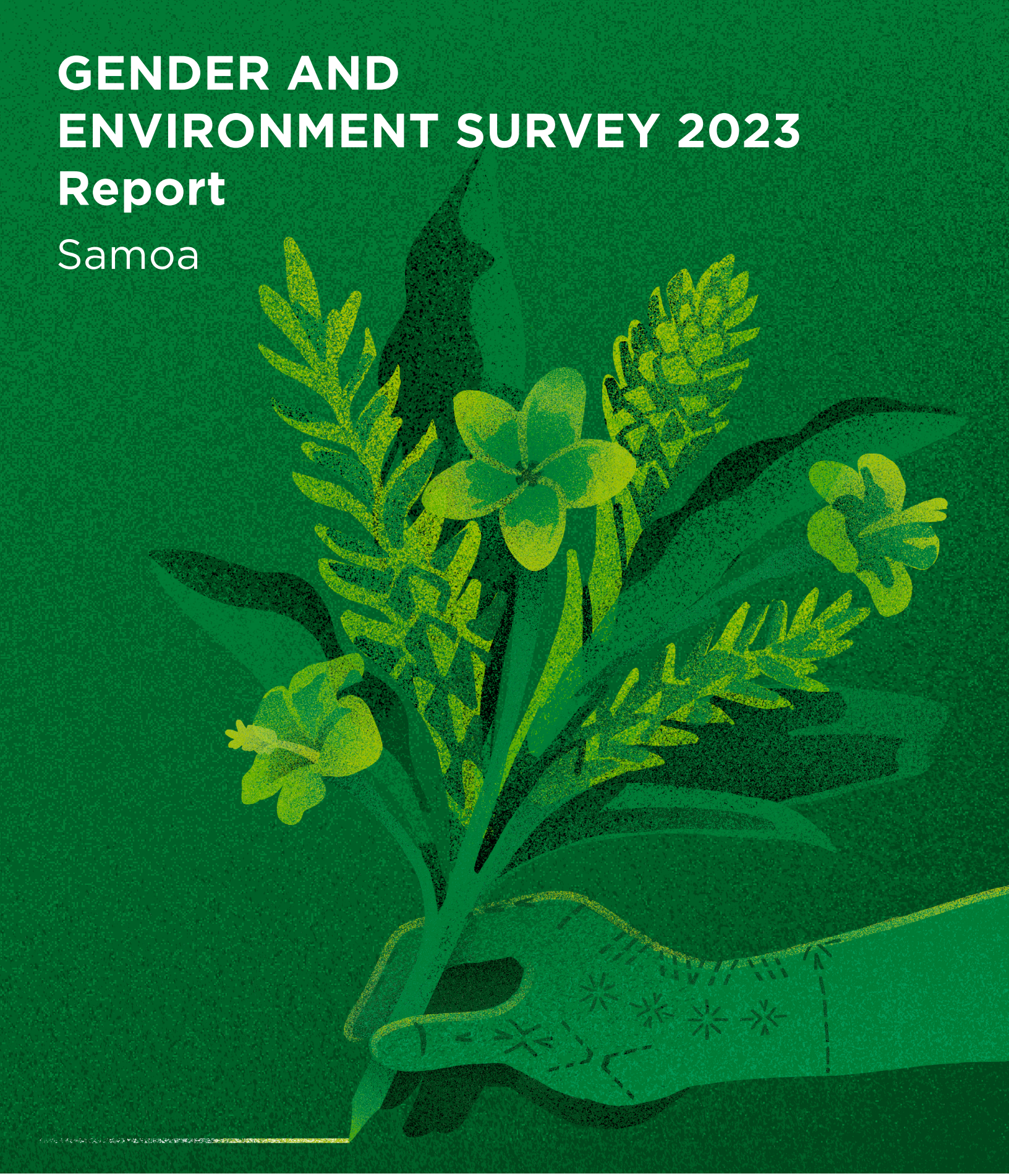
GENDER AND ENVIRONMENT SURVEY 2023

Report

Samoa



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About this report

Acknowledgements

The 2023 Gender and Environment Survey (GES) of Samoa was implemented by the Samoa Bureau of Statistics under the executive leadership of Leota Aliielua Salani. The survey was managed by Taiaopo Faumuina, who oversaw its planning, operations and roll out. Lewis Sinclair, Poinsettia Epati, Kaisarina Moananu, Aniva Nati, Atulia Lavea, Tausulu Reupena, Ken Faaofo, Pepe Vaiau and Meipo Lomiga supervised enumerators for survey implementation. A total of 72 enumerators and supervisors conducted the survey on the ground. The data sampling was carried out with support from Bertrand Buffiere from the Pacific Community (SPC). The Pacific Community team supported server management for data storage during the data collection period. Anthony Burgard and Sanghyun Jeon, working for the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), managed survey scripting and the computer assisted personal interview processes. The UN Women team, under the leadership of Sara Duerto Valero, conceptualized the survey, designed guidance materials and financed the survey with the support of the Department of Foreign Affairs and Trade of the Government of Australia. Sara Duerto Valero, Anthony Burgard, Sanghyun Jeon, Mele Maualaivao and Taiaopo Faumuina drafted this survey report. The report was edited by Mary Ann Perkins and designed by Blossom.it. The Samoa Bureau of Statistics and UN Women teams are grateful to the Department of Foreign Affairs and Trade of the Government of Australia for their financial support, as well as to the women and men in Samoa who spared their time to respond to the survey questions.

Foreword

The Samoa Bureau of Statistics in partnership with the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) conducted the **Gender and Environment Survey (GES) for Samoa** from March to May, 2023. The 2023 GES Samoa is one of the activities under the Building Back Better project lead by UN Women. The project focuses on gender data on resilience during crises, including the coronavirus disease (COVID-19) crisis. The 2023 GES Samoa data collection was conducted by the Samoa Bureau of Statistics, while UN Women supported data processing and the survey report writing, including through funding from its Women Count project. The 2023 GES Samoa was fully funded by UN Women with the support of the Government of Australia, and the project's executing agency was the Samoa Ministry of Finance.

The 2023 GES Samoa aims to capture how women and men interact with the environment in a holistic manner. As such, the scope of the survey goes beyond economic activities to also capture relationships that take place in the context of the household or during leisure time.

We are very grateful for the continuous support provided by village and government representatives and especially the survey respondents in the communities for their willingness to engage and participate in the survey. We congratulate the survey interviewers on a job well done and especially staff of the Samoa Bureau of Statistics for their full commitment in the completion of the survey.

Finally and importantly, we are very humbled to have worked along with UN Women, and we are grateful for their continuous support both on site and online during the survey period. We offer our thanks to UN Women for sharing knowledge and expertise with Samoa and especially for entrusting the Samoa Bureau of Statistics to carry out this survey to support evidenced-based policies and plans. We hope this report will be widely used as reference material to guide gender and environment programme interventions, delivery of services and related research for the benefit of all residents of Samoa.

Leota Aliielua Salani
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Acronyms

COVID-19	Coronavirus disease of 2019
GES	Gender and Environment Survey
SPC	Pacific Community
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women

Glossary of key terms

Biodiversity loss
The reduction of any aspect of biological diversity (e.g. genetic, species, ecosystems) in a particular area through death, destruction or manual removal. It includes loss of species through global extinctions and population extinctions, resulting in decreased total diversity.

Climate change
A change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer.

Deforestation
The conversion of forest to other land uses (regardless of whether it is human-induced). It involves the permanent reduction of the tree canopy and includes areas converted to agriculture, pasture, water reservoirs, mining and urban areas, among others.

Disaster
serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.

Environment-related livelihoods
Fishing, aquaculture, agriculture, collecting plants, gathering firewood/timber, hunting, using wild forests, mining, oil pumping, collecting water, processing/preserving food and beverages, and storage and garbage picking/sorting/recycling can all be considered environment-related livelihoods.

Hazard
A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.

Pesticide
A chemical substance used to control pests and antibiotics, substances used to prevent or treat infectious diseases, typically used to eliminate parasites and other pests and prevent diseases in aquatic animals/plants.

Note: For specific sources of these definitions, and many other concepts mentioned in GES, please refer to GES Enumerators Manual.

INTRODUCTION

The 2023 Gender and Environment Survey (GES) of Samoa is a comprehensive national household survey exploring the multidimensional relationship of women and men with the environment. The survey estimates household and individual level exposure to the immediate consequences of recent disaster events and the prolonged impacts of climate change. It also evaluates the reciprocal influences of both women and men on the environment through their daily activities and livelihoods.

Global evidence indicates that climate change and other environmental hazards, including disasters, affect women and men differently. Similarly, women's and men's lives and livelihoods have different impacts on natural resources and conservation. The same is true in the Pacific region, where many people depend on natural resources for their livelihoods and are highly vulnerable to the effects of climate change.[1] Disasters and other hazards have substantially affected the availability of water and food in the Pacific, with consequent effects on women's physical health and time burdens, as they are typically in charge of treating water prior to consumption and procuring and preparing food for their families. Climate change has increased the spread of vector-borne and waterborne diseases, including among women, and environmental degradation has disproportionate effects on women. Rates of diarrhoea, dengue fever and malaria have increased as a result of climate change, and women's time burden has increased because they are usually in charge of caring for sick family members.[2] Furthermore, evidence indicates that violence against women may increase during and after disasters, but the crises themselves may reduce the availability of services to support victims.[3]

Samoa is an independent Pacific Island nation comprising two main islands (Savai'i and Upolu) and eight smaller islands (Apolima, Manono, Namua, Nuulopa, Nuusafee, Nuutele, Tapana and Vini). Only four of these islands (Apolima, Manono, Savai'i and Upolu) are inhabited, and the urban population across the country remains below 20 per cent of the total population.[4] With the bulk of the population living in rural areas of Savai'i and Upolu, many Samoans rely on natural resources for their livelihoods. More than 8 in 10 people engage in small scale agricultural operations. As such, they are vulnerable to changes in the environment as a result of climate change, biodiversity loss and pollution.

Most of the villages in Samoa are closely knit communities, where more than 80 per cent of the land is held under customary ownership. Land is one of the main sources of individual and family identity and security. There is a common view across the country that social stability rests on continuation of these traditional systems. Samoan villages tend to be hierarchically organized into communities with clear gender roles reflective of patriarchy. This structure includes the *matai* or family heads who are also the members of the village council or *fono*, the wives of the *matai*, the women born to the village, the women married into the village and the untitled men and their wives. Customary norms, as reported by the Government of Samoa to the Committee on the Elimination of All Forms of Discrimination against Women, are the main impediment to women's full participation in political and public life.[5]

In recent years, however, there have been notable shifts in gender roles. More women are taking up leadership positions in both the public and private sectors, and in the fields of climate change and disaster risk reduction. In Samoa, National Disaster Sub-Committees include women chief executive officers (CEOs) and senior government

1 UN Women, 2022, Women and the Environment: An Asia-Pacific snapshot. Available from: https://data.unwomen.org/publications/women-environment-asia-pacific.
2 United Nations Children's Fund (UNICEF), 2023, How disease, climate risks, and unsafe water, sanitation and hygiene create a deadly combination for children. Available from: https://www.unicef.org/media/137206/file/triple-threat-wash-EN.pdf.
3 UN Women, 2023, Disasters, crises and violence against women: Evidence from big data analysis. Available from: https://data.unwomen.org/publications/disasters-crises-and-violence-against-women-evidence-big-data-analysis.
4 World Bank, 2024, World Bank Database. Available from: https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=WS.
5 Food and Agriculture Organization of the United Nations, 2019, Country Gender Assessment of Agriculture and the Rural Sector. Available from: https://openknowledge.fao.org/items/d9f25ab0-2e7c-4294-a400-85e8adb7f3c2.

officers, including from the Ministry of Women, Community and Social Development. The Samoa Red Cross Society, which has a woman CEO, is involved in all disaster subcommittees.

In 2023, high temperatures in Samoa were recorded on land and in the ocean, with consequences for environmental livelihoods (agricultural yield, animal raising, fisheries) and biodiversity loss. The same year also saw severe floods. On Savai'i, there were widespread power outages and road infrastructure was damaged. Many houses were destroyed as more than 300 mm of rain fell in less than 24 hours in some parts of the country. The effects of these phenomena across the country, including the different experiences of women and men, are reflected in the findings of the 2023 GES Samoa.

The Samoa Bureau of Statistics implemented the 2023 GES Samoa with support from the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women). The content of the survey was based on international guidelines provided by UN Women, including the Model Questionnaire: Measuring the Nexus between Gender and Environment,[6] and adapted for the Samoan context in consultation with national stakeholders from ministries focusing on energy, agriculture, environment and community, aligning with the four key economic sectors of Samoa.

The estimates generated by this survey refer to the broader engagement of women and men with the environment, whether for pay, profit, leisure, tradition, religion or other purposes. As such, these may differ from labour force statistics or other agriculture statistics that focus exclusively on the employed population or on agricultural holdings. The various ministries in Samoa may find the estimates derived from the GES relevant to their planning and policymaking activities, as they seek to improve the lives of women and men and support ecosystems in Samoa. Estimates from this survey provide sex-disaggregated data that can be used for national and global monitoring frameworks, including the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction and the Global Set of Climate Change Statistics and Indicators.

The survey training was conducted in March 2023 at the Lava Hotel conference room in Apia, Samoa, while data collection and analysis took place during April and May, 2023. The findings from Samoa reflect the vulnerability of the Pacific region to frequent disaster events, the long-term impacts of climate change and the differentiated experiences of women and men who confront these impacts every day.

Survey methodology

OBJECTIVE AND SURVEY SCOPE

The main objective of the 2023 GES Samoa is to generate nationally representative and sex-disaggregated statistics across several thematic areas. These areas include household-level data on housing characteristics and individual-level data for women and men respondents spanning themes such as personal attributes, exposure to and experience of disasters and hazards, the impact of climate change, agriculture and land use, and environment-related livelihoods. The 2023 GES Samoa largely adheres to international guidelines, as outlined in the Model Questionnaire: Measuring the Nexus between Gender and Environment, with adaptations specific to Samoa in select instances (table 1).

6 Model Questionnaire: Measuring the Nexus between Gender and Environment.

Table 1: Modules of the Questionnaire administered in the 2023 Gender and Environment Survey of Samoa

MODULE	DESCRIPTION	LEVEL
1	Household roster	Household
2	Housing characteristics	Household
3	Individual characteristics	Individual
4	Disaster exposure, preparedness, and consequences	Individual
5	Exposure to, and preparedness for, climate change-related effects	Individual
6	Agriculture and land use	Individual
7	Environment-related livelihoods	Individual

GEOGRAPHIC SCOPE

In developing the sample design for the 2023 GES Samoa, one of the primary goals was to achieve a wide geographic representation, including the most remote areas, to better understand the frequency and long-lasting effects of disasters and climate change. Each inhabited area in Samoa may have unique microclimates and risks related to disasters and climate change. Therefore, the sample was designed to represent all four statistical regions of the country: Apia urban area, north-west Upolu, rest of Upolu and Savai'i.

Within each region, all private household units were eligible for the survey sample, and for targeted individual interviews were administered to adult household members (age 18 and older).

REFERENCE PERIOD

Field data collection for the 2023 GES Samoa occurred from 4th April 2023 to 30th May 2023. Most data items have a 12-month reference period from the date of the interview. The questionnaire explicitly notes those data items that deviate from the 12-month reference period, such as questions about slow-onset processes related to climate change.

