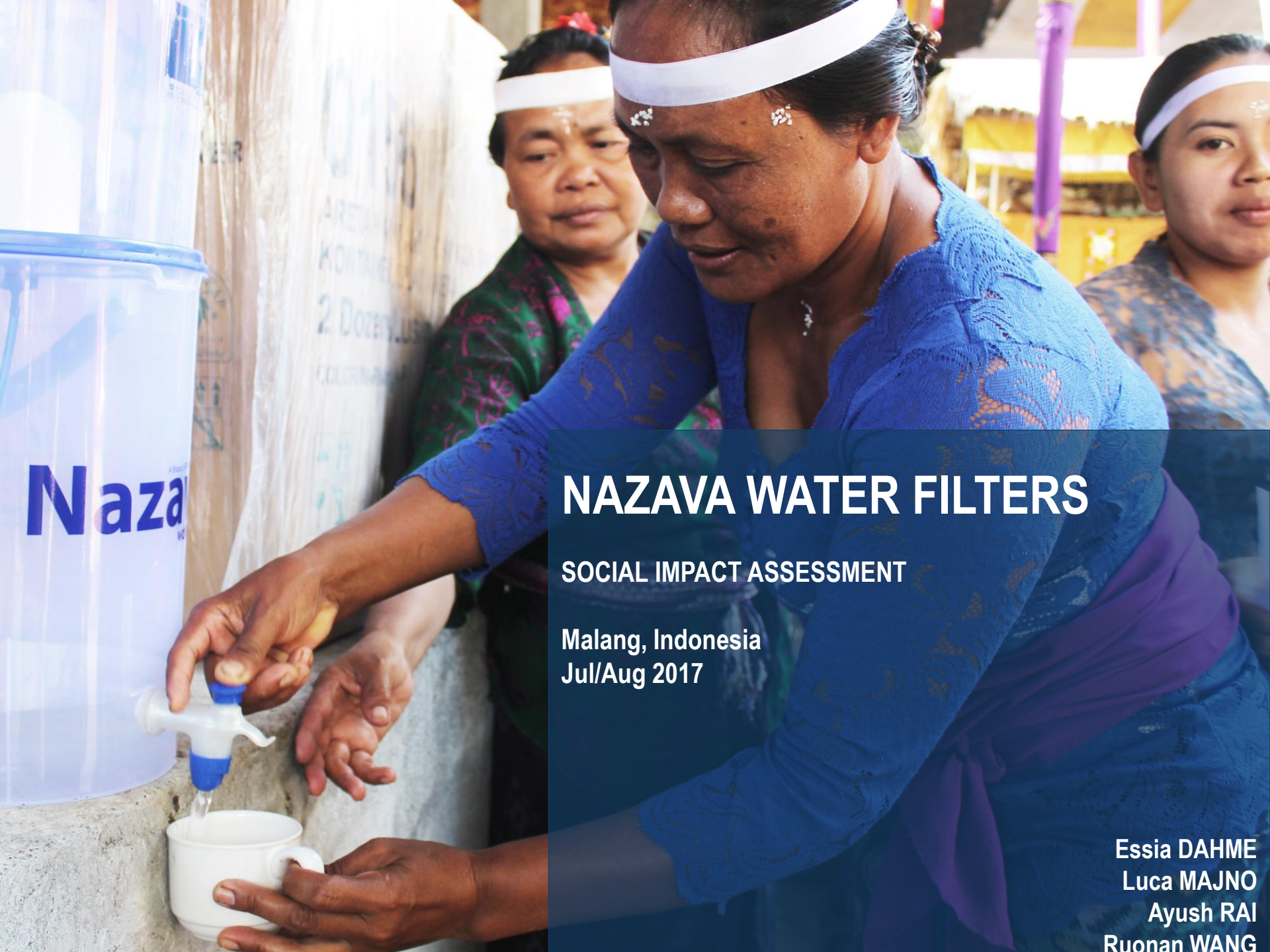


NAZAVA WATER FILTERS

SOCIAL IMPACT ASSESSMENT

Malang, Indonesia
Jul/Aug 2017

Essia DAHME
Luca MAJNO
Ayush RAI
Ruonan WANG

Table of Content

Executive Summary

SOCIAL IMPACT ASSESSMENT

This report presents the results of a social impact assessment conducted for Nazava Water Filters. The aim of the project is to understand and quantify the impact on users by the water filters sold by Nazava across three dimensions: money saved, time saved and health improvement. The sample group comprised both users (500) and a control group of non-users (200) were interviewed across more than 41 villages in the Malang region. A questionnaire was tailored for users in order to analyze the three factors over more than 60 questions, evaluating social demographic, usage, impact and marketing sections. We also designed another questionnaire for the control group. Both before-after analysis and data from control group (non-users) are considered in our analysis.

MONEY SAVED

In Indonesia, two main methods are used to clean water: boiling and buying gallons. Both methods could be expensive for Nazava's target customers. One of the missions of Nazava is to help users reduce living expenses. On average, using a filter allow families to save 9,639.01 IDR per week. In particular, households who were previously using gallons save 17,197.5 IDR per week. 63 users (31% of the interviewees using LPG to boil water) didn't experience a significant change in their expenses. This result may be due to lack of usage of the filter or exceptional need created of LPG fuel (i.e. people start using extra LPG to boil water for shower). Overall, almost 3 out of 4 users are saving money, a result that represents an even higher impact on the bottom of the pyramid families whose costs of cleaning water are relatively higher.

TIME SAVED

There was no significant change in terms of the number of hours used to collect wood or use LPG. This result might be due to the fact that most of the people didn't change their habits. Even after buying the filter, consumers keep collecting the wood for other purposes (i.e. cooking, boiling water for tea or coffee) and the amount of wood used to boil water represents just a small part of the total consumption.

The users, however, generally benefit from time saved by avoid boiling water. Add in the calculation

Executive Summary

HEALTH IMPROVEMENT

One of the direct measures of health improvement across the globe is the decrease in the frequency of diarrhea outbreaks due to contaminated water. A significant difference was found between users and non users. 83% of users reported the occurrence of Diarrhea about 2 years ago compared to non-users where the percentage was lower (69%). Moreover, only 8% of Nazava users reported the occurrence (within a month or within half a year) where as 21% of non-users reported it. While this outcome may demonstrate a negative correlation between the usage of filters and the occurrence of Diarrhea, caution must exercised in the generalization of these results. Indeed, other factors – as level of education – seem to play a role in the overall health improvement. A detailed health study rather than just one question-based approach may be needed to confirm the accuracy of our results.

CONCLUSION & RECOMMENDATION

Overall, Nazava has created positive impact for customers upon usage of the filters, over the three aspects under study, among which the impact on money saved is the most apparent. During the study, we noticed that convenience, instead of actual time saved, is a more appealing factor to the customers. We therefore recommend the company to focus more on the “convenience” marketing proposition. In addition, we recommend the company to strengthen its water and product education during marketing meetings as well as to improve its after sales services, as we observed that most of the users are not fully informed with how and when to clean and change their filters.

For future studies, we recommend upcoming social impact study groups to continue using the PPI index so as to follow the evolvement of social economic status of the users.

Foreword

Term of the Study

Users	All the past customers/households of Nazava Water Filters who are still using the water filter (and/or its components). This may or may not imply the correct prescribed usage of the filter.
Non Users	All the others who do not fall in the above category of Users. It may include past customers who may have discontinued the usage of the filter and/or not willing to re-establish the filter.
Households	This signifies the entire family members living in the same house. It does not have any direct resemblance or relation to the actual consumer of the filtered water whatsoever.
SWC	Acronym for Safe Water Consultants. SWC represent the sale force who work directly under the city managers and oversees both the sale and recruitment process in a given region. Each region includes villages and sub-villages.
Resellers	Coordinators are directly responsible for the product sales to the households. They also oversee the filters repurchase and work through a network of sub-coordinators. Most of them are women.
Sub-Coordinators	Work as a part of the network of coordinators and have been a crucial part in connecting us to the households in the villages that we surveyed.
Puskesmas	These are small governmental organizations responsible for a group or a single village's medication requirement. It also includes the centers operated by midwives and specifically designed for women and child health.

Foreword

Focus Of The Study

This report analyzes the impact of Nazava water filters across 3 dimensions: health, time saved and money saved. Our outcomes are based on the responses of 500 users taken from an overall 3,500 customers population as well as a 200 non-user control group in the Malang region.

Time & Geography

The study took place during 6 weeks between the 12 Jul and the 21 Aug 2017. The data analyzed in this report is based on samples taken from over 10 districts, comprising more than 22 villages, across the whole Malang region in East Java where Nazava is currently active.

Sample

Our outcomes are based on the responses of 500 users (from 41 villages) taken from an overall 3,500 customers population in the Malang region. The study included also responses from 200 non-users (from 49 villages) used as a control group.

Addressee

This study report is issued by the student consultants from HEC Paris in the framework of the FACT Impact Planet program and has been presented to the Nazava team before public distribution.

Limitations

Language & Translation

Translation is a crucial factor in order to ensure a proper understanding of the questions and answers. Four translators, fluent in both Bahasa and Javanese, were contracted by Nazava to conduct interviews, translate questionnaires and communicate with local coordinators. Although, the questionnaires were translated formally yet while conducting the survey there were many uses of local dialects, which might have introduced different connotations of the same questions and thus, introduced some error. Also, at some places it was a mixture of Javanese and Bahasa Indonesia which was hard to translate back specially in the qualitative question.

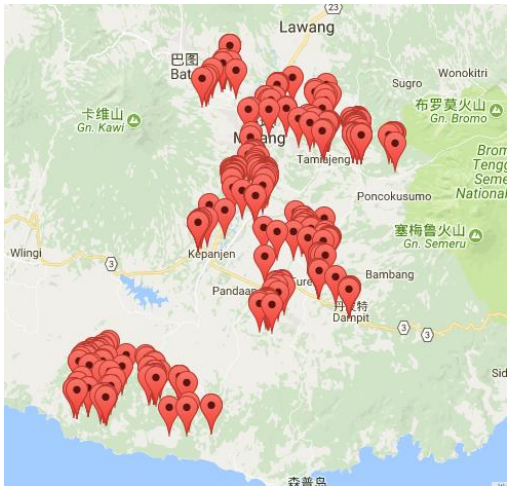
Social Desirability Bias or Company Affiliation

The presence of foreign interviewers and of a structured interview setting may drive individuals to answer in a way that makes them look more favorable to the experimenter. In order to limit the effects of this bias, interviewers were presented as university researchers from France, with no affiliation to Nazava company. Furthermore, non-users interviews were conducted in the same village in order to cross-check the truthfulness of data before the filter was bought.

Limitations

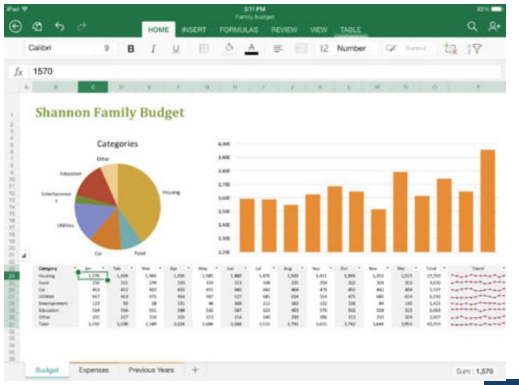
Statistical Significance & Sample Selection Bias

The initial randomization posed a problem as the households (specifically the rural ones) were hard to reach and thus, we had to move to some specific areas where the coordinators and sub-coordinators were more active. The surveys were conducted in over 10 sub districts over the entire Malang region to minimize this error but nonetheless there is a possibility of biased/favorable answers due to the aforementioned logistics issue. Furthermore, interviews were conducted in different environments, rural and metropolitan, collecting data from a wide range of economic and social backgrounds so as to maximize randomization.



Iteration and Data Collection Error

Although maximum care has been taken in collecting and storing data but due to a few iterations of questions in the initial phases, there is a possibility of losing/nullification of the initial few records. We have taken steps to minimize this error to near zero.



Acknowledgement

This report could not have been accomplished without the help of the the two founders Lisa and Guido who provided insight and expertise that greatly assisted the research.

We are also grateful to the Managers and SWCs in the Malang office and, most importantly, to Rinda and Andri who helped to coordinate with the resellers on the field. Furthermore, we would like to thank all the villagers who patiently answered our questions.

We would also like to extend our thanks to Lise Penillard and Florian Hoos, respectively Executive Director and Scientific Director of M.Sc. Sustainability and Social Innovation at HEC Paris who assisted us in our preparations in Paris. Deepest gratitude are also due to Improve for this great opportunity.

Acknowledgement

And last but not least, thank you to the amazing work done by four students from Brawijaya University who volunteered for the translation work on the field.

Table of Content

Water Issues in Indonesia

Indonesia at a Glance

255 million

The fourth most populous country in the world

15,000

Children under the age of 5 die annually because of diarrhea

33 million

Lack safe drinking water and 100 million lack access to improved sanitation facilities

0.04%

Is the percentage of local government budget allocated for water supply

Water Treatment in Indonesia

Most water that people use in their households is contaminated with harmful bacteria. Just 12% of people wash their hands after defecating, and, although most Indonesians boil their water, around 47.5% of the boiled drinking water still contains e-coli bacteria. The two main water treatments, boiling water and buying bottled water are both inefficient for several reasons. Using wood or gas to boil is extremely time-consuming, causes respiratory diseases and increases CO2 emissions. The annual costs of buying water are 132 USD, which is too expensive for the bulk of the Indonesian population who earn less than 7 USD per day.

Water Issues in Indonesia

Government: A Series of Inappropriate Decisions

- The Indonesian Government aims to ensure access to drinkable water by 2019, which will be provided through piped water service (PDAM) (60%) and non-piped water services (40%). Today, more than 30 million of Indonesians do not have access to clean water sources. It remains highly unlikely that the situation will significantly improve by 2019 and according to the World Resources Institute, Indonesia is likely to suffer from high water stress in the upcoming years.
- Indonesians produce 64 million tons of waste every year and much of this waste is dumped into rivers, polluting the water that reaches hundreds of villages. Regulations prohibiting the dumping of waste into waterways exist, but are poorly enforced. Due to civil and industrial waste, for instance, the Citarum River in West Java contains four times the recommended safe levels of mercury. Nevertheless, more than 35 million people continue to rely on it for drinking, washing water, and irrigating rice fields.

Citarum River, the most polluted river in the world (Telegraph, 2014)

- Over the years, the government has insufficiently addressed the water sanitation problem with proper infrastructure. According to the World Health Organisation and the United Nations, only 22 per cent of Indonesians had access to water piped onto their premises in 2015. This lack of water infrastructure leads to negative health, economic and human development outcomes.

Water Issues in Indonesia

Colorful Village slum, Malang (East Java)

The Poorest Are Most Affected

- Low-income Indonesians are particularly exposed to poor quality water. Those that reside in urban slums lack basic sanitation facilities and are less likely to be connected to wastewater treatment plants. These areas are at higher risk of water-borne diseases such as cholera, dysentery, gastroenteritis, typhoid and hepatitis A.

The Need of Affordable and Efficient Water Treatment

- Improving access to affordable water cleaning methods and increasing the awareness of proper hygiene practices will be crucial to improve people's health and ensure country's future development.

Nazava Water Filters - Company Overview

Background

Nazava Water Filters is a for-profit social enterprise based in Bandung, and Banda Aceh Malang Indonesia. Founded in 2009, the company realized US$ 180,000 income from sales in 2015 and currently has 20 employees, among whom 15% are females

Management Team

The management team is composed by:

- Guido, Nazava's director
- Lieselotte, head Business Development
- Syahri, the general Operational Manager.

Every region is handled by a local manager, who manages the sales force and oversees the resellers recruitment process. Currently the company comprises of a network of over 150 resellers spread across Sumatra, Java and Bali.

International Recognition

Nazava Water Filters won The *Tech Awards 2013*, one of 10 global innovators recognized each year for applying technology to benefit humanity and spark global change. The Tech Awards, a signature program for innovation, selected Nazava Water Filters as one of two laureates in the Nokia Health Category.

Furthermore, Nazava has formed partnerships with global organizations such as the World Health Organization, the Thomson Reuters Foundation and NGO's such as Korpernik and Acted.

