2023-24

Formative research report

Safe drinking water

Bhutan

Contents

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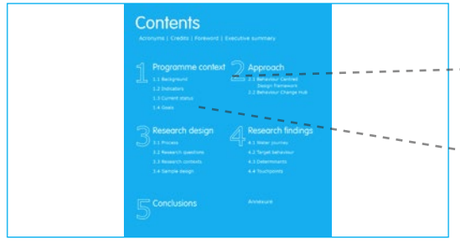

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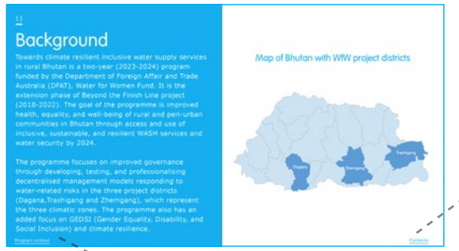

Inside pages

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Acronyms

BCD	Behaviour Centred Design
DPOB	Disabled Peoples Organisation of Bhutan
FGD	Focus Group Discussion
GEDSI	Gender Equality, Disability and Social Inclusion
HA	Health Assistant
PHC	Primary Health Centre
IDI	In-Depth Interview
IPC	Interpersonal Communication
KII	Key Informant Interview
LSHTM	London School of Hygiene and Tropical Medicine
PWD	Person With Disability
SNV	Netherlands Development Organization
UTS-ISF	University of Technology Sydney-Institute of Sustainable Future
WfW	Water for Women
WASH	Water Sanitation and Hygiene

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Credits

SNV and Upward Spiral, *Formative Research Report: Safe Drinking Water, Bhutan*, Mumbai, Upward Spiral, 2024.

This research has been funded by the Australian Governments Water for Women Fund as part of its support to SNVs "Towards climate resilient inclusive WASH in Bhutan" project.

Authors:
The views expressed in this document are those of the authors and do not necessarily reflect the views of SNV, Water for Women Fund, or Upward Spiral.

Cover photo: Upasana Dahal/SNV Bhutan

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About SNV

SNV is a mission-driven global development partner working across Africa and Asia. SNV's mission is to strengthen capacities and catalyze partnerships that transform the agri-food, energy, and water systems, which enable sustainable and more equitable lives for all.

Water for Women (WfW)

The Australian Governments Water for Women is supporting improved health, gender equality, and wellbeing in Asian and Pacific communities through climate-resilient and socially inclusive water, sanitation, and hygiene (WASH) projects and research in 16 countries.

DFAT

The Department of Foreign Affairs and Trade (DFAT) promotes and protects Australia's international interests to support our security and prosperity. They work with international partners and other countries to tackle global challenges, increase trade and investment opportunities, protect international rules, keep our region stable, and help Australians overseas.

About Upward Spiral

Upward Spiral specializes in designing and delivering effective behaviour design interventions to create social impact at scale. It has worked extensively in the WASH sector across Asia and Africa. It is currently piloting the Behaviour change Hub for SNV, a new model for program design for multinational foundations. Under the hub, program managers learn to design effective interventions through a 'learning by doing' approach.

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Foreword

This research is part of the Behaviour Change Hub, an innovative approach to design behaviour changes programmes simultaneously across countries. As part of the hub, three SNV Country teams (Bhutan, Nepal and Lao PDR) went through a learning by doing process i.e., learning the Behaviour Centred Design framework, while designing the intervention.

We are happy to share our findings from the formative research on safe drinking water in Bhutan, conducted in two districts - Haa and Dagana.

We hope this report offers insights for the design of safe drinking water programmes in Bhutan and other countries having similar scenarios.

We would like to thank the following people and organizations for their support:

Community: We are deeply grateful to the communities of Haa and Dagana districts, without whose invaluable time, cooperation, and active participation during the formative research, this report wouldn't have been possible.

Government: We offer our gratitude to the Ministry of Energy and Natural Resources, Department of Water, Ministry of Infrastructure and Transport, Department of Infrastructure and Development, Water and Sanitation division, Ministry of Health, District and Local government of Haa (Kana and Katsho gewogs) and Dagana (Lhamoizingkha and Karna gewogs) for their support, invaluable time, and continued cooperation during the formative research process.

Disabled Peoples Organisation: We express our sincere gratitude to our local implementation partner Right Holder's Organisation (RHO) for their exceptional support during the formative research. We are grateful for their partnership and always being available to support the team.

UTS/ISF: We would like to appreciate the University of Technology Sydney Institute of Sustainable Future (UTS-ISF) for their support in making us clearer on the climate change aspect of social behavioural change research.

CBM Australia: We would like to express our gratitude to CBM for their support in the areas of disability and social inclusion. Their assistance has been instrumental in shaping and enhancing our research.

Australia's Department of Foreign Affairs and Trade (DFAT) and the Water for Women Fund for supporting the training and research activities

Gabrielle Halcrow (SNV) for championing the Behaviour Change Hub and for being available from the initial stages through to completion of the project.

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Upward Spiral: Our sincere appreciation goes to Upward Spiral, especially Balaji Gopalan and Nipa Desai, for their incredible support in capacity development for the research team, both online and in person. With their assistance, our research team smoothly navigated logistical challenges and ensured timely and successful participation. Their contributions were vital to the overall completion of this project's formative research.

Kencho Wangdi (Country Representative/WASH Sector Leader), Ugyen Rinzin (Project Leader) and Tashi Dorji, Ugyen Wangchuk and Gem Tshering (WASH Advisors) for their valuable comments and support.
Thinley Dem for leading the research.

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Executive Summary

Programme context

The Principles of the Water Act of Bhutan, 2011, states that every Bhutanese have assured access to adequate, safe and affordable water to enhance the quality of lives. Thus, to ensure there is safe drinking water, the Bhutan Drinking Water Quality standards, 2016 was developed in line with the Water Act. Its objective is to contribute towards a progressive improvement of drinking water quality management by the service providers, to increase awareness on drinking water safety and under Water Use Priorities - water for drinking and sanitation is the first in the order of priorities.

"Towards Climate Resilient Rural WASH services" in Bhutan seeks to leverage existing partnerships and government investments to strengthen resilience, coping mechanisms, and adaptive capacities towards inclusive WASH services for households, health facilities and district centres. The programme districts are Dagana, Zhemgang and Trashigang, which represent the three climatic zones of the country. It will aim to ensure that the districts are better able to adapt to the increasing climate risks and hazards and contribute approaches, knowledge and learning for future upscaling. This is in alignment with DFATs WASH Flagship Programme (Water for Women) and Climate Change Action Strategy (2020-2025) priorities.

The safe drinking water campaign is timely and in line with the project in ensuring safe drinking water for rural households and responds directly to the increasing climate risks. The Health Assistant's (HAs) expressed the need to have a safe drinking water campaign, as while they advise the people to treat water at home., a safe drinking water campaign has not been conducted so far. Thus, a safe drinking water intervention will contribute greatly towards their effort in informing the community on how to safely handle water and treat it. The HAs have also expressed that they would extend their support by leading sessions at the priamry health care centres and outreach clinics. SNV Bhutan conducted a formative research in Dagana and Haa districts with technical support from Upward Spiral. This research aimed to understand people's behaviours, beliefs, environments, and motivations regarding safe drinking water and effective touchpoints. For this purpose, we considered 'safe drinking water' with proper treatment by boiling. Though other methods of water treatment were also available such as filtration by cotton cloths, our focus was on boiling. People did not treat water correctly or continuously and there was no proper pre and post safe handling of water. Filter was rarely used and there was no knowledge on the effectiveness of the filter. In the current project, we aimed to identify determinants of behaviour change, create an intervention on these determinants, and deliver the intervention.