SAMPLING PROCEDURE

Sample selection for the 2023 GES Samoa was conducted as part of the three-stage probability sample design from which 2,664 households were chosen. In the first stage, 276 enumeration areas were selected. The sample was designed to provide estimates for a large number of internationally comparable indicators on gender and the environment, with some adaptations specific to Samoa, and disaggregation for urban and rural areas and for four regions: Apia, North-West Upolu, Rest of Upolu and Savai'i. Within each stratum, a specified number of enumeration areas were selected systematically with probability proportional to size. A systematic sample of 8 households in Apia urban area and 10 households in other rural regions was drawn in each sampled enumeration area. As a result, a total of 2,664 households were selected at the national level. All of the selected households were visited during the fieldwork (data collection), and, from each, one adult woman and one adult man (age 18 and older) were randomly selected to respond to the survey. In households where there were no eligible respondents, interviews were not conducted. In single-adult households, the single adult was selected for interview regardless of sex. In the end, the survey was administered to 2,061 women and 1,827 men (table 2). A total of 369 interviews could not be completed.

SAMPLING FRAME

The survey utilized a sampling frame based on the latest Population and Housing Census (2021), with a projected total of 32,040 households. Information in the sampling frame included geographic codes related to the location of the household and the name of the head of household.

Table 2: Sampling frame utilized for the 2023 Gender and Environment Survey of Samoa

	POPULATION PROJECTION FOR SAMOA 2023		2022 GES SAMOA		
STATISTICAL AREAS	HOUSEHOLDS	ENUMERATION AREAS	SAMPLE SIZE (HOUSEHOLDS)	WOMEN INTERVIEWED	MEN INTERVIEWED
Apia urban area	5 890	63	504	352	305
North-West Upolu	12 040	98	980	756	689
Rest of Upolu	7 269	61	610	511	455
Savai'i	6 841	57	570	442	378
Samoa	**32 040**	**279**	**2 664**	**2 061**	**1 827**

To account for different probabilities of selection, sampling weights are calculated for each private household in the sample and for each randomly selected female and male respondent. The 2023 GES Samoa weights are corrected for non-response and calibrated using the number of private households and individuals by region from the 2021 Population and Housing Census.

FIELD OPERATIONS

All data in the 2023 GES Samoa were collected by a group of trained enumerators and supervisors using the computer assisted personal interview (CAPI) method. Supervisors were recruited by the Samoa Bureau of Statistics with the criteria of having past field data collection experience. Before the data collection period, all supervisors and enumerators completed training covering concepts, definitions and field procedures.

Survey Solutions was used to design the questionnaire form, and quality assurance was conducted using in-built survey management functionalities. Daily monitoring reports were compiled at the national level using R statistical software and distributed to each field team, providing feedback on the interview status, pending interview appointments and major data inconsistencies for review. The Pacific Community in New Caledonia hosted the server utilized to store survey data.

The survey manager led quality assurance and oversaw a team of nine supervisors and 63 enumerators in the field. Supervisors were distributed across regions proportional to the sample size and were responsible for checking interview completeness, arranging and following up on household interview appointments and validating responses in completed interviews. Data quality checks were conducted in line with the procedures outlined in the Enumerator's Manual for the 2023 GES Samoa.

The household response rate to the 2023 GES Samoa was 86.1 per cent. Within those households, 96.7 per cent of women and 90.4 per cent of men responded. While efforts were taken to follow through with data collection even when households were relocated due to disaster events, some households could not be tracked down, even after repeat attempts, or dwellings were found to be no longer occupied.

DATA PROCESSING

Data processing for the 2023 GES Samoa was conducted in R and STATA statistical software. These processes included steps for data cleaning, validation, internal and external coherence checks, the computation of sampling weights and the calculation of survey estimates.

Inconsistencies found during data processing were referred to the survey manager for reconciliation and, in some cases, follow-up with the household. Ultimate editing decisions were made by the Samoa Bureau of Statistics after consultations with field staff and individual respondents.

Most estimates included in the graphs presented in this report have been rounded to the closest whole number for ease of interpretation.

General characteristics of the population

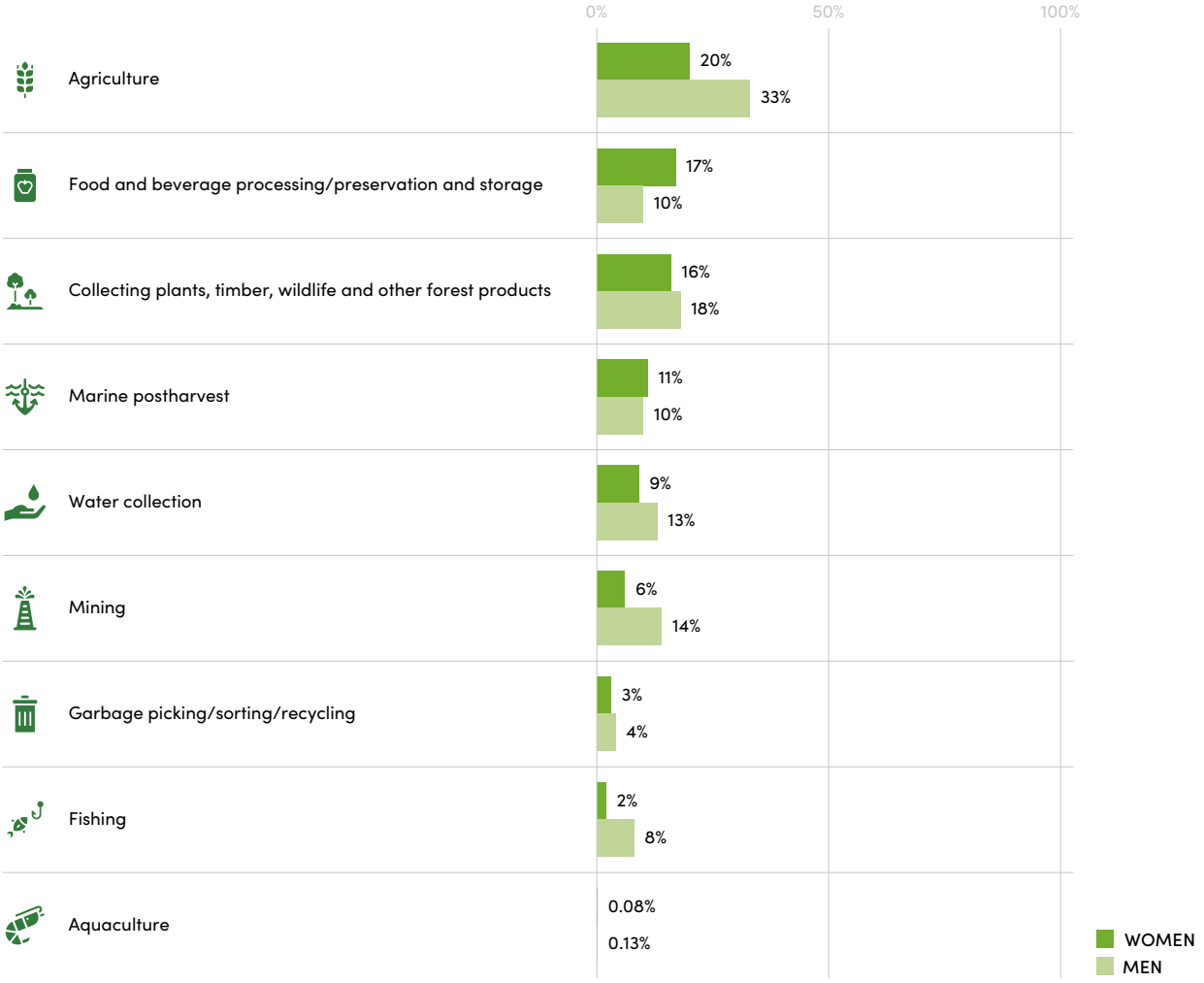
According to the 2021 Population and Housing Census, there are 31,137 households in Samoa, comprising a total population of 205,557.

Note: For the calculations included in this figure, girls and boys are considered age 14 and under.
*TVET refers to technical educational vocation and training.

According to data from the 2023 GES Samoa, the bulk of the households in Samoa (69.3 per cent) are made up of two adults and children. An estimated 9.2 per cent of households are women living alone with children (no men in the household), compared to 2 per cent of households composed of men living alone with children (no women in the household).

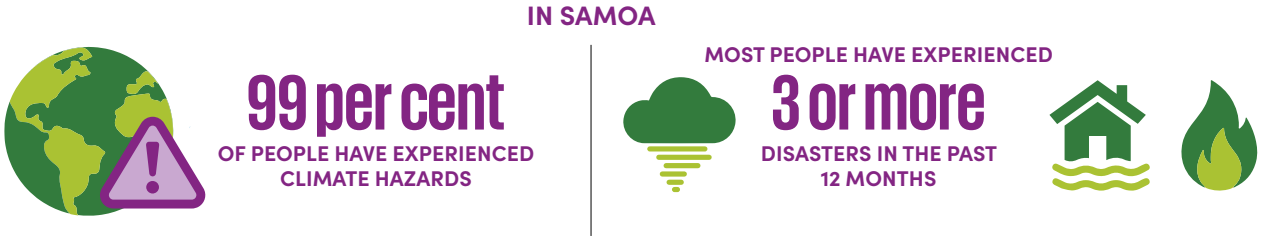
A large share of the Samoan population depends on the environment for their livelihoods (figure 1). Agriculture, including animal husbandry, is the most common environment-related livelihood among both women and men, followed by food and beverage processing, preservation and storage among women, and collecting plants, timber, wildlife and other forest products among men.

Figure 1: Proportion of the population age 18 and older engaged in environment-related livelihoods*, by sex (percentage)



*Across this report, livelihoods refers to both income and non-income generation activities. Therefore, this will include engagement in this activities for pay, profit, subsistence, leisure, tradition, religion or other purposes. As such, these figures will differ from labour force statistics pertaining the proportion of the employed population engaging in these activities for economic purposes. The reference population (all people ages 18 and older) includes population beyond working age. It is important to note that some people who perform these activities in addition to other non-environment related income generation activities may not have thought to disclose their engagement at the time of the survey, and therefore engagement with environment-related livelihoods might be underestimated in some cases.

All survey respondents had experienced at least one disaster in the past 12 months, and almost all had noticed first-hand the effects of climate change.



Findings

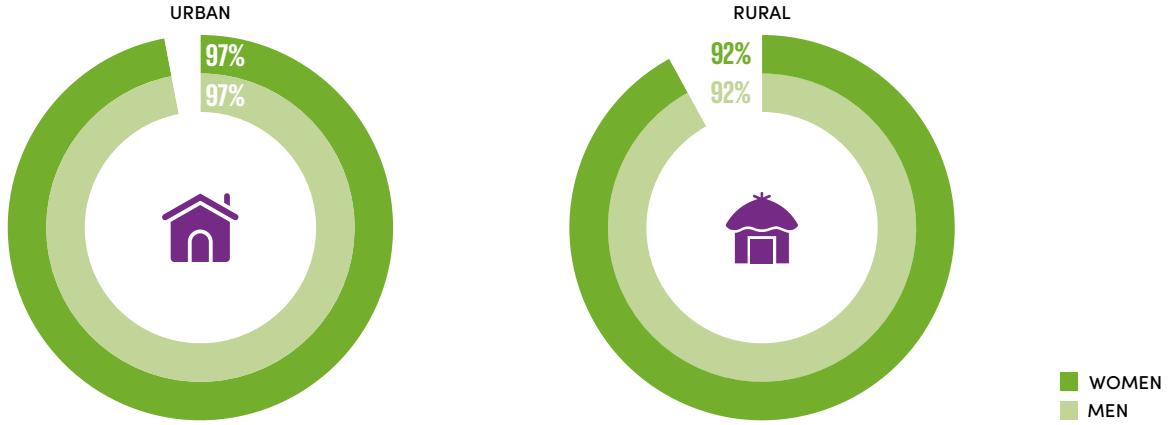
Section I. Disaster exposure, preparedness and consequences

The changing climate is increasing the frequency and severity of disasters globally.[7] This is affecting the health and safety of people and ecosystems, and putting a spotlight on mitigating and adapting to climate change to maintain livelihoods and promoting environmental sustainability. Utilizing mostly data pertaining to rapid onset hazards experienced by women and men in Samoa (module 4 of GES), this section highlights gendered differences in exposure, preparedness and the consequences of disasters and related hazards.

ALMOST EVERYONE IN SAMOA LIVES IN AREAS WITH HIGH ENVIRONMENTAL RISK.

Compared to other Pacific Island countries, disaster risk in Samoa is relatively low, yet Samoans have high exposure to various environmental hazards. Notably, an estimated 92.6 per cent of households are located in areas with high environmental risk, such as exposure to cyclones or high winds, proximity to high vehicle traffic, volcanoes and seashores.[8] This renders Samoans highly vulnerable to disasters, climate change, pollution and other hazards. Women and men in urban areas are the most exposed (figure 2). Women's coping capacities in the event of a hazard or disaster are generally lower, as they are less likely than men to own productive assets (such as land, fishing and agricultural machinery), have access to financing and hold high-income jobs.

Figure 2: Proportion of the population whose dwelling unit or land is located in areas with high environmental risk, by sex and location (percentage)



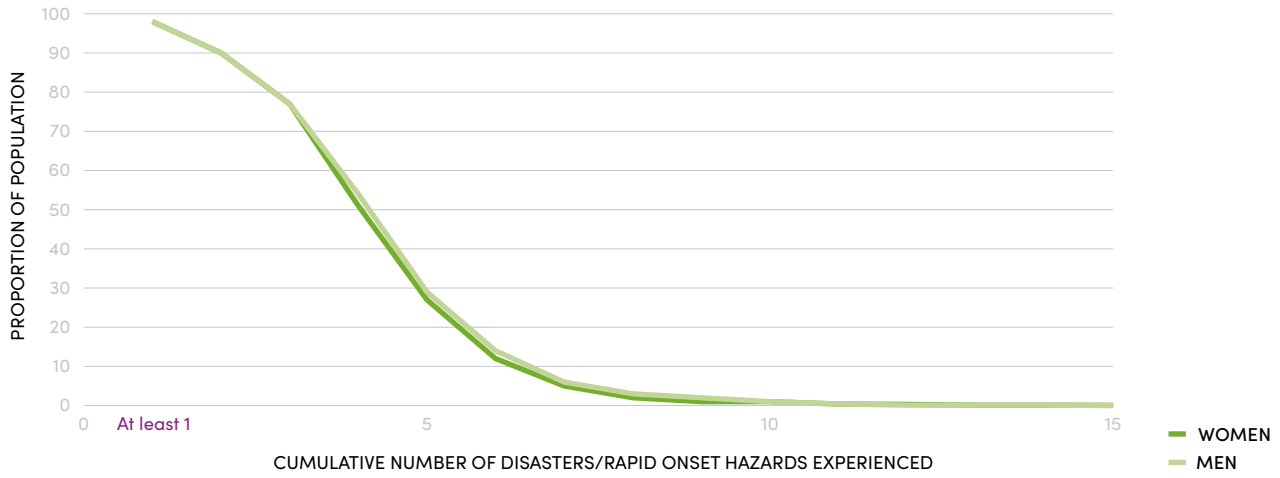
7 See www.undrr.org/climate-action-and-disaster-risk-reduction.

8 Location near high environmental risk areas has been calculated utilizing GES questions about people's awareness of their proximity to such areas within a 30-minute walk of their household.

MOST PEOPLE IN SAMOA EXPERIENCED A DISASTER IN THE PAST 12 MONTHS, AND MANY EXPERIENCED MULTIPLE DISASTERS.

