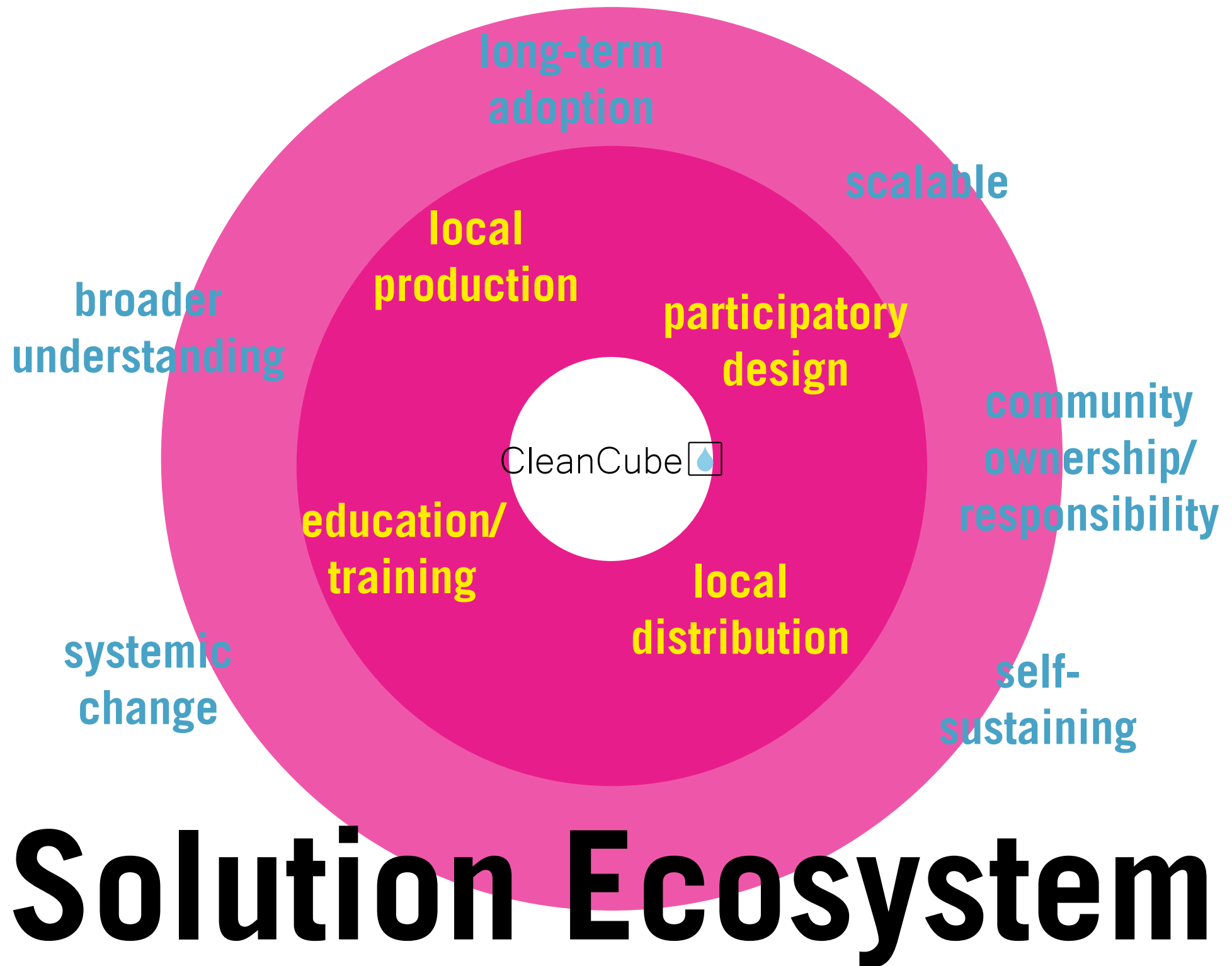






CleanCube prototype





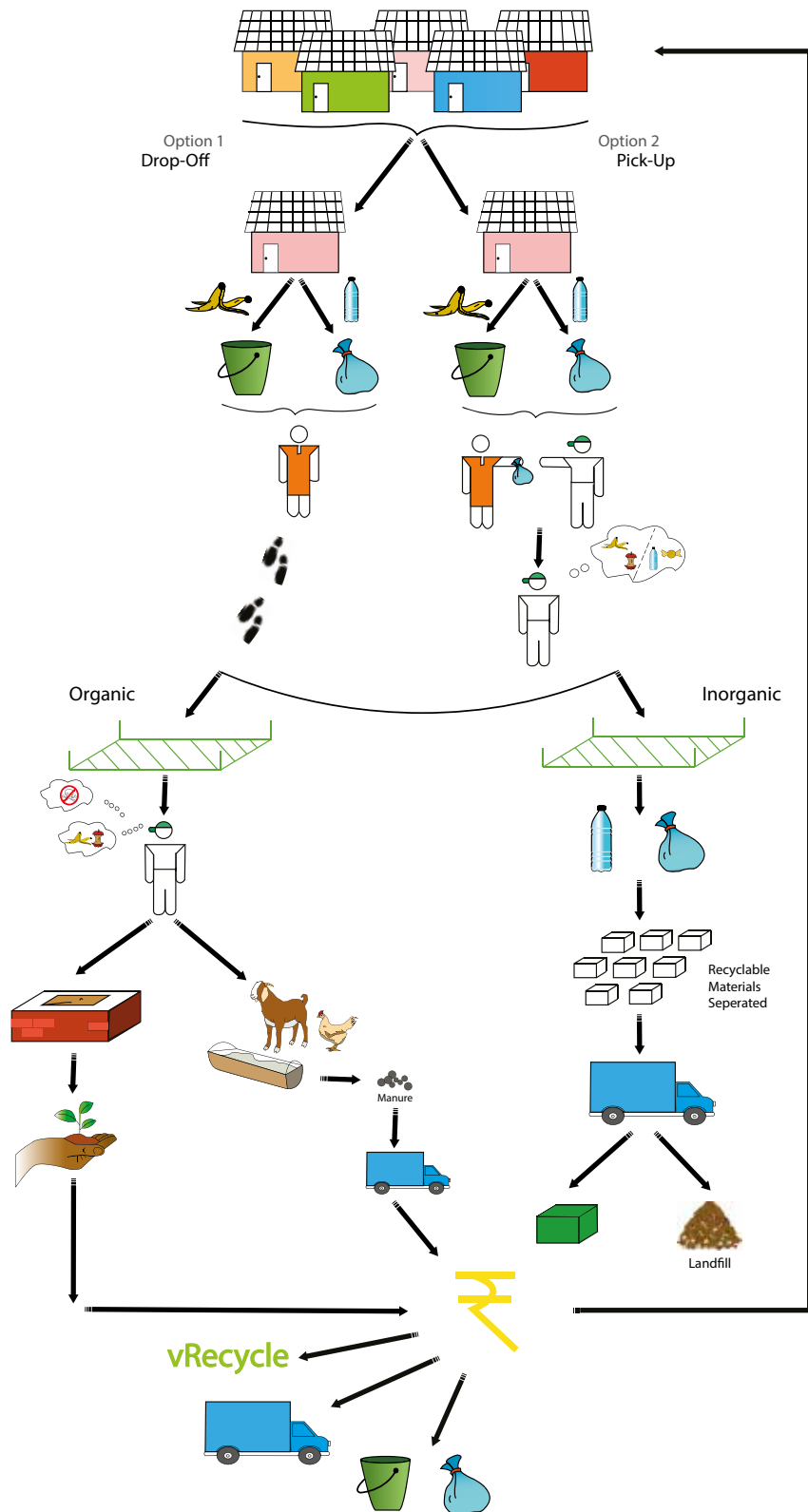




CO-DESIGNING with the community



IMAGINING the needed infrastructure



EXPERIENCING the power of cooperation





CREATING a shared message



स्वच्छ
बस्ती



MEMBER
Zuarinagar Evergreen
Association

**CATALYST for
community action**



PROVEN Models

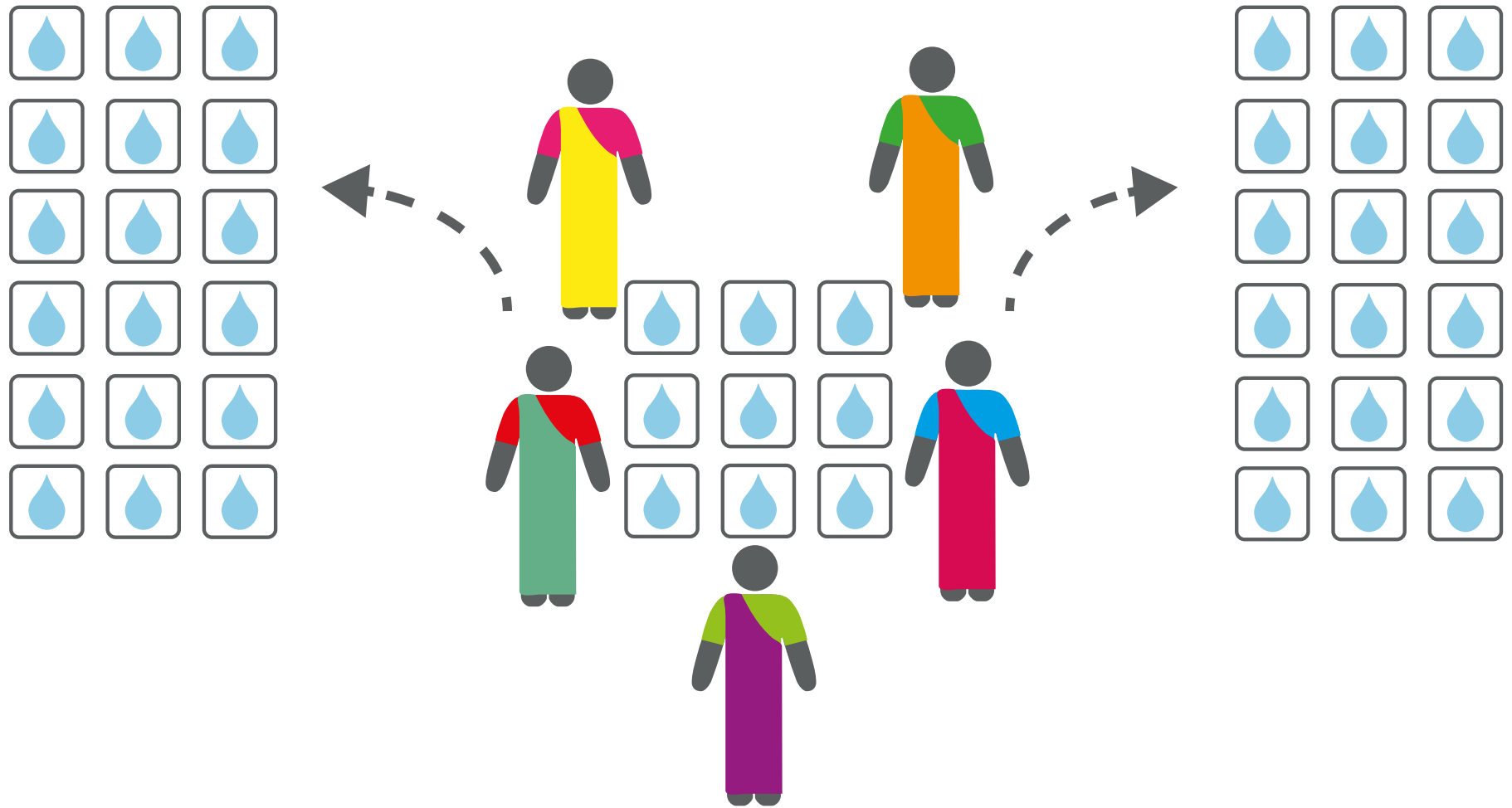


Lijjat

RAPAD

A woman wearing a red patterned shirt and a green and yellow patterned headscarf is cooking in a large red pot. She is holding a wooden spoon and stirring the contents of the pot. Steam is rising