CHUUK WATER SUPPLY AND SANITATION PROJECT (CWSSP)

FINAL REPORT
SOCIOECONOMIC SURVEY FINDINGS ON WENO
March 2021

PREPARED BY CHUUK PUBLIC UTILITY CORPORATION

EXECUTIVE SUMMARY

A. The FSM National Government and the Chuuk Public Utilities Corporation (CPUC) requested the assistance of the Asian Development Bank (ADB) to improve water supply and sanitation in Chuuk. This socioeconomic household survey on water and sanitation is a component of the Chuuk Water Supply and Sanitation Project (CWSSP) with ADB to support CPUC's capacity in improving water and sewerage services in Chuuk.

This project aims to:

- improve and upgrade CPUC's water supply and sewage services;
- increase the water supply resilience of water supplies by reducing the reliance on rainwater harvesting and groundwater;
- reduce Non-Revenue Water (NRW);
- raise revenue and improve the day to day services to meet the demand;
- raise community awareness on sound sanitation and hygiene practices to prevent waterborne disease; and,
- foster water conservation.

B. The purpose of the survey is to identify socioeconomic factors that households experience in accessing sound water and sanitation services and practices in order for CPUC to provide relevant, reasonable and quality support and services to its communities. This report presents the summary data of the results and findings of the Weno household survey on water supply and sanitation infrastructure.

The objectives of this report are:

- to share the components of the socioeconomic survey;
- to share the results and findings of the socioeconomic household surveys on water supply and sanitation conducted on Weno households;
- identify from the survey the social, economic, gender, and cultural factors as well as gaps in accessing safe water and sanitation; and,
- Offer recommendations to improve water and sewerage services.

BACKGROUND

Chuuk State is one of the four island states that make up the Federated States of Micronesia (FSM) with a total land area of 49 square miles. The 2010 Census shows that Chuuk's population is slightly over 48,000 residents out of FSM's 102,800 population making Chuuk the most populated state in the entire nation.[1]

Weno Island is Chuuk's main urban and administrative centre with a population of more than 13,000 living on total land area of 7.3 square miles/127 square kilometers. During the weekdays, neighbor islanders would commute to Weno for work, school, and other informal trades.

[1] FSM National Government. (2010). Summary Analysis of Key Indicators from the FSM 2010 Census Population and Housing. Division of Statistics FSM SBOC.

As the administrative centre, Weno is the only island in Chuuk with access to public utilities such as water and sanitation systems. However, access to public water and sanitation services is limited and does not cover the entire island and its residential homes. Currently, CPUC operates the public utilities on Weno, but it only services no more 378 residential customers, about 19% of the approximate 2000 households on Weno.

The 2010 FSM National Census of Population and Housing reported that 18.2% of households had no access to safe drinking water and more than half of FSM household, 53.4% households in Chuuk had no access improved sanitation facility.[2] Only 7% of the households on Weno obtained drinking water from public utilities while a large 69% obtained from water tanks. Other water sources for drinking would include deep well, natural springs/streams and bottled water.[3]

In 2012, the Chuuk Women's Council (CWC) conducted a study or campaign on public awareness for water conservation and watershed protection as well as the willingness to pay for water. As part of the project, CWC carried out a social survey and reported that most households on Weno relied heavily on rainwater catchment. However, households were willing to pay for utility water (CPUC) if the water would be treated, accessible and available. In that 2012 report, it was recommended that the quality of utility water needed to be improved, services to be consistent and reliable, and fair charges to be enforced.[4]

While CPUC has made significant progress through institutional reforms and has become a reliable utility company, access to public water and sanitation services remains a persisting problem on Weno Island. The findings of this survey show that not much has changed since 2010 or any recent surveys or assessments on water and sanitation. However, the findings of the survey compiled in this report hopes to offer an understanding of socioeconomic factors that support or preclude progressive development of water and sanitation facilities.

METHODS

This survey was conducted with households on all eleven villages on Weno over a two-week period. While it was targeted to cover 2,000 households, the surveys only covered 1,514 households on Weno. Several households were missed and a few households refused to participate in the survey.

Two survey managers were employed to oversee the socioeconomic survey on the ground. Additionally, three field supervisors were hired to supervise a team of 44 surveyors; one supervisor managed the northern part of Weno, the villages of Sapuk,

[2] Ibid 2010, 7.

[3] Chuuk Department of Health Statistics.

[4] Chuuk Women's Council. (2012). *Public Awareness Campaign for 'Water Conservation and Watershed Protection' and 'Willingness to Pay Study'*. Unpublished.

Penia, Peniesene, Tunnuk and Mechitiw; another managed the central villages of Iras, Nepukos and Mwan, and the third supervisors managed the southern villages of Neauo, Wichap and Epinup. For safety purposes, surveyors worked in pairs to carry out the household surveys.

Surveyors and supervisors were oriented and trained on the use of the **Kobo Toolbox App** used for the surveys for one and a half-day. Surveys were carried out both on paper and on mobile phone using the KoboToolbox App. Each team of surveyors were provided and equipped with an Android mobile phone to carry out the survey on the App. The household survey started on Wednesday, June 3, 2020 and concluded June 26, 2020. Figure 1 shows the map of the surveyed households on Weno using the Kobo Toolbox App.

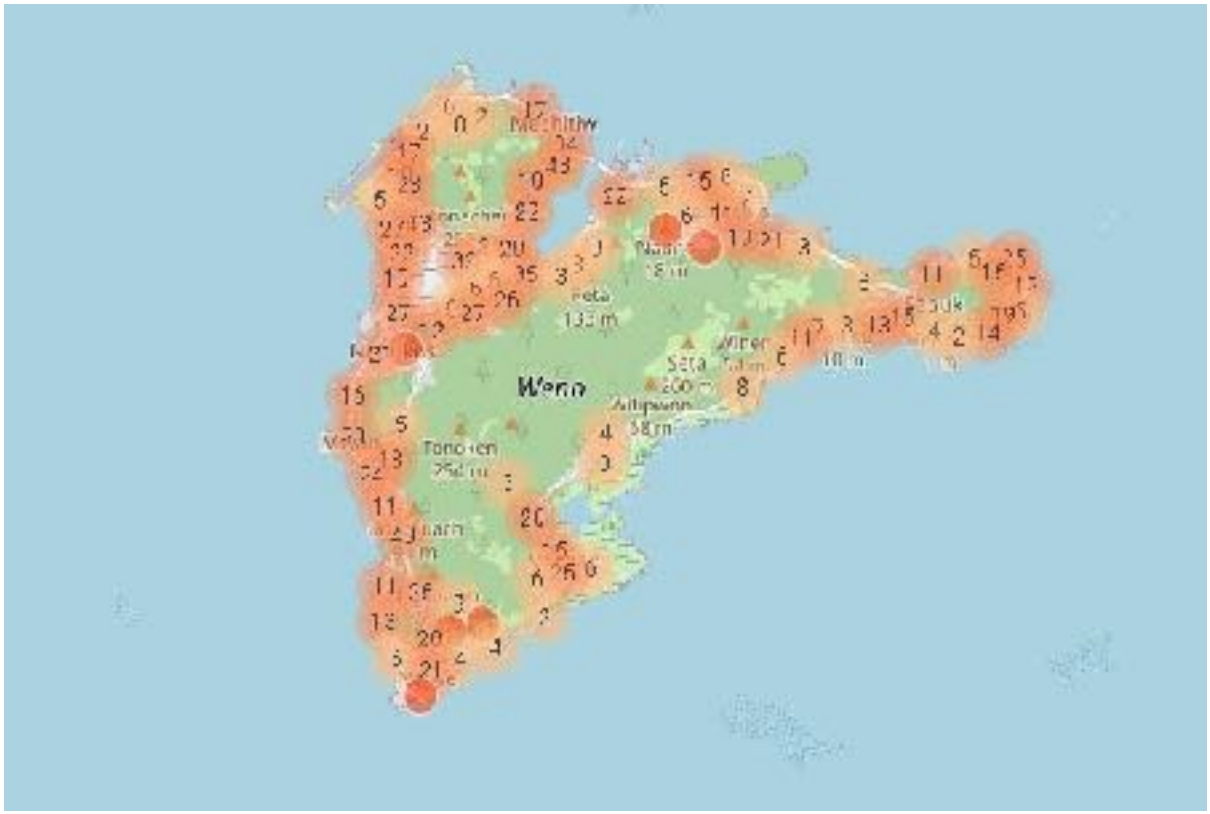

Figure 1: Map of Completed Household Surveys

Survey managers worked closely with the ADB team and CPUC in establishing the 96 survey questions. The survey was translated into the Chuukese language by the supervisors and managers.