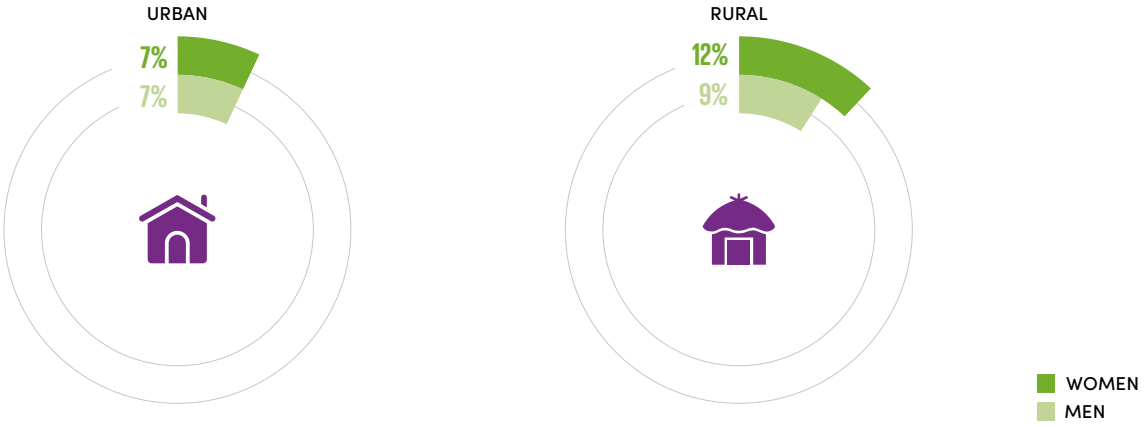
At the end of 2023, almost the entire population in Samoa (99 per cent) had experienced at least one disaster in the past 12 months (figure 3). What's more, as many as 84 per cent had experienced three or more disasters or related hazards. Extreme winds and thunderstorms were experienced by most of the population in 2023.

Figure 3: Proportion of the population that experienced one or more disasters or related hazards in the past 12 months, by sex (percentage)



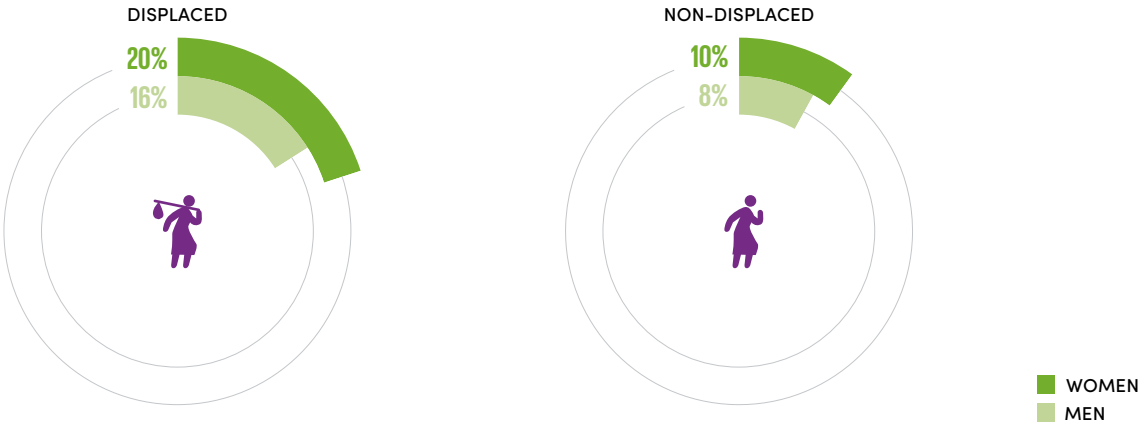
More than 10 per cent of the population that was exposed to hazards in the past 12 months also experienced barriers to accessing medical care or hygiene products, as a result of road closures, supply chain issues, damaged public transportation or the lack of health services altogether (figure 4). In rural areas as many as 12 per cent of women and 9 per cent of men noted these challenges. These challenges were even more severe among those displaced by disasters and other hazardous events, including those that moved to a new location permanently and those experiencing pre-emptive evacuation. An estimated 20 per cent of displaced women and 15 per cent of displaced men encountered barriers to accessing medical care or hygiene products (figure 5).

Figure 4: Proportion of the population age 18 and older exposed to hazards in the past 12 months who encountered barriers to accessing medical care or hygiene products as a result, by sex and location (percentage)



Note: In 2023 GES Samoa, a hazard is defined as any process, phenomenon or human activity that poses a potential threat to life, health, property or the environment. Being exposed to a hazard means that an individual has been in a location—such as a city, village, or field—where they have personally witnessed the event.

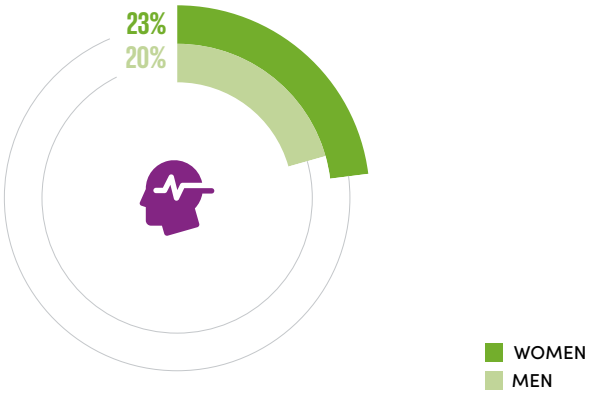
Figure 5: Proportion of the population age 18 and older exposed to hazards in the past 12 months who encountered barriers to accessing medical care or hygiene products as a result, by sex and displacement status (percentage)



WOMEN'S MENTAL HEALTH WAS MORE LIKELY THAN MEN'S TO BE AFFECTED BY DISASTERS.

When exposed to disasters or other hazards, individuals may experience mental health issues such as stress reactions, grief, depression, post-traumatic stress disorder or anxiety, including related to uncertainties about meeting basic needs for food, water, or medical care. As many as 23 per cent of women and 20 per cent of men exposed to disasters and related hazards in Samoa noted they had experienced such feelings at the time of the survey (figure 6). The slightly higher impacts of hazards on women's mental health may reflect their greater vulnerability, which renders them ill-equipped to cope with the effects of disasters on their livelihoods. It may also reflect the heavier burden on women to care for those who are ill or injured during disasters. The 2023 disasters in Samoa caused multiple injuries and illnesses. For instance, an estimated 0.1 per cent of women and 0.3 per cent of men sustained injuries as a result of floods, while 1.2 per cent of women and 0.7 per cent of men contracted illness. Other events such as storm surges and high winds also caused injuries.

Figure 6: Proportion of the population exposed to hazards in the past 12 months whose mental health was affected as a result, by sex



DISASTERS CAUSED SEVERE DAMAGE TO PEOPLE'S LIVELIHOODS, AND WOMEN WERE DISPROPORTIONATELY IMPACTED.

An estimated 19 per cent of women and 15 per cent of men noted that their personal income had decreased as a result of disasters in the past 12 months. Women were also more likely than men to note effects across almost every other type of livelihood, from losing their jobs, to crops being damaged or livestock contracting disease (figure 7). Since many people in Samoa rely on environment-related activities for income and subsistence, the 2023 disasters had devastating effects. For 8 of every 10 people whose crops were damaged or destroyed, agriculture was the main source of income (figure 8). Similarly, for 8 of every 10 women whose livestock died or contracted serious illness, livestock raising was their main source of income, compared to 6 of every 10 men. Men, overall, were more likely to access different resources and diversify their sources of income, thus reducing their vulnerability to climate change, disasters and environmental degradation.

Figure 7: Proportion of the population exposed to hazards in the past 12 months whose livelihoods were damaged or destroyed, by sex (percentage)

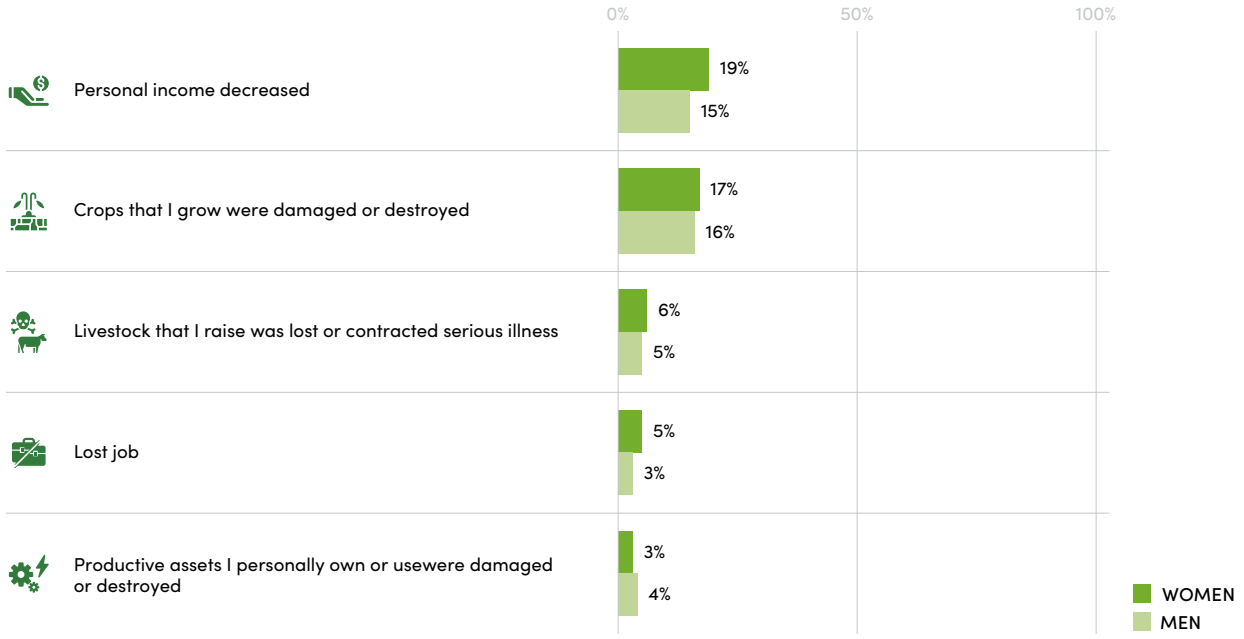
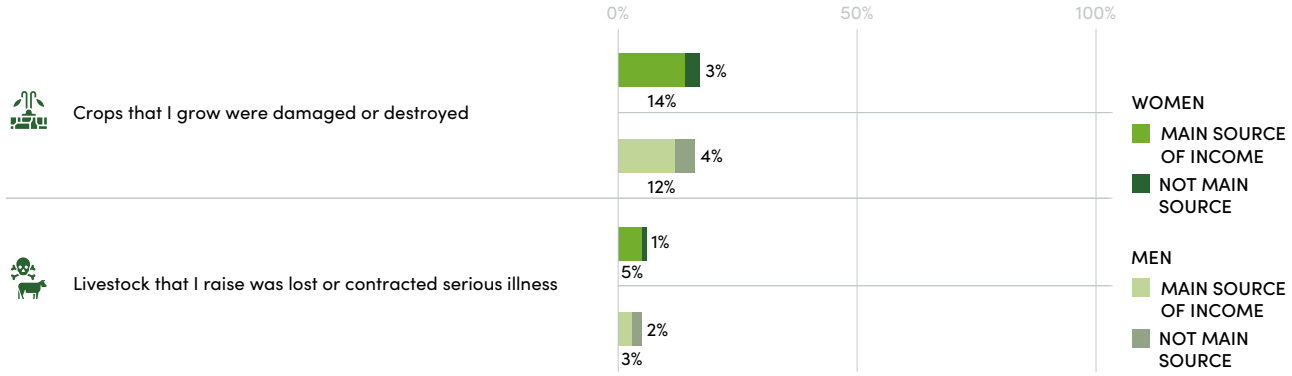


Figure 8: Proportion of the population whose crops and livestock were damaged or destroyed, by sex and whether or not these were their main sources of income (percentage)



The multiple disasters that affected the country in 2023 left an additional 5 per cent of women and 3 per cent of men unemployed, and many more had to switch jobs. Mobility restrictions, road closures, health-related hazards associated with disasters and care work burdens exacerbated by disasters, such as the need to care for those who were injured or sick, may all have worsened job and income losses. In Samoa, flooding, storm surges and saltwater intrusions are the disasters that caused the most injuries or disease. As a result, many people may have had to reduce their total working hours or quit their jobs to care for those who were affected.

The 2023 disasters also caused roughly 6 per cent of women and 5 per cent of men in Samoa to experience displacement, either from pre-emptive evacuation or permanent migration from affected areas (table 3). Relocating may carry important economic and safety consequences for many, especially for single parents that flee or migrate with children, most of whom are women.

Table 3: Proportion of the population who experienced displacement (temporary or permanent) as a result of disasters or related hazards, by sex and household composition (percentage)

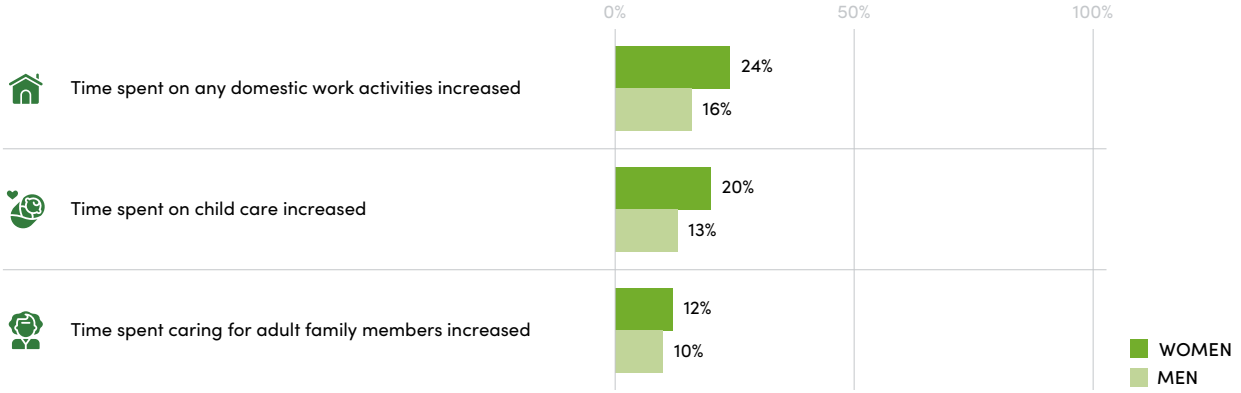
WOMEN	MEN	SINGLE MOTHERS	SINGLE FATHERS
5.6	4.9	4.9	3.8

Note: Displacement included those who migrated to a different geographical area or experienced any form of forced displacement, including pre-emptive evacuation.

DISASTERS WORSENED UNPAID CARE AND DOMESTIC WORK BURDENS FOR WOMEN IN SAMOA.

Unpaid domestic and care work burdens multiplied in Samoa as a result of the 2023 disasters and related hazards. With school closures due to severe weather and disaster-related injuries, many parents and care takers had no choice but to reduce their paid work hours or limit their own care, education and leisure time to care for those in need. As some water sources were compromised and supply chains disrupted, food and water limitations prompted many to spend more time procuring or processing these items for safe consumption. These increased burdens were disproportionately shouldered by women (figure 9). Although women were already doing the bulk of these chores before the disaster took place, an estimated 20 per cent of women noted their childcare burdens had worsened as a result of disasters. Women were also more likely than men to note increases in time spent caring for other adults, whether sick, injured or elders. In addition, 24 per cent of women compared to 16 per cent of men saw increases in time spent on domestic chores ranging from cooking and cleaning (typically performed by women) to making household repairs or fixing animal shelters (more often performed by men).