Nazava Water Filters - Products and Impact

Product

- The ceramic firlter can filter **99.99%** percent of harmful bacteria
- Price ranges from 16 USD to 51 USD
- Tested in 18 labs around the world1
- Filters up to **2-3 liters of water per hour**
- Each filter can last for **3 years** at peak efficiency

•Tested in 18 labs around the world

Impact

To date, Nazava has sold more than 45,000 filters over Indonesia, Philippines, Mozambique Burkina Faso and Pakistan. Filter use benefits customers across three levels. On the on hand, it effectively reduces the risk of water-borne diseases by filtering 99.99% of harmful bacteria. On the other hand, filtering water is significantly cheaper and less time consuming than respectively, buying bottled water and boiling water with LPG or wood. In fact, research has shown that low-income households in Indonesia using Nazava Water Filters save an average of USD$68 annually. As of today, Nazava improved the health of 225,000 people, increasing their disposable income by $ 2.9 M per year, and reducing CO_2 emissions by 31K TONS carbon dioxide.

Nazava Water Filters sales channel actively empowers women. Filters are sold primarily through a network of resellers who promote the use of water filters to their peers. This network is composed for the vast majority by women, who, through their work, can increase their monthly income and take an active role in the village. By 2020 Nazava aims to Improve health of 1 million people, increase their disposable income by $ 14M annually and give work for 350 people.

1. http://www.nazava.com/nazavaWaterFiltersTestResults.php

Nazava Water Filters - Staff Testimonial

Nazava is devoted to empower local people, especially women, by creating full-time/part-time job opportunities. The Malang office is currently composed of 5 Safe Water Consultants and 2 Logistic Handlers

Olivia
Safe Water Consultant

"I feel very happy working for Nazava. I feel so honored to have received trainings from foreign consultants hired by the company. I gained new knowledge that I did not have before. For example, how to make appointment with someone or even general sales skills.
I feel that I can actually help people by offering them water filters. Help them save money, time and become more healthy. I get new sales skills by knowing their problems and come out with a solution for their problems."

Andri
Logistics Manager

"Nazava is a social enterprise, I feel my work contributes more to the people. Nazava for me is like a family. I joined the company from the beginning in Aceh 7 years ago. Before I had no knowledge about water, now I have got many new knowledge about water treatment and how important clean water is for society. During these years with Nazava, I already tried all kinds of positions in the company and am able to install all kinds of filters."

The Mission

Goal

The aim of this report is to present the impact of Nazava filters on the life of customers living in the Malang region. The impact is assessed across three factors:

Time Saved

Money Saved

Health

Deliverables

Impact Map and 2 Questionnaires

Impact Report

Data Collection Tools

Logistics

To reach out to users, we randomly selected coordinators out of a list provided by Nazava. We firstly visited them and then were later introduced to their sub-coordinators (as many as possible). The reasons why we chose not to interview users directly are detailed in the limitations part.

We were divided into 4 pairs (with our translators) and worked separately to achieve maximum efficiency. After making appointments with the sub-coordinators, we drove to the villages by motorbikes to meet them and then the users they are in charge of.

We used our personal smart phones and Magpi, an offline Survey Apps that could generate questionnaire results into excel sheet.

Table of Content

Methodology & Tools

The entire questionnaire for users has been segmented into four parts (Demographics, Usage, Impact and Marketing) so as to avoid any overlap of redundant questions while maintaining the scope of the desired information.

DEMOGRAPHICS

We have used PPI Index to measure poverty likelihood and understand the characteristics of the households (both users and non-users)

Progress Out of Poverty

- We used this tool to measure the poverty outreach of the company and to know the demographic characteristics of the population under consideration. It is used in order to understand the current economic condition of the region using a set of 10 indirect questions so as to minimize the social and perceptive bias introduced through direct income-related questions.

- This tool has been tested and verified to provide statistically significant results for poverty outreach, using a set of different poverty lines and scales and measures the “User’s or Non-User’s” likelihood of falling below the selected poverty line.

- An organization’s “poverty outreach” represents how well they are reaching the poor. After surveying at least a random and representative sample of households with the PPI and averaging those households’ poverty likelihoods, a practitioner can determine the percentage of those households that are living below the poverty line. From this data, the practitioner can analyze the organization’s poverty outreach in terms of poverty concentration, scale, and penetration. “Concentration” refers to the percentage of an organization’s clients who are living below the poverty line. “Scale” refers to the total number of poor clients served by the organization. “Penetration” contextualizes scale by comparing it to the number of poor households in the area. An organization may wish to analyze its poverty outreach by one or more of these definitions, depending on its mission and strategy.

Resources: Terminology and Descriptions here

Methodology & Tools

The entire questionnaire has been segmented into four parts (demographics, usage, impact and marketing) so as to avoid any overlap of redundant questions while maintaining the scope of the desired information.

USAGES

We focused on the sources of drinking water and current methods of using the filter so as to gauge any discrepancies in the prescribed usage and to set a base timeline for the results (depending on the duration for which the households have been using the filter).

IMPACT

The Impact Questions have been included under three basic outcomes as mentioned in the Impact Map (namely, Health Improvement, Time Saved & Money Saved). For all three of them, a set of quantitative and qualitative (perception based) questions have been included. Health Improvement also includes the frequency of the occurrence of diarrhea after using the filter, apart from the perception questions. Money Saved has been calculated only on users who changed their water source or used methods other than direct boiling using wood as a fuel. Time saved questions have been one of the most difficult to frame and estimate while data analysis as water treatment did not include a considerable disposable time for most of the users or it became to varied for most of the users.

MARKETING

In regard to the marketing questions, we included questions to understand the reasons for buying filters (for both users and non users), the placement of the filter in the house, desired improvements and recommendations (if any). The results have been more on the qualitative side and we hope to provide some efficient product recommendations and marketing proposition based on this data.

Social Impact Assessment

Definition

Social Impact Assessment includes the processes of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment." (International Association for Impact Assessment, http://www.iaia.org)

SIA is much more than the prediction step within an environmental assessment framework. Social impacts are much broader than the limited issues often considered in EIAs (such as demographic changes, job issues, financial security, and impacts on family life).

A limited view of SIA creates demarcation problems about what are the social impacts to be identified by SIA, versus what is considered by related fields such as health impact assessment, cultural impact assessment, heritage impact assessment, aesthetic impact assessment, or gender impact assessment. The SIA community of practitioners considers that all issues that affect people, directly or indirectly, are pertinent to social impact assessment.

Social Impact Assessment: in the Context of Nazava

A convenient way of conceptualizing social impacts is as changes to one or more of the following:

people's way of life	• that is, how they live, work, play and interact with one another on a day-to-day basis; (Considered in the present study as the work and disposable hours dedicated to collecting wood & boiling water)
their culture	• that is, their shared beliefs, customs, values and language or dialect;
their community	• its cohesion, stability, character, services and facilities; (Considered in the past study as the work and employment opportunities to women as they become a part of the reseller and co-ordinator network);
their political systems	• the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose;
their environment	• the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources;
their health and wellbeing	• health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity; (Considered in the present study as the presence of diarrhoea in the household and their perception on health and drinking water improvement)
their personal and property rights	• particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties;
their fears and aspirations	• their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children. (Considered in the present study in the form of perception questions based on 5-pointer scale)

Process and Modus Operandi

Feb 17

Initial Course Study at HEC Paris in Social Impact Assessment as an elective, FACT Impact conducted by Lise Pewnillard and Selection of the Mission

Feb – Apr 17

Pre-field study of the organization and synthesis of the following tools:

- Background Study of Indonesia
- Past Sales Data Study of the company and division into various regions and samples to be studied in the considered region (Malang)
- Past reports done by third party universities and organizations
- Competitive Landscape
- Social Business Canvas
- Theory of Change
- Impact Map (Defining Stakeholders, Inputs, Activities, Outputs, Outcome, Impact & Indicators)

Apri – May 17

Questionnaire Preparation & Digital Data Collection Tool

- Translation and Reiterations

12 Jul – 11 Aug 17

Field Work

- Arrival at the Field & Testing Questionnaires
- Setting up logistics and meetings with coordinators and sub coordinators for respective villages and areas
- On Field Surveys and understanding the eco-system of where the company operates
- Exceptional visits to have more qualitative overview of the areas and collecting testimonies/pictures
- Data Synthesis and Analysis (which includes discussing the results with the Founders and figuring out what could be the main reasons behind anomalies and discrepancies as well as to work on the recommendations and defining the scope of next studies)

11 – 23 Aug 17

Final Report Synthesis & Individual Papers

Theory of Change

Nazava's vision is that everyone everywhere has access to safe and affordable drinking water within his or her house.

NEED	IF	THEN (Short term)	THEN (Long term)
Lack of access to safe drinking water • Water quality from traditional water treatment methods not guaranteed (boiling cannot treat all bacteria and chemicals; many bottled commercial water are not certified) **Money and time required for traditional water treatment** • Expensive price for commercial water and existing brands for water filters • Time spent on collecting wood and boiling water **Lack of awareness for water born disease**	Nazava provides product offerings that are affordable and effective to remove 99.99% of bacteria in water without the need of being further treated **CONDITIONS FOR CHANGE** • Water education and usage training from SWCs and resellers • Purchase and installation of Nazava Water Filters • Daily utilization, in time cleaning and replacement of the filter	A more effective and convenient way to ensure a **safe quality** for drinking water **Money and time saved** for users by changing their traditional water treatment methods **Drinking water with better taste** **Increase in income** for coordinators resellers who are mostly housewives and commissioned for every filter sold	Reduce in water born disease and **improvement of overall health status** **Increase in income**: economical and time savings, productivity and development of new activities Increase in **health awareness** and changes in traditional water treatment behavior Empowerment of **people**, especially resellers

Impact Map and Measurable Indicators

Stakeholders	Inputs	Activities	Outputs	Outcome	Impact
Users	Time Money	Training Purchasing & Installing Consuming Refilling Repurchasing	Purchased water filters Installed water filters Clean water Awareness about clean water	Money saved Time saved Health improvement	Healthy & Satisfied customers Increase in income Personal and social empowerment

Indicators

Quantitative

- How often the filters are used
- Daily consumption of water
- Average duration of usage
- Number of people in each family
- Number of people in the family that use filters
- Times of suffering from water born diseases
- Type of energy sources to treat water before using the filter
- Amount of gas/wood consumed before and after using the filter
- Average amount of money spent on filter purchases
- Amount of money spent on other water treatment methods before and after using the filter
- Amount of time spent on water treatment before and after using the filter

Qualitative

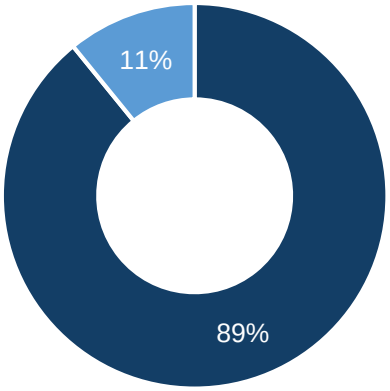
- Reasons of purchase
- Self perception of fitness
- Self perception of time and money saved
- Self perception of satisfaction of the filter
- Willingness to recommend the filter to others

Table of Content

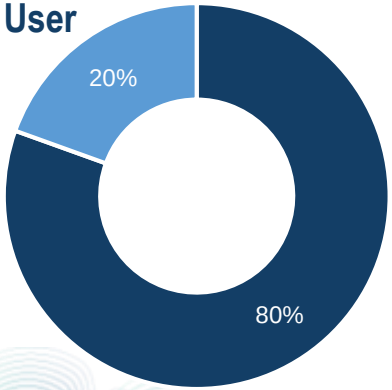
Social Demographics – Gender & Number of Members in Households

Gender Distribution

User



Non User



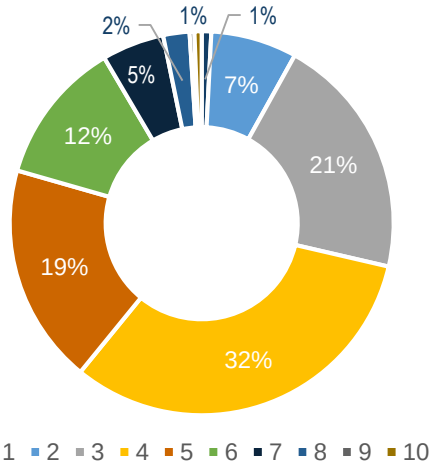
- Of the total users surveyed, **54** were men & **443** were women. The proportion was in accordance to the expected results as most of the coordinators and sub-coordinators are **women** and as seen in the later data analysis, most of them know about Nazava through either through **Puskesmas** or **Women Organisations**.

  Out of the 200 non users we interviewed, around 80% are women, which is in accordance to the gender distribution among the users and due to the fact that it is often the female head at home and more familiar with the filter/eergy use of the family.

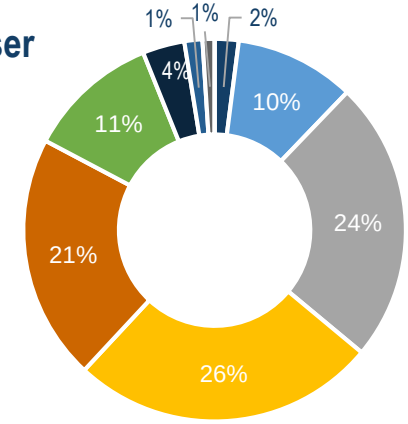
- For both users and non users, the majority of the householders have 3 – 5 family members.