The household survey had 96 questions divided into 8 thematic sections/categories:

A. Personal information of respondent;
B. Information about household;
C. Information on water source for the household;
D. Sanitation/Hygiene facilities and practices;
E. Access to water and sewage utilities and services;
F. Maintenance of water and sanitation;

G. Inventory of land and property; and,
H. Social information about household .

Throughout the survey period, the ADB Team worked closely with the survey managers. Also, the survey managers worked with the supervisors. Moreover, each of the supervisors would meet with their teams in the morning to record their time, conduct inventory of phones and for short briefings. During lunch-hour, supervisors would deliver lunch to their teams and return to the fields at the end of the day to collect phones, paper surveys and for general check-in with the surveyors. There were regular debriefs in the evening on data including field experiences, any issues in the field that may arise, or have been encountered and how to address those.

Raw data was shared with the ADB team and with the team in Chuuk for reporting purposes.

RESULTS

This section shows the results and data of the survey questions by categories.

A. Personal Information of Respondents

For this household survey, there are more male participants than female participants, but not much difference. One percent did not respond and disclose their sex. 52% of the participants are male and 47% are female, the median average age of respondents is 46.

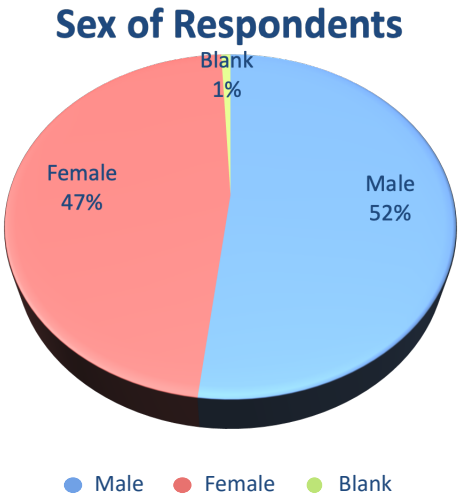

Figure 2: Sex of Respondents

Of all the respondents, only 5% reported to have disability, 93% reported without disability and 5% reported to live with partial disability.

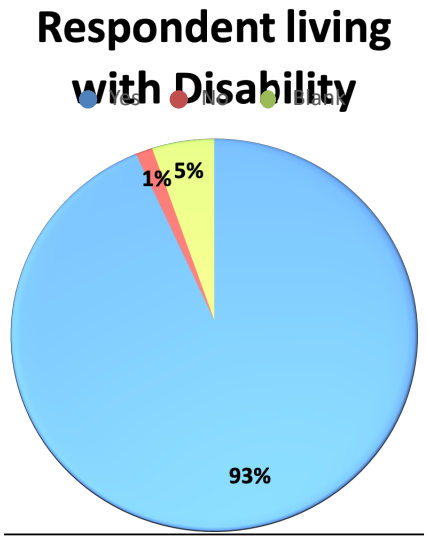

Figure 3: Respondent Living with Disability

A majority of the survey respondents are married, with 69% of respondents reported being

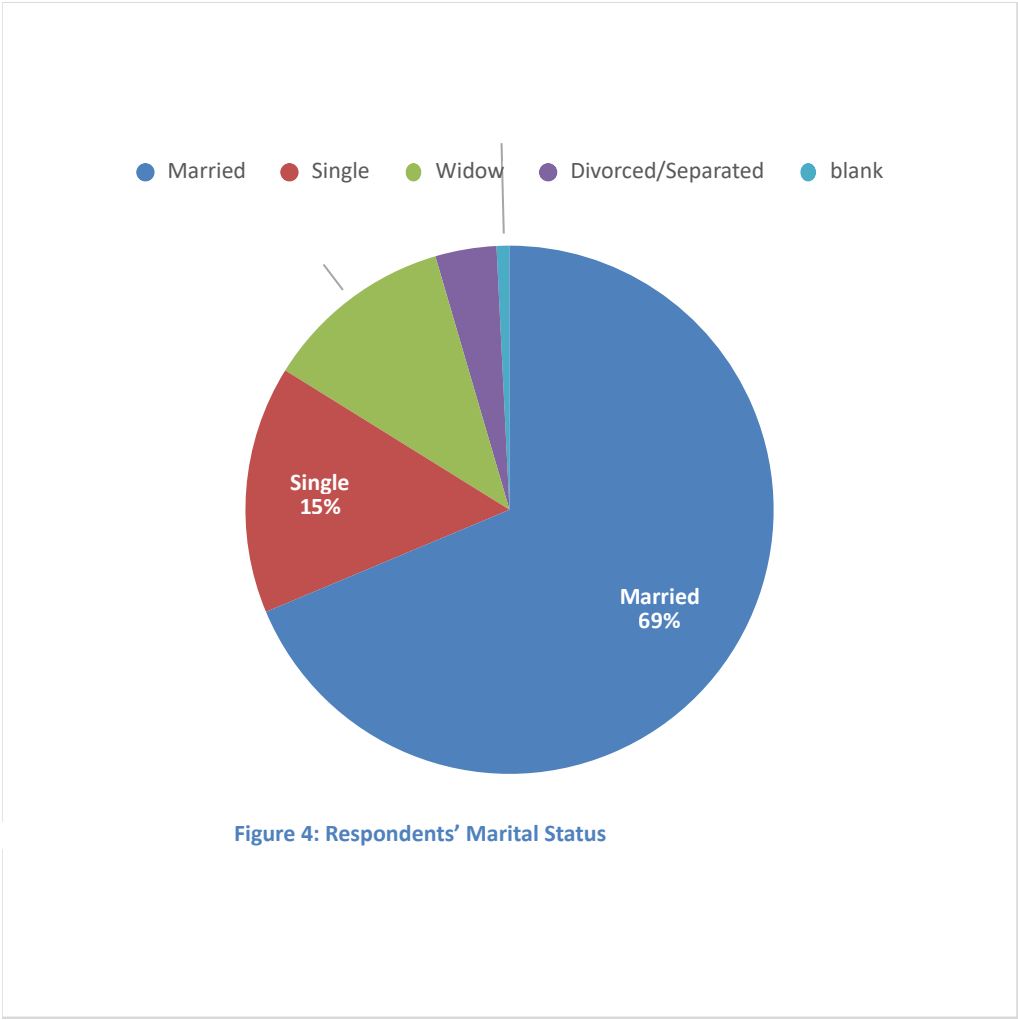

Figure 4: Respondents' Marital Status

married, while 15% reported to be single, another 12% are widowed, and a small percentage of 4% indicated to have been divorced or separated.

Most respondents reported to have completed secondary education with 40% achieving secondary level. 22% reported to have finished university/college level or some vocational training. About 2% have no formal schooling or some with limited reading and writing skills.