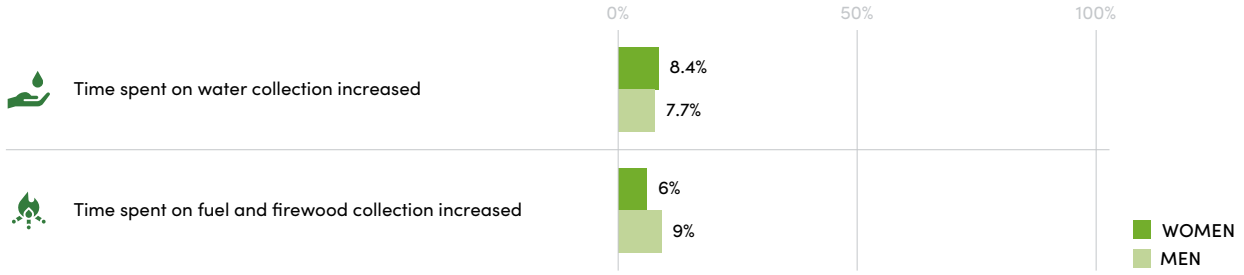
Figure 9: Proportion of the population exposed to hazards in the past 12 months whose time spent on unpaid care and domestic work increased as a result, by sex and type of work (percentage)



Time spent collecting water and fuel also increased (figure 10). As many as 10 per cent of women and 7 per cent of men who experienced disasters saw their water sources compromised, and 12 per cent of women and 10 per cent of men, reported that shortages affected their household's water use. This prompted many to have to go and fetch clean water. Water collection may carry health and safety concerns, both associated with carrying great weights and walking long distances alone. In some instances, the water from some sources requires treatment before consumption, which is an additional time burden. Disasters also affected the availability and use of clean fuels. An estimated 6 per cent of women and 5 per cent of men experienced a period of more than two weeks

in which they had to switch to unclean fuel sources, such as charcoal, kerosene, wood or shrubs, for lighting, heating or cooking. This may have been due to outages, supply chain issues, or to changes in energy prices and cost of living, which may have rendered clean fuels unaffordable for many. Using cheaper unclean fuels, such as charcoal, wood and kerosene, worsens indoor air quality and puts those who cook or spend more time at home, such as women and children, at heightened risk of respiratory and cardiovascular disease. Although the increased water collection burdens were shared more or less equally between women and men, more men saw their time allocated to fuel collection increase as a result of disasters or related hazards.

Figure 10: Proportion of the population exposed to hazards in the past 12 months whose time spent on water and fuel collection increased, by sex (percentage)



INFRASTRUCTURE DAMAGE IN HOUSING, ROADS AND THE ELECTRICAL GRID MAY HAVE REDUCED THE SAFETY OF MANY WOMEN.

The 2023 disasters caused some damage to housing and infrastructure (figure 11). An estimated 5 per cent of women and 4 per cent of men saw their dwellings damaged as a result. In addition to the damage to water and fuel infrastructure (see above), some sanitation facilities were also affected. A small share of the population (less than 2 per cent) had to start sharing sanitation facilities with other households or switch to unimproved forms of sanitation, including public latrines and open defecation. The use of shared sanitation facilities, poorly illuminated facilities, or facilities without locks puts people, especially women, at a heightened risk of assault and increases exposure to disease. These safety concerns may have been compounded by disaster-related power cuts. The temporary lack of electricity and public lighting together with other stressors associated with disasters may have worsened crime and safety across the country. An estimated 3 per cent of women and 2 per cent of men noted that crime had increased as a direct result of disasters, while roughly 1 per cent knew someone that had been a victim of violence since (figure 12).

Figure 11: Proportion of the population exposed to hazards in the past 12 months who saw their dwellings damaged or destroyed, by sex (percentage)

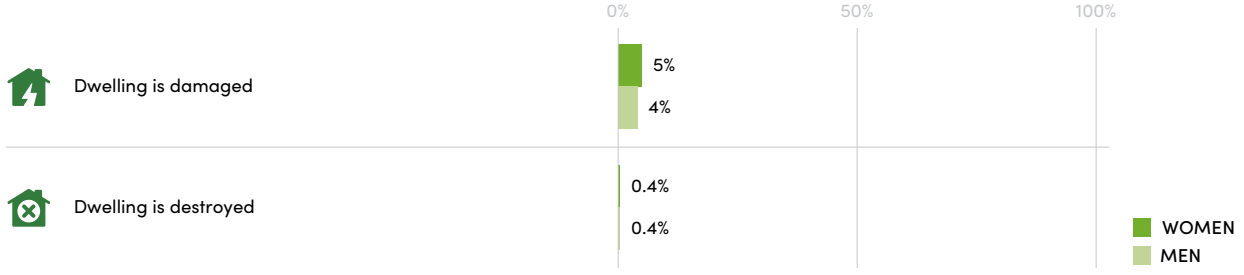
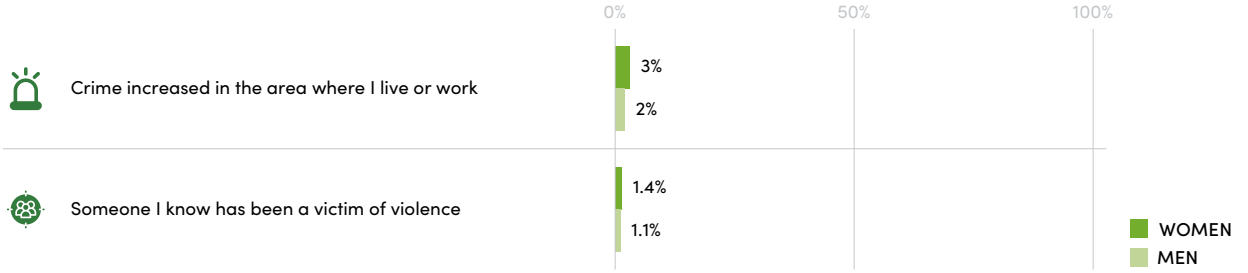


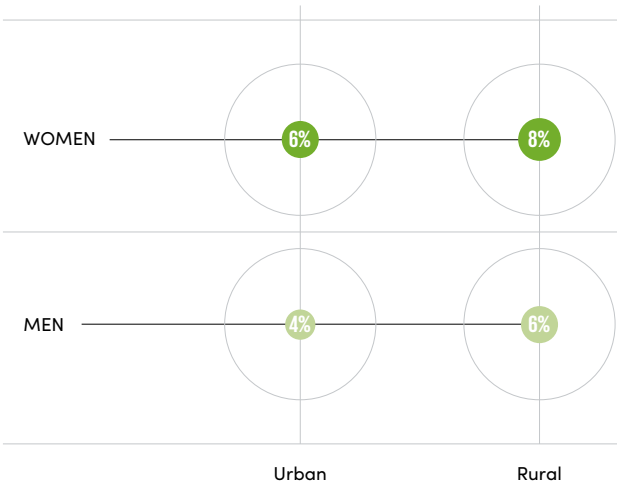
Figure 12: Proportion of the population exposed to hazards in the past 12 months who noted that crime or violence have worsened as a result, by sex (percentage)



Note: Crime and violence related questions included in this survey differ from those included in violence against women surveys and victimization surveys. These estimates are likely to underreport the prevalence of violence and crime in disaster affected areas. Notably, survey enumerators followed the internationally agreed Hazard Information Profiles to identify those who had experience hazards, and inquired whether "As a result of these phenomena, did you experience any of the following? (z.h.) Crime in my area has increased (yes/no) and (z.i.) I have heard people are experiencing more violence (yes/no).

Damage to roads and other infrastructure affected access to public transportation. In rural areas, 8 per cent of women and 6 per cent of men lost access to public transportation as a result of disasters and related hazards (figure 13). Women in urban and rural areas were slightly likelier than men to report that they lost access to public transportation. As women are less likely than men to own private vehicles, public transportation impacts women's mobility more than men's, and service disruptions may further expose women to safety concerns. Public service interruptions that cause people to lose access to transportation in disaster situations puts ill and injured people, elders and pregnant women at disproportionate risk.

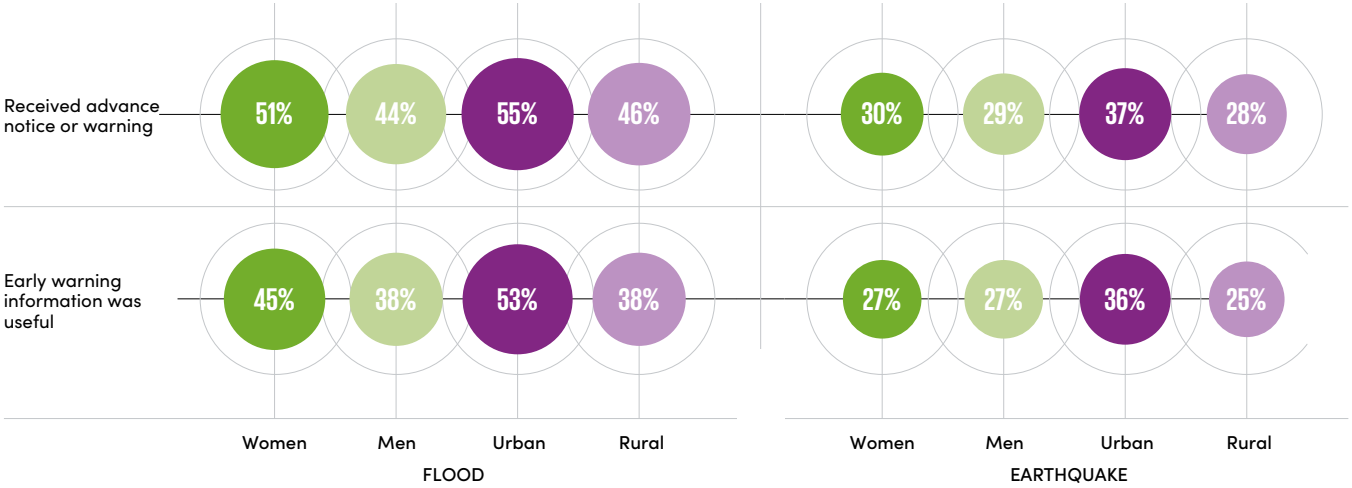
Figure 13: Proportion of the population exposed to hazards in the past 12 months who lost access to public transportation as a result, by sex and location (percentage)



EARLY WARNING OF HAZARDS CAN PROVIDE VITAL PREPAREDNESS INFORMATION, BUT MORE THAN HALF OF THE POPULATION DID NOT RECEIVE IT.

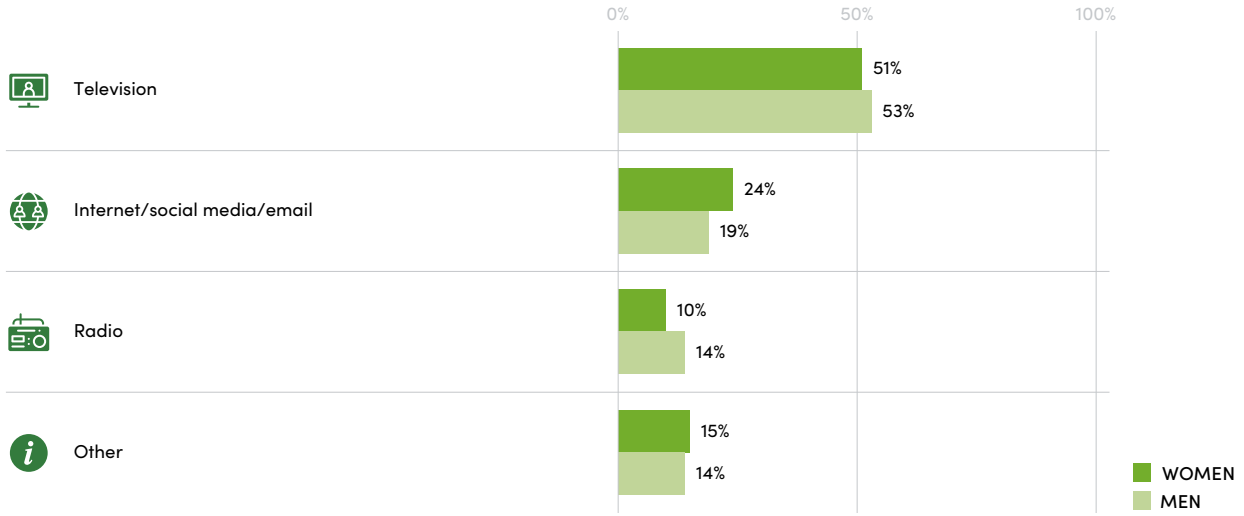
Roughly 51 per cent of women and 44 per cent of men received early warning information about floods, which helped them prepare for the upcoming events. Only 30 per cent of people had advance information about earthquakes (figure 14). Discrepancies across hazards may dictate how well people are able to prepare and cope with different disasters. Although gender differences exist across hazards, patterns are not clear in this regard. However, people in rural areas have been less likely to receive early warning information, and this may have hampered their preparedness. These differentials are, in part, driven by the availability of household items. For instance, as many as 22 per cent of rural households did not have a working Internet connection prior to disasters taking place, which prevented them from using social media or websites to learn about the hazards.

Figure 14: Proportion of population exposed to hazards in the past 12 months who accessed early warning information for floods and earthquakes, by sex or by location (percentage)



Throughout the country, those who received early warning information were most likely to receive it from television. Across hazards, men were overall more likely than women to rely on television for early warning information, while women were more likely than men to rely on social media and the Internet (figure 15).

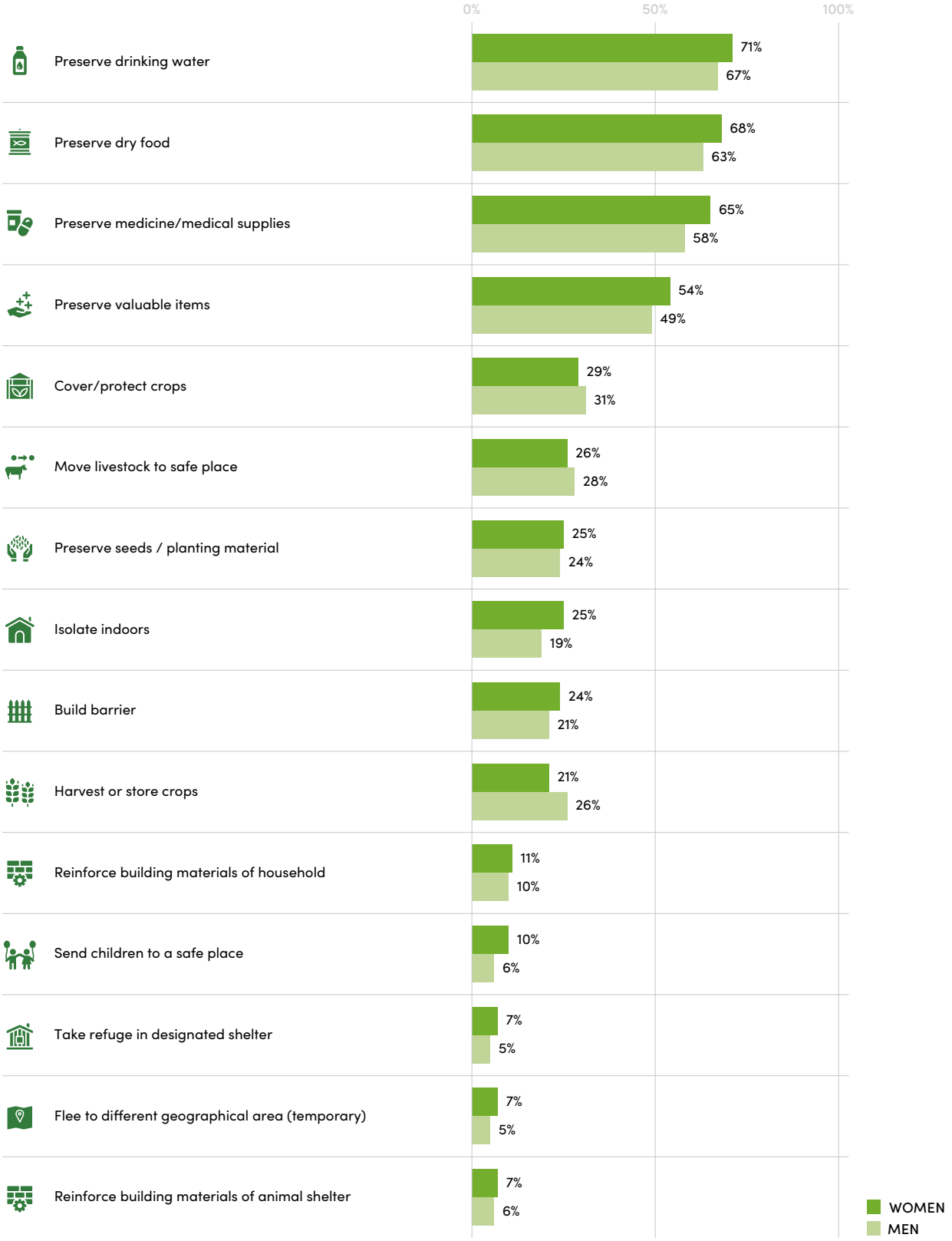
Figure 15: Proportion of population exposed to hazards in the past 12 months who accessed early warning information for floods, by sex and information source (percentage)



WOMEN AND MEN PLAYED VITAL BUT DIFFERENTIATED ROLES IN PREPARING FOR HAZARDOUS EVENTS.