from the pot. The kitchen has a dark countertop with various items on it, including a yellow cup, a green bottle, and a small bowl. A window with a metal grille is visible in the background.

SELF HELP Groups (SHGs)



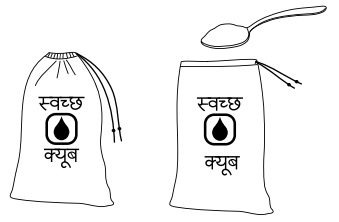
**SMALL batch
PRODUCTION**



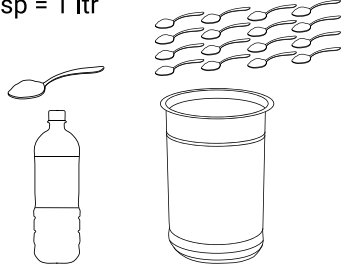
HEALTH & PRODUCTION TRAINING



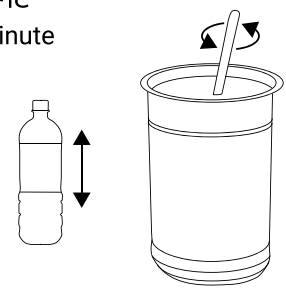
बैग खोलो
Open bag



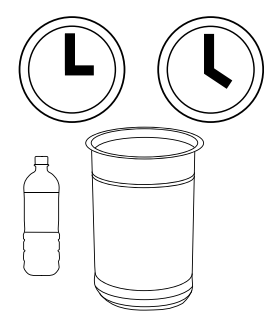
1 छोटी चम्मच = 1 ली
1 tsp = 1 ltr



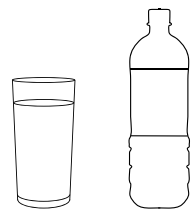
1 मिनिट
1 minute



1 घंटा
1 hour



साफ पानी तैयार
Clean water ready