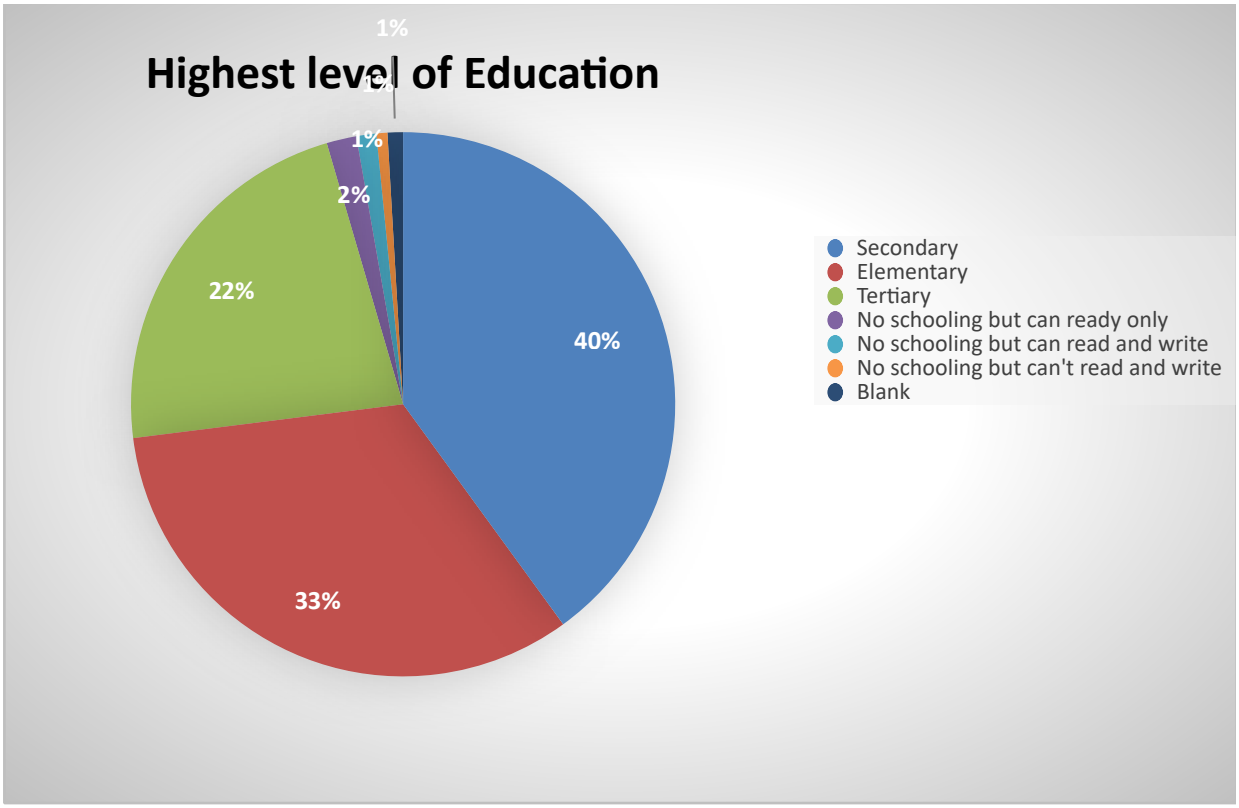

Figure 5: Highest Level of Education of Respondents

B. Information About Households

Of all the 1,415 households that were surveyed on Weno, the total population of household members is 9,312 with 50% male and 48% female. 1% of the population declared to be transgender members of the households. According to the survey, over 75% of the households are headed by a male and 24% are headed by a female. Most households on Weno have an average occupancy of six members, with over 75% having at least four or more members.

Also, less than 10% are sponsored members of the households: these are normally individuals from neighboring islands who may or not be relatives, residing with these households to be closer to and/or for work.

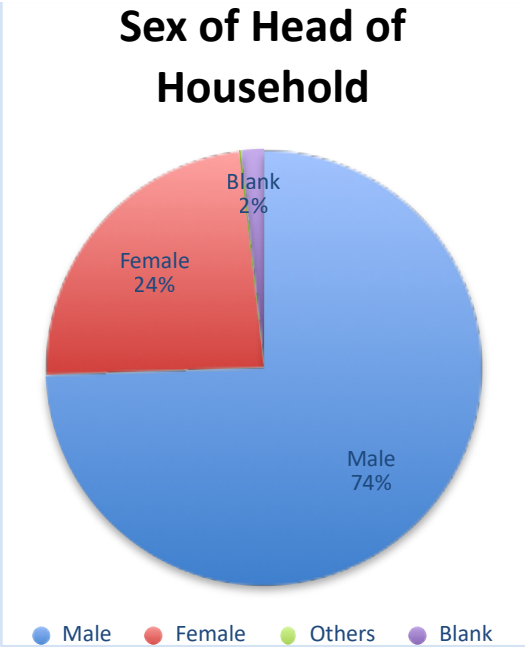

Figure 6: Identified Gender of Head of Household

For income, 46% of all households reported an income of $200 and below every payday (bi-weekly). A ratio of 4 male to 1 female is responsible for earning income in the household.

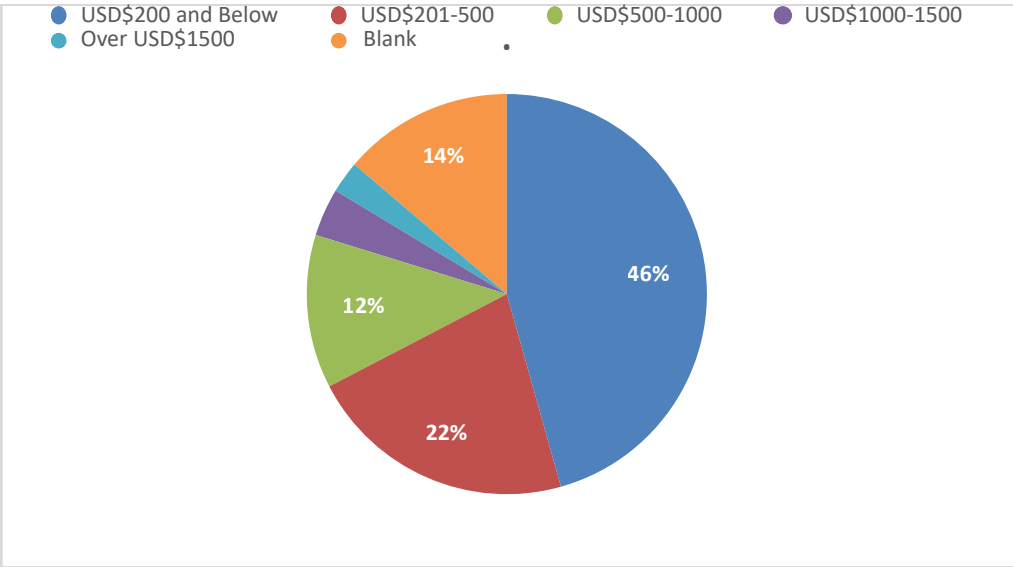

Figure 7: House Hold Income/payday

The main sources of income are primarily government employment and private businesses. For secondary source of income, private business would bring in majority of secondary source of income, followed by remittances as secondary income for majority of the households.

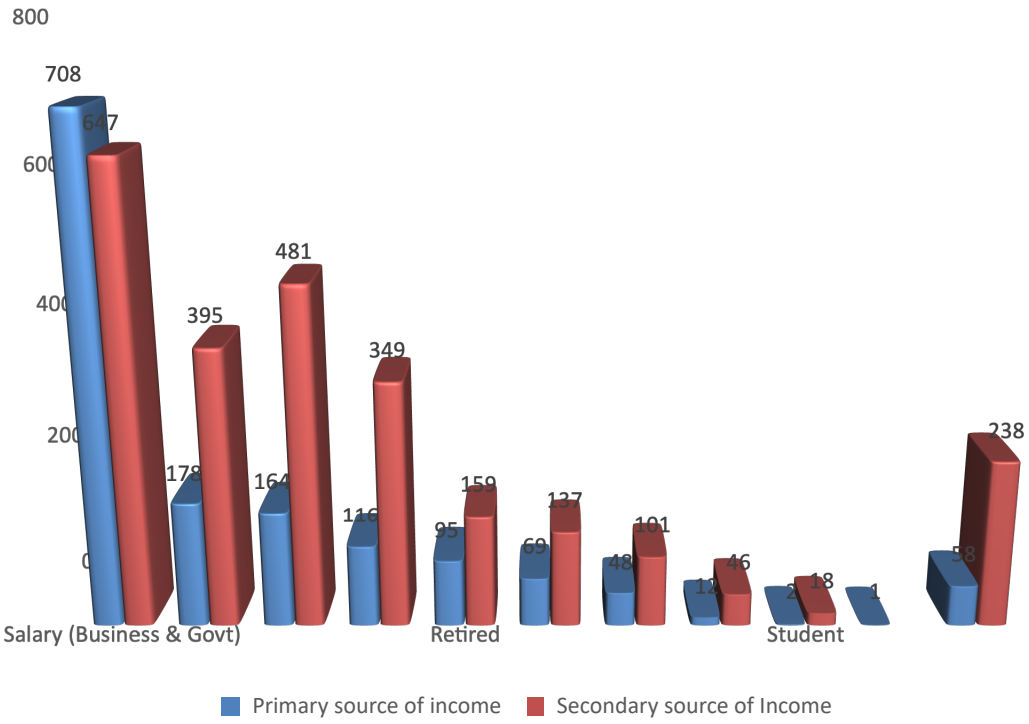

Figure 8 Household Primary Source of Income

Around 3,075 out of 9,312 occupants (33%) of the Weno households are employed. With 60% males, 38% females, and 2% of the transgender populations being employed.