Social norms often dictate the types of activities women and men may engage with (figure 16). When preparing for hazardous events, women in Samoa were more likely than men to be in charge of preserving water, food, medicine and valuable items. This aligns with their disproportionate engagement in unpaid household chores such as cooking, cleaning and water treatment. They also were more likely than men to isolate, take the children to a safer place, or move elsewhere themselves (e.g. take refuge in a designated shelter or flee to a different area). Unlike women in other countries, women in Samoa were more likely than men to build barriers, reinforce their homes and their animal's shelters. Men, however, were disproportionately in charge agriculture-related tasks such as covering crops, harvesting crops and moving animals to a safer place, given that they engage in agriculture more often than women.

Figure 16: Proportion of population exposed to hazards in the past 12 months who took precautionary disaster preparedness measures, by sex and type of measure (percentage)



Section II. Exposure and coping strategies to deal with the effects of climate change

Beside rapid-onset hazards, the climate crisis is exposing people and ecosystems to multiple slow-onset phenomena that may be hazardous for their health and wellbeing. Sustained changes in temperatures, overall precipitation, sea level rise and aridity, among many others, are changing the way in which women and men work, live and manage their environments. This section explores some of the effects of such slow-onset hazards, and analyses how women and men prepare to deal with them.

ALMOST EVERYONE IN SAMOA IS NOTICEABLY AFFECTED BY CLIMATE CHANGE. CHANGES IN TEMPERATURE, PRECIPITATION, AND THE SPREAD OF DISEASE ARE NOTICED BY MOST.

The effects of climate change permeate every island of the Samoan archipelago (figure 17). An estimated 99 per cent of survey respondents had noticed effects of climate change in their daily lives. Besides an increased frequency of disasters, slow-onset hazards are also increasingly noticeable (table 4). For instance, 77 per cent of people had witnessed the direct effects of sustained changes in temperatures, 54 per cent noticed changes in precipitation, and 85 per cent suffered from the increased spread of pathogens and mosquito-borne diseases. The types of impacts varied, ranging from worse health to lower income, prolonged time spent at work to maintain livelihoods, and increased domestic and care work burdens, among others.

Figure 17: Proportion of the population that experienced one or more hazards related to climate change in their lifetime, by sex (percentage)

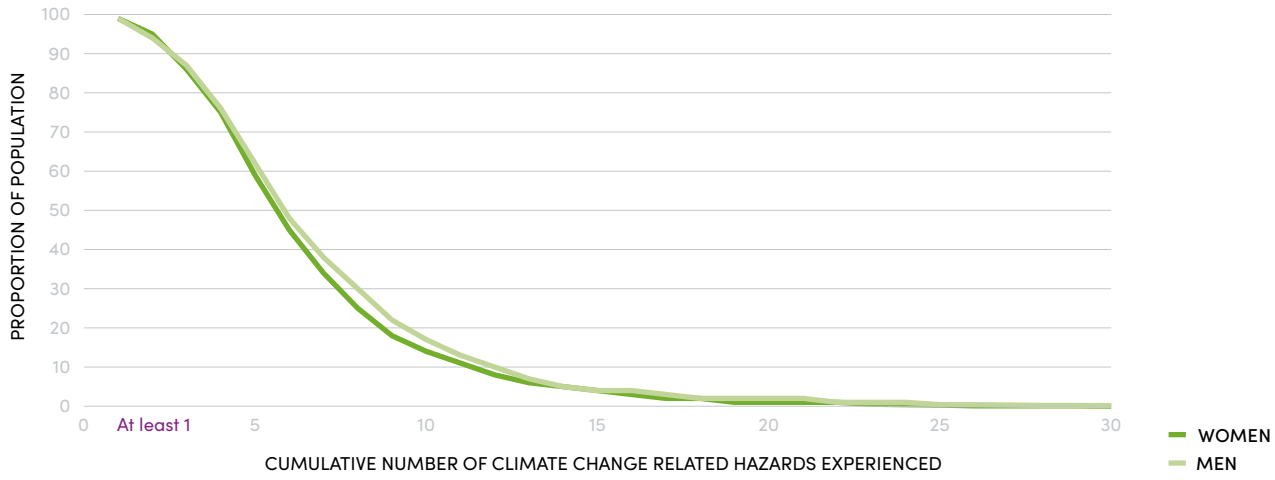


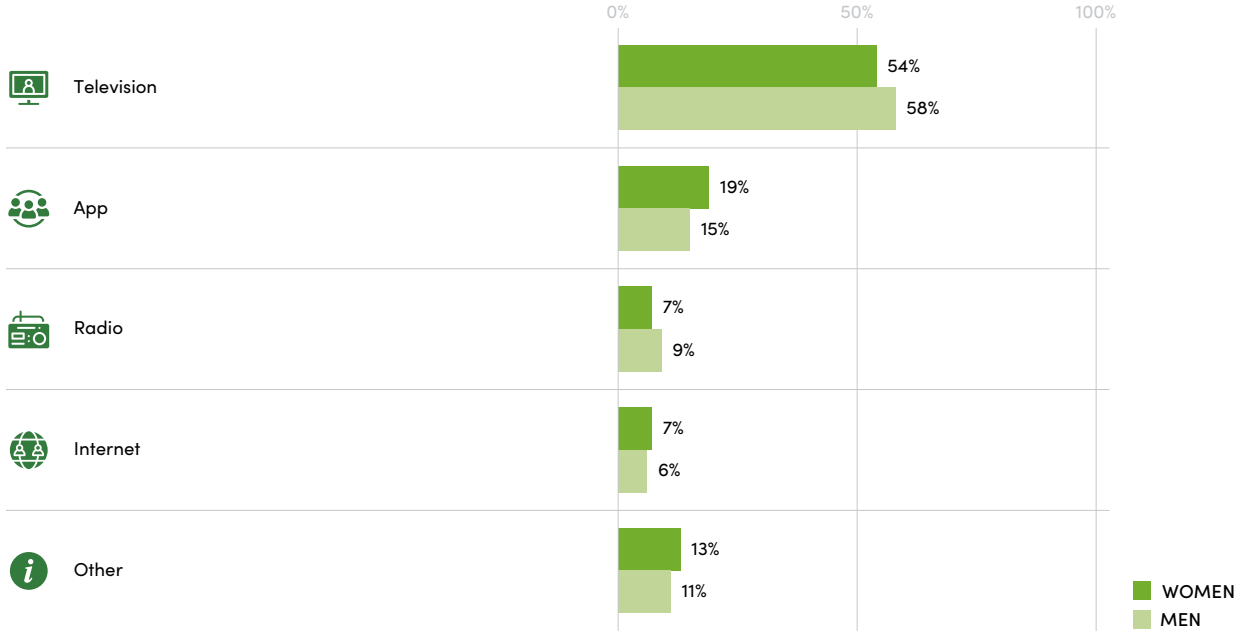
Table 4: Most frequently experienced slow-onset hazards by the population of Samoa (percentage)

HAZARD	WOMEN	MEN
Increasing spread of pathogens	81.0	78.6
Increased temperature	74.1	74.6
Permanent/frequent flood	51.1	56.2
Endemic insect borne disease	48.1	46.8
Increased overall precipitation	47.3	47.8
Recurrent animal or human disease	42.3	42.4
Sea level rise	25.3	27.5

Putting in place mitigation and adaptation measures is important to cope with the effects of climate change. In Samoa, all respondents noted having accessed useful and timely climate-related information on each of the slow-onset hazards they experienced. This differs from information access behaviours in the context of rapid onset disasters, such as floods and earthquakes as discussed in section I.

Television was, by far the most common source of information about climate change related hazards; reaching between 40 and 60 per cent of people, depending on the climate hazard. In the case of increasing precipitation, more than half of the population relied on information broadcasted on television to learn about this hazard (figure 18). Across hazards, women were more likely than men to get information through apps, on the Internet or from friends, while men were more likely than women to listen to the radio.

Figure 18: Proportion of the population with access to information on the effects of increased overall precipitation, by sex and source (percentage)

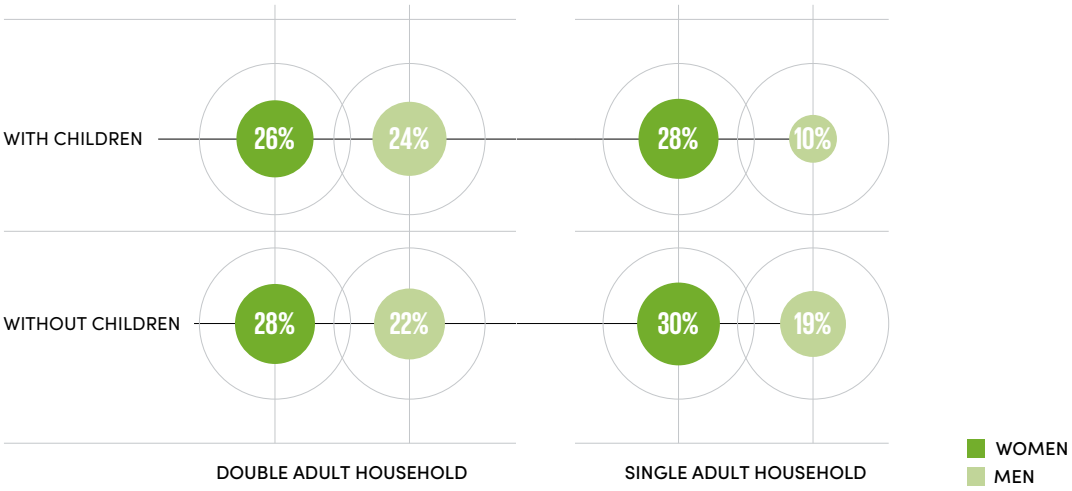


Note: Only early warning sources for increased overall precipitation are pictured. The distribution of sources was similar across all climate hazards. Sources such as children's school were not used by anyone and have been excluded from the figure.

WOMEN ARE MORE LIKELY TO SACRIFICE THEIR NUTRITION TO COPE WITH CLIMATE CHANGE.

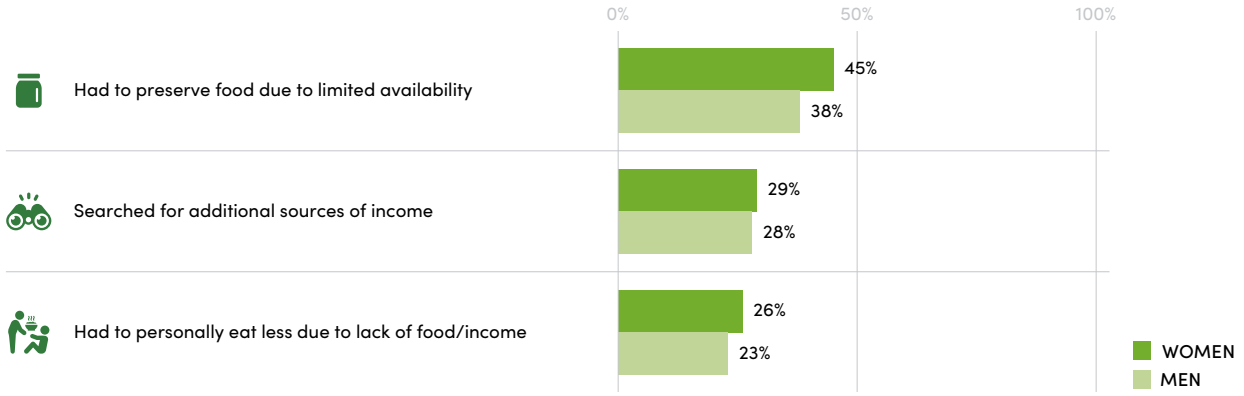
Single women with children were more likely than other adults to decrease their food intake as a result of climate change (figure 19). This coping strategy raises substantial health concerns, as people typically reduce food intake as an extreme measure, only after first attempting to cope by selecting more affordable foods albeit of lower quality and nutritional value. Women were the most likely to eat less in favour of offering limited food supplies to their children, spouse or other family members; a behaviour likely influenced by cultural norms in times of scarcity. In Samoa, where many people rely on communal settings and religious institutions for food, those who had to eat less were likely struggling substantially.

Figure 19: Proportion of the population who decreased food intake as a result of climate change, by sex and household composition (percentage)



As a result of hazards related to climate change, 26 per cent of women and 23 per cent of men ate less because food was less available or because they lacked income to buy food (figure 20). Other coping strategies adopted by many included preserving food due to limited availability and searching for additional sources of income. Women were likelier than men to pursue every one of these coping strategies.

Figure 20: Proportion of the population who coped with food or income shortages as a result of climate change, by sex and type of coping strategy (percentage)

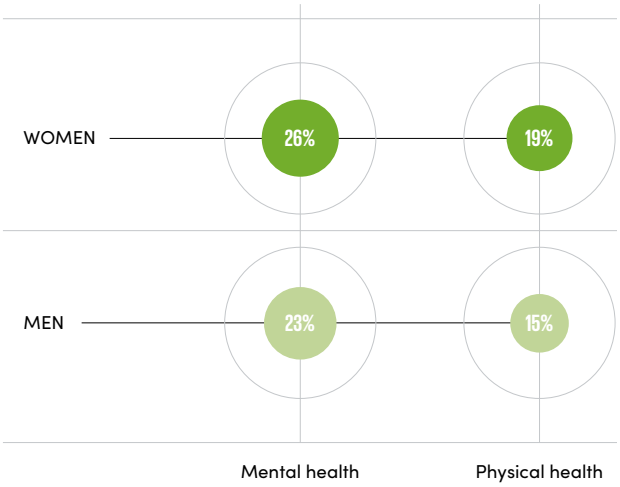


CLIMATE CHANGE WORSENED THE HEALTH OF AT LEAST ONE IN FOUR PEOPLE, ADDING TO WOMEN'S UNPAID CARE WORK BURDENS.

The effects of the changing climate on people's livelihoods, especially in agriculture, fisheries or other environment-related activities, may lead to economic instability and food insecurity, and related stressors may impact migration, safety and security. This has direct effects on mental health. As many as 26 per cent of women and 23 per cent of men noted that stress and anxiety associated with climate change affected their mental health (figure 21).

Approximately one in five women and one in six men noticed that climate-related phenomena affected their physical health. Issues such as warming temperatures are known to drive respiratory disease, heat-related cardiovascular issues and the spread of pathogens, which may cause gastroenterological ailments. Although people may not link these health ailments to climate change, correlations are well established. Other health challenges, such as insect- and waterborne disease or parasitic infections, are more likely to be attributed to climate change among people who experience sea level rise, recurrent floods and warming temperatures, as the symptoms often develop quickly and may be severe. In Samoa, the increased spread of pathogens, animal or human disease, and insect-borne diseases were the most frequently mentioned climate-related drivers of worsening physical health.