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Current status

According to the Annual Drinking Water Quality Surveillance Report 2020, Haa at 55% and Dagana at 50% reported unsafe drinking water during the dry season under the health risk category. According to SNV's Household Survey in 2022, in Dagana, 96% reported treating water (mostly boil 86%). And in Trashigang 76% reported treating water (mostly boil 97%, which could just be warming and occasional).

Goals

Our focus is on access to safe drinking water throughout the year for all. Research with the community indicates that people are increasingly aware of environmental changes due to climate change, such as the reappearance of insects not seen in years, which may also affect water quality. Therefore, prioritizing water treatment is essential, alongside ensuring safe water handling practices. The target behaviour is proper boiling for safe drinking water i.e., rolling boil for 30 seconds, including safe handling practices pre and post treatment. Our primary focus is on the consistent practice of water treatment throughout the year. Our goal is for 70% households in Lhamoizingkha (Dagana) and 90% households in Sakteng (Trashigang) to adopt regular water treatment practices after our campaign.

Approach

Behaviour Centred Design (BCD)

We used the BCD framework, developed by Robert Aunger and Valerie Curtis from the London School of Hygiene and Tropical Medicine (LSHTM). BCD is built on the latest insights from evolutionary and environmental psychology, marketing, and neuroscience. It has been applied successfully to behaviours ranging from handwashing to oral rehydration, food hygiene, child and maternal nutrition, and post-operative exercise.

Behaviour Change Hub

This project is part of the Behaviour Change Hub for safe drinking water created by Upward Spiral for SNV. The Behaviour Change Hub proposes a new model of programme design and management for multi-national foundations that wish to create social impact on a global scale. Its objective is to design and deliver effective behaviour change interventions and, in the process, also to enhance the capacities of the programme teams.

Research design

We employed qualitative research methods, including In-Depth Interviews (IDIs), Key Informant Interviews (KIIs), Focus Group discussions (FGDs), and behavioural observations. The research took place in two districts: Karna and Lhamoizingkha in Dagana district, where SNV Bhutan's Water for Women project has been active and Kana and Katsho in Haa.

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Key findings

Target behaviour

There is preference for water treatment options that save time and effort, are affordable and have the natural water taste. With electric boiler/kettle, there is greater participation from men. Children and elderly people can also boil water with these tools. This reduces the workload on women and the caregivers.

Motives

The possible motives for proper treatment of water are: Disgust (for visible contamination and invisible germs and animal faeces), Affiliation (observing and following what others do) Nurture (protect family members, especially children, from illnesses) and Convenience (save time and effort).

Touch points

Interpersonal communication (IPC) by the health assistants can reach mothers. Online chat groups are effective to connect with the community. Conduct meeting with self-help groups for persons with diabilities and their caregivers, and visit households where required.

Climate resilience

In Haa and Dagana, during the dry season, alternate water sources are used, also when the water in the primary source is not sufficient. Community members are aware of drying of water sources due to climate change and human induced activites as well.

Executive Brain (Knowledge, Beliefs)

Among non-doers, there is belief that if the water looks clean, tastes good, and doesn’t smell, then it is safe to drink. Besides, there is belief that naturally occurring, flowing water - spring water is safe to drink.

There is a lack of knowledge about treatment solutions (how to properly boil water), and safe handling practices pre and post water treatment (e.g., not putting the hand in the water while scooping water and closing the lid while boiling water)

Disability

Persons with disabilities wish to participate in the water journey. However, due to the barriers present in the environment, and on account of the type and severity of disability, they are often unable to participate.

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Programme context

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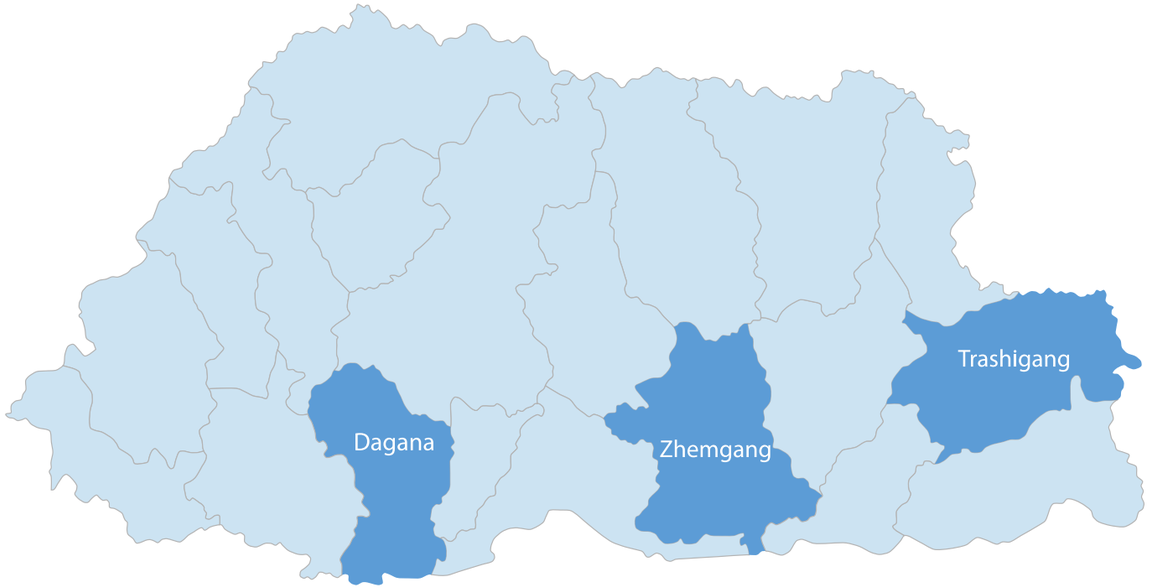
1.1

Background

Towards climate resilient inclusive WASH services in rural Bhutan is a two-year (2023-2024) program funded by the Department of Foreign Affairs and Trade Australia (DFAT), Water for Women Fund. The goal of the programme is improved health, equality, and well-being of rural and peri-urban communities in Bhutan through access and use of inclusive, sustainable, and resilient WASH services and water security by 2024.

The programme focuses on improved governance through developing, testing, and professionalising decentralised management models responding to water-related risks in the three project districts (Dagana,Trashigang and Zhemgang), which represent the three climatic zones. The programme also has an added focus on GEDSI (Gender Equality, Disability, and Social Inclusion) and climate resilience.

Map of Bhutan with WfW project districts



1.2

Indicators

Household water treatment and handling is an important component of providing safe drinking water at the household level and is also considered to be an important component of a the governments priority, as reflected in the Annual Health Bulletin 2024[1], to provide safe water to people who live without enough water. Treating water at the household also helps to improve drinking water for those who fall ill due to the contamination of their drinking water[2].

SNVs Household Survey data in 2022 included data on self reported household water treatment practices (boiling, filtering). However, it did not have the data on whether the water was treated properly and was handled safely, before and after treating the water. With limited data on water treatment at the household levels, the following indicators were considered in consultation with health assistants, Ministry of Health and reference to WHO standards[3].

Indicators:

Indicator 1: Use either boiling or water filtration to treat water.

Indicator 2: Wash storage containers with soap before use and keep them covered during storage.

Indicator 3: Consume treated water without mixing it with untreated water or allowing hands to come into contact with water

[1]www.moh.gov.bt/wp-content/uploads/Annual-Health-Bulletin-2024.pdf
[2](Sisay W/Tsadik, D., Debela, B. G., Ali Ewune, H., & Hareru, H. E. (2022). Determinants of Household-Level Water Treatment Practices in Southern Ethiopia. Environmental health insights, 16, 11786302221109399. https://doi.org/10.1177/11786302221109399)
[3]www.who.int/publications/i/item/WHO-FWC-WSH-15.02

1.3

Current status

Dagana (96% reported treating water)
– Mostly boil (86%) which could be just warming and occasional.