C. Source of household water

Household water is used for bathing, cooking, cleaning and washing clothes. 21% of households rely on CPUC water for general household water. Deep well and rain catchment are the primary sources of bath water and deep well is the common source of water for washing clothes.

The number one source of water for general household use and for drinking comes from water tank or rain catchment. Over 58% of households obtain drinking water from rainwater tanks and 29% have now resorted to bottled water purchased from stores. A very low percentage of households (1%) rely on CPUC water as the primary source of drinking water. When it comes to cooking or preparation of food, only 4% of households rely on CPUC water.

Figure 9 shows source of household water and the primary source for drinking water and cooking.

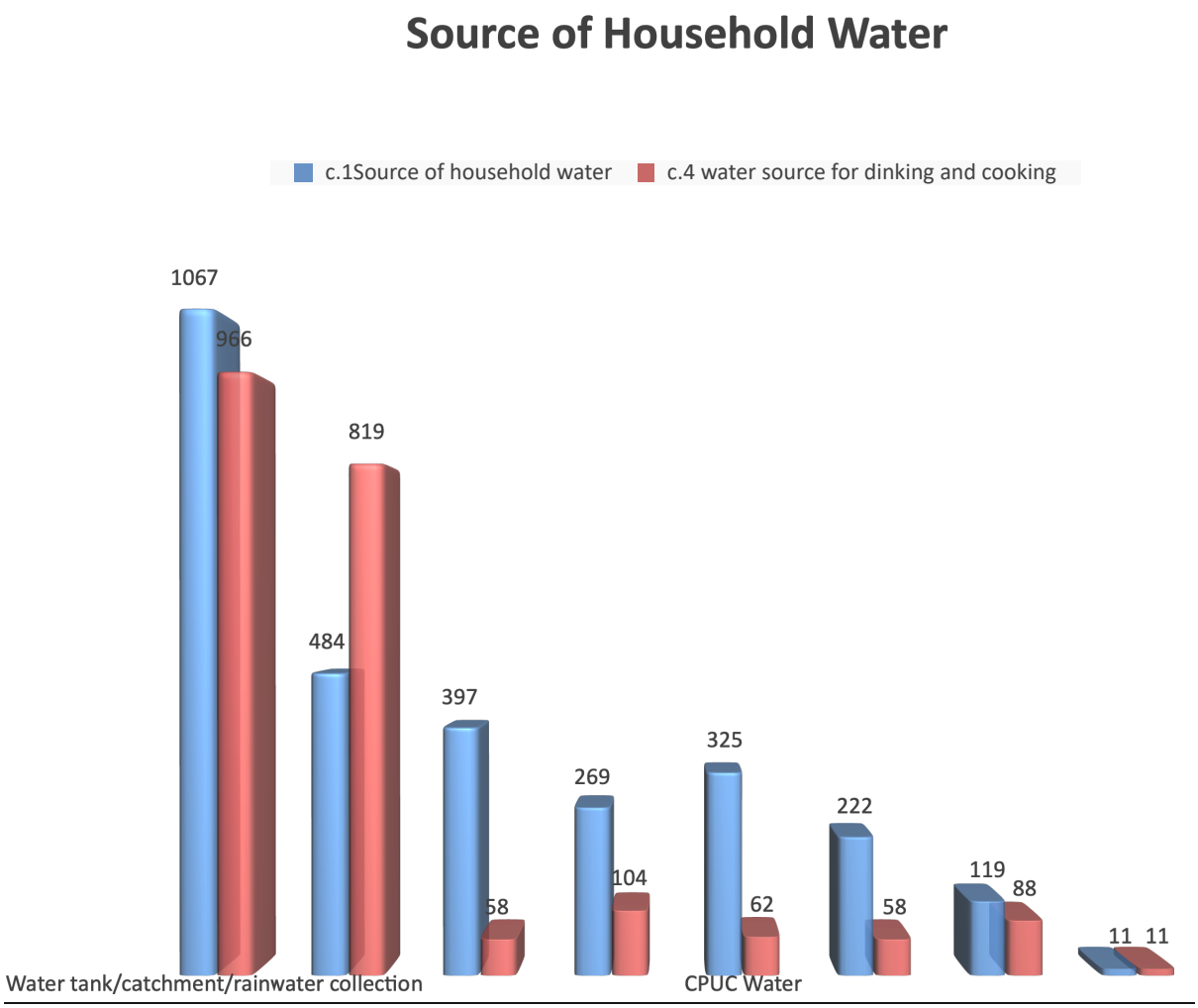

Figure 9: Source of Household water

Even with the reliance on rainwater catchment, 78% of households reported to have access to safe drinking water. Most households reported that they have access to safe drinking water without relying on CPUC water.

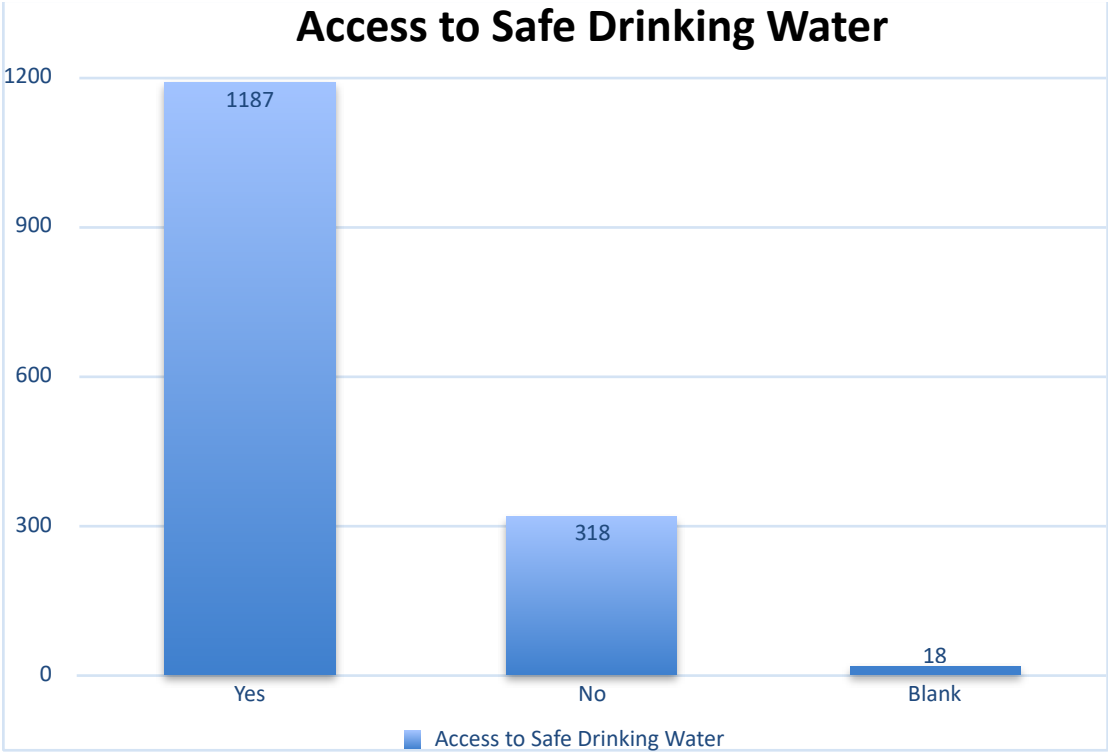

Figure 10: Households' Access to Safe Drinking Water

Figure 11 below shows the chart of willingness to pay for water supply and its maintenance. It is evident that most households do not spend money on the maintenance of their household water. Below are the top five amounts of total money spent (or unspent) for each household on water collection and maintenance.