Number of Members per Household

User

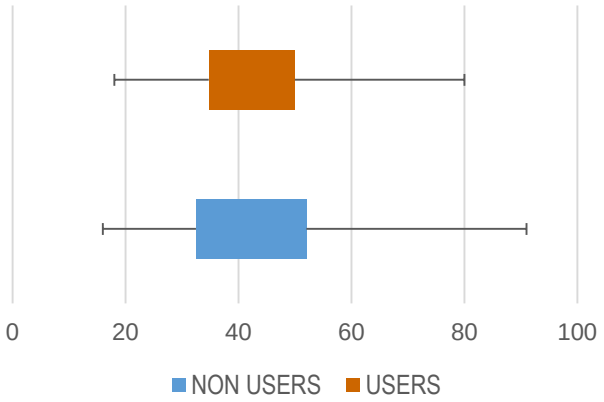


Non User

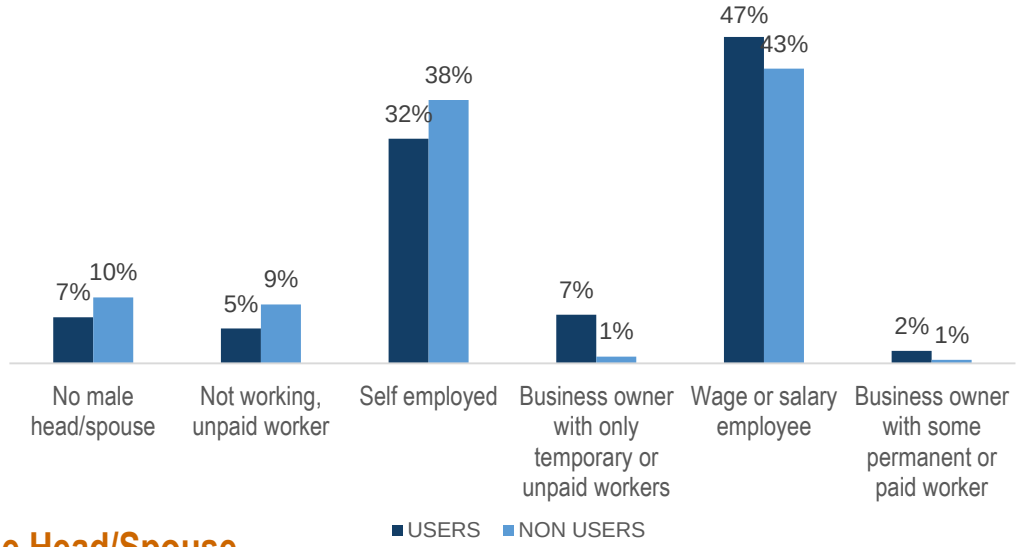


Social Demographics – Age, Employment & Education

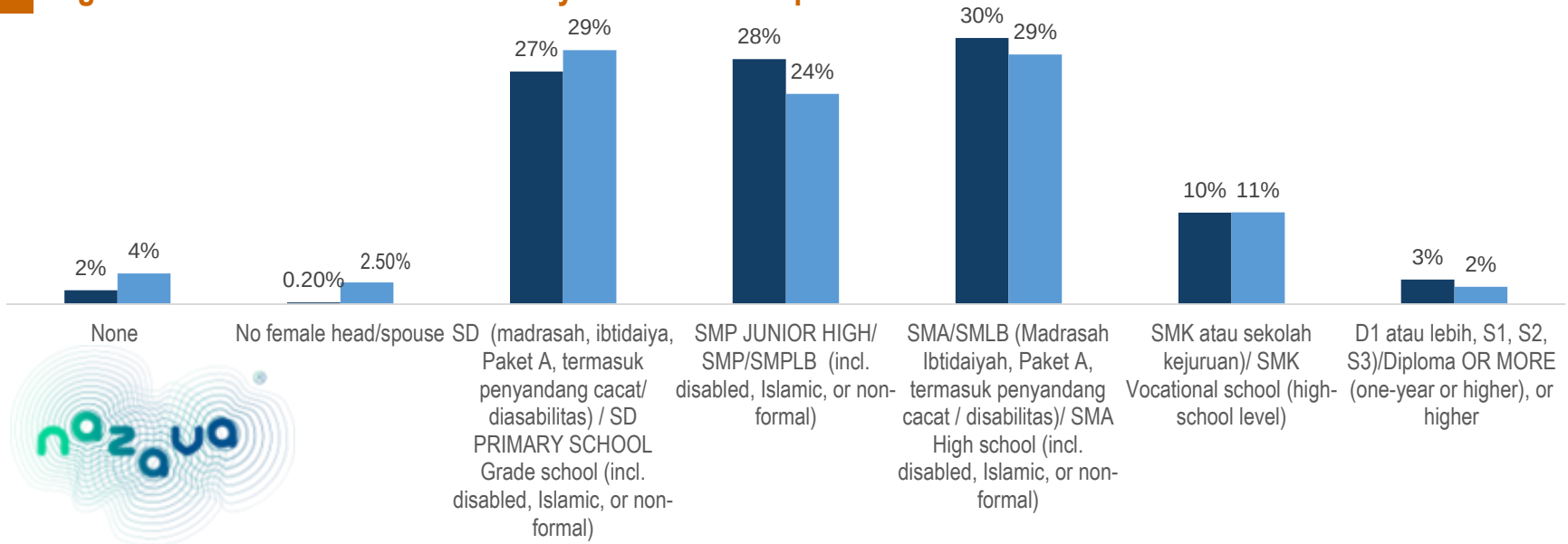
Age Distribution



Employment Status for Male Head/Spouse

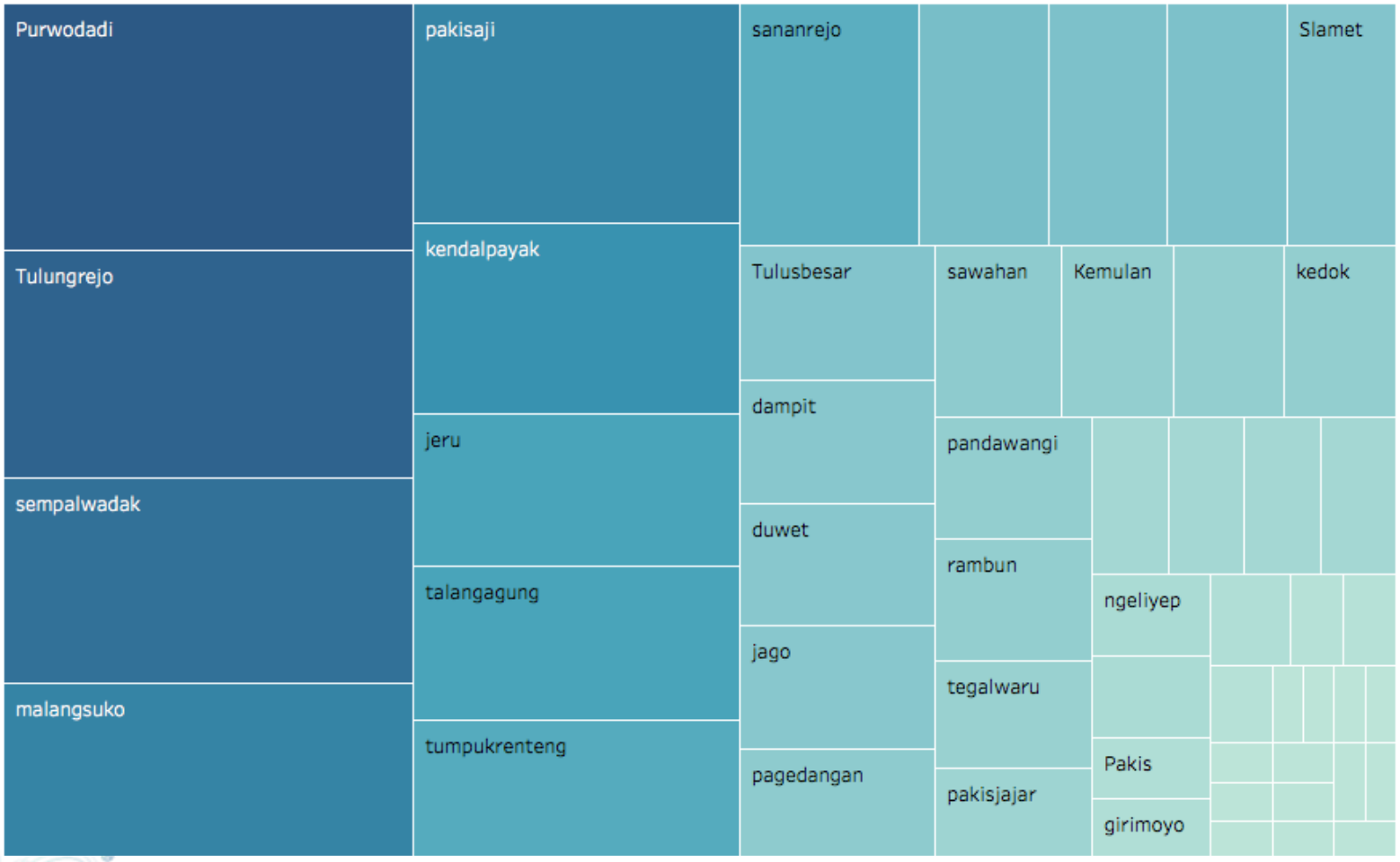


Highest Education Level Achieved by Female Head/Spouse



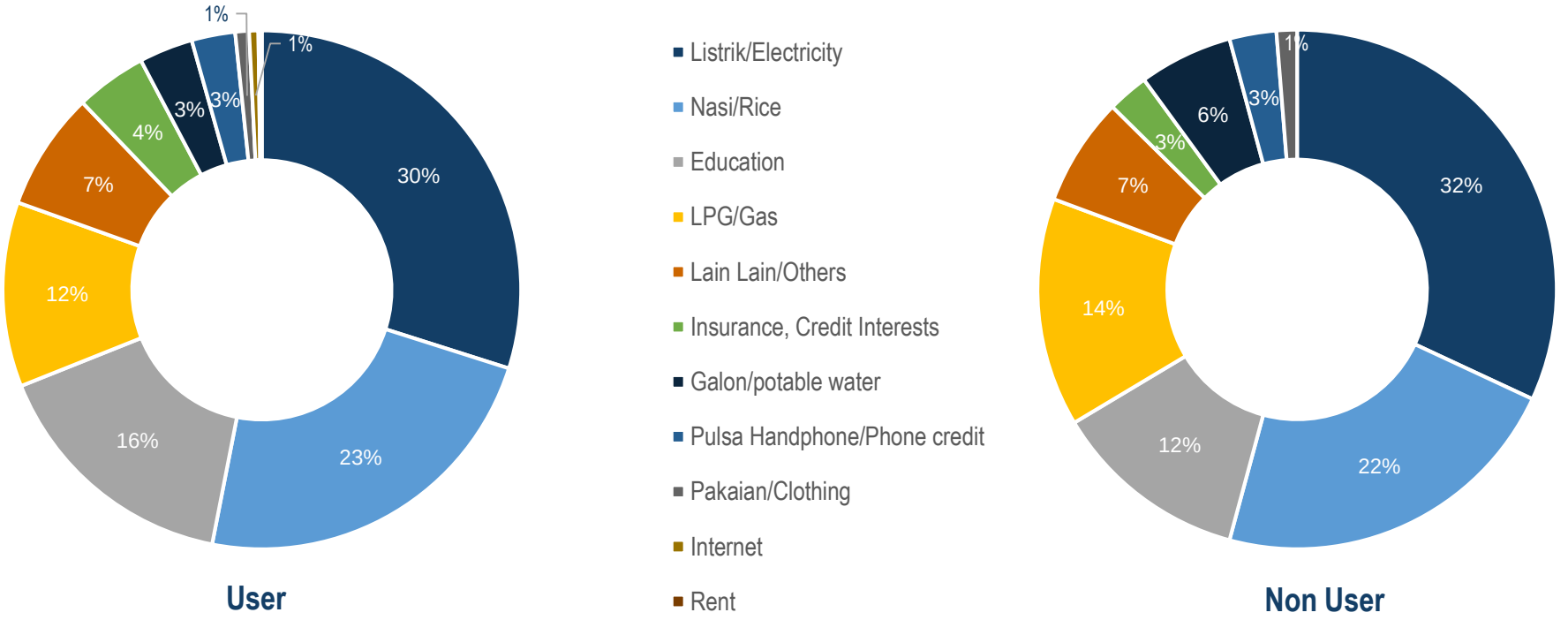
Social Demographics – Geographic Distribution

We have conducted 500 user questionnaires in 41 villages within the Malang region. The interviewee population distribution per village is demonstrated as below



Social Demographics – Household Expenses

Household Expenses



- For users, the three major expenses reported were **Electricity**, **Rice** (Food) and **Education**. **Gas** or **LPG** was the **fourth** major expense. (Addition: This also implies that most common indicator for the money saved will be one of the aforementioned ones. Thus, (as will be dealt later in the study) we have used the change in LPG cylinders and Gallons as the major sources of money saved.)
- For non-users, LPG is the third largest expense and the company uses it as a business proposition for new customers, detailing as to how the users are able to save money on fuel by using Nazava Filters.

Social Demographics - PPI

About PPI

We asked the set of 10 basic standard questions to the given sample of around 500 people out of the entire Malang region that the company caters to. These 10 questions were allotted a score based on the PPI Methodology and the final score for each household was calculated. The Lookup Tables were used to measure the likelihood of a household to be below poverty line. Based on these tables and the estimated poverty line of $25 per month (2011), and taking a 150% National (which means the same as $37.5 per month), the outreach of Nazava has been 24.45%. This signifies that Nazava is able to cater to at least 25% of the poor in the surveyed area. (The detailed description of the method and tables can be found in the attached appendix and excel tables)

This figure might not seem to be high but the point to be kept in mind is that it is based on the poverty line figures of 2011. Considering a 200% National ($50 per month), the figures rise to 50.9%, which clearly shows that the stated 25% is a conservative one. Thus, we conclude that although the outreach is quite good, yet there are significant changes that need to be done.

Comparing this with the non-users and using the exact methodology, the poverty likelihood for non-users (on a 150% National scale) is around 50%, which shows that the non-users are relatively at a higher risk of falling below the poverty line. (One issue could be relatively small sample size of non-users compared to the users; 200 versus 500). But, nonetheless, it does indicate that there is still scope for reaching the poor households and may be offered an alternate credit mechanism for the product.

Social Demographics – PPI

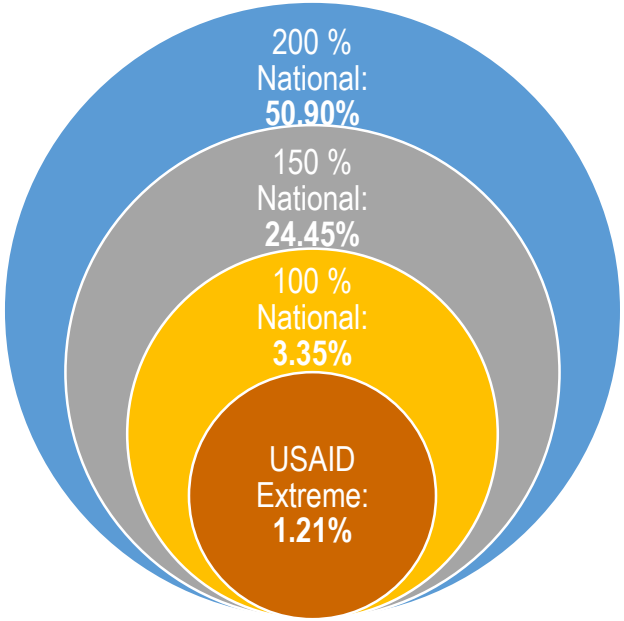
PPI of Nazava Users

The **Poverty Outreach of the Company** is shown in the graph on the right (for the given **users** in the given area using four different base poverty lines) :

This means considering the PPI data and scorecard, Nazava is effectively able to reach **at least 25% of the people** who have a likelihood of being **below the national poverty line**.

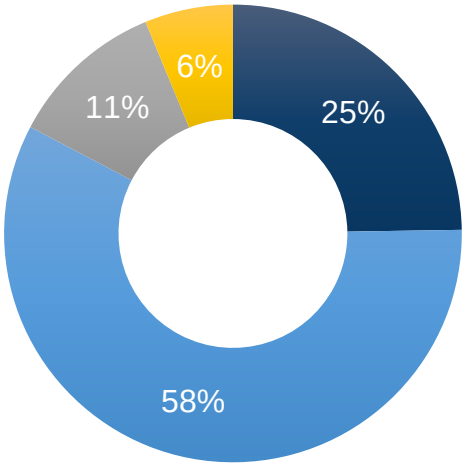
This PPI does not end here, once included in each survey (for all users and non-users) it shows the way poverty likelihood is changing in the area the organization is working. It will also help track as to whether the outreach has increased (while considering non users) or not. Thus, we recommend to include the first 12 questions in every survey that is being conducted on part of the company in future.

This analysis can also be done village wise and if the company wants to focus in more poor areas in the future course, it can very easily do so by looking at the attached excel. The aim of using this tool is to provide the firm with a robust and continuous evaluation model to target the most effective and desired population and area.

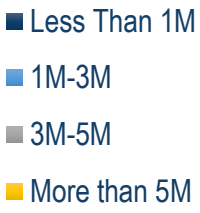


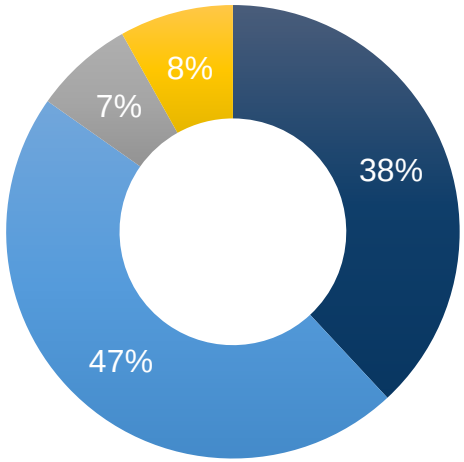
Social Demographics – Stated Income

Stated Household Income per Month



User





Non User

In Indonesian Rupiah

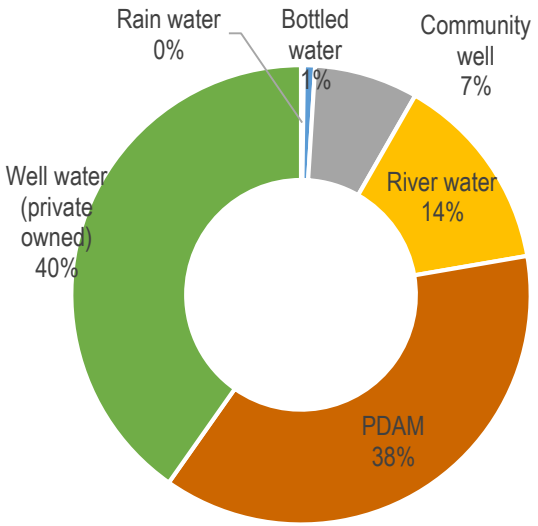
- Comparing the PPI analysis with that of the reported income level, users report 75% users report monthly income level above 1M, which is pretty much in accordance with the above statistics obtained using PPI. 38% of non-users report an income level below 1M, which is again in accordance to the above statistics. Also, only 15% of users state their monthly income above 3M (the poverty line, in this case, being 4M).