Trashigang (76% reported treating water)
- Mostly boil (97%) could just be warming and occasional.

Source: SNV Household Survey Data, 2022

1.4

Goals

Target behaviour

The target behaviour is proper boiling for safe drinking water i.e., rolling boil for 30 seconds, including safe handling practices pre and post treatment. Our primary focus is on the consistent practice of water treatment throughout the year. Since boiling water using electric boilers/stoves is the preferred and the most convenient, we are placing a higher priority on boling.

Desired status

Our goal is 70% households in Lhamoizingkha (Dagana) and 90% households in Sakteng (Trashigang) will adopt regular safe water treatment practices after our campaign.

Approach

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2.1

Behaviour Centred Design Framework

We used the BCD framework, developed by Robert Aunger and Valerie Curtis from London School of Hygiene and Tropical Medicine. BCD is built on the latest insights from evolutionary and environmental psychology, marketing, and neuroscience. It has been applied successfully to behaviours ranging from handwashing, to oral rehydration, food hygiene, child and maternal nutrition, and post-operative exercise.

Links

The BCD resources page on the LSHTM website has many free resources that dive deeper into the the BCD framework, including the following:

Behaviour Centred Design, towards an applied science of behaviour change Aunger and Curtis, Health psychology review, 2016

The BCD manual

BCD - Formative research protocols

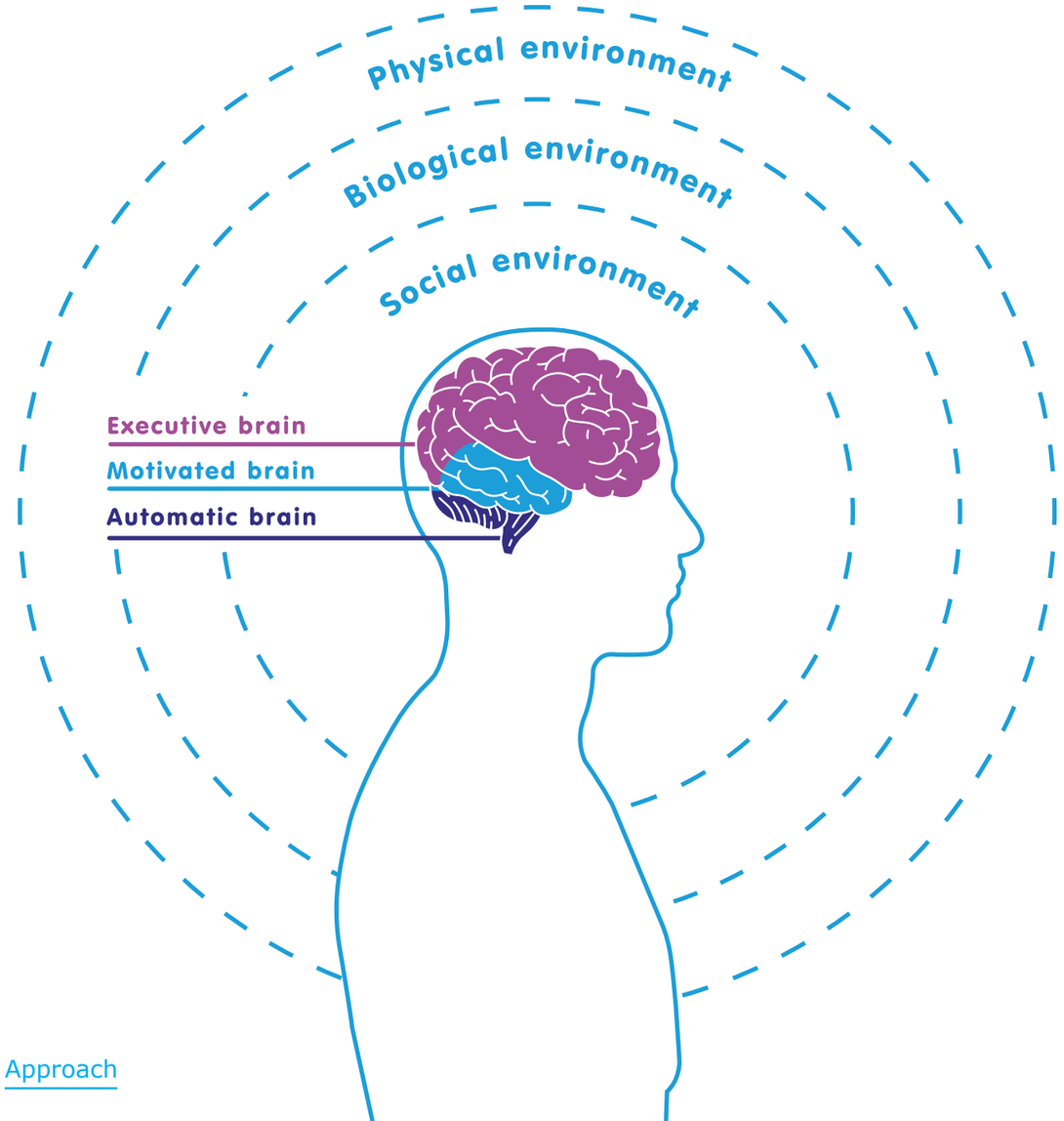
Books

Gaining Control Robert Aunger and Valerie Curtis

Don't look, Don't touch Valerie Curtis

Reset Robert Aunger

Behaviour determinants



BCD defines behaviour as a functional interaction between a body and its environment, designed to help an organism to get what it needs to survive and reproduce. At the individual level, the framework proposes roughly three regions in the human brain, related to three different types of behaviour:

Automatic brain

produces unconscious behaviours. These include reflexive behaviours such as flinching in response to contact with a flame and habitual behaviours such as driving a car.

Motivated brain

produces sub-conscious behaviours to achieve goals. One of the unique features of the BCD framework is that it has identified 15 fundamental, universal motives that drive all human behaviour.