SKILLS DEVELOPMENT



**WORKING
TOGETHER**

QUALITY CONTROL



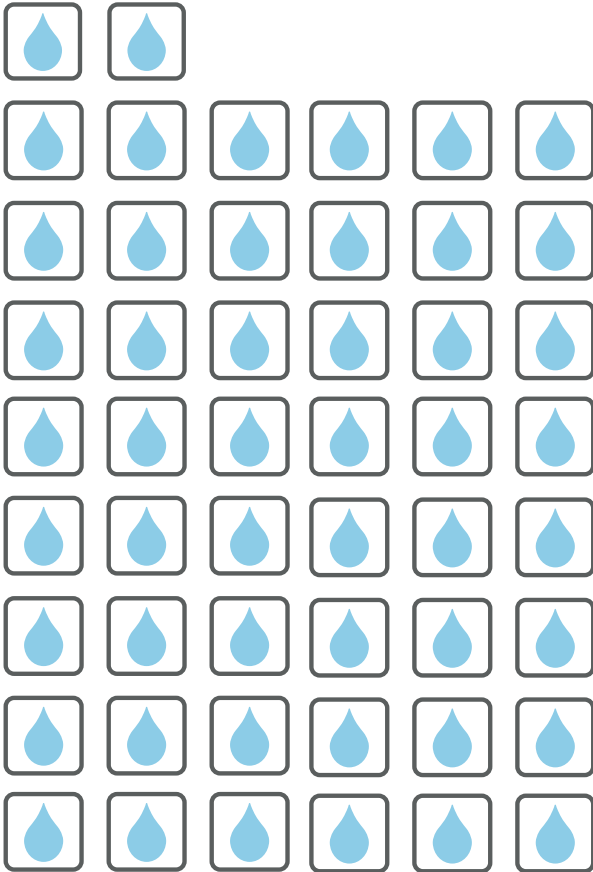
A photograph showing two women engaged in packing items into cardboard boxes. The woman on the left is wearing a black and red floral patterned top, a yellow face mask, and white gloves. She is holding a small white object in her gloved hand. The woman on the right is wearing a red and black striped sari, a purple face mask, and white gloves. She is also holding a small white object. In the background, there is a blue plastic container. The text "TIME & EFFICIENCY" is overlaid in white on a red semi-transparent background.