Figure 21: Proportion of population who attributed their own mental or physical health ailments to the effects of climate change, by sex (percentage)



When family members are sick, women are typically in charge of caring for them. According to data published in 2023, in 42 per cent of Samoan households women are in charge of feeding, cleaning and providing physical and medical care for children (compared to 6 per cent for men), while in 43 per cent of households women provide such care for elders and other adults (compared to 9 per cent for men).[9] Thus, women were already doing the lion's share of these chores, and GES data show that climate change is worsening inequalities in this regard. To cope with increased health-care burdens brought about by climate change, an estimated 17 per cent of women compared to 10 per cent of men now spend even more time caring for family members (figure 22).

Existing data indicate that women also carry the heaviest domestic work burdens, as they were in charge of cooking in 48 per cent of households prior to hazardous events (18 per cent for men), cleaning in 68 per cent (9 per cent for men) and shopping for the family in 31 per cent (16 per cent for men).[10] As a result of climate change, almost 1 in 4 women indicated that their domestic work load worsened. Fewer men saw related increases. Men's unpaid domestic work upticks were mostly associated with caring for animals to protect them from climate-driven disease (such as heat stress and metabolic disorder) and unpredictable weather.[11] An estimated 7 per cent of men noted that they now spend more time taking care of livestock, compared to 4 per cent of women.[12] Women experiencing larger overall increases in domestic work burdens, even though they were already doing more of it to begin with, may mean that climate change is further exacerbating the unequal distribution of domestic tasks.

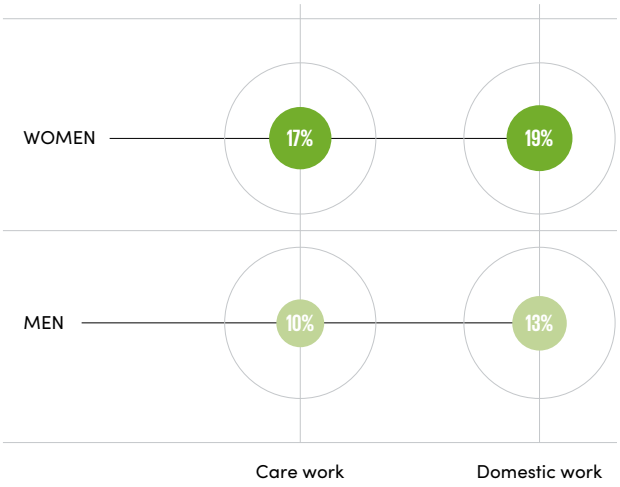
9 UN Women, 2023, Two Years On. Available from: https://data.unwomen.org/sites/default/files/documents/Publications/Asia%20Pacific/AP-RegionalReport-2yearson-COVID-compressed.pdf.

10 Ibid.

11 Climate-driven increases in temperatures are known to affect the health of livestock through heat stress, metabolic disorder, oxidative stress and immune suppression. Furthermore, indirect effects include multiplication and distribution of parasites, reproduction, virulence and transmission of infectious pathogens and/or their vectors (see Zulkefar Ali et al.).

12 Refers to the top five most noticed effects of climate change.

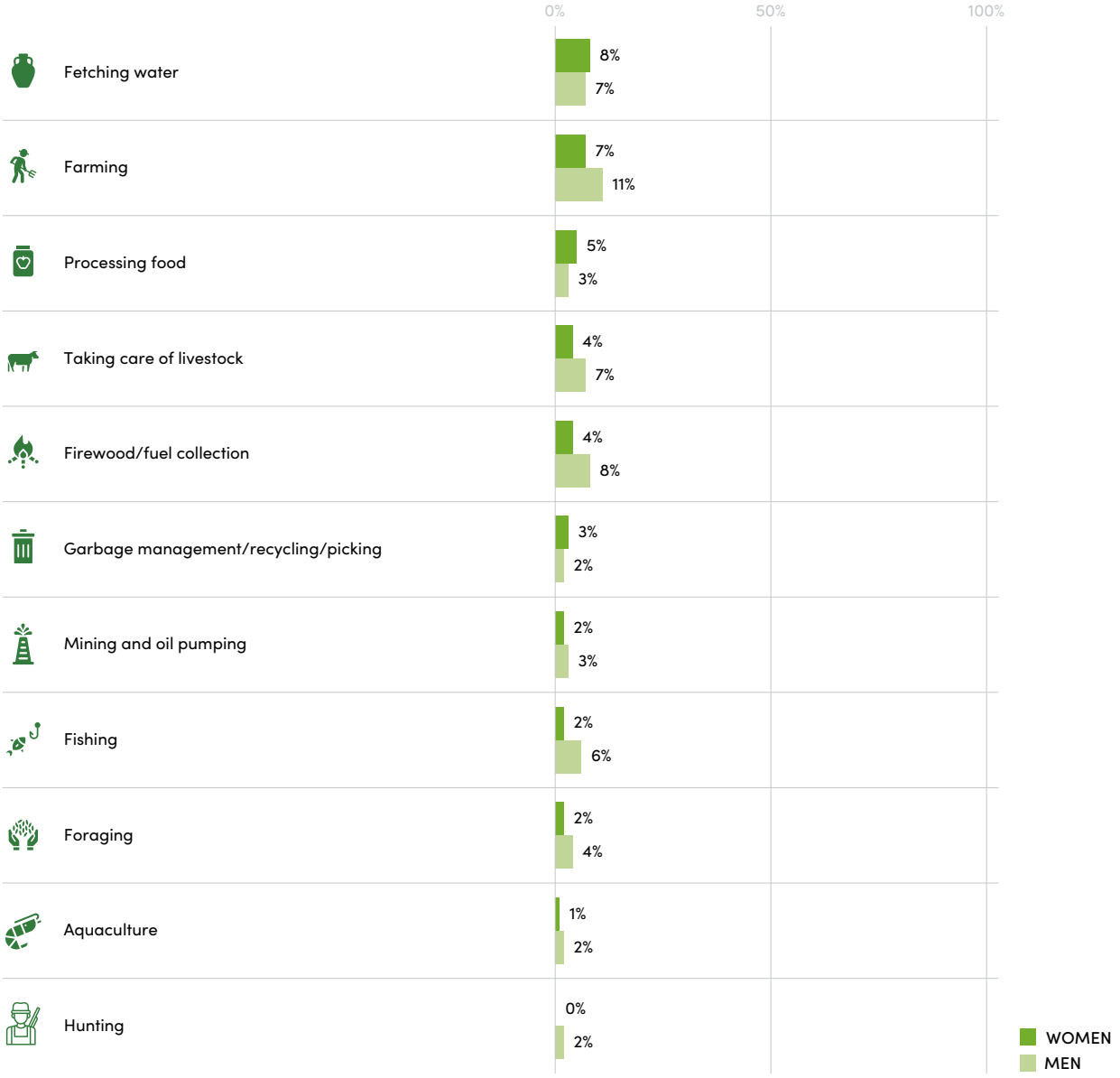
Figure 22: Proportion of the population whose time spent on care work and domestic work increased as a result of climate change, by sex (percentage)



CLIMATE CHANGE IS LENGTHENING THE TIME NEEDED TO MAINTAIN ENVIRONMENT-RELATED LIVELIHOODS.

Climate change is affecting the availability and quality of water sources. An estimated 8 per cent of women and 7 per cent of men who lack clean water at home are seeing substantial increases in time spent fetching water. The lack of water, coupled with reduced agricultural yields driven by changes in temperatures, precipitation and soil degradation, may also be lengthening the time spent processing foods (for instance, by cleaning or drying them for later use) or treating water before consumption, tasks undertaken disproportionately by women. Although the increases in water collection burdens are shared almost equally between women and men in Samoa, men are more likely to shoulder the increasing fuel collection burdens driven by climate change (figure 23). In turn, women are more likely to bear climate-driven increased burdens related to food processing or waste management. Those engaging in fishing, aquaculture, farming, gardening or livestock raising noticed increases in time spent on these activities to maintain yields, with men noticing these the most as they engage in these activities more often than women to earn an income. Different climate hazards also result in different time burdens. For instance, increases in temperatures triggered the largest surges in time spent processing food and farming.

Figure 23: Proportion of the population whose time spent on the production of various environmental goods increased as a result of climate change, by sex (percentage)

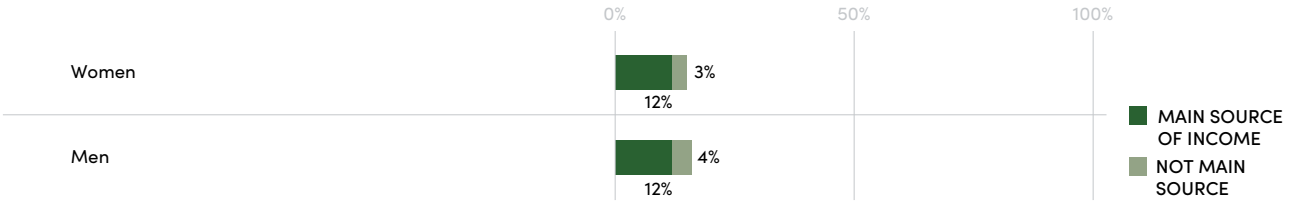


INCREASING TIME SPENT ON AGRICULTURAL ACTIVITIES MAY NOT BE SUFFICIENT TO MAINTAIN YIELDS IN THE FACE OF CLIMATE CHANGE.

As many as 15 per cent of women and 16 per cent of men engaging in agriculture or livestock raising (either for pay or profit or for reasons such as subsistence, leisure, tradition, religion or others) noted climate-related reductions in their yield in the past five years (figure 24). For most of these people, agriculture, including livestock raising, was their main source of income. This is particularly true for women, 80 per cent of whom noted this was their main income source.

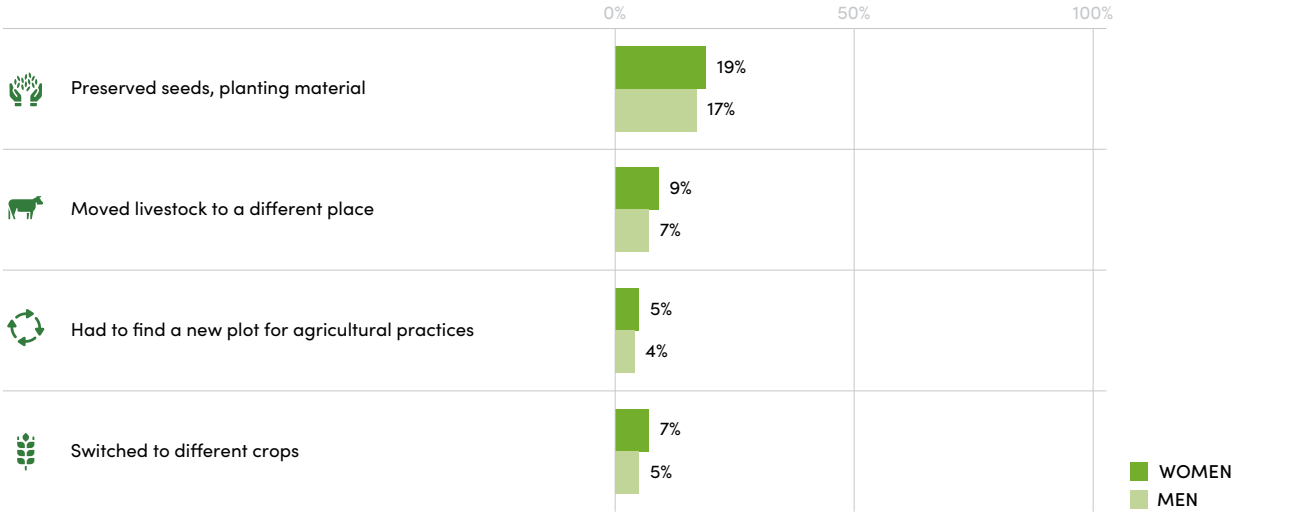
Yields fell despite people's increased investment of time and effort, which indicates the effects of climate change are too large to be mitigated simply by increasing time spent on these activities. For many, spending additional time may have been the only available mitigation strategy if they lacked resources to buy additional agricultural inputs, such as pesticides, fertilizers, animal feed or growth hormones, to maintain yields. Women's disproportionate reliance on agricultural livelihoods renders them highly vulnerable to the effects of climate change.

Figure 24: Proportion of land or livestock users who noted climate-related drops in yield in the past five years, by sex and whether this was their main source of income (percentage)



To mitigate some of the effects of climate change on crop and livestock yield, farmers have increased their efforts to conserve seeds and planting materials, or to find alternatives such as switching to climate-resilient crops or moving their livestock to a different place. Where climate change has severe effects on agricultural operations, such as in areas exposed to sea level rise or frequent flooding, or where farming areas are exposed to pollution or other environmental degradation, farmers have had to relocate their agricultural operations (figure 25). This is a more common practice among men than women as it is costly, and men often have better access to credit and are more likely to own assets that can be used as collateral for loans or to acquire new land.[13] Furthermore, women in Samoa are more likely than men to engage in home-based operations, such as growing kitchen gardens or tending to chickens or other small livestock. Therefore, it is not always possible to change locations.

Figure 25: Proportion of land or livestock users who conserved seeds, switched crops or moved operating locations to deal with the consequences of climate change, by sex and activity (percentage)

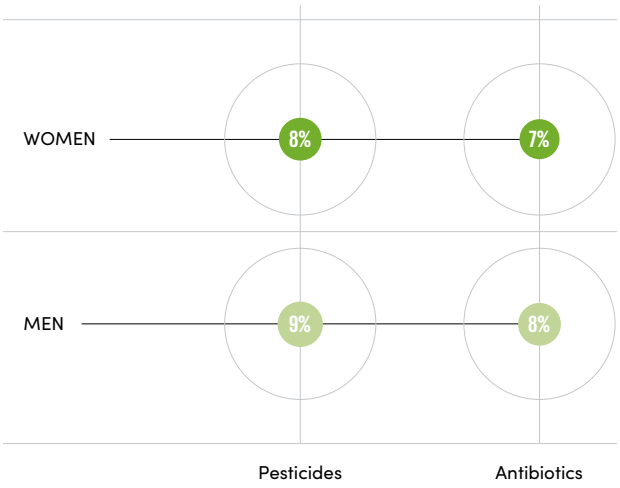


13 UN ESCAP and Government of Canada, 2020. Discussion paper on barriers and opportunities for women-led micro, small, medium enterprises in Samoa. Available from: https://www.unescap.org/sites/default/d8files/2020-09/WMSMEs_in_Samoa_Barriers_and_Opportunities.pdf

CLIMATE CHANGE IS PROMPTING FARMERS TO USE MORE PESTICIDES AND ANTIBIOTICS, FURTHER CONTRIBUTING TO ENVIRONMENTAL DEGRADATION.

Increasing temperatures, ecosystem loss, severe weather and many other hazards related to climate change put agricultural activities at stake. A coping mechanism for women and men who grow crops or raise livestock may be to increase the use of pesticides or antibiotics in their operations. This contributes to further damaging the environment, especially since increasing temperatures are known to result in more pesticide volatilization, increased rates of bacterial growth and heightened spread of antibiotic-resistant microorganisms. Furthermore, other climate-change related hazards, such as severe rain events, are known to carry pesticides into waterways and increase exposure risks for humans, animals and overall ecosystems. In Samoa, an estimated 8 per cent of women and 9 per cent of men raising crops increased their pesticide use, and 7 per cent of women and 8 per cent of men raising livestock increased their antibiotic use (figure 26). The slightly larger percentage of men than women who increased the use of these substances may reflect men's larger purchasing power and disproportionate engagement in industrial or other large-scale operations. It is important to note, however, that the use of pesticides and antibiotics in Samoa is substantially lower than in many other countries, because they are generally both unaffordable and unavailable.[14]

Figure 26: Proportion of land or livestock users who attributed their increased use of pesticides or antibiotics to the effects of climate change, by sex (percentage)



14 The Ministry of Agriculture and Fishery continues to work with farmers across the country to improve appropriate use of antibiotics to treat animals, including to treat animals and while limiting the emergence of resistance within bacteria carried by these populations.