Executive brain

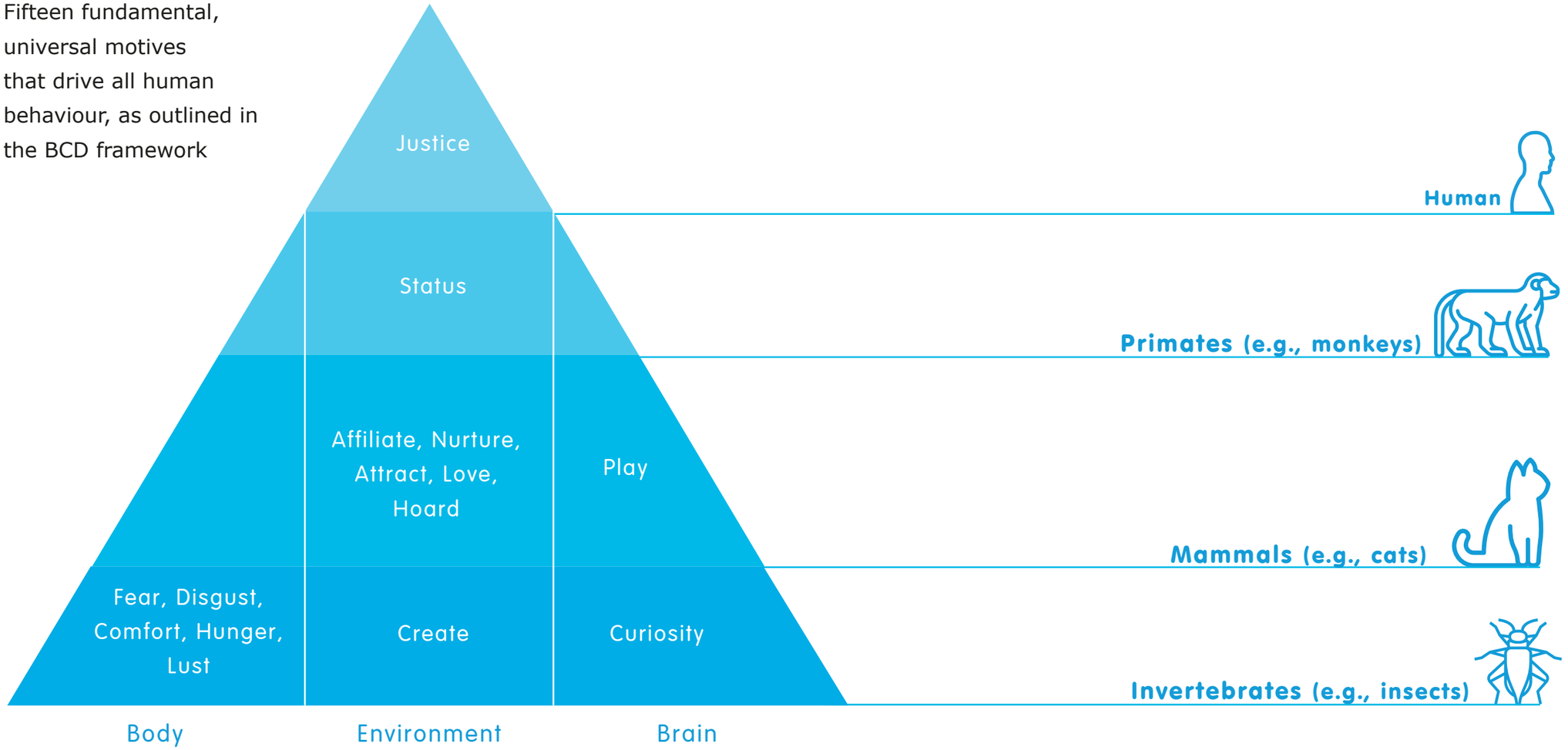
produces conscious behaviours. It chooses the behaviour to perform and also plans for the same. While most of the health messaging is targeted at this brain, most of the behaviours are produced in the automatic or the motivated brain.

Environment

It proposes three levels to the environment that an individual interacts with during the performance of the behaviour. The physical, the biological, and the social environment.

The motives pyramid

Fifteen fundamental, universal motives that drive all human behaviour, as outlined in the BCD framework



The aspect that is primarily modified by achieving a goal related to that motive

The stage of evolution at which these motives first evolved

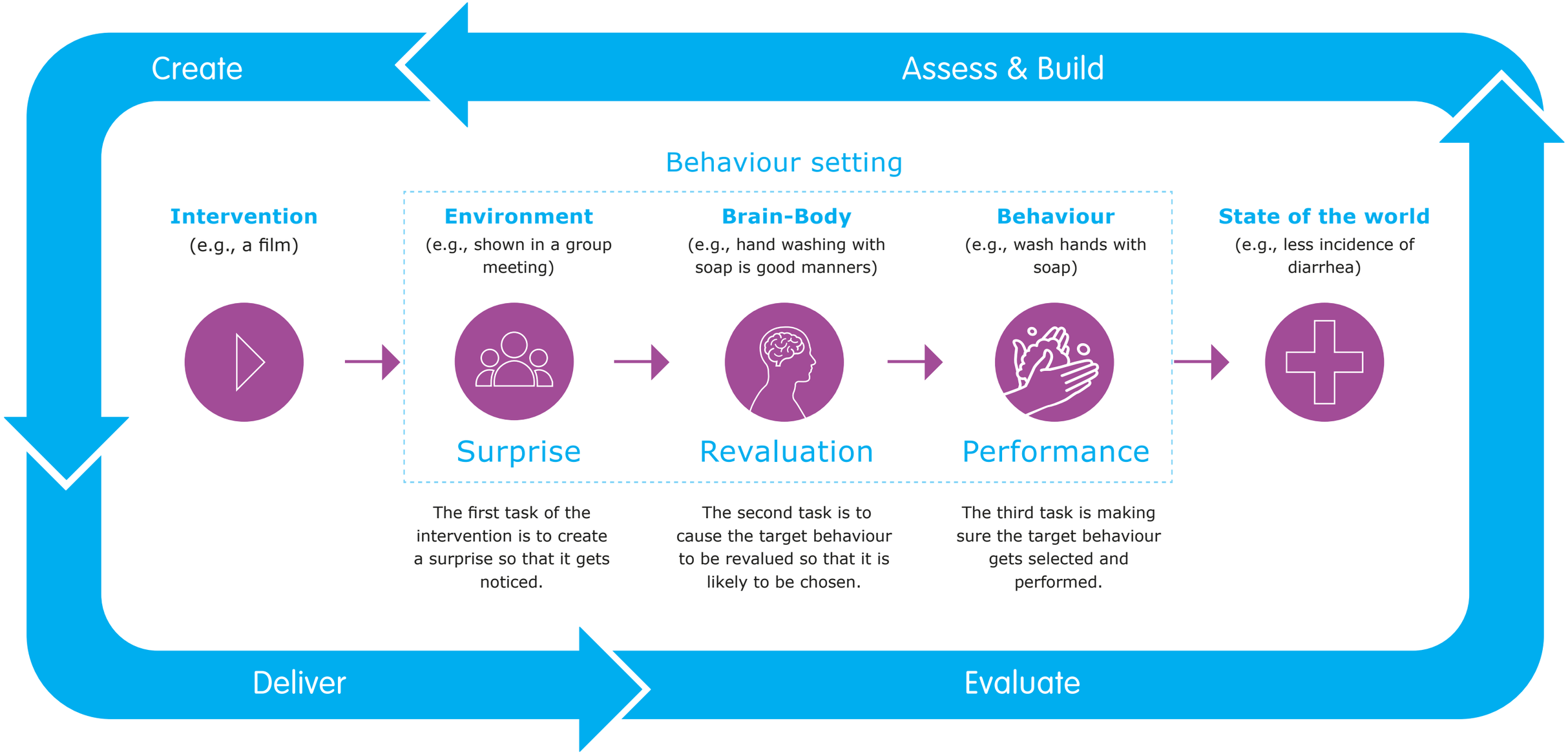
The BCD process

BCD provides a process for designing behaviour change interventions - ABCDE.
Each letter explains one of the key steps in the process as seen below.

	A Assess	B Build	C Create	D Deliver	E Evaluate
PROCESS	Gather what is known and identify what is unknown about goals, resources, determinants, and touch points through desk research, expert interviews, and workshops with stakeholders.	Conduct formative research using BCD research tools to find answers to 'what is unknown' and explore hypotheses about the likely drivers of change.	Design the intervention through an iterative design process where creative ideas are refined through research with the target group.	Implement the intervention package through relevant touch points such as community events and mass media. Monitor this process to ensure on-going learning and adaptation.	Measure the outcomes and evaluate the processes along the theory of change. Learn what has worked and what has not to inform future programmes.
OUTPUT	Post-assess BCD checklist capturing 'what is known'. Research questions noting 'what is unknown'.	Formative research report. Design brief to guide the Create phase.	An intervention package of surprising and relevant materials and activities designed to cause the desired behaviour change.	Project monitoring reports and learning documents.	Evaluation report of outcomes and processes.

Theory of change

During the Assess and Build phase of the project, we understand the causal links from the state of the world to behaviour to brain-body to environment. Based on this understanding, the intervention is created, delivered and evaluated.