**TIME &
EFFICIENCY**

**A woman in production earns
Rs 4000 for 40 hours/month,
a contribution of 30-40% to
her household income**



**= 1 L of clean water = Rs 1
or about \$0.02 CAD**



**= 1 week of clean water
for family of five
= Rs 50 or about \$1 CAD**



SHORT & LONG TERM IMPACT



INTERSECTION of the SACRED & MUNDANE



COMMUNITY-BASED EDUCATION



storytelling,
science, magic,



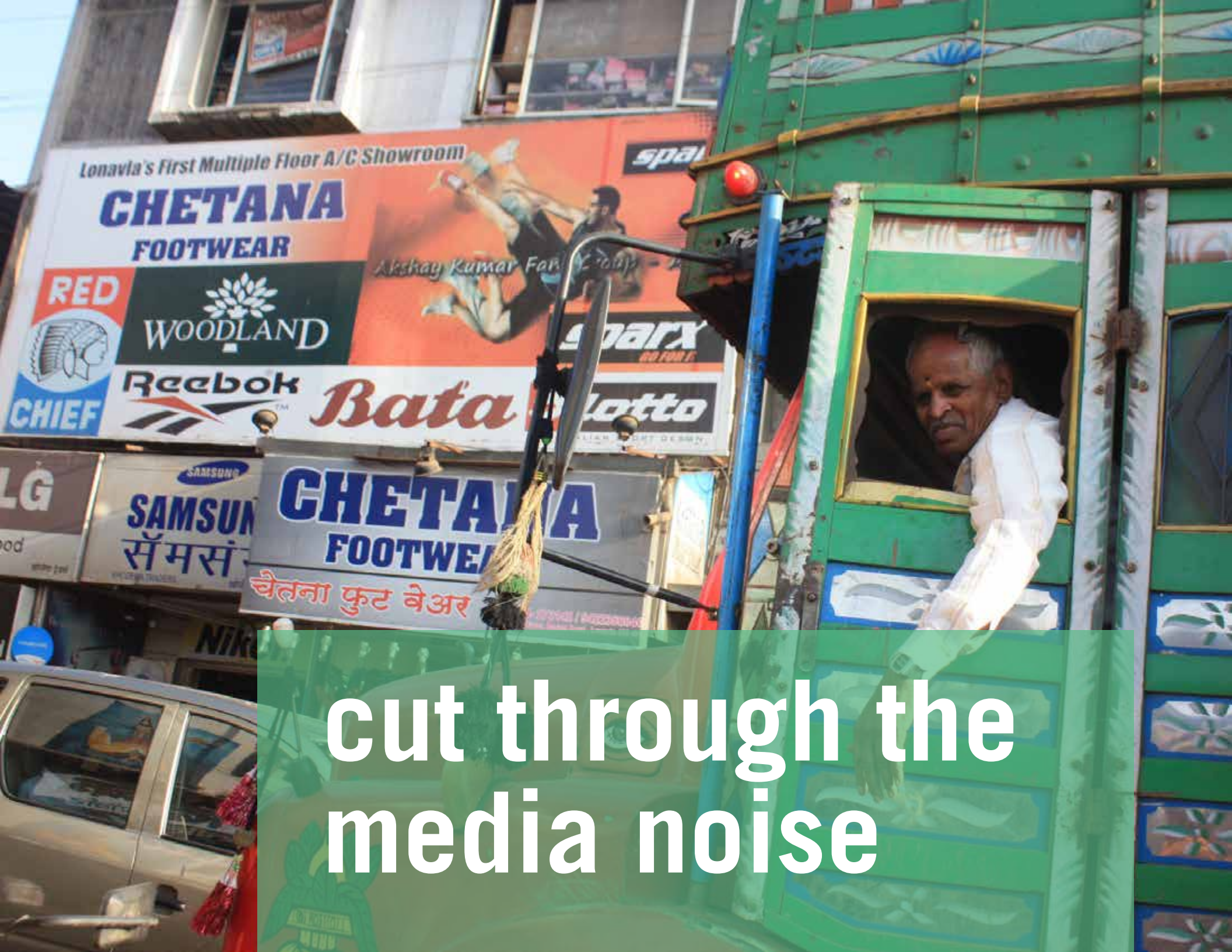
music & dance







**a powerful
medium
tuned into
local
realities**



cut through the
media noise

ALTERNATIVE DISTRIBUTION MODEL



IN HOME AMBASSADOR KIT

स्वच्छ क्यूब 
स्वच्छ जल शुद्ध जीवन

CleanCube 
Clean Water Pure Life

उपयोग



पेने का पानी



हाथ धोना



बर्तन धोना



कपड़े धोना



सब्जियां धोना



खाना पकाना



बागवानी



नहाना



ब्रश करना



वरुण VARUNA



सब पानी एक है।
ALL WATER IS ONE.

जल

WATER

संस्कृत कक्षा

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शुद्ध जल
PURE WATER



अशुद्ध जल
IMPURE WATER



अदृश्य अशुद्धता
INVISIBLE IMPURITIES



माइक्रोस्कोप
MICROSCOPE

CHILDREN'S ACTIVITY BOOK



** बच्चा आर उनके आस पास क समुदाय म रंग भर।

** Colour the children and their community.

दुखी होकर सारे बच्चे आगे चलने लगते हैं। वे देखते हैं कि एक बॉल घुमते घुमते नाले में गिर गयी है।
Feeling sad, the kids walk ahead and see a ball rolling into a sewer.