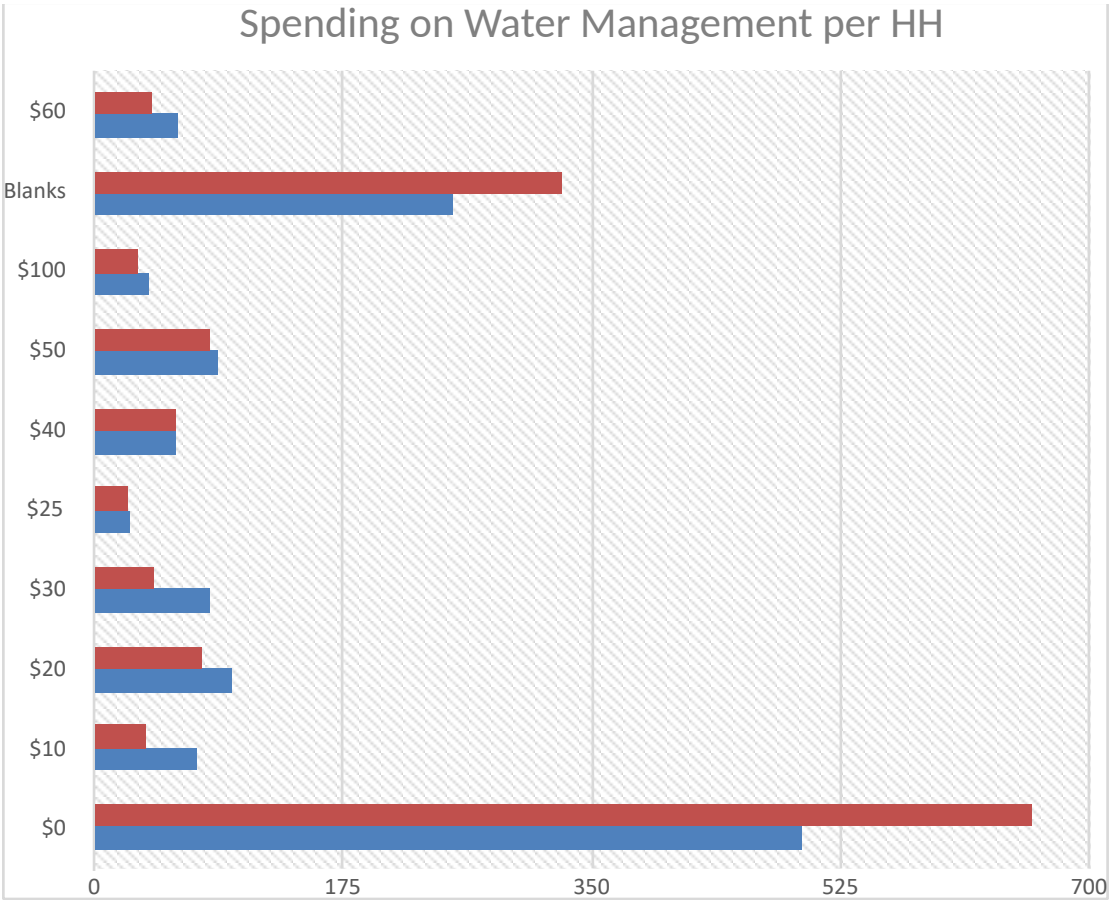

Figure 11: Willingness to Pay for Water per Household

About 85% of households are willing to pay $10 a month for clean water supply and to be connected with CPUC, while a lower number at 55% of households are willing to pay $20/month for clean water from CPUC connection.

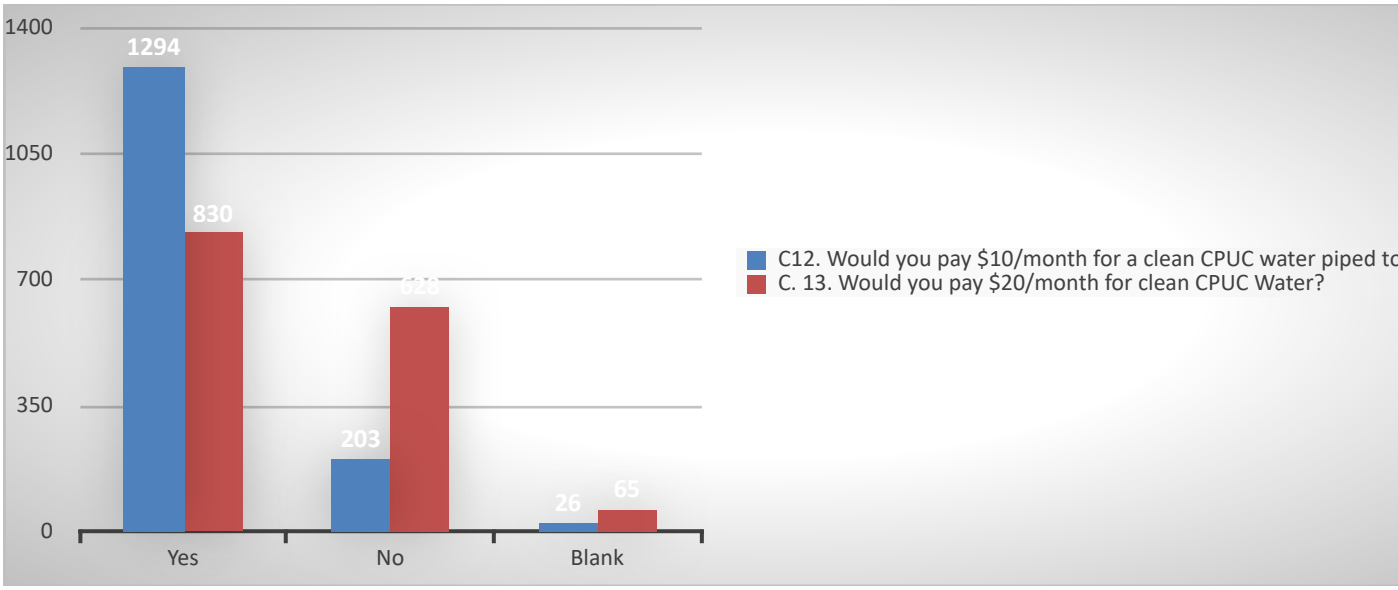

Figure 12: Amounts Households are willing to pay for CPUC Water

Around 42% households are willing to pay $25 as one-off charge to be connected to CPUC's water system, while 39% are willing pay a different amount and only 4% are willing to pay $50 for installation of water.

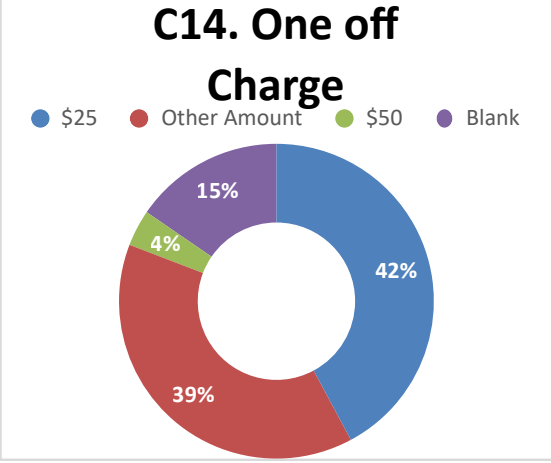

Figure 13: Amounts Households are willing to pay for Connection Fee

D. Access to Sanitation Facilities

A total of 77% households have access to sanitation facilities on Weno while 22% households reported without sanitation facilities.

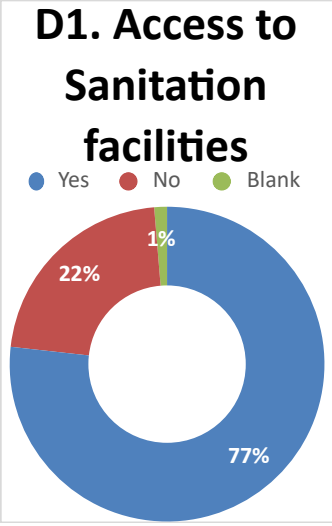

Figure 14: Access to Sanitation Facilities per Household

Around 42% of households reported to having indoor flush toilet connected to their own private septic tanks while 22% of households reported to be connected to CPUC's sewage system. Another 18% of households reported to use outdoor benjo or the basic pit latrine. 50 households or 3% of respondents chose not to indicate their types of sanitation facilities.