Behaviour Change Hub

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Its objective is to design and deliver effective behaviour change interventions and, in the process, also enhance capacities of the programme teams.

Why a Behaviour Change Hub?

Effective Interventions

As it is rooted in the BCD framework, country teams can follow a robust design process and identify the behaviour determinants that help create effective interventions.

Experiential Learning

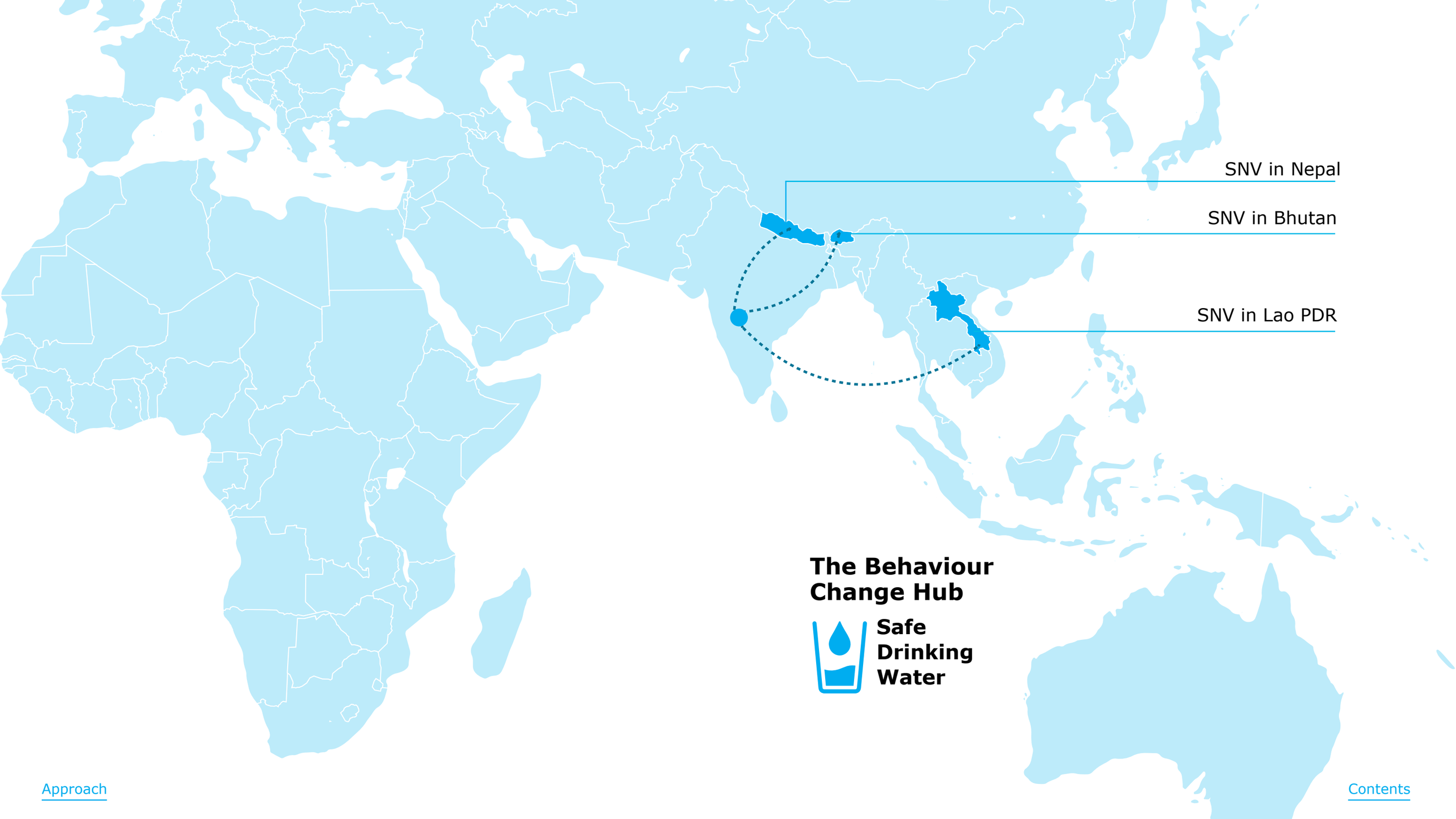
It takes a 'learning by doing' approach. By designing effective behaviour change interventions, country teams also learn the design process.

Cross-Country Learning

Country teams follow the same processes, which helps managers and country teams learn and work more effectively and efficiently with each other.

Optimisation of Resources

Experts are engaged by the group instead of individual teams, and tools are shared. Costs and efforts are optimised for everyone.



Approach

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Research design

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Process

Aug 2023 → **July 2024**

Aug-Sep 23

Assess

Gathering existing knowledge and identifying key research questions.

Aug-Sep 23

Research design

Research design and preparation of research guides and concepts.

Oct 2023

Training

Training researchers and note takers.

Oct 2023

Data Collection

Collection of data by two teams led by SNV advisors.

Capturing raw data online.

Nov-Dec 2023

Data Analysis

Conducting data analysis and synthesis.

Dec 2023 - Jul 2024

Reporting

Consolidating and presenting research findings as a report

Ethical Consent

The research team was well aware of informed consent, the principle of 'do no harm', child protection, and the GEDSI policy. Throughout the data collection process, respondents were briefed on the study purpose and willingly provided consent with signatures for the utilization and dissemination of the collected data, including their photographs.

Iterative Approach

The iterative approach helps answer new questions that emerge during the formative research and thereby helps move closer to strategic insights.

Research questions

During the Assess phase, we identified the gaps in the knowledge and organised them as key research questions. The pre-test in the field before also contributed to getting the research questions tested and modified where needed. These formed the basis for designing the formative research.

Behaviour

What are the current routines in the water journey?

What is the preferred and sustainable water treatment option for the target persons?

GEDSI

How can we reduce the burden of women and caregivers of PWD in water journey?

What are the challenges/barriers that exist for person with disabilities in the water collection, treatment and handling?

What solutions can improve access to water collection, treatment and handling for person with disabilities?

Brain/Body

Motivated brain: What could motivate the purchase and use of filter or boiling?

Executive brain: Are beliefs about water in favour of or against treatment?

Are there knowledge gaps that affect boiling or filter use?

Body: How do sensory aspects - look, taste and smell, affect choices around drinking water?

Environment

Physical: Are water treatment tools available in nearby markets?

Social: Is water treatment an emerging, aspirational norm?

Touch Points

What are the effective and efficient touchpoints to reach the target persons, including persons with disabilities and their caregivers?

Climate resilience

What could be the alternatives for water shortage or contamination, especially for disadvantaged populations?

Research contexts

In-Depth Interview (IDIs): Conducted IDI with water treatment doer and non-doer households, including persons with disabilities and their caregivers.

Focus Group Discussion (FGD): Conducted FGD with both men and women separately for motives, touchpoints, GEDSI and climate resilience.

Key Informant Interview (KII): Conducted KII with local government leaders, Health Assistants, RHO and Market study.

Behavior Observation Stayover: The research team stayed overnight with families to observe the journey of drinking water, from collection to consumption.

Research methods

Formative research in BCD is different from conventional research in a number of ways; it is designed to carefully answer questions that will help us to construct a Theory of Change for changing behaviour. It focuses more on behaviour than what people say about their behaviour, as many of the drivers of behaviour are non-conscious and so cannot easily be explained by the people involved. To know more, please refer to BCD - Formative Research Protocols document.

Site observation

Researchers observe the site and then interact with the community member to know more about what was observed. This helps us understand aspects of the physical environment, reasons for choices, and rewards.

Water Journey

Respondents narrate their experience of performing the target behaviour (e.g. water treatment practices, storage, from their daily activities) as a story. This helps us understand the factors that influence different stages of the user journey.