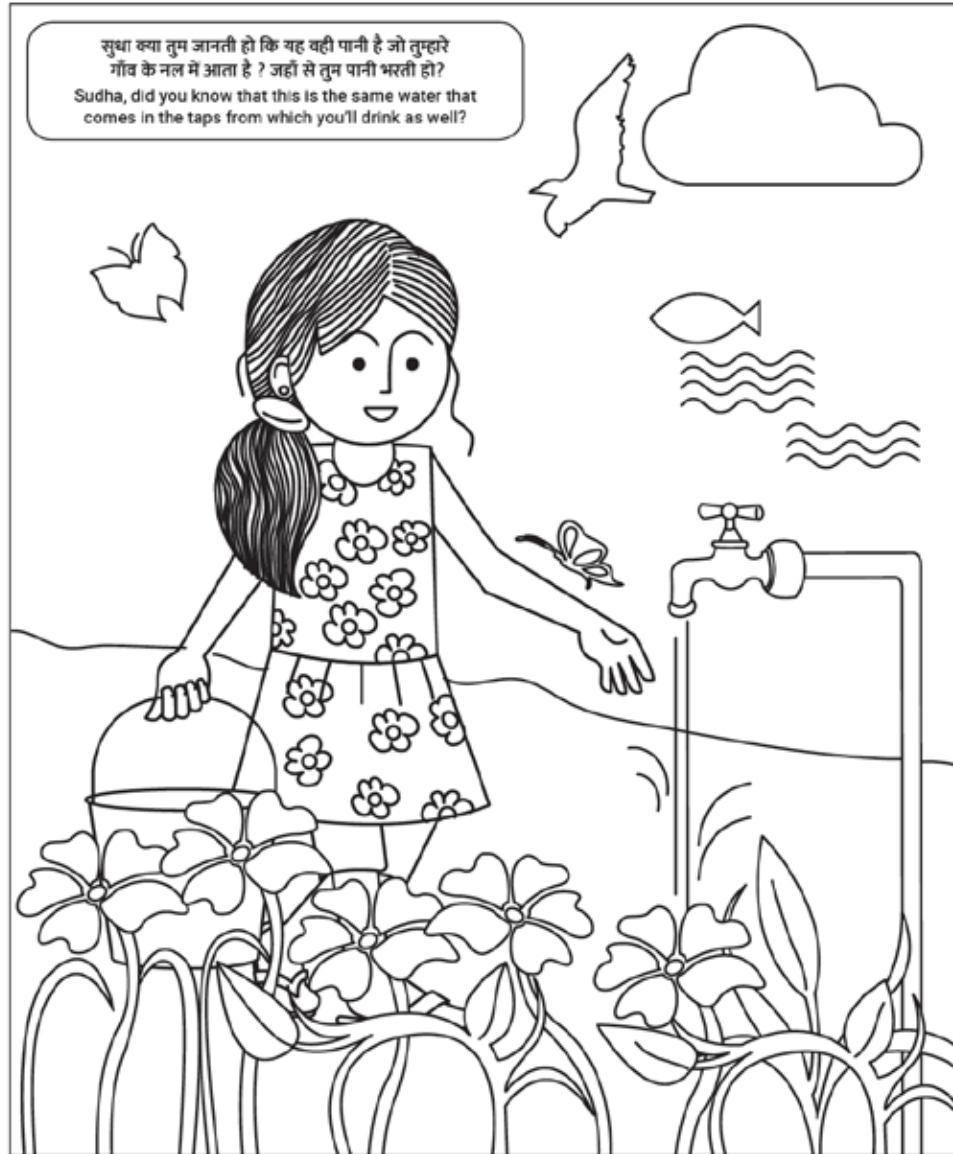
क्या तुम्हे पता है ? यह धरती ७१ प्रतिशत पानी से बनी है ?
इंसान के शरीर का ७८ प्रतिशत हिस्सा पानी से बना है? तुम्हारा भी!
Did you know? Earth is made of 71 percent water
Even the human body is made of 78 percent water. Yours too!



तुम सबको बारिश में खेलना पसंद हैना?
वही बारिश का पानी आसपास के तालाबों,
नदियों और समुंदरों को भरता है। पेड़-पौधे, फूल-पक्षी,
जानवर, मधुमक्खियाँ-तितिलियाँ—ये सारे वही पानी पीते हैं।
All of you like to play in the rain... don't you?
The same rain water fills up the lakes, rivers and oceans.
Trees and flowers, birds and animals, bees and
butterflies all drink the same water, too.



** सुधा और उसकी दुनिया में रंग भरे। यहां पानी साफ है और सभी जीवों को सजीव रखने में सहायता करता है।
 ** Colour Sudha and her world - here water is clean and supports all living things.