Figure 15 below shows the different types of sanitation facilities used by different households on Weno. There are more households that have no proper toilet facilities than households that are connected to utility sewerage systems. They have no proper sanitation facilities thus may pose health risks for households who rely on streams for water supply.

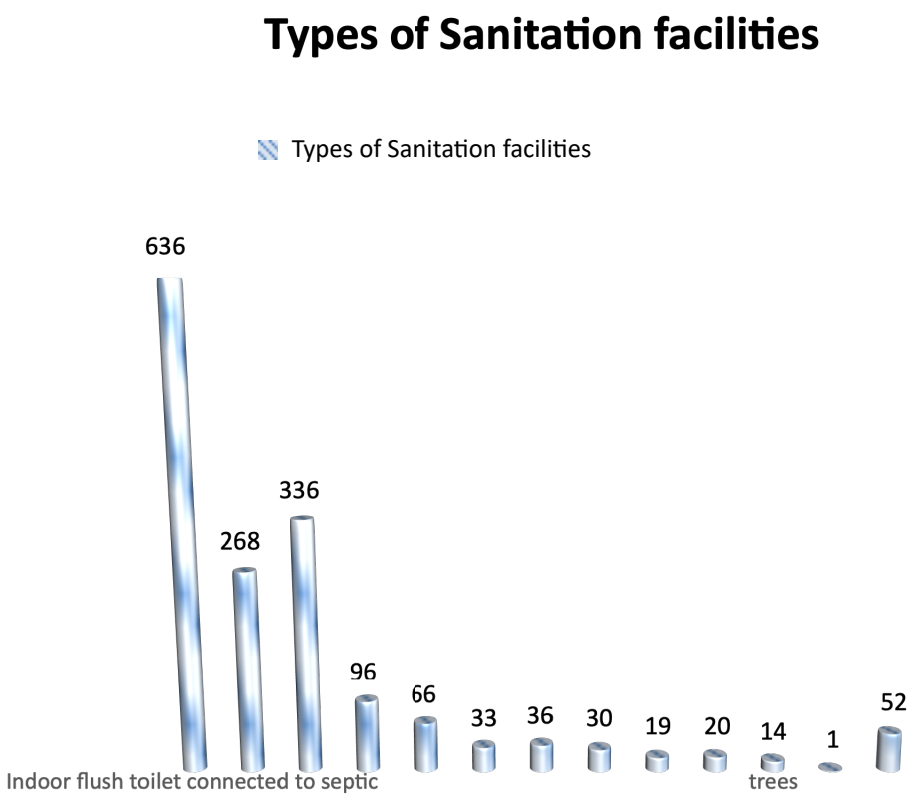

Figure 15: Types of Sanitation Facilities

E. Access to Water and Sewage Facilities

Not many households on Weno are connected to CPUCs water system. This survey shows that only 19% are connected to CPUC's water system, while 84% of households are not connected. Among the households, only 22% households pay for water while, 67% of homes are not paying for water. This may indicate that the households rely on rainwater catchment or other sources of water or perhaps part of the non-revenue water.

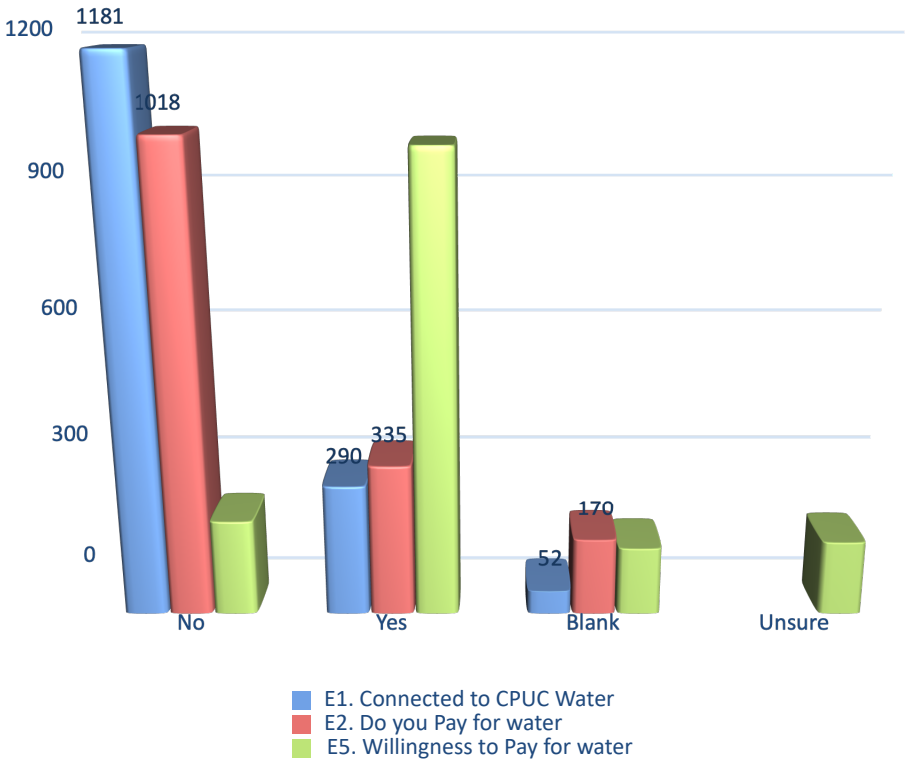

Figure 16: Willingness to Pay for CPUC water

Around 51% households claimed that they would pay for water, and reported to have spent between $10-$30 per month on water, while 22% of households spent a different amount, 17% of households spent between $10-$30, and the other 10% spent less than $10 on water. These households include those who are not connected to CPUC water utilities but have CPUC water delivered to their homes.

Figure 17: Total spending on water per month for a household

For payments of water fees, the survey reported that 27% of fathers (male) compared to 14% mothers are responsible in paying for water. Furthermore, households also reported that 3% of their sons and 3% of their daughters also contribute to paying for water. About 903 surveys or 60% household respondents left this question blank.

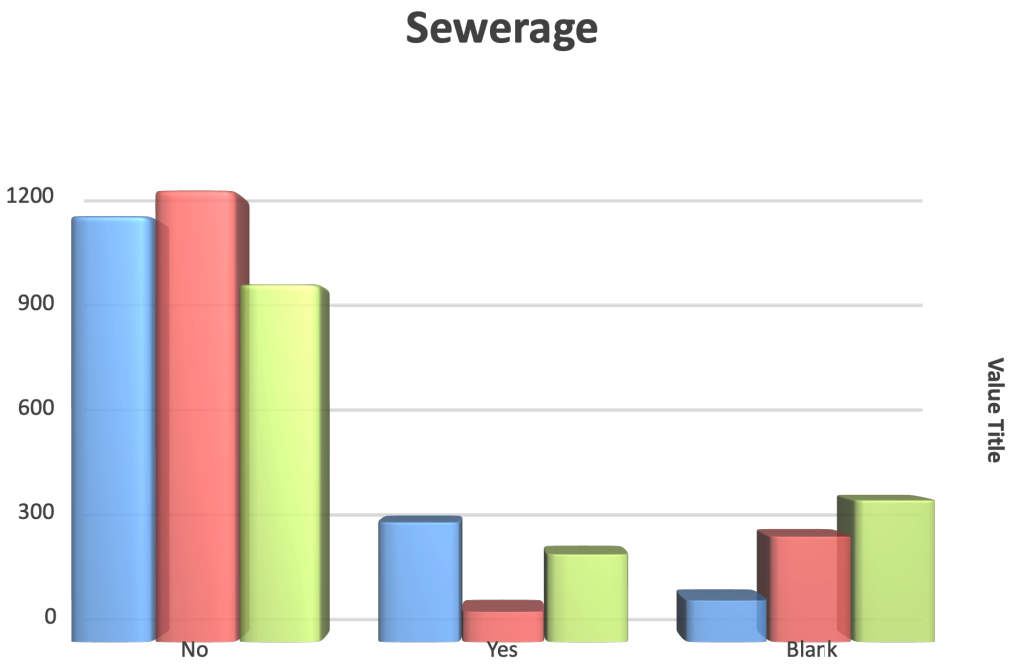

Figure 18: Connection to CPUC Sewerage System

Regarding sanitation facilities, only 20% of households are connected to the public sewage system, while 73% are not connected. Within the households, respondents claimed that 22% of the fathers of the households are responsible for paying sewerage system, while only 9% of the mothers are responsible for the sewerage payment. About 5% of households are connected to someone else's sewerage system. Surveys further reported that only 15% households reported paying while 61% are not paying for sewage.