Behavior demonstration

Researchers observe the demonstration of the behaviour (e.g., boiling water) to know more about what was observed.

Behavior observation

During ethnography, the family carries on with their regular tasks with no interference from the researchers. This helps us observe routines, tools used, and challenges to performing the behaviour.

Touch Point Mapping

Researchers map the different touchpoints to reach the target persons. This helps us understand access and nature of engagement with potential touchpoints.

Three wishes

Respondents get to make three wishes to improve their life or an aspect of their life (e.g., children's life). This helps us understand overall motives in life, not necessarily related to the behaviour.

Motive stories

Respondents react to stories that link motives to the target behaviours. This helps us understand motives specific to the target behaviour.

User Imagery

Respondents imagine the profiles of those who perform the target behaviour and those who do not. This helps us understand motives, social norms, and sanctions related to the target behaviour.

3.4

Sample design

The research sample was selected based on three criteria;

1 Behaviour

Doers (those who treat water by boiling or filtering) and Non-doers (those who do not treat water)

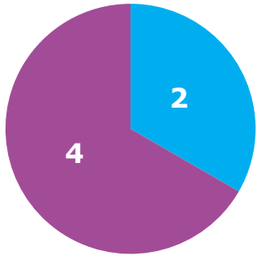
2 Region

We consciously selected a hot region (Dagana) and a cold region (Haa) to understand the different water journey and treatment practices respectively.

3 Inclusion

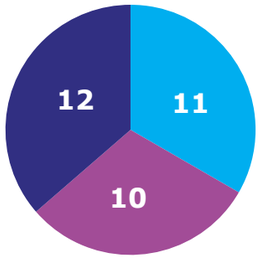
We have actively included PWDs and caregivers, irrespective of gender and age. However, we found that the caregivers for the PWDs were primarily women, and in some cases, men were also seen as caregivers.

Behaviour Observations



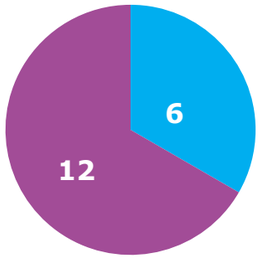
General
Persons With Disability

In-Depth Interview



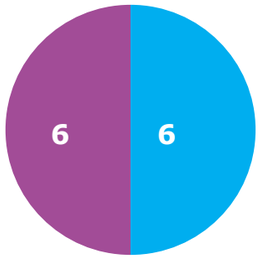
Non-doers
Doers/Partial
PWD

Key Informant Interview



Shopowners
Health Assistants/Local Government)

Focus Group Discussion



Motives and Touchpoints
Gender and Climate resilience

Research findings

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Water Journey

The research team closely observed and interviewed the daily practices and routines of water collection, treatment, storage, and handling water. We selected a hot and a cold region, and the findings are presented separately.

Key research questions

What are the current routines in the water journey?

Haa

Haa is a valley in western Bhutan at an elevation of 3056 metres above the sea level. Most households have access to piped water at home.

Haa - Collection

Primary source

Most households have water taps connected inside their kitchens to collect water for drinking. Few households have the water tap outside, and it takes two to ten minutes to collect water. The water supply is usually consistent. If there is an issue, it is usually fixed within one to three hours. During such times, the families collect water from neighbours if needed.

Women perform majority of the tasks related to water collection. However, some men collect water when women are not home. It is very common to see both men and women participate in water collection. Persons with moderate disability also help with collection.

Alternate source

In summer, water from the tap gets dirty. Therefore, most families collect water from the spring. It takes them 10 to 20 minutes for a round trip, and some make the trip four times in a day. During such times, whoever is available at home collects water. Some families also buy bottled water for drinking.

Haa - Treatment

Most households tie a white cloth around the water tap to filter dirt.

Before, the common practice was frequent tea consumption. However, over the years there has been a shift towards drinking boiled water. Water is boiled in an electric kettle or boiler, and the gas stove. Those who boil water, reported boiling throughout the year. Filter is rarely used. Those who use filter, boil the water first and then filter it.

When boiling water on the gas stove, they boil till bubbles arise, continue to boil for another two to three minutes. With the hot–warm boiler, it takes 16 minutes and with the instant boiler, it takes 15-20 seconds. After boiling, they keep the water in the boiling vessel itself for it to cool down.

Both men and women boil water in the electric boiler, on the gas stove and on the mud stove (depending on what they use at home). Persons with moderate disability can boil water in the electric boiler by themselves, with guidance and support from the caregiver.

Haa - Storage

Pre-treatment

Even though the water supply is consistent, most families store water to let the dirt settle. In winter, water freezes in the pipes, and is not available till midday. The families store water in buckets, jerrycans and barrels. Some cover the storage vessels with lids, while others don’t. They wash the storage vessels frequently to avoid the slimy texture in the bucket and change water every 24 hours. The households have a scoop to shift water from the storage vessels. Some wash/rinse before scooping the water, while others don’t.

Post – treatment

All families store the boiled water in a hot thermos and cold water in water bottles or pet bottles. They rinse the storage containers before storing water. They don’t usually store for more than 24 hours. Old water is always discarded before refilling.

Haa - Consumption

Overall, many still prefer tea to water. Some carry boiled water and tea when they go to the field. They pour tea or water from the flask into a cup to drink. When drinking hot water, cups are washed only when they get dirty.

In households that have a person with disability, caregivers ensure water is available next to the person. For persons with severe mobility challenges, caregivers cool the water before offering it to them. While offering water for persons with intellectual disability, caregivers are more careful since hot water or tea can cause burns.

Dagana

Dagana has one of the hottest place in Bhutan. The elevation is 1371 metres above the sea level. According to the SNV endline report 2023, 23.9% reported water was piped into dwelling and 69% reported water available on premises.

Dagana - Collection

Primary source

Few households have a water connection in their kitchens, but most have a water tap just outside their house. Water supply is limited to certain times in the day. It takes families two to five minutes to collect water. They collect water in jerry cans or buckets. They rinse collection vessels before collection, sometimes with detergent.

Alternate source

During summer, the water source collects debris and water becomes brownish and dirty. All families collect water from the spring. It takes five to ten minutes for a round trip, carrying five to ten litre jerrycans. Some make the journey more than once as their water requirement is more. The community members are concerned that the volume of the spring water is decreasing.

Dagana - Treatment

In most households, there is a cloth tied to the tap to filter the dirt, especially during the summer. Most don’t treat water, and those who do, primarily boil. Those who boil water, boil it on a gas or a mud stove, and on an electric boiler, only till it bubbles. They boil water only when someone is sick within the family or when the water is dirty. Very few use water filters. Those who do, used it as a dispenser for the boiled water.

Cues for changing and cleaning the scoop and the cloth

In both Haa and Dagana, the scoop is washed or rinsed when dust or flies are seen around it. The cloth tied around the tap is washed when the colour of the cloth changes.

Dagana - Storage

Pre-treatment

Everyone stores water in jerrycans and buckets, sometimes with and sometimes without cover. Those who do not treat water, store the water in bottles and keep it indoor or in the fridge. Sometimes, the water stored in the barrels outside are disrupted by the elephants. Sometimes, even the water pipe connections are broken by the elephants.

Post-treatment

Those who boil, leave the boiled water to cool in the boiler or the vessel in which it was boiling. Sometimes, they transfer it to another vessel. The boiled water is also stored in the fridge.

Dagana - Consumption

Most consume water from a mug, some consume directly from the jug or the bottle. Not everyone carries boiled water to work. Some drink directly from the tap. In households that have a person with disability, water is always boiled and kept ready by the caregiver.