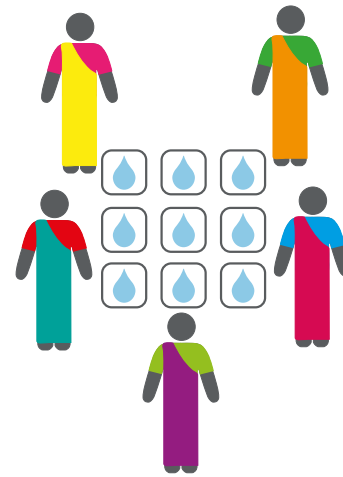
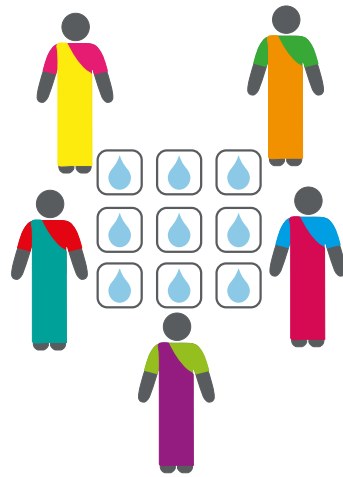
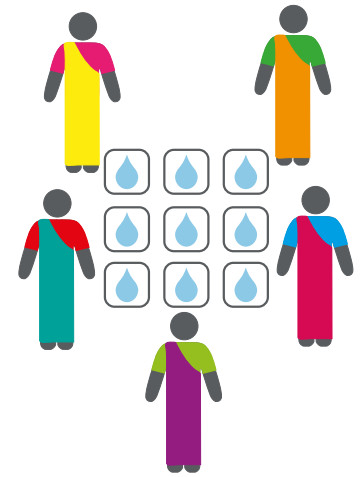
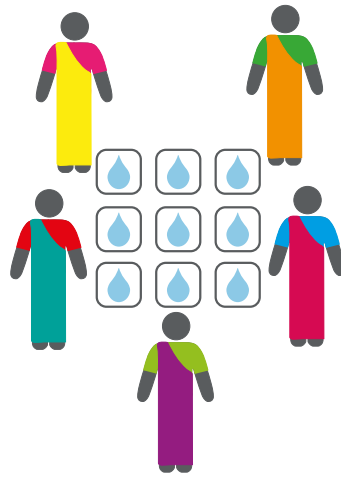
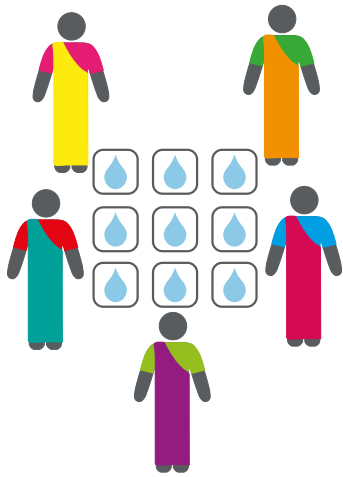


पानी बहुत ही पवित्र है।
 मैंने धरती को पानी के रूप में एक तोहफा दिया है पर कोई भी उसकी परवाह नहीं करता। माँ तुम्हारा ख्याल रखती है। क्या तुम सबने कभी सोचा है कि पानी का ख्याल कौन रखता है? वह खुद अपना ध्यान नहीं रख सकता!

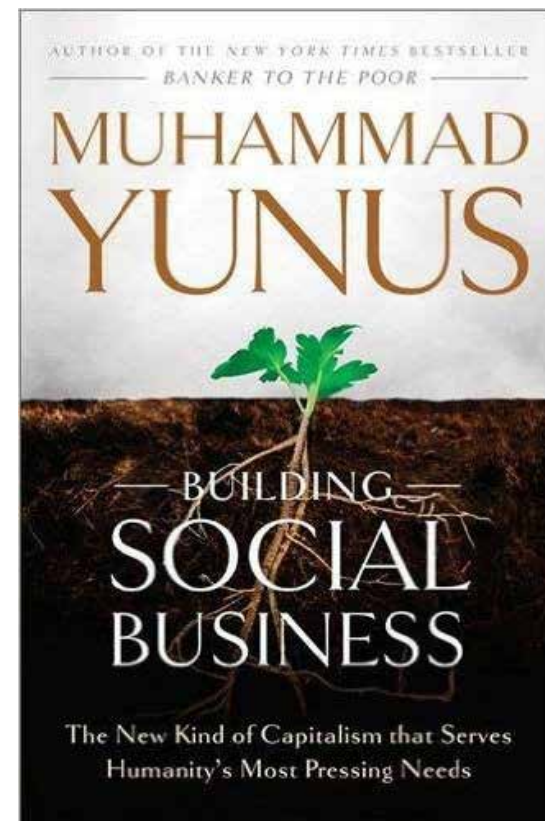
Water is sacred.
 I have given people the gift of water, but no one is taking care of it. Mother takes care of you, did you ever think who takes care of water? Water cannot take care of itself!