- Combined data in both the methods used shows that the users are relatively richer compared to the non-users. This might also imply that once a village has been saturated with users, the non-users are only those who can not afford the product. (Since we generally surveyed users and non-users in the same village).

(P.S. We used scaled figures (i.e. 150% National Poverty Line) so as to make sure we get the minimum understated figures)

Social Demographics – Water Source (User)

Water Source Distribution by Interviewees



Community Well
Argotirto
Sadahaaan
Perum Bumi Asri
Ngeliyep

River/Spring Water
Jeru
Kaliurang
Tulungrejo
Mentaraman
Banjarejo

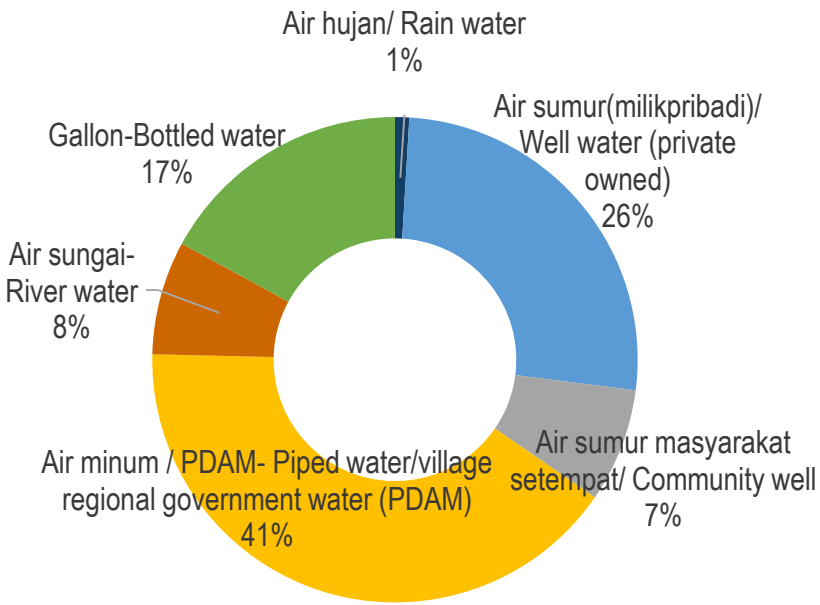
PDAM
Pakisaji
Kendalpayak
Kenongo
Pandawangi
Sananrejo
Pagedangan
Pendem
Tawangargo
Pakisjajar
Saptorenggo
Malangsuko
Tulusbesar
Jago
Tegalwaru
Duwet
Kedungsalam
Donomulyo
Madyopuro
Dampit

Private Well
Talangagung
Bunul
Klayatan
Sumbersuko
Kemulan
Sawahan
Pakis
Girimoyo
Tegalondo
Slamet
Kebuarjo
Pakiskembar
Tumpukrenteng
Kedok
Tympans
Sempalwadak
Kebonsari
Purwodadi
Mulyo Agung
Pandanajeng
Tambakrejo
Rambun
Talok

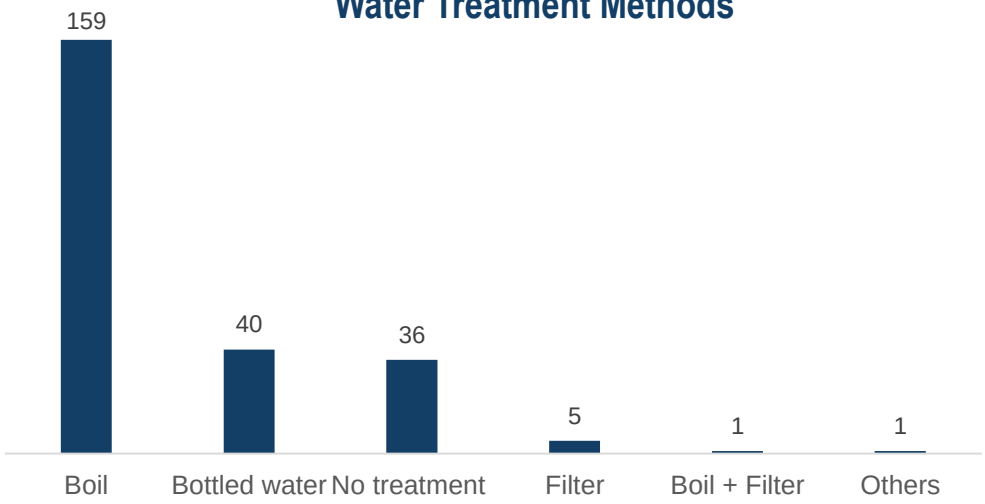
Village Distribution by Water Sources

Social Demographics - Water Source & Treatment (Non User)

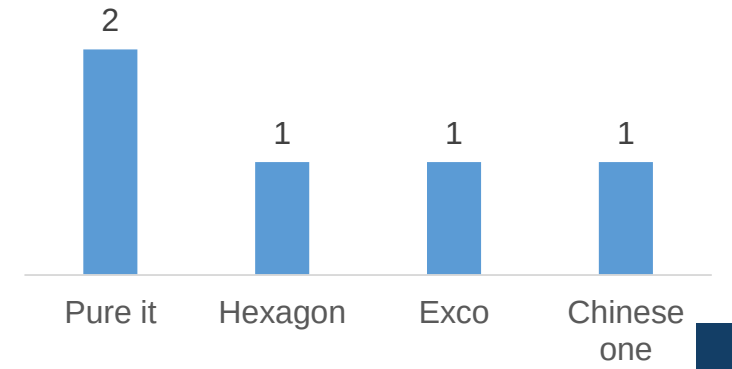
Water Source Distribution by Non Users



Water Treatment Methods



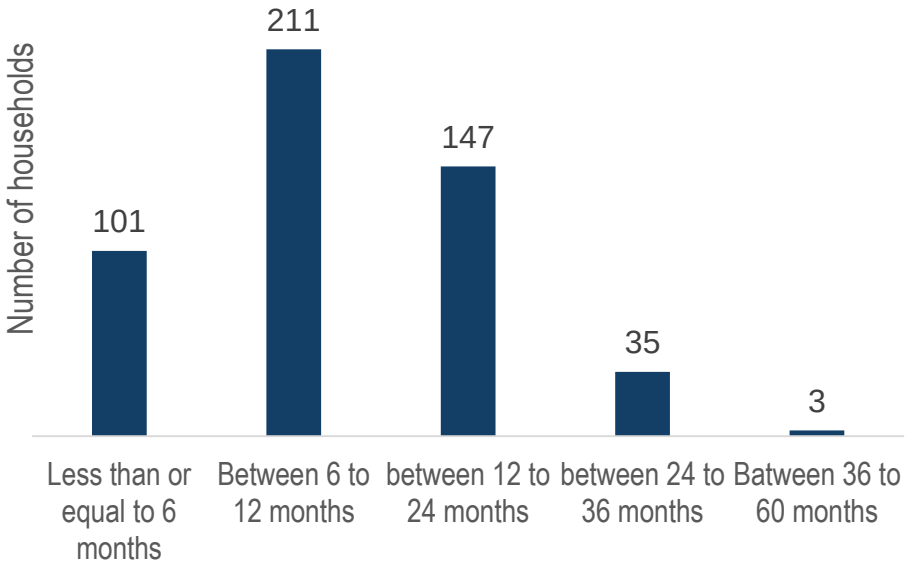
Filters Used by Non Users



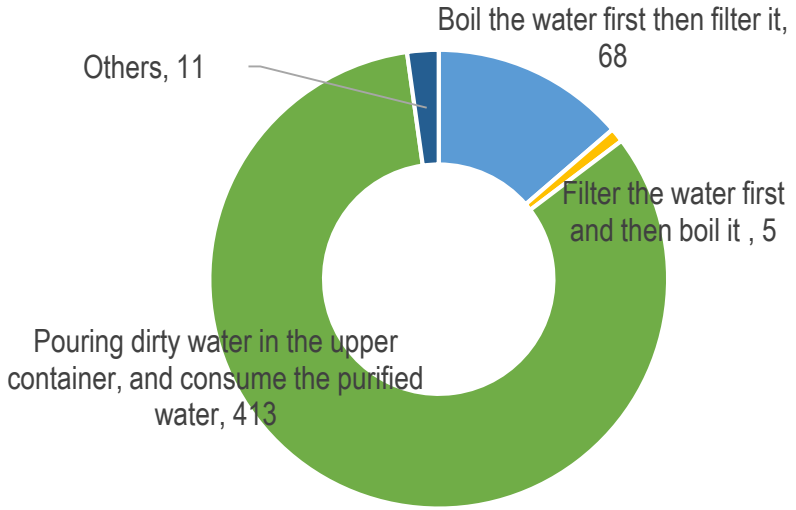
- Given that users have mostly private well (40%) and non users PDAM (41%), we could conclude that households/villages equipped with PDAM are less likely to purchase water filters as the government promotes the PDAM as safe water source. Households with private well could be prioritized as potential users.
- Most of the non users are still boiling water whilst there are 36 households are not treating their water at all. Very few (around 5) non users use water filters at home. Market potential is high.

Filter Usage - Duration and Methods

How Long Have You Been Using the Filter



How Do You Use the Filter

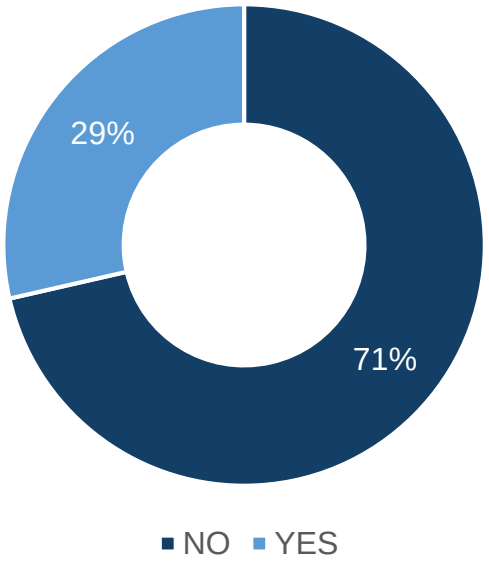


- More than half of the users began using the filter less than 1 year ago. The market is new and is composed of many potential repurchase clients.
- Although more than 80% of the users filter their water directly without boiling, there are still around 70 users who boil water before filtering, limiting the time and energy saving impact of the filter.

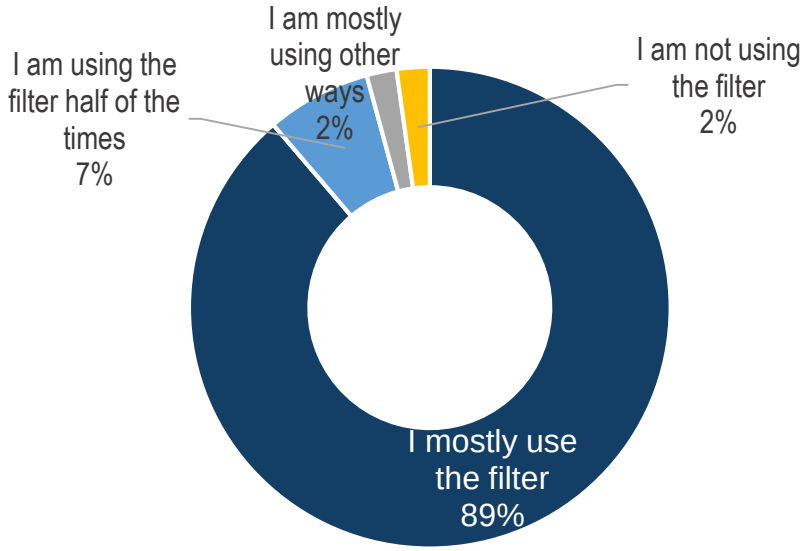
  Among the other methods to use the filter, people firstly put the water in a container for sedimentation, or add another step of filtering before putting water into Nazava.

Filter Usage - Frequency

Do You Still Use Other Ways to Treat Your Water



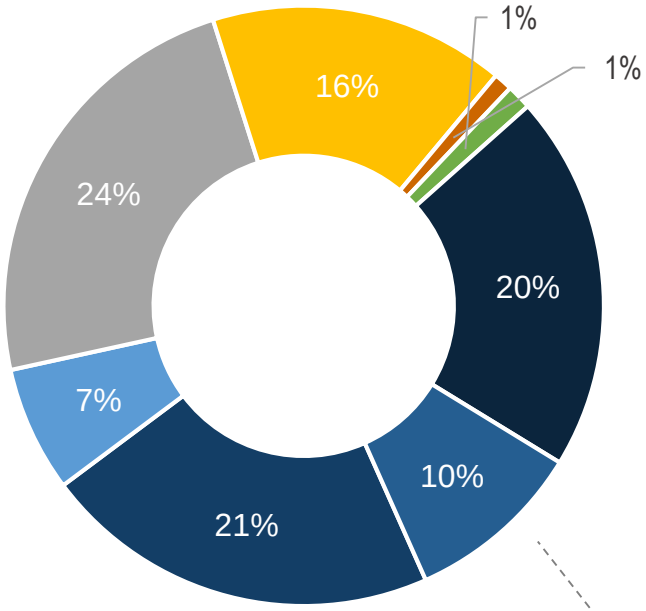
How Often Do You Use the Filter



- Among the users, around 30% are still using other water treatment methods. 2% of the total stopped using the filter completely. The most common answers for it are that the filter is broken; they started to “get flu” or “too lazy to put water in the filter”.

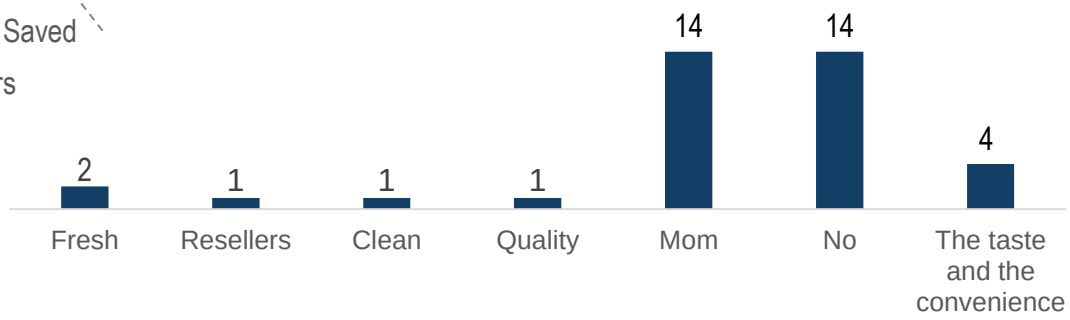
Filter Usage – Reasons (User)

Why do you buy a Nazava filter?



- We have asked users to rank the top three reasons for them to purchase a Nazava filter, the ranking of answers for each preference is shown as below (please see more details in the annex):
  - First Preference: Health > Convenience> Money Saved
  - Second Preference: Money Saved > Time Saved > Health
  - Third Preference: Convenience> Money Saved > Time Saved
- Overall Preference : On average **Health**, **Money Saved** & **Convenience** were quoted the maximum number of times as the foremost reasons to purchase the filter (**21%**, **24%**, **20%** respectively).
- We thereby conclude that the money saved proposition (in terms of number of gallons, cylinders etc.) is indeed a strong factor for sales while the sales through health centres (which includes the highest percentage among the others category in awareness analysis) seems to be a reason for the occurrence of Health as another major factor.
- Contrary to our assumption, "Time Saved" has only **16%** share in the quotation graph and has even lesser contribution in terms of quantitative data analysis on “Time Saved” (**54%** of users using wood were found to have zero percent time saved). Among “other” reasons, the taste and cleanness of the water were many times mentioned during the interviews.