F. Maintenance of Water and Sanitation

For most households, 41% of the mothers are responsible for maintaining their water source while 25% is maintained by the fathers. However, when water infrastructure needs fixing, 53% of fathers are responsible, while only 6% of the mothers and 35% of other family members undertake the fixing of the structures.

The responsibility of cleaning household water areas falls on the women. According to the survey, 36% of households reported that mothers are responsible for cleaning the household water areas, while 21% are maintained by fathers and 23% are cleaned by other members of the household.

When it comes to cleaning toilet facilities, 47% of mothers take full responsibility, while 29% of households reported other members are responsible, and 16% households reported that fathers are responsible for cleaning the toilet facilities.

When it comes to plumbing, 40% of fathers are responsible for plumbing in the household, and the remaining 15% reported mothers, and other family members at 36% are responsible for plumbing of their sanitation facilities.

For cleaning gutters and pipes, the survey shows that most fathers are responsible for cleaning cutters, with 58% fathers, 31% other family members, and only 5% where mothers are responsible for these tasks.

In addition, 45% of male members in households are responsible for taking care of their household livestock.

When it comes to cleaning the house and around the yard, and cooking and washing, more women are reported to be responsible for these tasks. The graph below (Figure 19) shows the different responsibilities by father, mothers, and other members in the household.

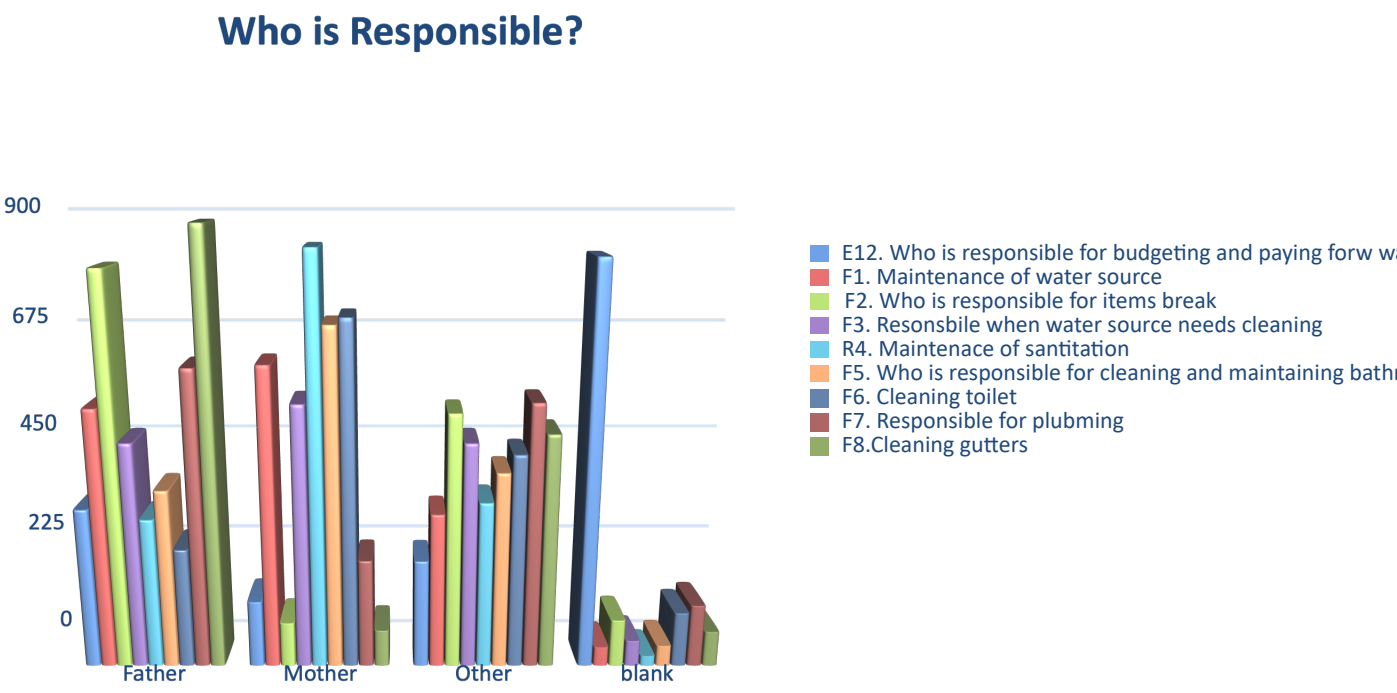

Figure 19: Who is responsible for budgeting and maintaining water and sanitation

G. Land Property

To understand households and their access to water and sanitation, it is also important to understand the status of the land and house ownership. According to the survey, 65% of respondents reported having their houses built on their land. While 13% of households being on their relatives' land, nine percent (9%) live with their in-laws, seven percent (7%) live on community/shared property, and four percent (4%) renting properties. There are also households, living on mission property or land that belongs to the churches (2%).

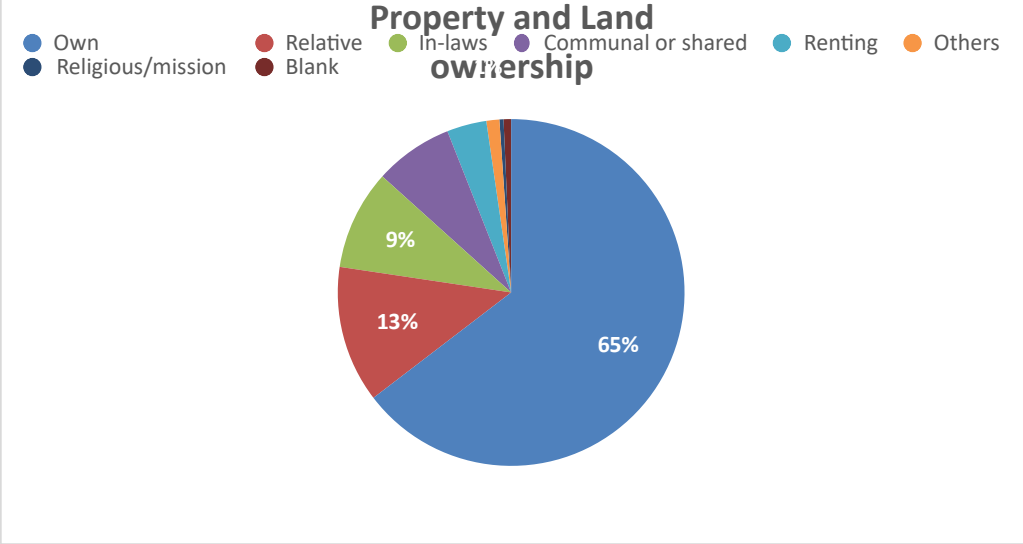

Figure 20: Property and Land Ownership

I. Social Information

Over 1,200 (around 79%) household respondents reported that women are primarily responsible for cleaning in their households. Also, nearly 1,400 (around 92%) respondents reported that women are primarily responsible for cooking and washing in their households.