JOBS ARE BEING LOST TO CLIMATE CHANGE, AND FINDING A NEW CAREER IS NOT POSSIBLE FOR MANY.

Changes in the availability of natural resources, climate-related supply chain disruptions, biodiversity loss and changes in meteorological conditions have contributed to people losing their jobs, particularly those engaged in tourism, agriculture, fisheries or other environment-related activities. As a result of climate change, an estimated 3 per cent of women and 2 per cent of men have lost their jobs (figure 27). Men are more likely than women to hold a job in Samoa, but women in agriculture are disproportionately engaged in the informal sector,[15] including subsistence farming and fishing, which makes them more vulnerable to climate-driven instability. Many people who depend on natural resources for their livelihoods do so in the absence of advanced education, thus they may be unable to find a job in a different sector. Among women who depend on natural resources for their livelihoods in Samoa, less than 20 per cent have finished tertiary education and less than 50 per cent have finished secondary education (table 5).

Figure 27: Proportion of population who changed or lost their job as a result of climate change, by sex

Table 5: Proportion of women who depend on natural resources for their livelihoods, by level of educational attainment (percentage)

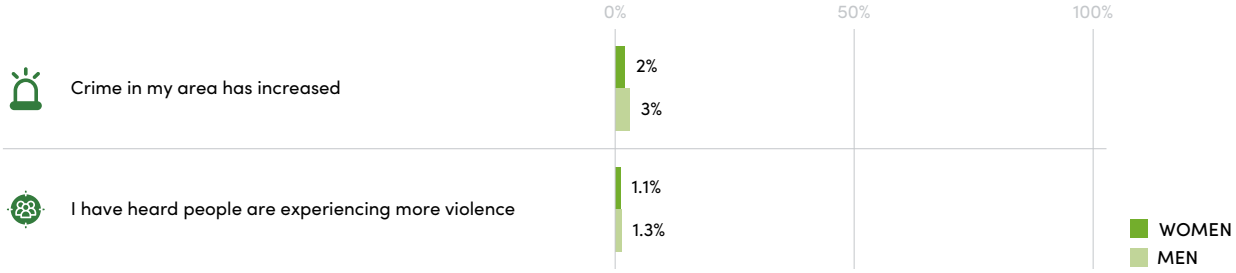
	LESS THAN PRIMARY EDUCATION	COMPLETED PRIMARY EDUCATION	COMPLETED SECONDARY EDUCATION	COMPLETED TERTIARY EDUCATION
Agriculture, fishing and aquaculture	1.3	1.7	52.3	20.5
Other natural resources	0.2	9.7	28.3	11.4

15 In 2022, 97.8 per cent of men employed in agriculture held informal jobs, compared to 99.3 per cent of women. Data available from: ILOSTAT.

CLIMATE-RELATED CRIME AND VIOLENCE MAY BE INCREASING IN SAMOA.

All the above-mentioned economic stressors coupled with the increasing scarcity of environmental resources as a result of climate change may be exacerbating inequalities and feelings of anxiety and stress, which are known drivers of crime and violence. When asked if they noticed worsening crime in the area where they live or work, 2 per cent of Samoan women and 3 per cent of Samoan men noted that crime had increased, and roughly 1 per cent of people had heard that violence had increased as a result of climate change (figure 28). To quantify the incidence of crime and violence accurately, specialized surveys must be administered to facilitate frank responses on such sensitive topics. General questions in multipurpose surveys are known to produce underestimations of these rates, and thus these percentages should not be understood as prevalence rates. However, they signal the likelihood of crime and violence increasing as a result of climate change: a topic that requires further research.

Figure 28: Proportion of the population who saw or heard about increases in crime and violence as a result of climate change, by sex (percentage)



Section III. Natural resources, biodiversity loss and environment-related livelihoods

The triple planetary crisis of climate change, pollution and biodiversity loss is affecting not only people, but also ecosystems. Yet, the crisis is also largely driven by human activity,[16] much of which has transboundary effects. Building largely on GES information collected from modules 7 and 8 of the Model Questionnaire, this section examines how women and men's lives and livelihoods are affected by these crises, and how their engagement in different activities contributes to environmental conservation and degradation.

16 UNFCCC, 2022, What is the triple planetary crisis? Available from: https://unfccc.int/news/what-is-the-triple-planetary-crisis.

MANY SAMOANS ARE DEPENDENT ON NATURAL RESOURCES, HIGHLIGHTING THAT ENVIRONMENTAL DEGRADATION COULD HAVE DEVASTATING EFFECTS.

Heavy reliance in environmental resources makes the population in Samoa substantially vulnerable to climate change and environmental degradation. An estimated 66 per cent of women and 72 per cent of men rely on at least one environmental activity for their livelihoods. Although many Samoans have multiple sources of income, environmental activities make up the largest share of the income for women more than for men, highlighting women's disproportionate vulnerability to environmental degradation and climate change (figure 29).

Men are more likely than women to engage in agriculture, sand mining and quarrying and other environment-related sectors, typically relying on multiple sources of income, both environmental and others. In contrast, many women depend on environmental resources alone (table 6). For instance, many engage in food processing, preservation and storage for their livelihoods. In addition, they are more likely to engage in the creation of cultural products for non-income generating purposes (22 per cent of women and 18 per cent of men who gather wild plants, insects or their products, create cultural products for subsistence, leisure, tradition, religion or other purposes).

Table 6: Proportion of the population whose main source of income is environment-related, by sex and whether it is the main source of income (percentage)

POPULATION GROUP	WOMEN	MEN
Samoa	**42**	**35**
Urban	47	37
Rural	42	35
Apia	47	37
North-West Upolu	38	38
Rest of Upolu	53	32
Sava'i	38	33

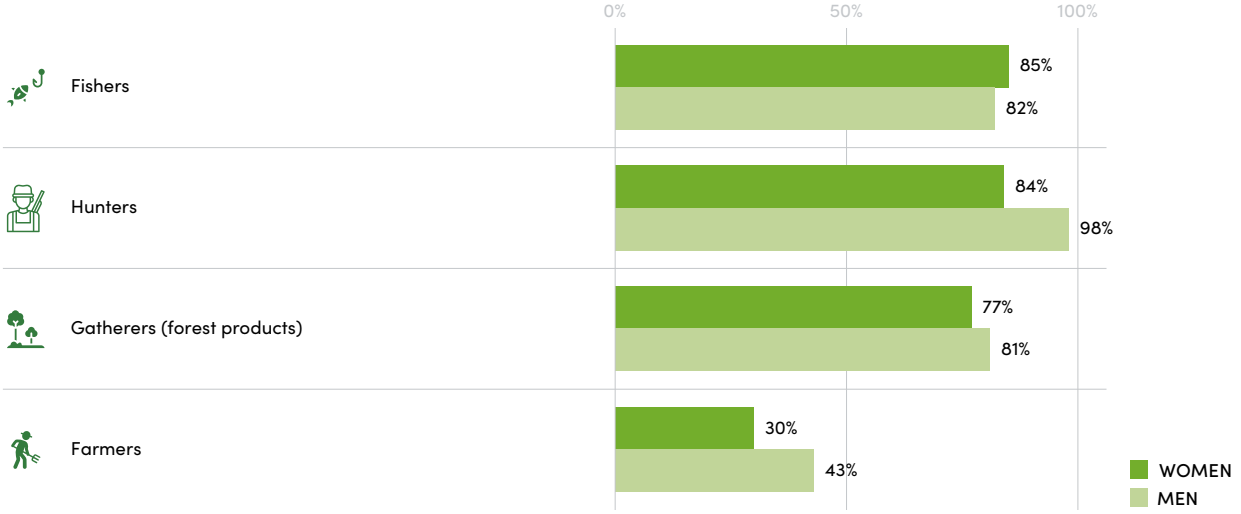
Figure 29: Proportion of the population whose main source of income is environment-related, by sex (percentage)

Note: For the calculation of this figure, environment-related livelihoods considered include fishing, aquaculture, marine pre and post harvesting activities, forestry, including collection of plants, animal products and other materials, hunting, food and beverage processing, preservation and storage, picking/soring/recycling garbage, mining, oil pumping, quarrying, water collection. The reference population is all people ages 18 years and over. As such, this includes population beyond working-age, and statistics will differ from labour force statistics. Furthermore, as many people who engage in environmental livelihoods on top of non-environment related income generation activities may not disclose their engagement with environment-related activities, these rates can be underestimated.

Given that Samoa is an island country, fishery-related livelihoods are also widespread (table 7). Although men are more likely than women to fish for a living, women and men engage almost equally in fish processing and marketing operations (roughly 7 per cent of the total population engage in these activities).[17] Yet, women engage in fishery-related activities for subsistence purposes more often than men (85 per cent of women compared to 82 per cent of men that fish do it for subsistence), highlighting vulnerability to biodiversity loss (figure 30).

Overall, most Samoans engaging in environmental livelihoods rely largely on small operations, with very few people engaging in large agroindustry corporations. As many as 85 per cent of women and 82 per cent of men fishers are subsistence fishers, and as many as 84 per cent of women and 98 per cent of men that hunt do it for their own subsistence as well. The lack of engagement in large corporations is encouraging from an environmental protection and management point of view, but it means that the bulk of the population are highly vulnerable to environmental degradation, as they may not have alternative sources of income, savings, or skills to switch jobs if needed.

Figure 30: Proportion of the population who are farmers, fishers, hunters and gatherers for their own subsistence, by sex (percentage)



17 Among those who engage in fishing and marine harvesting, women are likelier than men to engage in pre- and post-harvesting operations (63 per cent compared to 55 per cent).

Table 7: Proportion of the population who are farmers, fishers, hunters and/or gatherers for their own subsistence, by sex, household composition and level of education

	MARRIED		NOT MARRIED		SINGLE WOMEN WITH CHILDREN	SINGLE MEN WITH CHILDREN	PRIMARY EDUCATION OR LESS		COMPLETED SECONDARY EDUCATION		COMPLETED TERTIARY EDUCATION	
	W	M	W	M			W	M	W	M	W	M
Fishers	51	34	49	66	40	33	15	40	59	52	26	8
Farmers	41	38	59	62	11	14	18	31	60	54	22	15
Hunters and/ or gatherers	28	33	72	67	28	32	20	24	64	58	16	18

Note: Not married includes single, divorced, widowed and any other categories besides married. Single women/men with children refers to their household composition (whether or not they live with a partner) rather than their marital status. Any household member younger than 18 has been classified as a child.

WILD FORESTS PLAY A CRITICAL ROLE IN MAINTAINING PEOPLE'S LIVELIHOODS.

The protection of wild areas, such as forests, pastures, mangroves or other forms of wooded land, is essential to preserve biodiversity. A native forest has a large variety of species of trees, plants, birds, amphibians and mammals. These are critical sources of food, firewood and construction material. Native forests, pastures, wooded land and mangroves can protect against some of the effects of climate change and contribute substantially towards maintaining ecosystem productivity. Men engaging in harvesting activities are, overall, more likely to use wild forests than women, particularly those engaging in the collection of firewood, fuels, thatch and other non-edible plants (figure 31). However, as women are less likely than men to diversify their income sources. Almost every woman who gathers materials from wild forests depends on this activity for the majority of her income (figure 32), indicating substantial vulnerability to forest degradation.

Figure 31: Proportion of the population using wild forests, pasture or wooded land for foraging, logging, hunting or grazing livestock for their livelihoods, by sex (percentage)

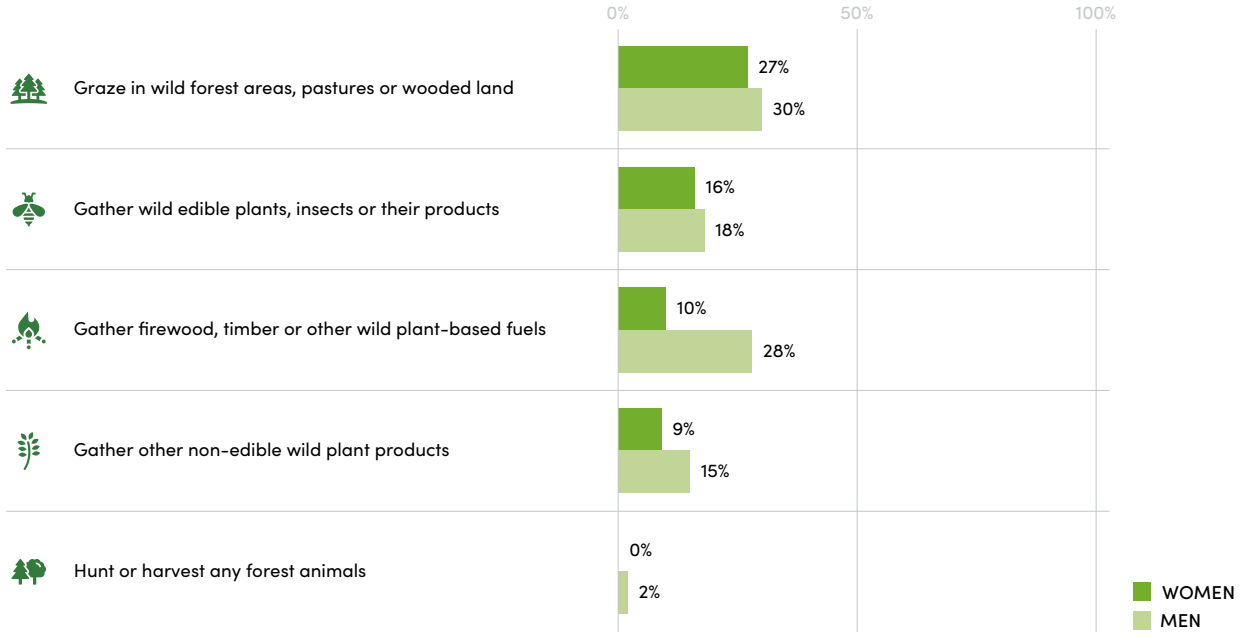
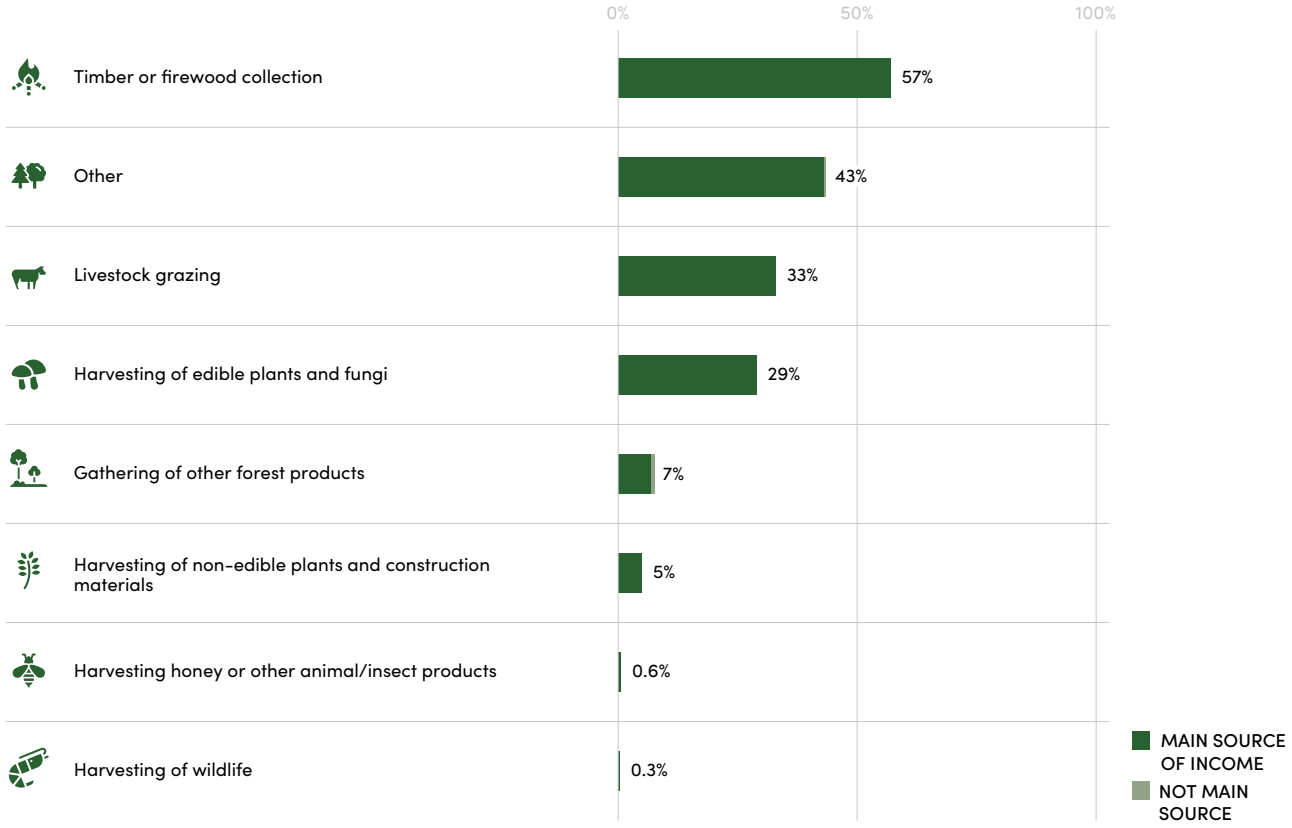


Figure 32: Proportion of population using wild forests that are women, by type of use and main source of income (percentage)



MORE MEN THAN WOMEN ARE NOTICING DEFORESTATION AND RELATED BIODIVERSITY LOSS.