Others



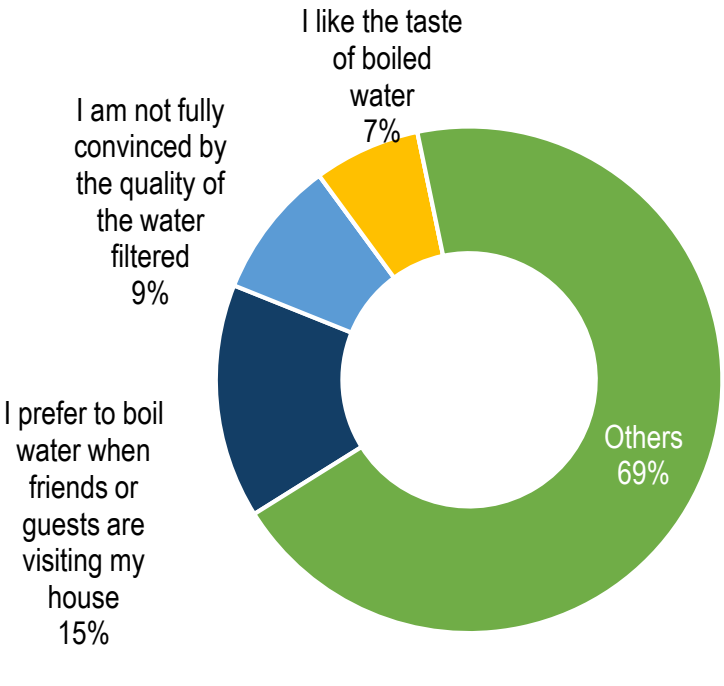
Filter Usage

Recommendation

- Thus, we recommend to focus more on the health, convenience and money saved (major factors) rather than time saved and low price (minor factors) during sales pitch. In “Others” category, we found that Quality of Water (Taste, Freshness, Smell, Colorlessness) had a really big percentage share.

- Thus, we suggest to include these as a new category in further surveys so as to give correspondents more options which they feel familiar with. (This was also a shortcoming in the options that we proposed, as we had an outsider view on what the people think before buying the filter). The quality of water may also be included in the sales pitch apart from the aforementioned three major factors and to minor factors.

Filter Usage – Reasons for Not Using the Filter



- The most quoted reason is Others, that varied from household to household. Since the answers are mostly subjective and beyond the scope to study each one separately, we devised a word-graph based on the frequency of the word. The most common reasons thus sorted were either they still boil water while making coffee and tea (and do not think to filter this one) or one or the other member does not prefer drinking filtered water due to health issues or safety biases. People also prefer boiled water for infants rather than the filtered one. The reason cited is again the health concerns.

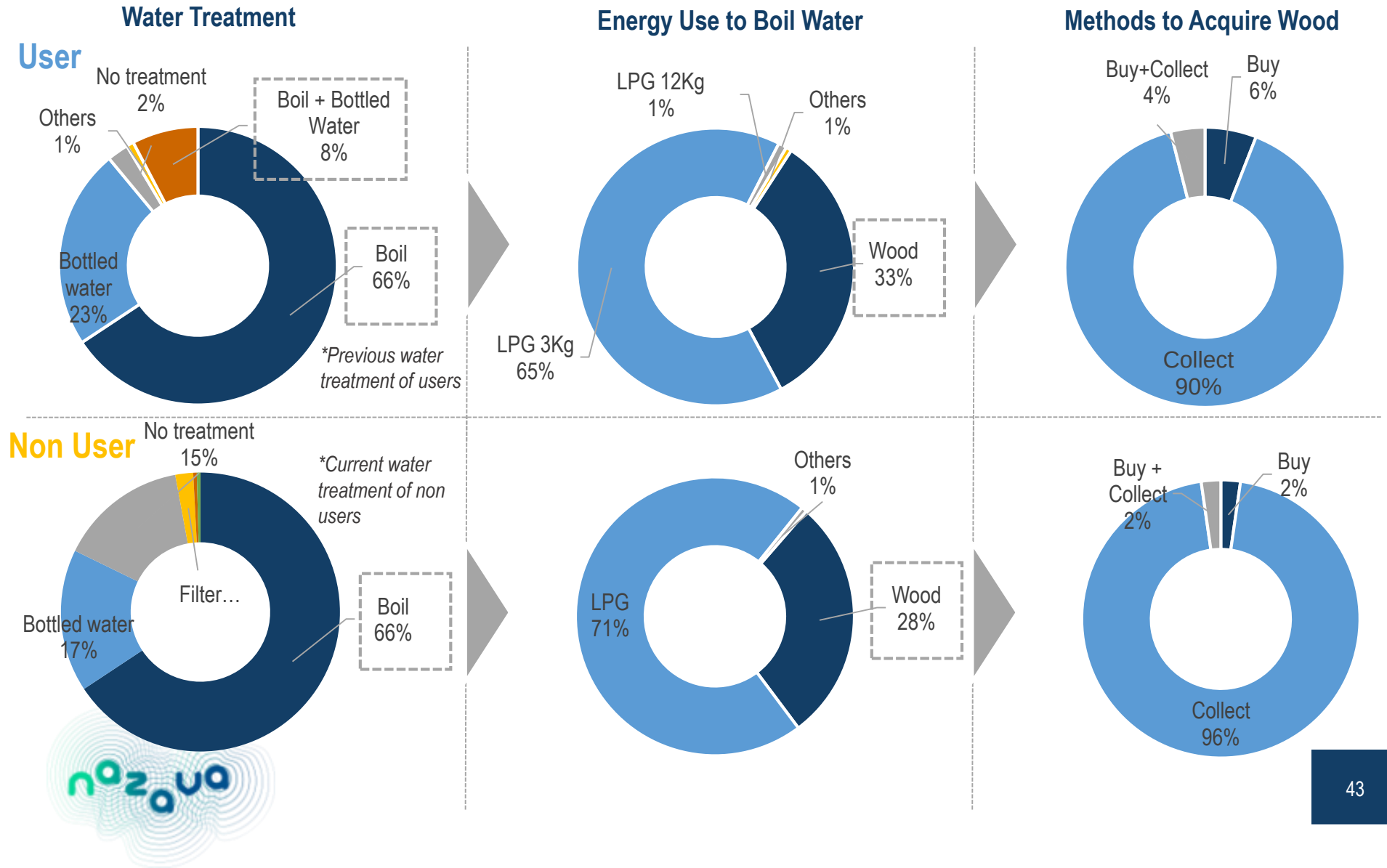
Impact – Foreword

Calculation Methods

To calculate the amount of time and money saved, a series of questions were asked to the users and later compared with the responses from the non-users as well. After knowing their drinking water source, we asked them as to what are the means of treating water (if any and if applicable). A series of flowcharts and various possibilities linked the following relevant questions. Change in the number of gallons (before using and after using the filters), change in the number of cylinders consumed (before and after using the filters), change in the number of times wood collected (before and after using the filters) and time spent in collecting wood was asked.

These questions became the basis for the quantitative assessment for money saved and time saved after using the filters, which is used as the basic and focal business proposition by the organization. The results are as discussed in the following pages:

Impact – Water Treatment (User & Non User)



Impact – Money Saved

Calculation Methods

To calculate money saved, we first divided the entire households into whether they use gallons for drinking water and/or whether they use LPG to treat drinking water. Depending on the answer, we measured the change (before and after) in the number of gallons and LPG cylinders consumed per week. This was multiplied by the market price of the standard gallon (the assumption being that the average price paid per gallon remains the same; although there might be slight variations village wise but with very small standard deviation) and that of LPG respectively. (depending on whether the household uses 3KG LPG or 12 KG LPG).

The mode of the data for LPG is 0 (change in the number of cylinders consumed) while the average cylinders saved is 0.3. The results of the analysis can be seen in the graph. On average, there is no significant change in the number of cylinders consumed and thus, the corresponding money saved. We thus conclude that the households still use the same amount of energy and thus, any claim regarding money saved through the change in consumption of LPG needs a more detailed study than the current one.

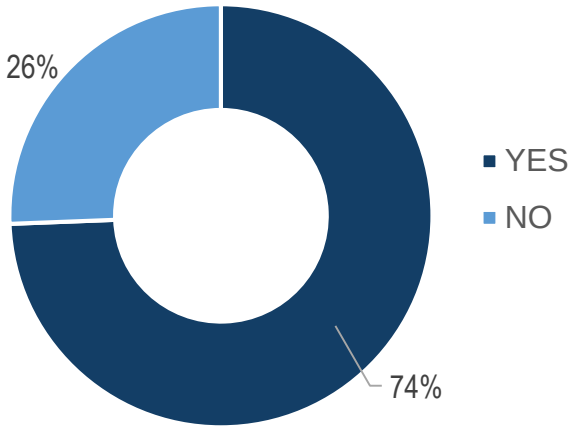
Impact - Money Saved

Calculation Methods

Although many factors affect the change in income of the family over a period of time yet we tried to link the change to the change in the consumption habit of the family. The aim of the study and analysis is not to find the exact amount of money saved by a household but to measure the change (if any) in the consumption of water gallons and LPG cylinders. We do not intend to say that if XX amount is the change in the number of cylinders used, then that is attributed to the filters. What we are trying to emphasize is the relative change that might have a very direct correlation with the use of filters as a considerable amount of LPG is used in boiling drinking water in most households. (As evident from the previous questions on water treatment methods. Apart from this reasonable assumption, we have directly linked the change in the number of gallons to the use of filters as a water consumption behavioral change can only be induced through this product in short duration.

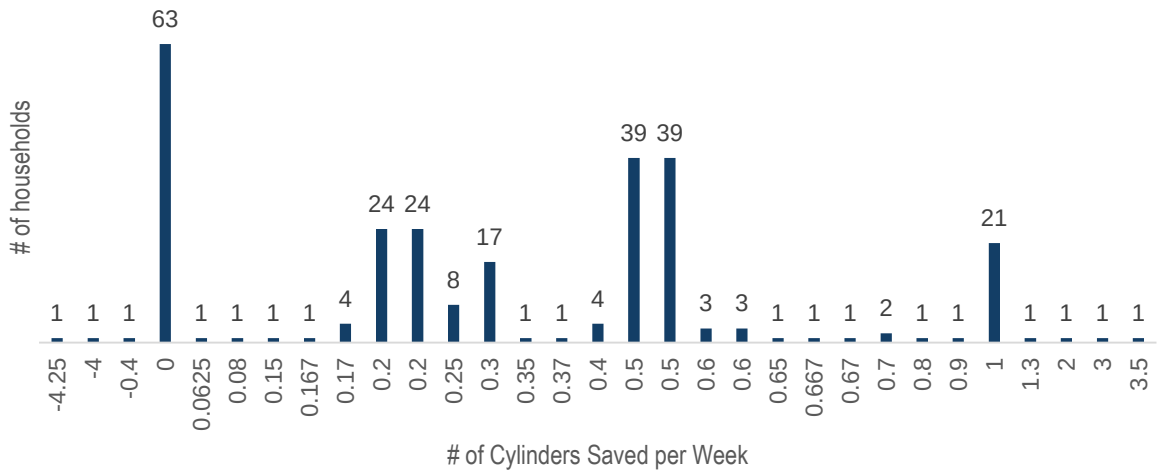
Total Money Saved for Users

- On average, all user households save 9 639.01 IDR per week, for 63 users (31% of the interviewees using LPG to boil water) , there is no significant change in their LPG before and after using the filter.
- On average, households who were previously using gallons save 17197.5 IDR per week. The mode stands at 15,000 IDR.
- Overall, 74% of the samples are saving money. We will illustrate more detailed calculation in the following slides.

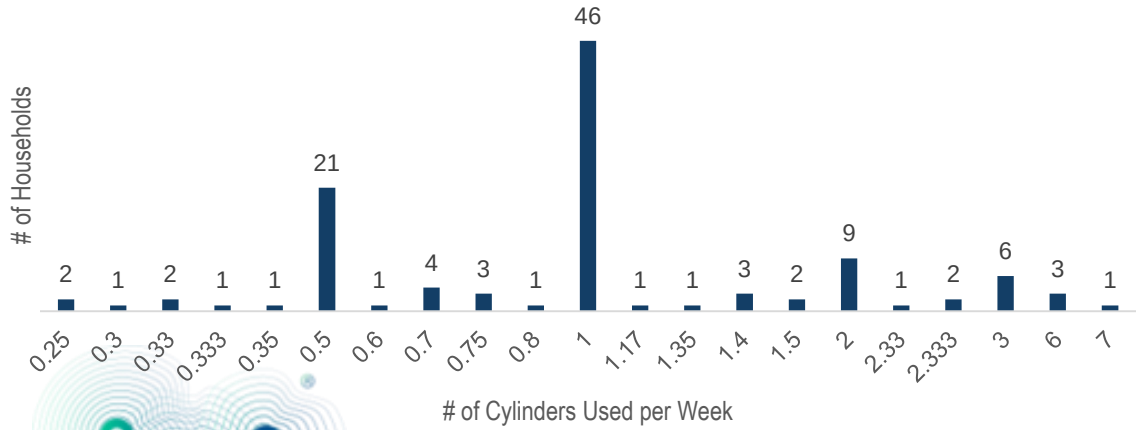


Impact - Money Saved (LPG)

Number of Cylinder SAVED by User Households



Number of Cylinder USED by Non User Households



15.6

Average number of cylinders **PER YEAR** the user saved after using Nazave (calculated from 0.3 cylinder per week)

1.6

Average number of LPG cylinder the users consume per week **BEFORE** using Nazave

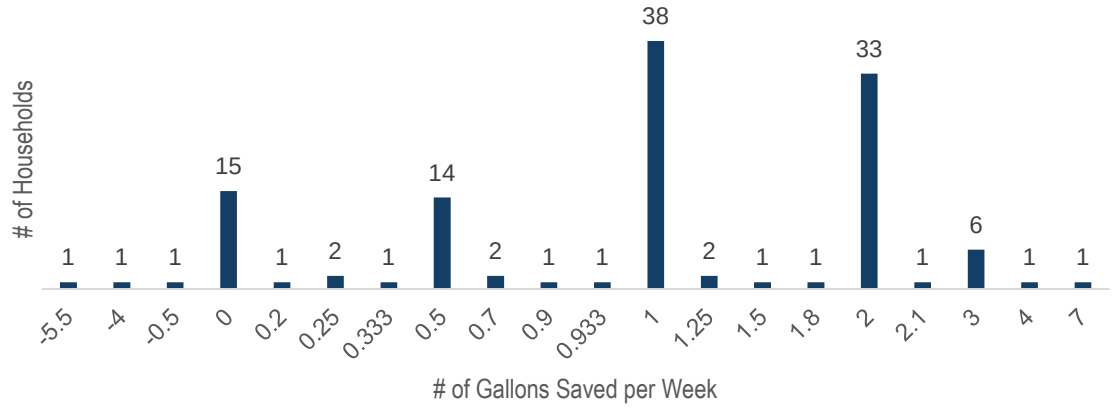
1.28

Average number of LPG cylinder the non users & users **CURRENTLY** consume per week

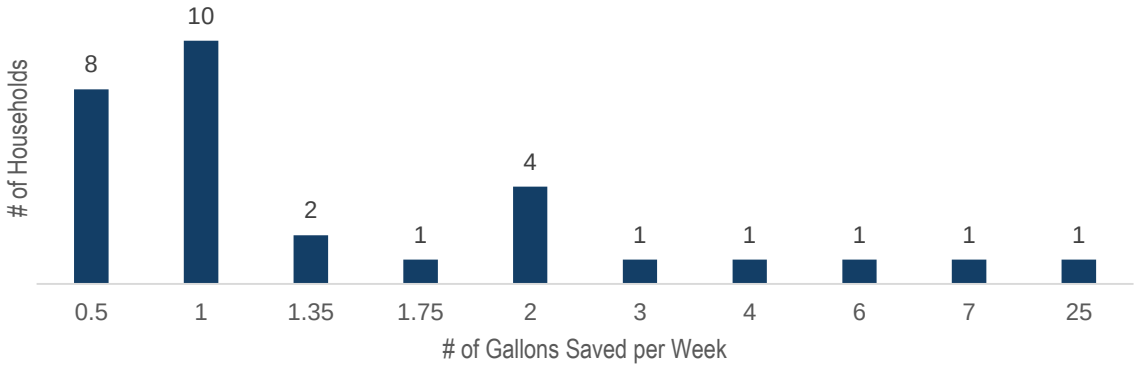
- On average, user households save 9,639.01 IDR per week after using Nazava.
- For 63 users (31% of the interviewees using LPG to boil water) , there is no significant change in their LPG before and after using the filter.