Target behaviour

At the end of the Assess phase, we had selected boiling water before consumption as the target behaviour. Further, we needed to explore different water treatment options that are easy and accessible for the rural communities, specifically the preferences of women and persons with disabilities.

Key research questions

What are the preferred and sustainable options for safe drinking water?
How can we reduce the burden of women and caregivers in the water journey?

Finding - Convenience

In both hot and cold regions, boiling water with an electric boiler is seen as a convenient option.

With electric boiler, there isn't much effort involved besides pouring the water and turning on the switch. Besides, use of filter is seen as an additional step to boiling. There is belief that boiling the water kills the germs present, whereas filter removes the dirt and the dead germs.

"With the electric boiler, it is easy, and I have seen my parent, and my in-laws also boil water in the same way."

Female
Dagana

"Electric cookers and boilers help reduce the burden, it makes our work a lot easier"

Female
Dagana

Finding - Safety and sustenance

In the cold region, boiling is a sustained practice, and it could become sustained in the hot region as well.

In the cold region (Haa), water is boiled correctly and through the year. In summer, when the water quality is poor, bottled water is an option for some households. However, in the hot region (Dagana), only few boil water, and they do so only when someone is sick or when the water gets dirty.

With convenient tools like electric boiler and gas stove, it is possible for safe and sustained practice of boiling throughout the year, though there is less preference for drinking hot or warm water in hot regions. With filters, there is lack of knowledge of its maintenance. Some filters are broken and are used as storage or are tucked away.

Finding - GEDSI and Climate Resilience

Electric boilers and gas stoves reduce the burden on caregivers, and suitable for different water sources.

The caregivers find the electric water boiler very easy to use. It saves time as they don't have to stand next to the gas stove. However, based on the type of disability, boiling on mud stove and gas stove is also seen as convenient for the person with disabilities.

"He (Persons with disabilities) fetches the water and boils it on the mud stove and not on the gas or with the electric boiler. We worry that he might get electric shock because he does not know how to use."

Caregiver, Male
Dagana

"All my children are speech impaired and deaf, and they can boil water. I taught and engaged them. This also makes them independent. My daughter boils water on the gas stove and stands there till it is completely boiled."

Caregiver, Female
Dagana

Finding - Accessible

Electric water boilers are easily available in the market and are affordable for most.

There is consistent supply of electric water boilers. Since electricity is regular with minimal power cuts, it does not affect the treatment process. The cost of a warm-boil boiler ranges from Nu 1500-1800 ($16), which is affordable for most.

Water filter and its spare parts are very difficult to find in the nearby markets. The cost of the filter ranges from Nu1800-Nu3000 ($16-$36).

"I don't keep water filters in my shop, people don't ask for filters, they ask for water boilers."

Shopkeeper
Haa

Determinants

In this section we present the findings related to the determinants of behaviour change. The determinants related to the brain, body and environment are from the insights gathered from the perspective of shifting behaviours towards safe drinking water.

Key research questions

Executive brain/Body

Are beliefs about water in favour of or against treatment?

Are there knowledge gaps that affect boiling or filter use?

How do sensory aspects - look, taste and smell - affect choices around drinking water?

Motivated brain

What could motivate the purchase and use of filter or boiling?

Social environment

Is water treatment an emerging, aspirational norm?

GEDSI

How can we reduce the burden of women and caregivers of PWD in the water journey?

What are the challenges/barriers that exist for persons with disabilities to collect, treat, and handle water?

What solutions can improve access to collection, treatment, and handling for persons with disabilities?

Climate resilience

What could be the alternatives for water shortage, especially for disadvantaged populations?

4.3.1. Executive brain/Body

Finding - Sensorial

If the water looks clean, tastes good, and doesn't smell, then people believe it is safe to drink.

There is preference for water that looks clean, tastes and smells good, and is at the right temperature.

Both in Haa and Dagana, when the water changes color in the summer to yellowish and muddy, it is not preferred. In the hot region (Dagana), the boiled water is not preferred by some because of its taste and smell. In the cold region (Haa), the filter water is seen as too cold to drink in the winter. However, in Dagana, there is preference for cooler water in the summer.

"Feels like it (filtered water) will break our teeth".

Female
Haa

Finding - Beliefs

Among doers in Dagana and Haa, there is a belief that there must be germs in water that the eyes cannot see.

This belief results in doers boiling water before drinking. Among non-doers in Dagana, there is belief that the water that looks clean is safe to drink. And therefore, doesn't need treatment.

"My parents keep asking me to boil water as there are many germs that the eyes cannot see, and since then I have been boiling water to drink."

Doer, Female
Haa

Finding - Knowledge gap

There is a knowledge gap about proper treatment solutions.

Boiling

Among some, there is a lack of knowledge on the how to boil the water, how many minutes or seconds are necessary. Also, on how the water will appear (bubbles) as it is boiling. Sometimes hot boiled water is mixed with the tap cold water, to cool it down for consumption.

"We use the electric boiler (warm/boil), we drink when it switches to warm, I don't know how long it takes to boil"

Female
Dagana

Candle filter

There is no knowledge about the availability of filter in the market, how to assemble the filter, when to change the candle and how to clean the candle. The few households that have filter, have not changed the candle. There is also the wrong perception that filter can't treat germs, only boiling can.

"My daughter gave me a filter; I don't know how to clean or use it. I don't trust the filter will kill the germs."

Female
Haa

4.3.2 Motivated brain

Finding - Overall motivation

There is strong motivation to boil water in the colder region (Haa), but not in the hot region (Dagana).

In the cold region, community boils the water because hot water is preferred in the cold weather. And there is belief that there may be germs in the water that eyes can't see. In the hot region, many don't treat the water as they don't prefer the taste of warm water and believe the water is safe to drink.

"I don't drink boiled water; I drink straight from the tap everyday. I don't like the taste of the boiled water."

Male

Dagana

Finding - Disgust

There is disgust with water that doesn't look clean, tastes or smells bad.

There are current practices to remove dirt from water such as tying a cloth around the tap or letting the dirt settle in the storage container. When water looks unclean or smells bad, it is not used for drinking.

The feeling of contamination at the source by animal faeces or dead animals also disgusts the community. During the formative research, the motive story "What is in your water?" – that illustrated different ways in which water can be contaminated - resonated very strongly with the community. In Haa and Dagana, all respondents related to the possible contamination from the source to their tap.

"I am using a cloth to filter the water from the taps, then let the dust settle before using or boiling."

Female
Dagana

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Finding - Nurture

Everyone wants to protect their family members, especially children, from illnesses.

They want to protect the family from illness, especially children and persons with disabilities.

During the formative research, the community responded well to the story on the nurture motive, “Take No Chances”, about a father who does not want to take any chances with his son’s health. Both fathers and mothers resonated with the story. They felt that parents always want to ensure the children are free from sickness like typhoid. The parents also felt that teaching good habits is also important for a better future for the children.

“With children, I feel extra care needs to be taken. To not compromise on health by drinking unsafe water, I purchased filter.”

Filter user, Female
Dagana

“It is best to teach your children what is right and wrong early in life, when the fire is small you can pour a cup of water and the fire dies, when the fire is big and uncontrollable it will be difficult to put out.”

Male
Dagana

Finding - Affiliation

Community members observe what others do with water and follow the same.

When it comes to water, families are influenced by what they observe around them.

In both Haa and Dagana, the community comes together to protect the water source and keep it clean.

"We face water shortage during the summer. With heavy rains, the water sources get dirty/blocked with insects, leaves, sticks, even rats and frogs. Around that time the water is dirty, brownish and also smells. The residents go to the water source and clean the source once a month…"

Male
Dagana

Finding - Convenience

The choices made in the water journey are influenced by what is easy or difficult.