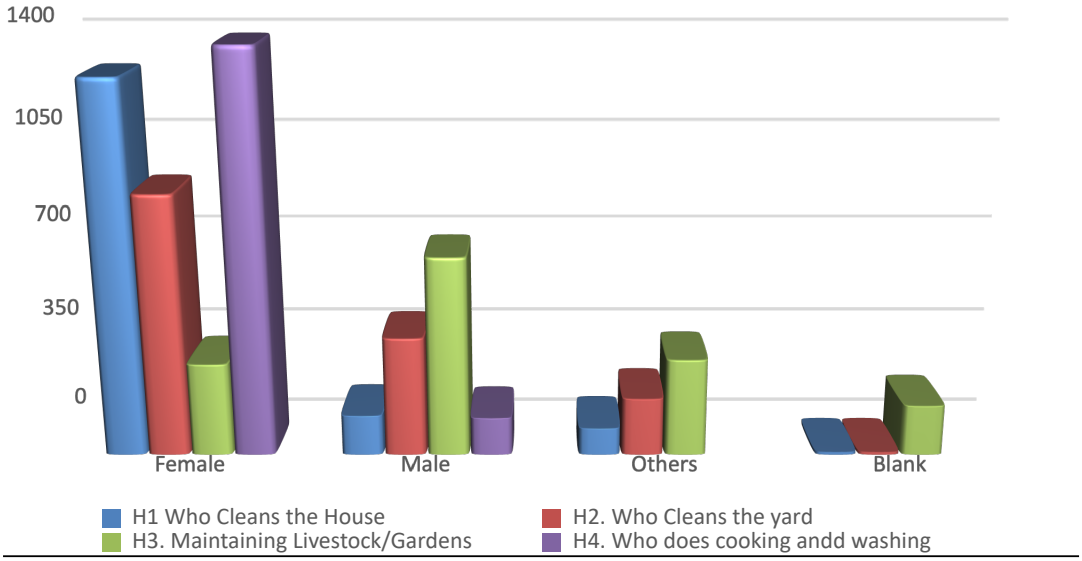

Figure 21: Social Household Responsibilities

The biggest challenge that each household face in relation to water is mostly shortage of water. This is not a surprise since most households rely heavily on water catchment or rain catchment so when there is no rain, most households on Weno will face this challenge.

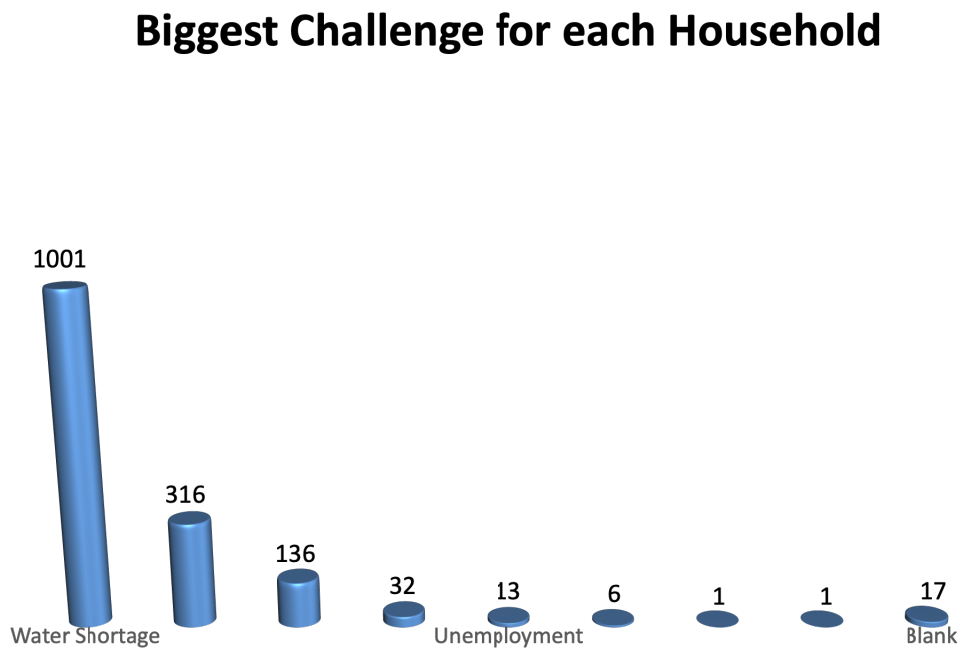

Figure 22: Greatest Challenge for each Household

DISCUSSION OF KEY FINDINGS

This is to highlight the key findings that emerged from the survey. Survey data shows that Weno households still have limited access to continuous water supply and without proper sanitation facilities. As expressed by 65% of households in this survey, the key challenge that each households face is water shortage; the second biggest challenge is access to clean water.

Some of the key findings regarding access to water and sewerage facilities include:

- On Weno, 19% of households are connected to CPUC water utilities and 20% of households are connected to CPUC sewerage system.
- More than 58% of Weno households rely on rainwater tanks as primary source of drinking water, followed by 29% of households relying on bottled refillable water and only 1% relies on CPUC for drinking water. More than 10% of the Weno households rely on other sources including unprotected well for drinking water.
- Rainwater tanks may not be the cleanest and safest options since most households do not spent money on maintaining their water sources. Rainwater tank is as safe if there is frequent cleaning and maintenance.
- Households are willing to pay a reasonable price to be connected to CPUC utility water and pay for one-off charge for connection to water supply.
- While 77% of households claim to have access to sanitation facilities, approximately 20% of households are connected to the sewerage system, 41% have their own septic tank, and the rest of the households are without proper sanitation facilities.

Most households rely on their own septic tanks over CPUC sewerage system. It is also evident that sanitation facilities on Weno are considerably poor, with a good number of households still relying on outdoor facilities.

Again, this may indicate risk factors with poor hygiene and access to proper sanitation facilities. There are higher risks of diseases when households rely on streams and deep wells for water source alongside poor sanitation facilities. Also in times of droughts and natural disasters, outdoor sanitation may not be safe for households.

Some factors that may preclude access to water and sanitation facilities include:

Social Factors

- Sharing of water supply and sanitation facilities. Most households on Weno have an average six members per household and 75% of households have more than four occupants.
- While households occupy their own land (mostly shared with other family members) they also share water sources and sanitation facilities with others.

Gender Roles

- For Weno households, 41% reported that women or mothers are responsible for water supply. A good number of households also reported that when it comes to cleaning toilets, bathrooms and water sources, women are also responsible.
- Women are also responsible for cleaning the household and yard, cooking and washing.
- Men, meanwhile, are responsible for taking care of livestock and gardens, plumbing and cleaning the house gutters.
- Fathers are mostly responsible for paying water and sewer (334 households) while mothers are also reportedly responsible for paying these services (139 households). Over 800 households left the question blank.
- Mostly male-headed households and there is a 4:1 male to female ratio of primary income provider. Paying for water may not be a priority.

Economic Factors

- There is an implication that poverty level is high as unemployment is also high. According to the survey, only 33% of the household members are employed and over 66% of the household populations on Weno are not employed. With the high rate of unemployment, cost of water will remain a common factor in accessing and maintaining water and sanitation facilities in households.
- Reported average monthly household income is $200 or less, making it difficult to pay for water supply and sanitation facilities for those within this income bracket.

CONCLUSION

Households are willing to pay for water - if it is reliable, affordable, and safe. This is indicated through increasing number of households relying on bottled refillable water for drinking and cooking.

To respond to household problem of water shortage and unsafe water, it is highly recommended that support is given to CPUC to improve, advance and expand their capacity in providing quality and relevant services to households on Weno.

The following are recommendations based on the socioeconomic survey findings and consultations:

1. CPUC to improve public awareness of its water and sanitation services that it can replace natural springs, deep well and rainwater catchment in times of drought.

    - Survey findings show that households do not trust CPUC water and sewerage system. CPUC water is used for washing, bathing and cleaning while rain water catchment/tanks are used for drinking and food preparation.

    - Engage with communities using scientific evidence to show public the value of their services.

2. Strengthen CPUCs capacity, accessibility and services. Households are willing to pay for water if reliable, accessible and if personnel services are improved.

3. Improved road, water, and sanitation infrastructure

    - Most households located out of town are unable to connect to CPUC water because of poor urban planning and poor roads.

    - CPUC water is also not accessible and unable to reach the rest of the island since the water pipes could only go as far as the current road infrastructure.

    - Households along the newly-paved roads are able to access CPUC water. Although CPUC does water delivery, the poor road conditions in most parts of the island are impacting regular delivery of CPUC water to households outside the newly-paved roads.

4. Ongoing meaningful consultations on land ownership.

    - In order for CPUC to expand its network, it must work closely with the communities and landowners, and engage in local and indigenous knowledge of water resources. There needs to be an effective plan to work with landowners on understanding the positive and negative impacts of the water and sanitation services and their important role in improving access to their communities.

5. Introduce other services for providing clean water.

- Households want safe access to water and sanitation facilities. As these are newly introduced infrastructure and facilities, households may need training in better understanding of how to maintain these facilities.

6. Consider health and environmental risks when upgrading water and sanitation services.

The Chuuk Water Survey Team