Impact - Money Saved (Gallons)

Number of Gallons SAVED by Users by Using Nazava



Number of Gallons USED by Non Users



60

Number of gallons SAVED by users by using Nazava (calculated from 1.15 gallons per week)

2.38

Number of gallons consumed by non users per week

1.54

Number of gallons consumed by users per week BEFORE using the fiter

- On average, households who were previously using gallons save 2.38 gallons/17,197.5 IDR per week. The mode stands at 15,000 IDR.
- The average number of gallons consumed by non users is 55% higher than users before purchasing the filter. The money saving benefits should be even more appealing and emphasized for non users who use gallon
- On the other hand, this could also explain that people consume less gallon water are more likely to buy/adapt to water filters

Impact - Money Saved

Money Saved

There is a significant change observed in the consumption of gallons after using the filters. This is because the usage of filters leads to a behavioral change in the consumers, where they (in general) stop the consumption all together and thus, their primary source of drinking water also changes. (mainly to either Private Well or PDAM). (The small increase in expense due to PDAM is not considered in the study, as the fee is marginal and thus, does not affect the response of the users to the answer regarding their major expenses; as prevalent in Expense Graphs where it makes less than 3% of the total household expenses for both users and non-users).

The average change in the number of gallons (before and after using the filters) is 1.15 gallons per week, which is around 60 gallons per year. Thus, apart from bringing more people to use the public water supply system and/or natural water sources, the usage of filters also leads to a considerable saving in the money and increases the disposable income of the family. (There might also be a reduced usage of plastic which nonetheless, requires another detailed study considering that the filter containers are also made of the same.) Thus, all in all, we see a considerable amount of money saved, specifically for the consumers who used to use gallons as their drinking water source.

Impact - Time Saved (Boiling)

Calculation Methods

- We calculated the time saved using a single parameter as to time saved in boiling using any means.
- For time saved during water boiling, we applied both direct and indirect ways of calculation.

Direct: non users were asked as to how many times they boil water per week as a reference for calculation, as we assume most of the user have stopped boiling water at all and might have very inaccurate memory of how many times they boiled water before using the filter. The times of boiling was later multiplied by the average time (realized by experiments) for water to boil using common home-used pans with LPG and Wood, respectively.

Indirect: from calculating the impact of money saved, we could already conclude that users on average save 0.3 cylinders of 3 kg LPG per week by using Nazava. By multiplying this number with the average time to burn out one cylinder of 3kg LPG, we could have an indirect result of time saved by users.

Direct

11.76 * **??** =

- 11.76: Average times non users boil water per week
- ??: Average hours for water to boil

Indirect

0.3 * **??** =

- 0.3: Average cylinders users saved per week
- ??: Average hours for one cylinder to burn out

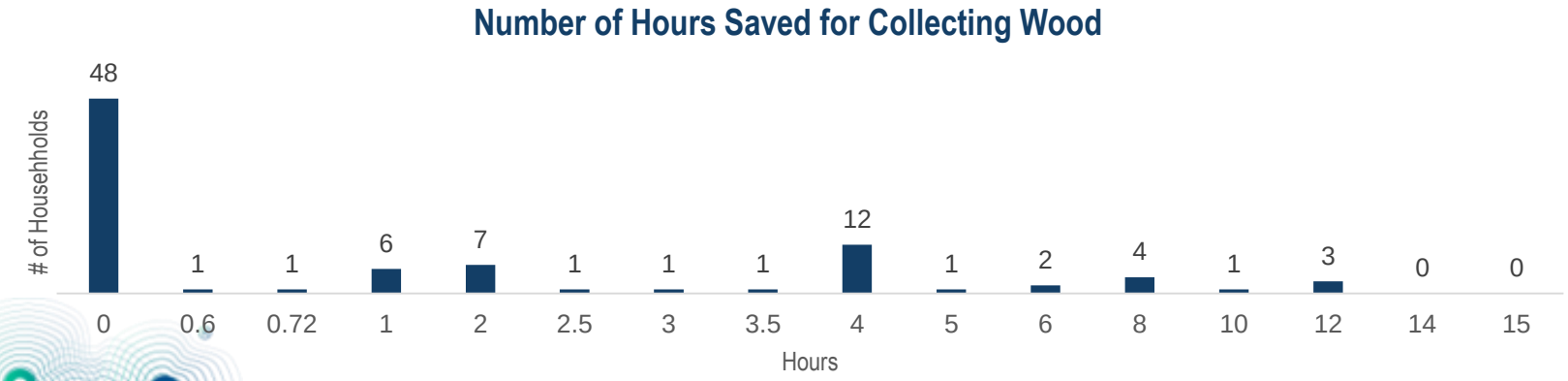
Impact - Time Saved (Wood Collection)

Calculation Methods

- For time saved during energy purchase/collection, we focus on users who collected wood as major fuel to boil water as we also tried to find out if there are users who buy wood instead of collecting, which came out to be a very small percentage, introducing an insignificant marginal error in our calculations using above assumptions.

  Therefore, we asked the users (who used to collect wood to boil water) how many times they collect wood before and after using the filer, as well was the average time for collecting wood per time. The time saved on collecting wood would be the product of difference in the collecting times and difference in the duration of collection

- The mode for the number of hours saved stands at 0, which signifies that for people who used to collect wood to boil water, the time saved is not significant. This might be caused by the fact that many people collect wood from their backyards or neighborhood, which did not require much time. Even after buying the filter, they keep the wood collection activity for other purposes and the amount of wood required for boiling water is not significant to compare to the total amount



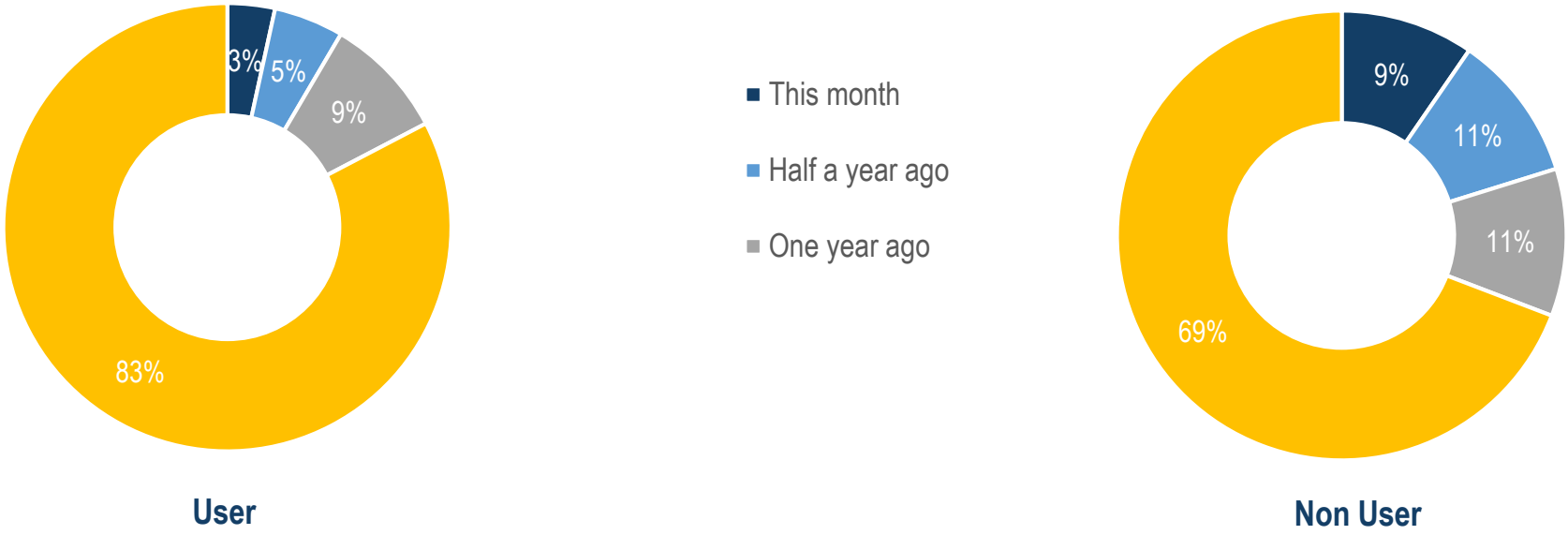
Impact - Health

Health

Health Improvement was one of the most difficult outcomes to study. We followed the same approach as in the other two measured impacts. We tried to minimise the number of questions and draw comparisons between users and non-users to study one dimension. We tried getting the data from public bodies and health centres. But, it did not work out. So, we added the perception questions as well. One of the direct measures of health improvement across the globe is the decrease in diarrhoea (mainly a symptom of water-borne diseases) and thus, we wanted to know how is this varying between users and non-users.

Impact - Health

When Was the Last Time Any Family Member Suffered from Diarrhea



User **Non User**

- Apparently, around 83% of users reported the occurrence of Diarrhea about 2 years ago compared to non-users where the percentage was lower 69%. Since the average duration of a Nazava customer has been around 1 year and less, so we compared this duration. Only 8% of Nazava users reported the occurrence (within a month or within half a year) where as 21% of non-users reported it. This was an indicator to know that there is some strong negative correlation between usage of filters and the occurrence of Diarrhea.

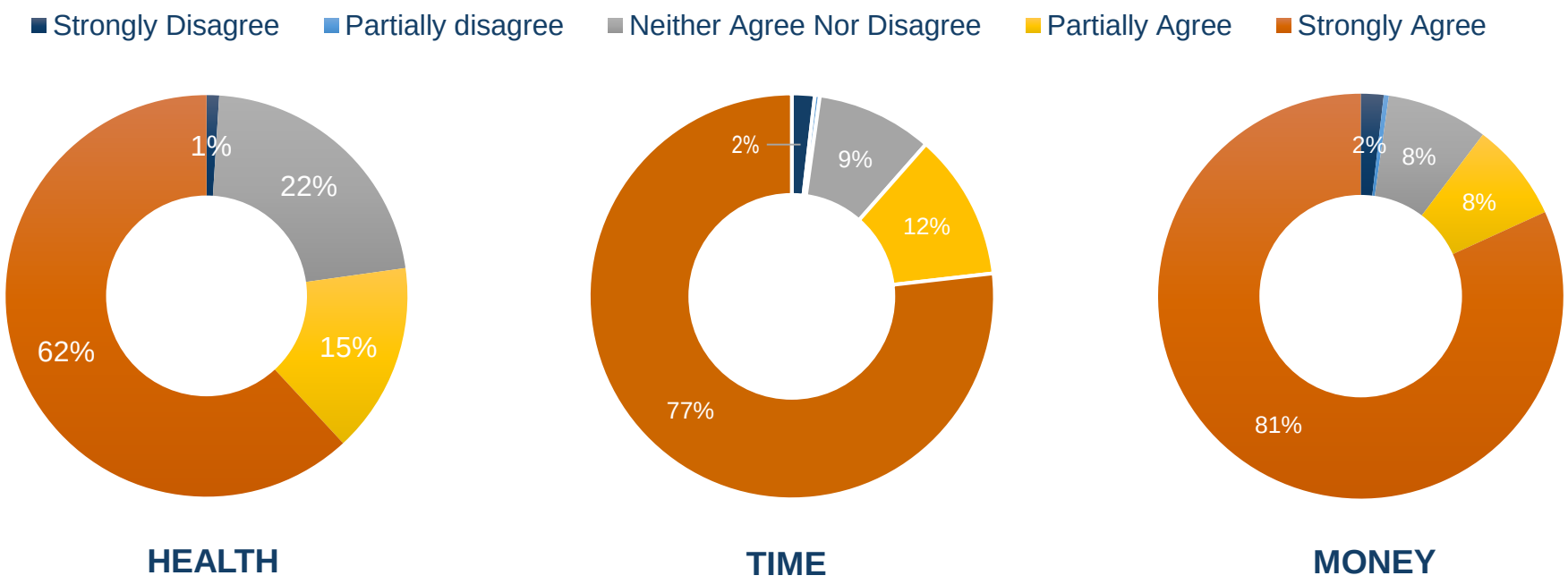
Impact - Health

Health

Next, we tried to run the regression on two parameters (the result of which can be found in the excel sheet): Occurrence of Diarrhea & Education Status. The correlation found was again a negative one with P-value less than 10%, indicating the presence of various parameters and factors than just the use of filters. Thereby, we can state that usage of filters indeed help in decreasing the symptoms of water-borne diseases yet, to entirely attribute the decrease in diarrhea cases to this particular usage factor would be an irrational extrapolation. We suggest a rigorous analysis between the occurrence of the diarrhea and income parameters (like household members, income status, education, toilet system & sanitation, water source and usage of filters) in order to conclude anything with more than 95% confidence limit.

Health is indeed a common impact due to increased water and sanitation condition and the current study shows that filters do play a role for the same, but within the scope of the current study, we are unable to draw any direct correlation between the two. There is a need of a detailed health study rather than just one question-based approach. An alternate analysis is also given in the appendix with multivariate regression on the collected data.

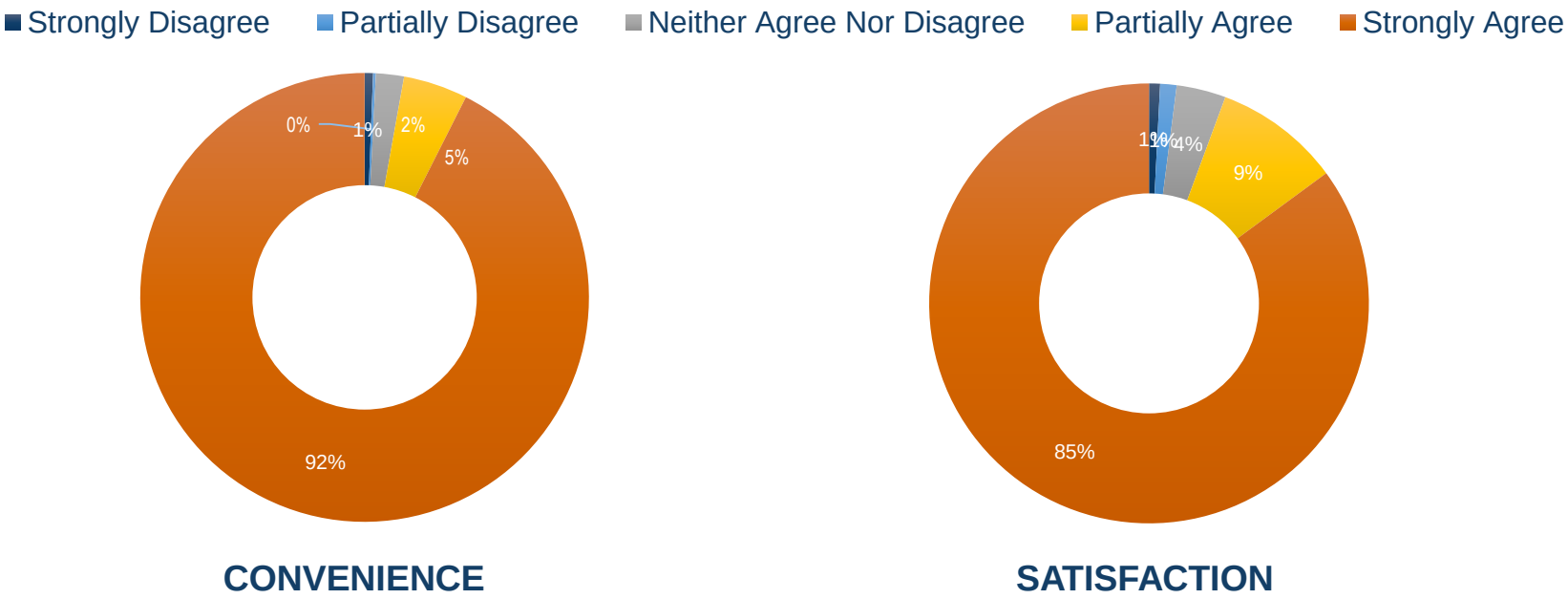
Impact - Perception and Customer Viewpoints



HEALTH **TIME** **MONEY**

- Less than 70% of our users perceive an improvement in health
- Less than 90% of users think that they saved time by using the filter
- Around 90% of users think that they **saved money** after buying the money (although, this also implies that what they actually indicate is the low price compared to other means instead of any quantifiable tangible amount saved)

Impact - Perception and Customer Viewpoints



- More than 95% of users perceive the filter as highly **convenient** and this can be also used as one of the most important selling propositions.
- More than 90% of our users are **satisfied** with the current utility and price of the filters. This might imply a little raise in the price with minor improvements specifically that in the type if tap, algae formation when kept in daylight, and hard water issues.
- Contrary to popular notion that filters help in saving time & money and improving health; the perception data clearly indicates that utility and product satisfaction are more perceptible reasons which should be backed by quantitative selling points of time and money saved, followed by health.