In both Haa and Dagana, most households have installed the water tap inside their kitchen to make it easier to collect water, especially during rains and in the night. Boiling on electric boilers is preferred because it is more convenient than on the gas stove. There is less preference for filter as it is seen as high maintenance.

"It is easier now with water connection inside the house, don't have to keep going outside to collect water like before."

Male caregiver
Haa

It is more convenient to boil water in the electric water boiler. Sometimes, the water cools overnight in the boiler, and if thirsty the family drink that in the morning."

Female, Caregiver
Haa

4.3.3 Social Environment

Finding - Norm

Use of filters is an emerging and aspirational norm.

The proper treatment of water before consumption is an existing or emerging norm and is aspirational.

In Haa, everyone in the community is perceived to boil water. Whereas, in Dagana, it is perceived that in future everyone will treat water before consumption.

The user imagery of individuals treating water is aspirational: Someone who is educated, aware, has consistent income, shares responsibility, gets support from family members, lives in the city.

Collection

Barriers to participation	Solution
Tap stand is outside.	Have a tap stand inside the house. Else, the distance of tap stand from the house can be reduced.
Tap stand is too high.	The tap should not be too high or too low.
Tap design is inconvenient.	The bibcock (design) of the tap should be easy to open and close.

Treatment

Barriers to participation	Solution
Lack of knowledge on how to use the boiler and gas stove, especially for PWD to be able to use the boiler/gas.	Teach how the gas stove and the electric boiler functions.
Filter not used and no knowledge.	Teach how to use filter. For filter users, encourage refilling water.

Storage

Barriers to participation	Solution
Containers are too big and heavy to carry.	Have jerrycans that are not too big.
The scoop is too far from the bucket /boiler/ vessel.	Keep the scoop closer to the bucket. Keep the scoop closer to the boiler to scoop hot water.

Consumption

Barriers to participation	Solution
No proper storage containers or flasks.	Having a dedicated flask for hot water and a bottle for cold water.
Mugs/ cups moved, kept in different places.	Keeping mugs and utensils in the same place.
No handles in mugs or glasses.	Have a mug /glass that is easy for the person to hold.

Finding - Gender

Women are seen to be responsible for water-related tasks, though the mindset is beginning to change.

The women perform most of the tasks in the water journey. The men are not ignorant, are aware and are also performing the water journey in very small parts. There is a difference in attitude within different generations. The older men feel there won't be anyone who would make fun of the women's task performed by men, however, the younger men feel they might be teased, or they might be told or asked why they are performing the work of the women.

In the next 10 years, they predict that household chores, especially in the water journey, will be shared by both men and women.

The electric water boiler reduces the burden on caregivers and is easier for persons with certain disabilities.

"So when I go home and when I am working and if my friends tease me, I will say, it is also my responsibility, and also, that it was something that was discussed in the meeting."

Male
Dagana

"It is challenging when I have to care for my baby and also do household chore"

Female
Dagana

4.3.5 Climate resilience

Finding

There is awareness about the climate change and its impact on the water sources.

In both Haa and Dagana, there is awareness that water sources are drying up and people are taking actions to cope with climate change. At the community level, there are efforts to protect water sources with climate resilient ideas e.g., planting the right trees at the water source. At the household level, there is hoarding of water for unforeseen water shortages.

In Haa, which is a cold region, water freezes in the pipe till midday. Water is kept running to avoid the freezing. In Lhamoizingkha, Dagana, which is one of the hottest regions, they use water pumps to bring water to the field in the winter when the water flow is less.

"With climate change, it is unpredictable. In the summer, we are worried about the high risk of landslides and that it will cause the river to rise and affect the households nearby."

Male, Caregiver
Haa

"Men and women, young and old are feel the need to plant the right kinds of trees near the source. If we plant banana trees at the water source, it might attract the elephants and might cause damage to the water source."

Female, Caregiver
Haa

Touch points

We specifically explored effective touch points to reach our target segments through Focus Group Discussions among men and women. We also explored effective ways to reach persons living with disabilities. We share here what we found about reach and engagement of different touch points.

Key research questions

What are the effective and efficient touch points to reach the target persons?

Finding

Interpersonal communication (IPC) by Health Assistants seems to be the effective touch points in both districts.

Water Safety Planning workshop

The Water Safety Planning workshop in the community provides the opportunity to reach majority of the households. The safe drinking water session for 1-2 hours can be integrated in the agenda.

Health Assistants

Interpersonal communication (IPC) by the health assistants is effective touch point. The health assistants conduct monthly outreach clinic with the mothers and for the public at the primary health care centre. Health Assistants conduct water test twice a year to ensure the quality of water is safe. They conduct household visits for to reach the persons with the disabilities and the caregivers.

Chat group

Chat groups are quite popular and frequently used. Creating a campaign chat group (WeChat, WhatsApp and Telegram) could also be an effective touchpoint to connect with the community.

Conclusions

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Target Behaviour

Key findings

There is preference for water treatment options that save time and effort, are affordable and have the natural water taste. With electric boiler/kettle, there is greater participation from men. Children and elderly people can also boil water with these tools. This reduces the workload on women and the caregivers.

Recommendations

Expose community to different water treatment options. However, promote sustainable and convenient water treatment solutions such as boiling on gas stove and electric boilers and emphasise the need to boil for a safe amount of time.

Motives

Key findings

The possible motives for proper treatment of water are: Disgust (for visible contamination and invisible germs and animal faeces), Affiliation (observing and following what others do) Nurture (protect family members, especially children, from illnesses) and Convenience (save time and effort).

Recommendations

Promote water treatment using primarily the nurture motive. However, other motives such as disgust, affiliation and convenience can be used where they add to the narrative.

Executive brain/Body

Key findings

Among non-doers, there is belief that if the water looks clean, tastes good, and doesn't smell, it is safe to drink. Besides, there is belief that naturally occurring, flowing water - spring water is safe to drink.

There is a lack of knowledge about treatment solutions (how to properly boil water), and their safe handling practices pre and post water treatment (e.g., not putting the hand in the water while scooping water and closing the lid while boiling water)

Recommendations

Promote water quality testing at regular intervals, at least twice a year (during wet and dry seasons) and communicate the results to the community. If the households sense that their water looks and smells bad, the households are encouraged to contact the health assists to test their water from their tap.

Provide knowledge about treatment solutions and maintenance in appropriate formats - product demos, films, cards and leaflets.

Disability

Key findings

Persons with disabilities wish to participate in the water journey. However, due to the barriers present in the environment, and on account of the type and severity of disability, they are often unable to participate.

Recommendations

Periodic awareness and sensitization of the family members, members of the community and local government to the needs of persons with disability, so that their environment is modified, assisting devices are provided and discussed with them to facilitate their participation in the water journey.

Specifically, promote the availability of safe and sufficient drinking water for persons with disability.

Climate resilience

Key findings

In Haa and Dagana, during the dry season, alternate water sources are used, also when the water in the primary source is not sufficient. Community members are aware of drying of water sources due to climate change and human induced activites as well.

Recommendations

Promoting sustainable water treatment options around the year like electric water boiler options so that water is safe irrespective of water sources.

Climate Resilient Water Safety Plan (CR-WSP) Workshop will be effective and reach majority of the households.

Touchpoint

Key findings

Interpersonal communication (IPC) by the health assistants can reach mothers. Online chat groups are effective to connect with the community. Conduct meeting with Self-help groups for persons with diabilities and their caregivers, and visit households where required.

Recommendations

Motivate, inspire and train health assistants, water technicians, and engineers to engage with the campaign to deliver the campaign effectively. Connect and engage with the community members via the online chat groups.

Annexure

Research tools

You can access all the research related documents in the links below:

Research guides and tools

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