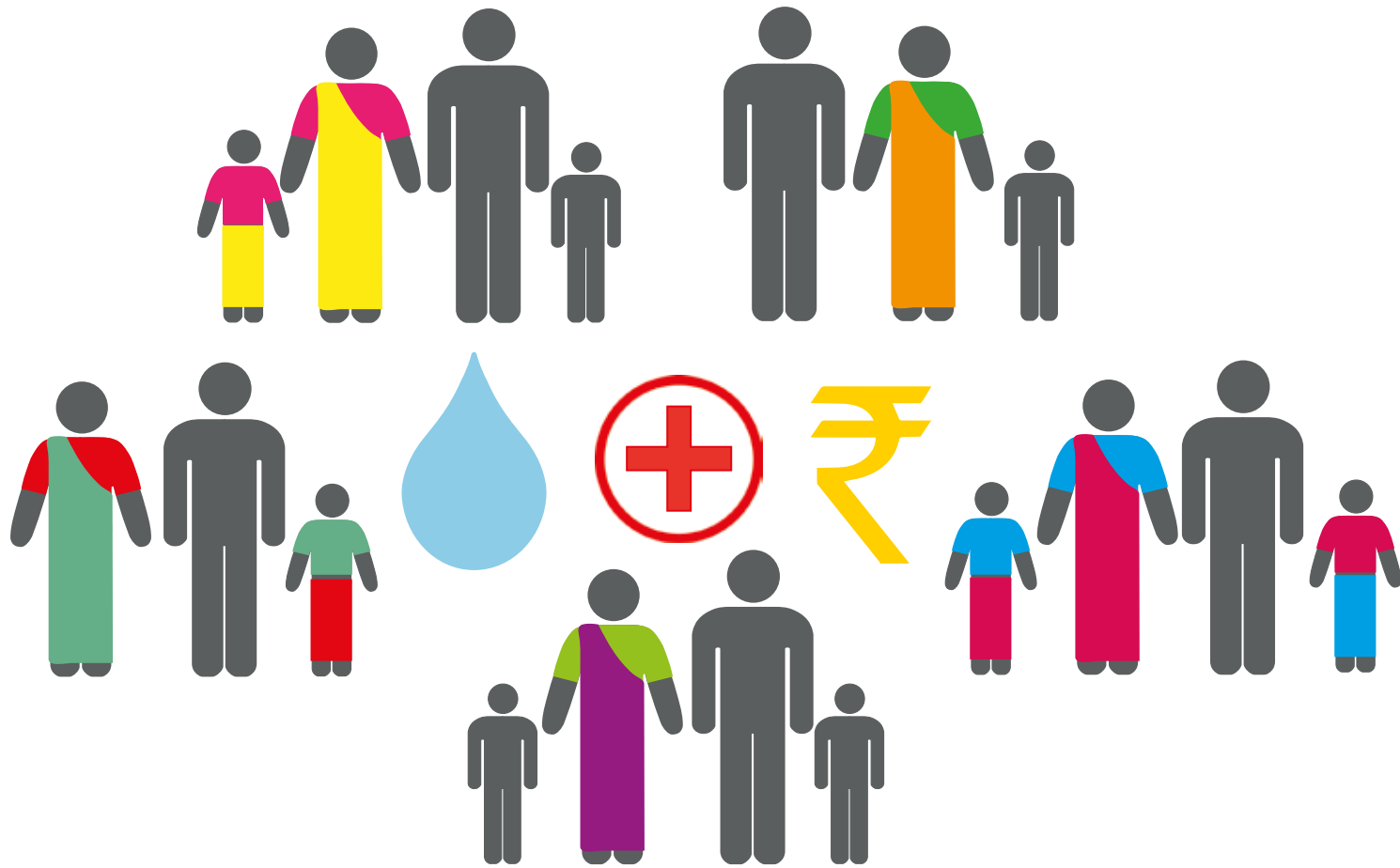


Scalable



Thinking SMALL to SCALE BIG



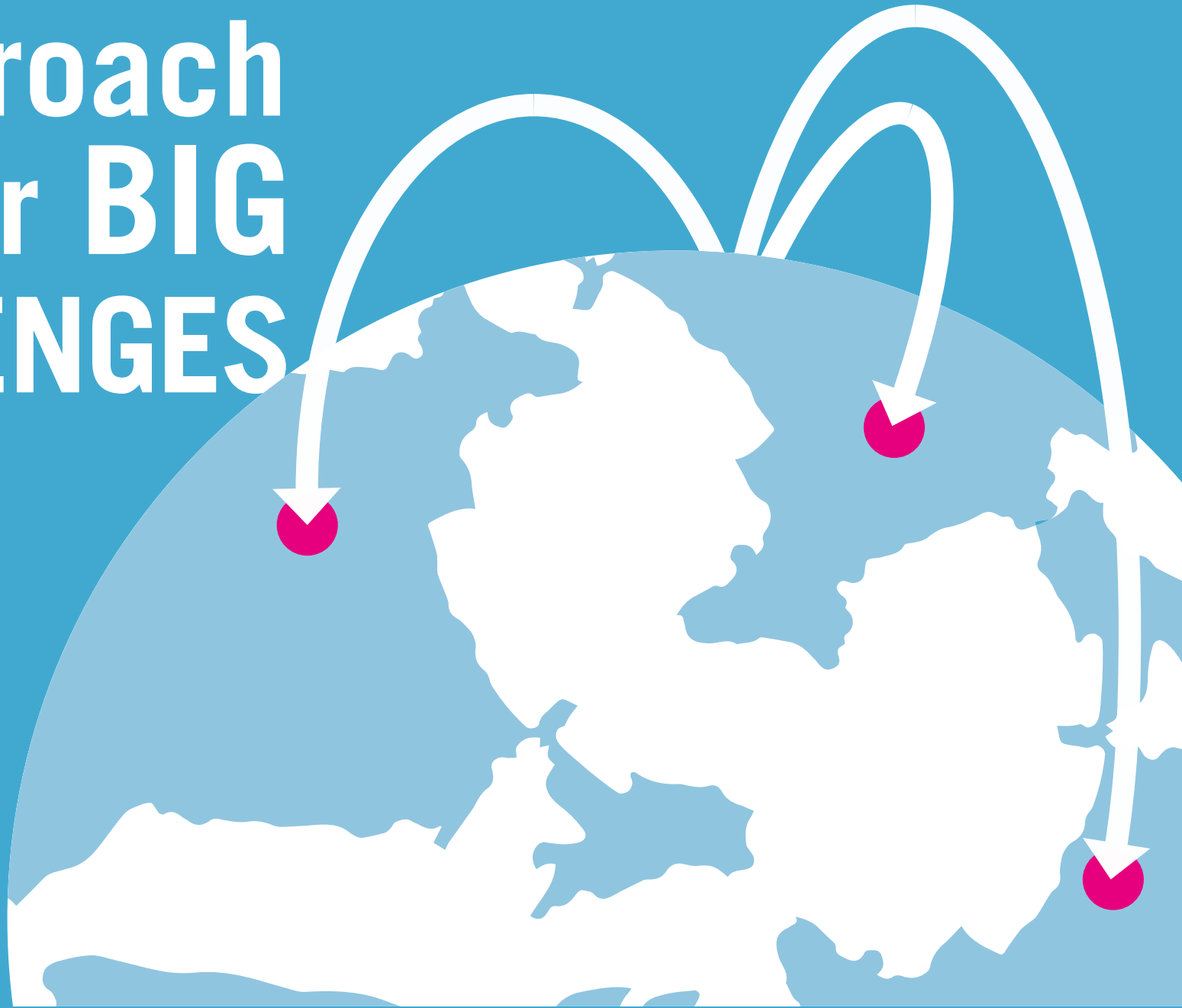


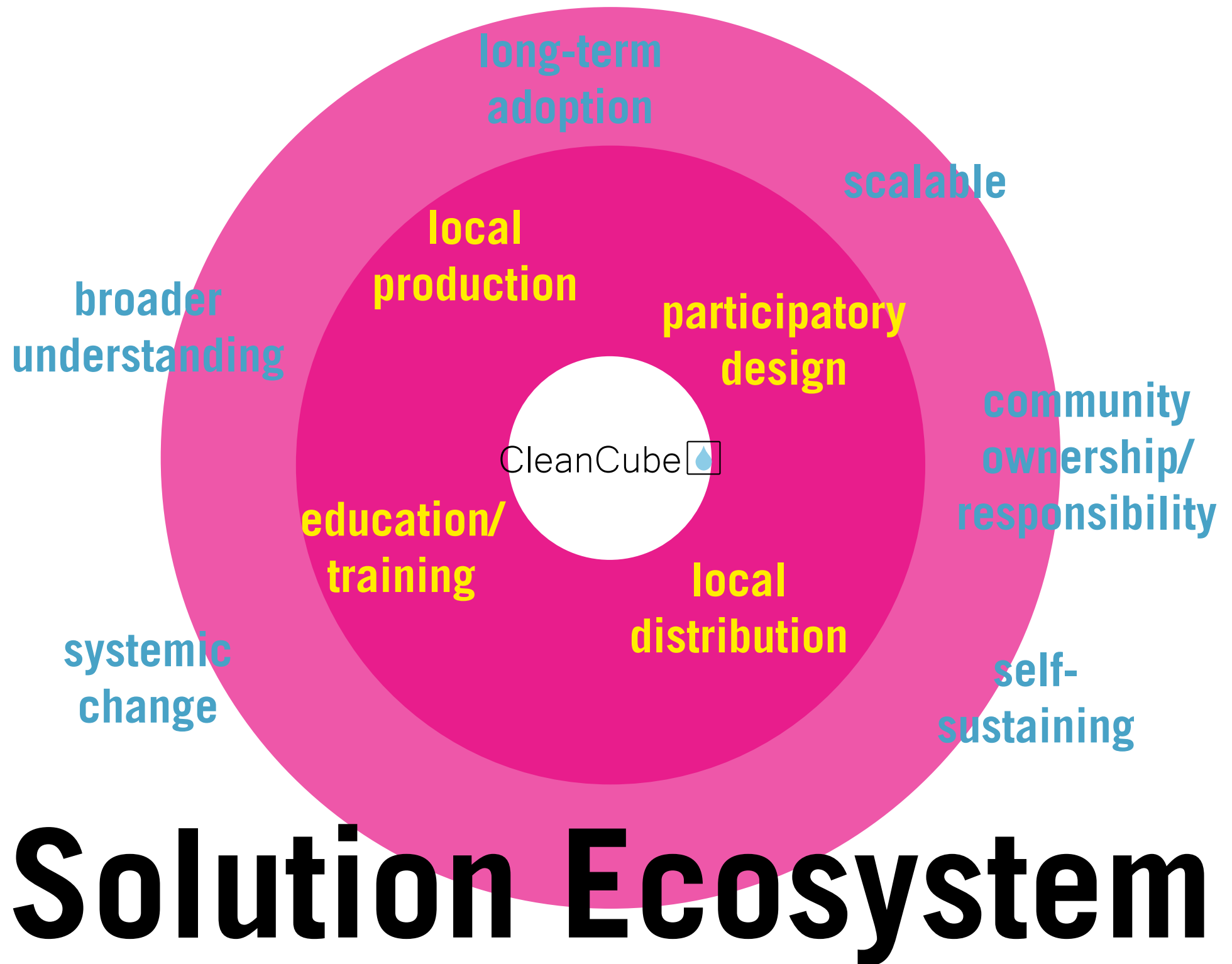
**HOLISTIC
approach**

FIT
a solution
reflecting
local
REALITIES



**an approach
to other BIG
CHALLENGES**





NEXT STEPS

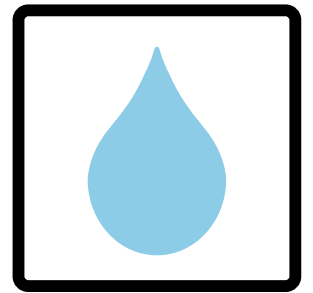
continued testing

prototyping

replicating

preparing for market

CleanCube



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