Marketing

What would you like to see improved

While most of the people were highly satisfied with the filters yet some of them gave us really constructive feedback and which we think should be used so as to boost sales and after-sales customer interaction. All the responses were subjective in nature and can be found in the Main Excel Sheet, nonetheless we have tried to group them into 8 major categories:

- **Price**
- **Quality & Design**
- **Efficiency & Capacity**
- **Promotion**
- **Safety and Quality Approvals**
- **Information & User Guide**
- **Cleaning & Replacement Issues**

Marketing

What would you like to see improved

Price: Most of the respondents either wanted a reduced price or an increased duration of the on-credit payment system. They also indicated a desire to increase the capacity and rate of filteration in the existing models.

Design: there were many complaints regarding loose fittings and taps. The quality of plastic being used in the previous models also looked shabby and loose. We believe this issue has been taken into account in the new model. The other issue in this category was that of the colour. Some people demanded better varied colours and designs as the filter looks quite simple, plain and economically humble for them to show it to the guests and users. (There was also a suggetsion to include Batik Pattterns on the body)

Promotion and Marketing: Events has been a pain point for coordinators and resellers as most of the people do not know the brand name and thus, are in general skeptical about having a behavioural shift and buy the product. This can be improved by implementing more customer interaction methodologies (pre-surveys, water safety events, health centre promotion meetings etc.). As the radio and TV commercials are in general too expensive and hard to track the conversion rate, we would suggest refraining from such means as much as possible, except in big, closer-to-town villages.

Marketing

What would you like to see improved

Quality: Many people were skeptical about the quality of the water and the health implications of the filtered water. This can be countered by using an "Approval Certificate" or "Quality Standards Holograms" on the product. One quick way to fix this is to use stickers in the name of the university which has already done product water quality tests and/or the stickers for the health centres which serve as sales channels. More research needs to be focused on how to convince people of the safety and quality standards of the product and filtered water.

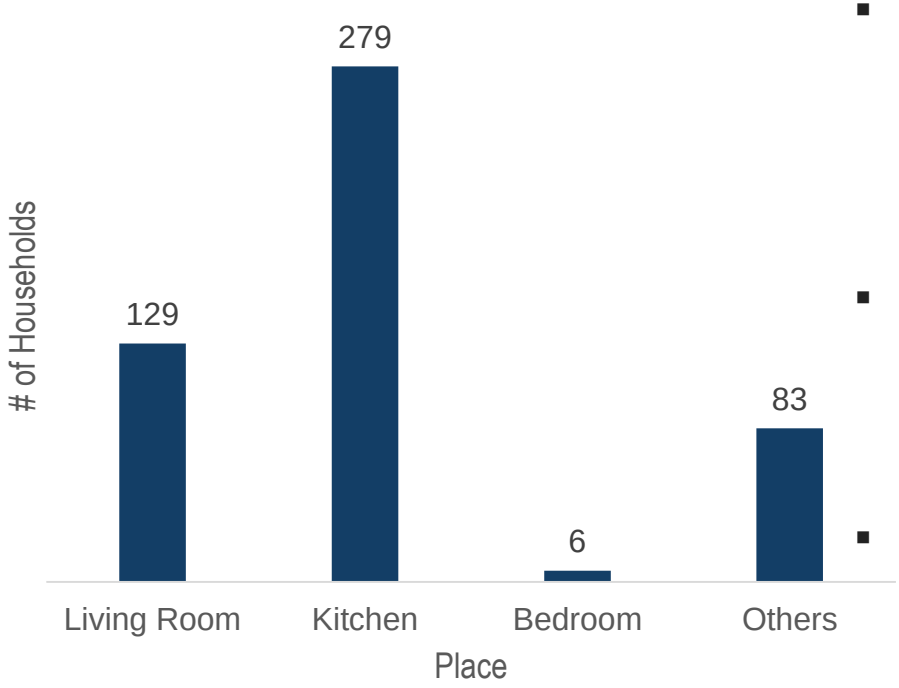
Information: Most people also did not know that they can repurchase the replacement filters and keep on using the same container buckets. The after sales interaction has been really low in most of the villages and people complain about not knowing whom to approach in case of any issue. This can be encountered by using very simple 2-pager guides for Information On Product, Information on Replacement, Product Suppport Helpline etc. This guide can also contain information on how to become coordinators or sub-cordinators, so that the end customers exactly understands his own product sales funnel.

Cleaning & Replacement has been a constant pain-point for the customers and most of the time they are totally unaware of the process. As suggested earlier, Information Guides can be useful in this too. We believe sometimes very basic assumed things for one set of customers can be the most difficult tasks for the other set and thus, the guides must be as simple as possible with an inclusive helpline number to call and ask, anything and everything about the product, price and promotion.

Marketing

Where do you put the filter in your house

This questions was designed to gauge the perception of the users of Nazava filters: whether it was a simple water treatment tool or a home appliances that could showcase their social status



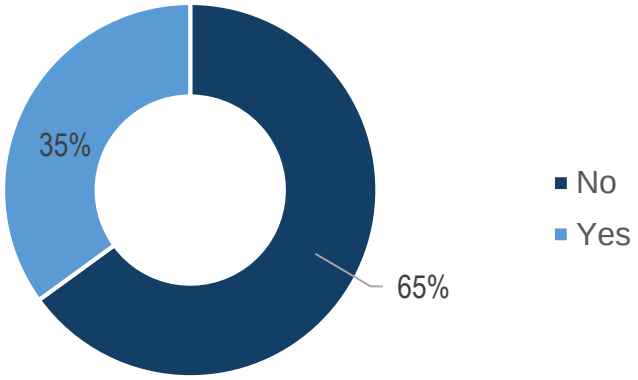
- More than half of the users place their filters in the kitchen, mostly because it is closer to the water source and/or closer to where they eat. Most families with kids place at higher places so that they do not play with it
- More than ¼ of the respondents put Nazava in the living room, either because it is where they spend most time at home or because there is no space elsewhere
- We have not seen cases where users put Nazava filters in their guest room, which is often where they put the most polished furniture/home appliances to show to the guests

Marketing – Non User

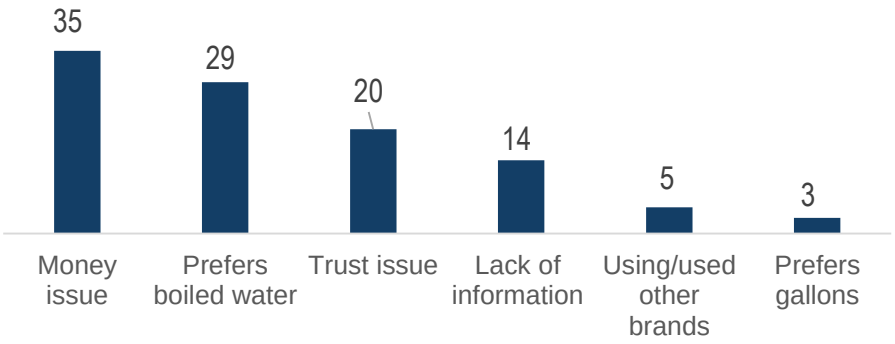
Why/Why not buying a filter

- The marketing part for non-users is divided into 4 questions
- 130 non users responded « No » and 70 responded « Yes » to this question.
- For those who are reluctant to buy, **money issue** is the main incentive followed by the traditional **boiling preference**. Many interviewees still believe that boiling water prevent illness (like the flu) and is highly recommended for people with diabetes.
- The second graph shows the reasons that come back often.

Would You Consider Buying A Filter



If No, Why not

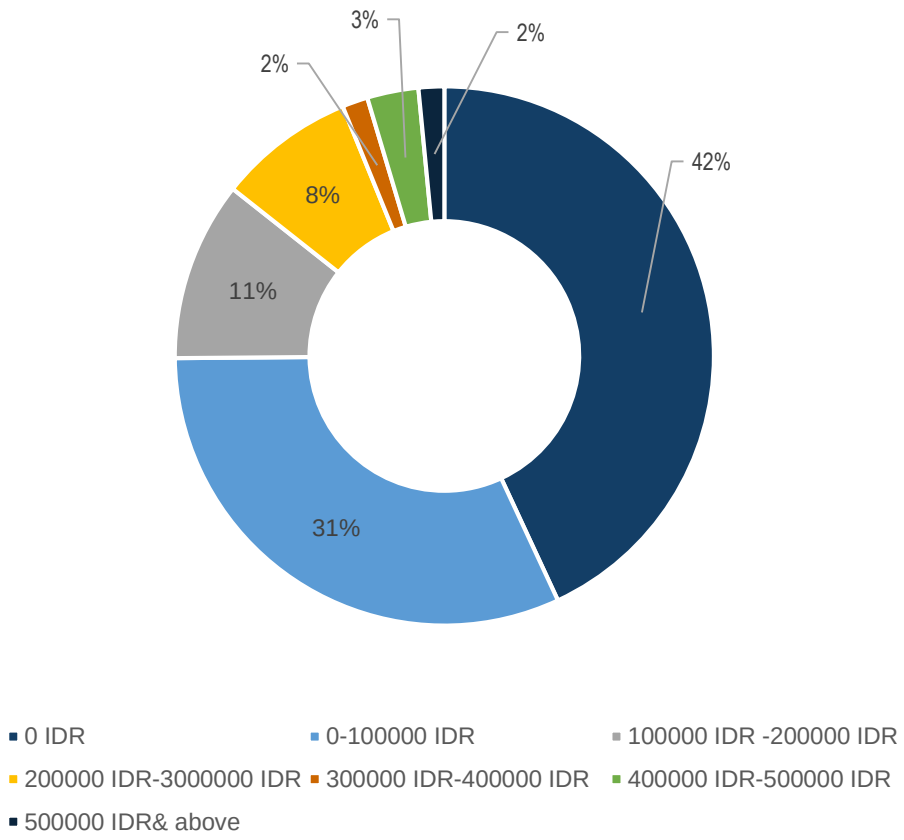


Marketing – Non User

How much you would pay for a water filter

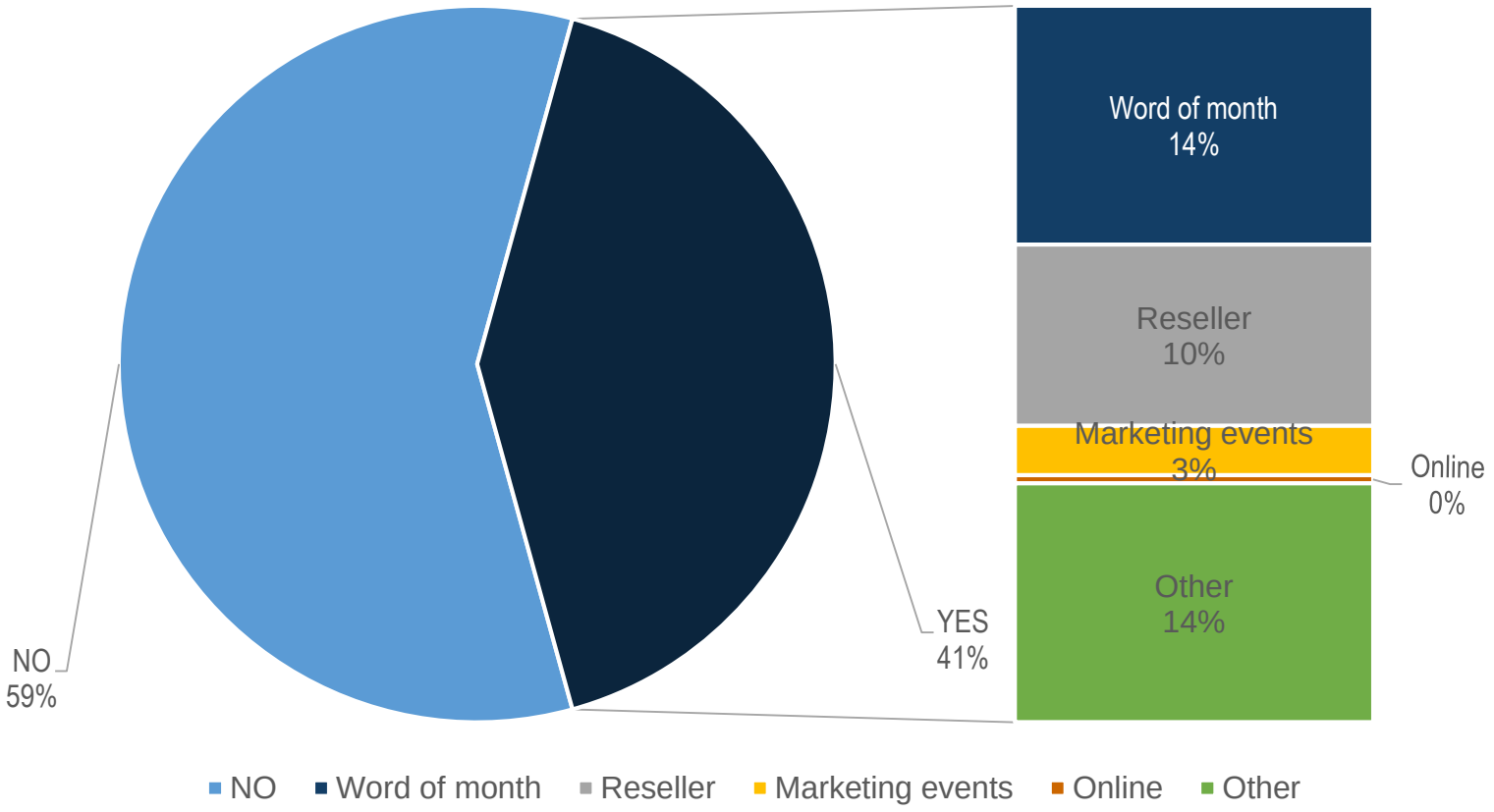
- This question mainly concerns interviewees willing to buy the filter and those who cannot buy the filter due to money issue.
- More than 80% of the interviewees are not willing to pay more than 200,000 IDR. And 42% answered 0 IDR or they don't know.
- Education for water filter is low and most of the interviewees are not sure of the value of the filter.

How Much Would You Be Willing to Pay for A Filter



Marketing – Non User

Have you heard of Nazava Filters?



Marketing – Non User

If You Were to Buy A Filter, Which Factors Are More Important for You?

- Almost in accordance to the preferences from users when purchasing the filter. Health is always the major concern, then followed by Money Saved, Convenience and Time Saved

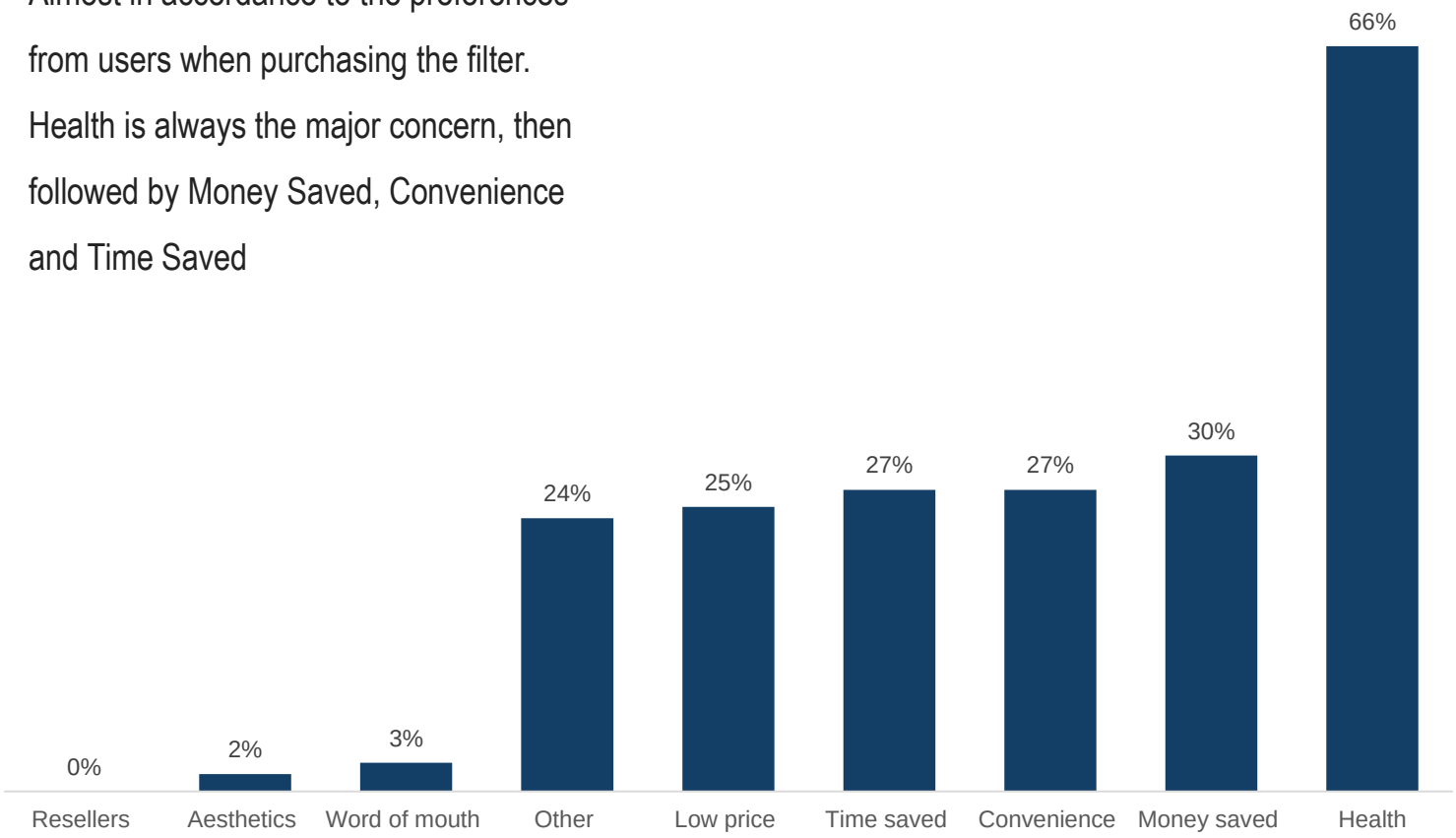


Table of Content

Recommendations – High Level Summary

We have given recommendations accordingly during the analysis of each part of our social impact assessment, please find the highlight of our recommendations below:

Focus on : health, convenience and money saved. In the Category « Others » in the sales pitch and include a new category that is the Quality of Water (Taste, Freshness, Smell, Colourlessness)

Offering an alternate credit mechanism for the product to reach the poor households (earning less than 7 USD per day) .

Using an "Approval Certificate" or "Quality Standards Holograms" on the product

Using very simple 2-pager guides for Information On Product, Information on Replacement, Product Support Helpline etc.

implementing more customer interaction methodologies (pre-surveys, water safety events, health centre promotion meetings etc.)

Organize meetings with resellers in the old regions (the current SWCs are only covering regions where Nazava is not introduced) to reinforce water education and communicate the importance of filter candle replacement

Continue using the PPI in the future to see the way poverty likelihood is changing in the areas where Nazava is based.

Critiques

Although many precautions and practices have been observed while making the report yet there are many sources of errors, limitations of the data and logistics constraints which might have skewed the analysis in one way or the other. We thus apologize for any such inclusion of biases and errors if encountered while reading the report. Though we tried our best to minimize such errors yet we are fully aware of the consequences and thus, have tried to present an original critique of the final report synthesized. The critique has been divided into four parts, as follows:

Structural and Impact Consideration Critique

Starting from the formulation of social business canvas and impact indicators, we have tried to ignore and restraint ourselves from any undue pressure or unsolicited viewpoints from any associated (impacted) members of the report, be it the university, the company or any other stakeholders. But due to the limited capacity of we being the students and the scope of the report, we duly acknowledged many aspects left unturned and untouched while measuring impact. Specific to this, we would like to emphasize on the impact of carbon emission, social impact of creation of the hierarchy due to induced effects of reseller model, social economic rift in villages, increased use of plastic products, increased sense of social status (due to usage of a foreign product), decrease in disposable income etc. These impact formulations and their indicators need to be studied in detail to fully apply the results of the study hereby presented. We also suggest similar studies to be executed by the Management to understand their impact holistically. Due to the limited scope of this study, we were also unable to focus on the negative impact assessment but the results found in regard to Time and Convenience indeed point in the direction of non-alignment of customers' perceptions and company's marketing proposition.

Critiques

Logistics and Approach Oriented Critique

We duly acknowledge the fact that the questionnaires have been prepared in a limited amount of time and thus, contains our personal biases in prioritizing things which might have affected the answers. (For example, the way a particular list appears in the questionnaire and the order of options provided). Due care has been taken to emphasize on different ways of approaching the same required information (especially in the income status and demographic questions). But nonetheless, we do admit our limited knowledge of Social Impact Assessment and the changes made due to the feasibility of the study. Under the ambit of translation and approaching the various stakeholders, we acknowledge the fact that many times the translators did not strictly adhere to the “aforementioned formal” use of language. This was partly because the villagers interviewed were not academically well-versed to understand the formal tone of the questions and thus, needed explanations in their local dialects and languages other than Bahasa Indonesia (which was Javanese, most of the time). This might have skewed their understanding of the question and lead to erroneous data recording. To minimize this, however, we tried to keep the questions as open ended as we could without losing the context of the impact being studied. We also would like to point out the fact that adherence to our chosen indicators (quantitative and qualitative) was also weak, mainly due to ground logistics, feasibility and many iterations of the questionnaire. (Which at the end, included a marketing questionnaire segment to understand customer perspectives apart from just impact segments so as to give some concrete DOs and DONTs to the management)

Critiques

Randomization Critique

Starting by randomly selecting people from the complete sales data, we soon realized that it was literally impossible to reach the selected households without the help of the coordinators and sub-coordinators. This indeed induced a “satisfied customer” bias in the data as the customers/households/coordinators who were more satisfied with the product were more inclined to come forward for answering the questionnaires. Although, we tried to randomize the households we targeted in each village, yet due to the limited number of “users” in a particular village, we had to interview almost all of them to reach the desired statistically significant level of our sample. This might have lead to more than the actual positivity in the responses that we collected. We also observed that due to ease of reaching out to economically sound users, the data collected may represent only the upper layers and not the complete base of the pyramid, which the company is trying to address. To circumvent this source of skewness, we tried to go to far off villages and stay there (eg. Donomulyo, Turen) and also, use an indirect PPI method of assessing our poverty outreach.

Critiques

Data Analysis and Report Formulation Critique

Considering the fact that we are four students from a business school, we duly acknowledge the fact that there is a possibility of erroneous conclusions based on the huge amount of quantifiable data that we collected during the six weeks of our study. There is also a possibility of structural and hypothesis error while doing regressions and finding correlations between various parameters of our study. (Mainly, because of so many dependent variables affecting our considered impact indicators) This report in itself is not by any means a complete analysis of the company's impact or an attempt to analyze the customers (users/households) using filters. This is a small study conducted in order to figure out what might be the focal points (as illustrated in the study) of further future detailed assessments if the company decides to measure its impact holistically. Nonetheless, with limited knowledge, scope and time frame, we have tried to do what was feasible and what could lead us towards a better marketing proposition and impact analysis. As mentioned elsewhere, we do not intend to define the strategy of the company through this report but only suggest the management to focus and conduct detailed analysis on the focal pivots as indicated by the study. Once again, due to small sample size and data, the next steps are at the volition of the senior management and we claim no credit or liability for the same. We would also like to take this opportunity to invite constructive feedback and critique of the report, from the management and other stakeholders, so as to learn together as a team, for the betterment of future impact studies.

Sources

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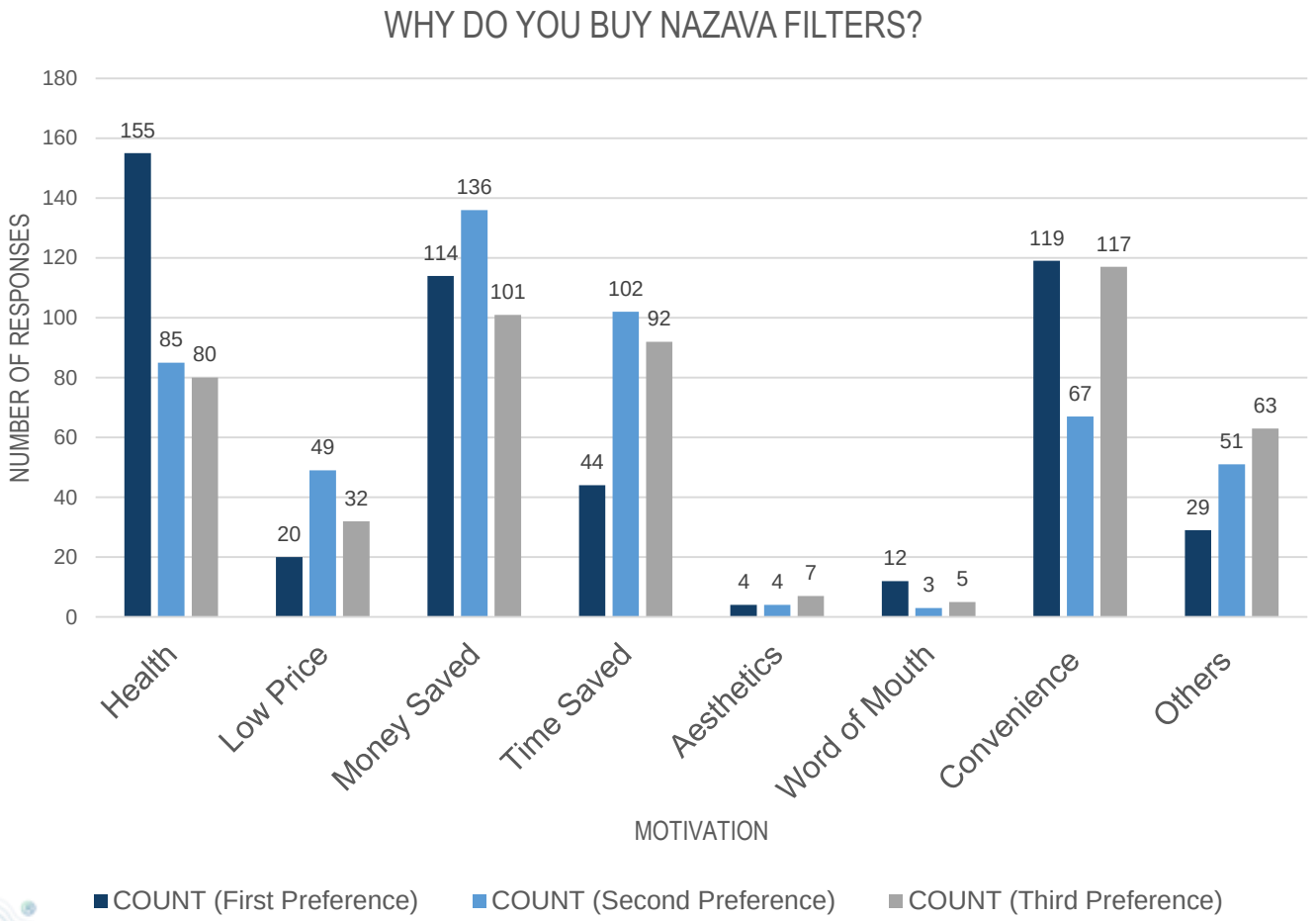
8. https://www.asiaforgood.com/nazava-water-filters

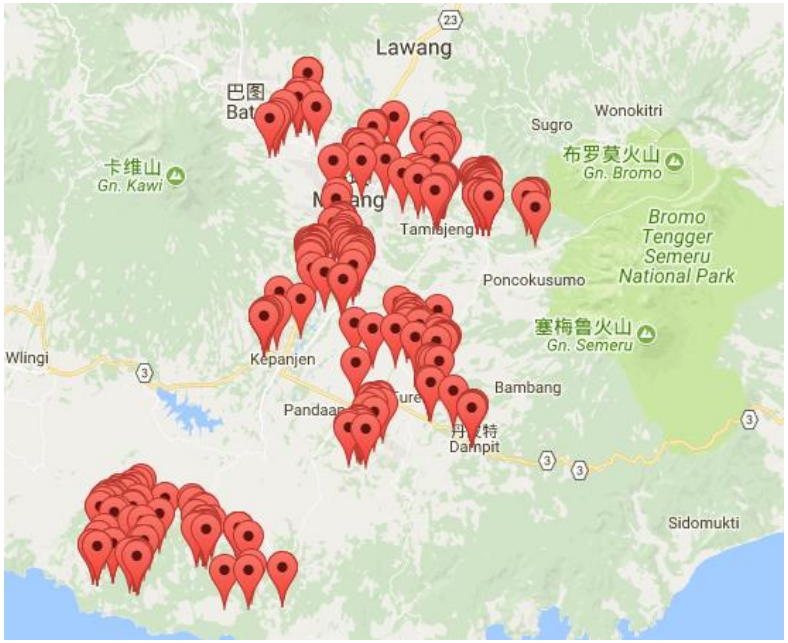
Annex – Additional Charts

The ranking of reasons behind filter purchase

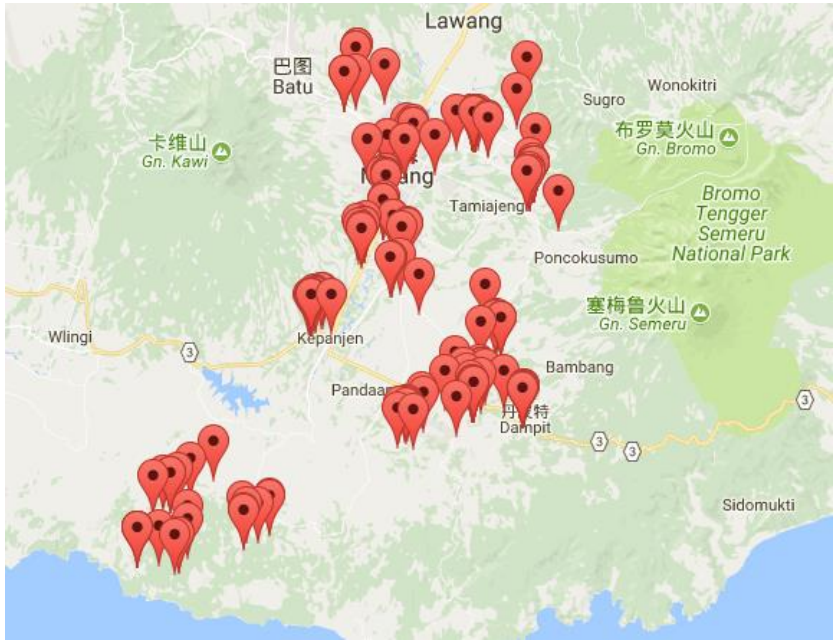


Annex – GPS Location of Users and Non Users

The GPS Mapping of the users and non users visited by the team



User



Non User