Due to land transition, overexploitation and climate change, the size and composition of forest areas are changing worldwide. As the total forest area decreases over time and wooded land gets partially or fully developed, the number of species living in forests is decreasing rapidly. This has considerable consequences for ecosystem production. Given their disproportionate engagement in forest activities, men in Samoa have been more likely than women to notice these effects. One in four women and almost one in three men using wild forests saw degradation of the forest area used (figure 33). Wild forest users were most likely to notice decreases in total forest area, often linked to land transition due to urbanization or for agricultural purposes; biodiversity loss, often related to urbanization, use of pesticides in nearby areas, or poor forest management practices; and changes in relative aridity (figure 34). Both women and men noted they cannot find the same variety and quantity of animals and plants in forests.

Figure 33: Proportion of wild forest users who noticed degradation of the forest area, including drops in total area and biodiversity loss, by sex (percentage)

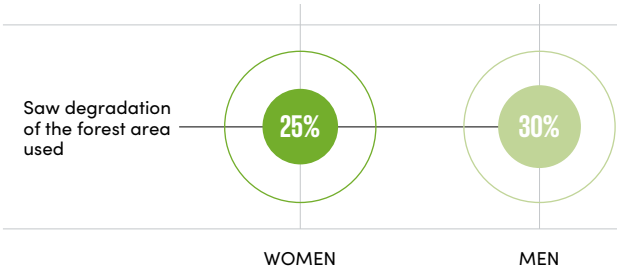
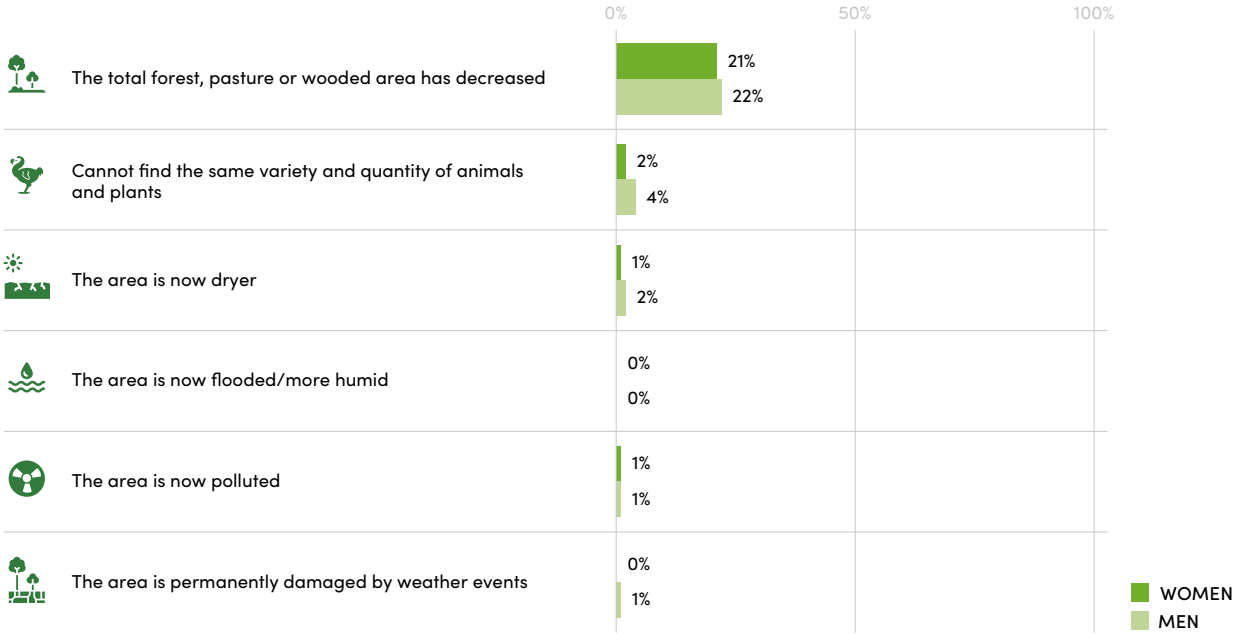


Figure 34: Proportion of wild forest users who noticed degradation of the forest area used, by sex and type of degradation (percentage)



SOIL DEGRADATION AND WATER SHORTAGES ARE INCREASINGLY NOTICEABLE AND AFFECTING PEOPLE'S LIVELIHOODS.

Because of climate change, pollution and biodiversity loss, farmers in Samoa are increasingly noticing the progressive degradation of the land they use for agriculture and livestock grazing (figure 35). Key markers of soil degradation may include fertility decline, changes in the soil acidity or alkalinity, vulnerability to erosion, increased susceptibility to pests, loss of organic matter and overall biodiversity loss. These may have substantive impacts on agricultural and livestock yields and the health and quality of agricultural and livestock products. Almost half the men and women engaged in these activities noticed soil degradation. Farmers were also likely to notice shortages in the availability of irrigation water.

In Samoa, rainwater and piped water to a lesser extent are the most common water sources for land irrigation (figure 36). Farmers using rainwater for irrigation were the most likely to notice shortages, as climate change, changes in ocean temperatures, land transition, water pollution and overconsumption all contribute to droughts, water shortages and erratic precipitation patterns. Agricultural demand may also contribute to water shortages in Samoa.

Figure 35: Proportion of the population using land for agriculture or livestock grazing who noticed soil degradation, by sex (percentage)

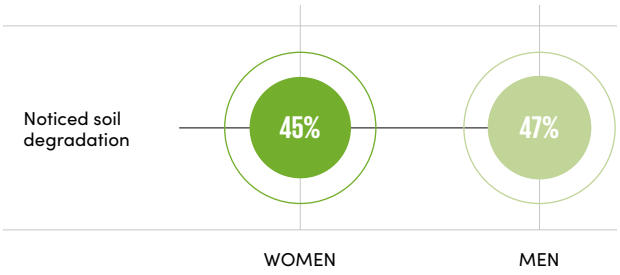
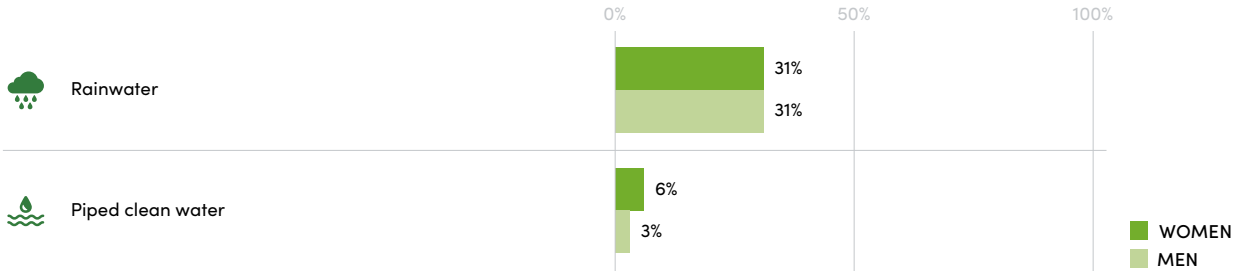


Figure 36: Proportion of the population that noted decreases in the availability of irrigation water, by sex and source (percentage)



Note: Freshwater, wastewater, greywater and other water sources are not depicted because no respondent noted their use.

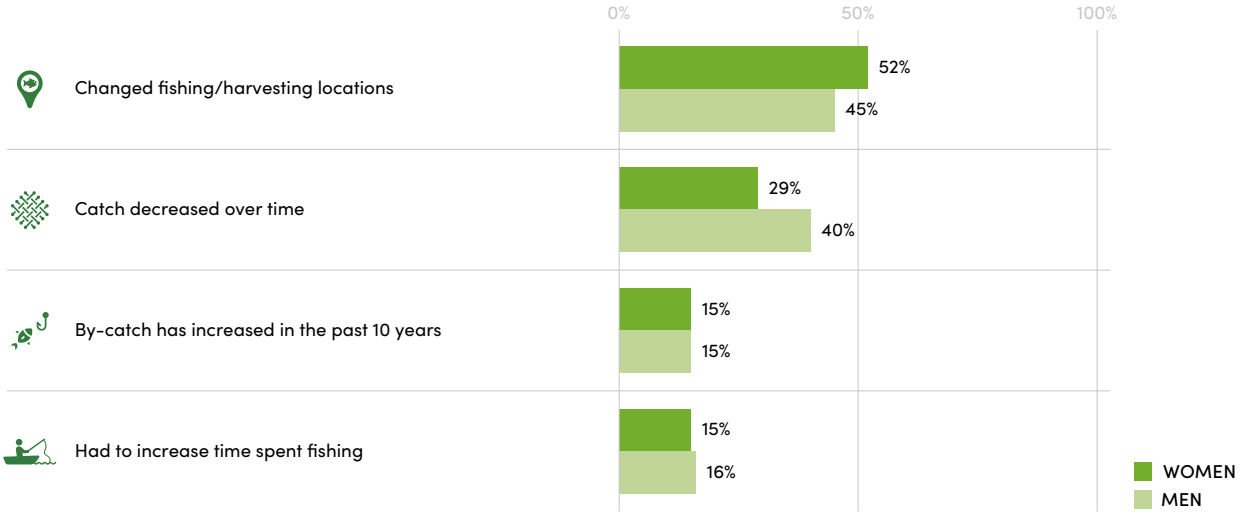
FISH STOCK DEPLETION IS OBVIOUS TO THOSE ENGAGING IN FISHING AND MARINE HARVESTING, PARTICULARLY MEN, WHO ARE MORE LIKELY TO FISH OFFSHORE AND AT A LARGER SCALE.

One in three women and two in five men engaging in fishing or marine harvesting saw their catch dwindle over the past 10 years. To cope with this challenge, women and men changed locations or spent more time fishing or hand harvesting (figure 37).

An estimated 52 per cent of women and 45 per cent of men harvesting marine life changed fishing locations in the past 10 years (figure 38). For 26 per cent of women and 20 per cent of men, the change was directly attributed to the depletion of the previous fishery. For an additional 1 per cent of women and 5 per cent of men, the change was attributed to pollution. As women are more likely than men to fish on the shore or harvest marine resources by hand, moving to new locations may pose challenges. Although 11 per cent of men chose to change locations because they found more productive or convenient sites, these reasons were only cited by 4 per cent of women.

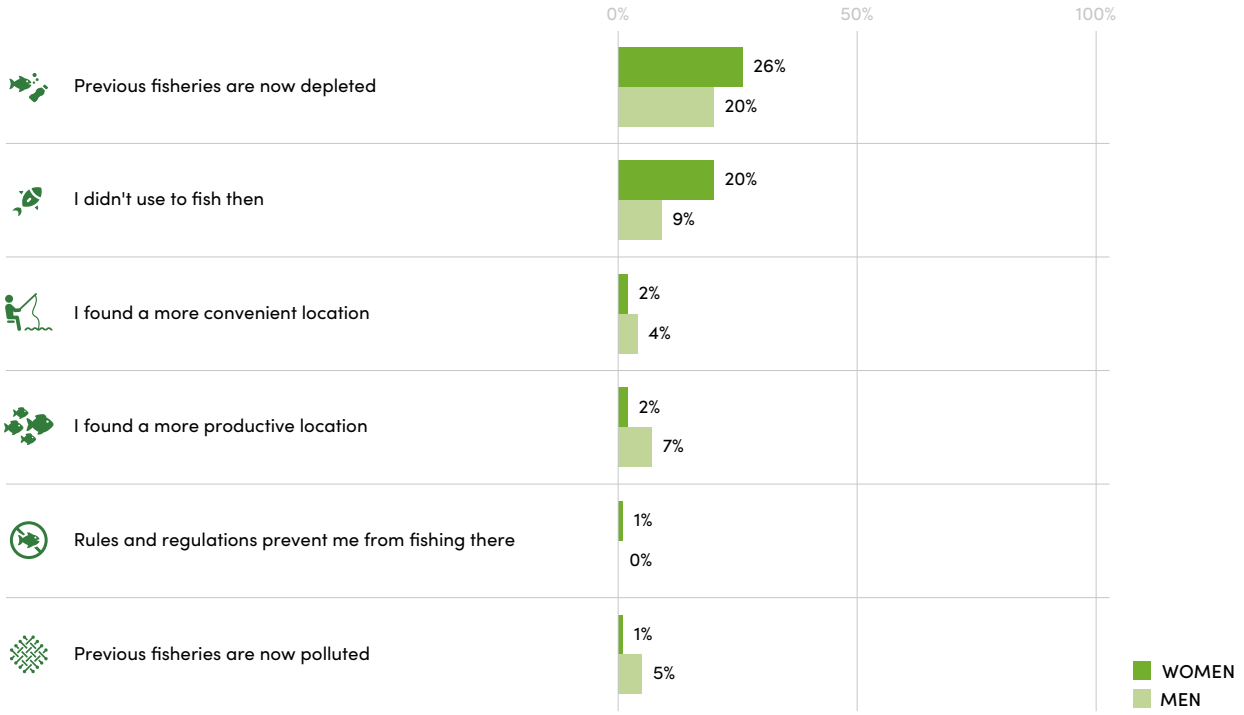
In addition, an estimated 15 per cent of women and 16 per cent of men have spent more time fishing as a result of stock depletion, pollution, or related reasons. Worryingly, 15 per cent of people noticed increases in the share of by-catch, a clear indicator of biodiversity loss. Reduced availability of target species together with the use of non-selective fishing gear for larger fishing operations (such as long lines, gillnets, drift nets, trawling or purse seine,[18] among others) contribute to increases in the share of by-catch.

Figure 37: Proportion of the fishing/marine harvesting population who cope with effects of environmental degradation and biodiversity loss, by sex (percentage)



18 A purse seine is a non-selective fishing method in which a floating net is deployed and sweeps large marine areas.

Figure 38: Proportion of the population who changed fishing/marine harvesting location in the past 10 years as a result of environmental degradation or biodiversity loss, by sex and reason (percentage)

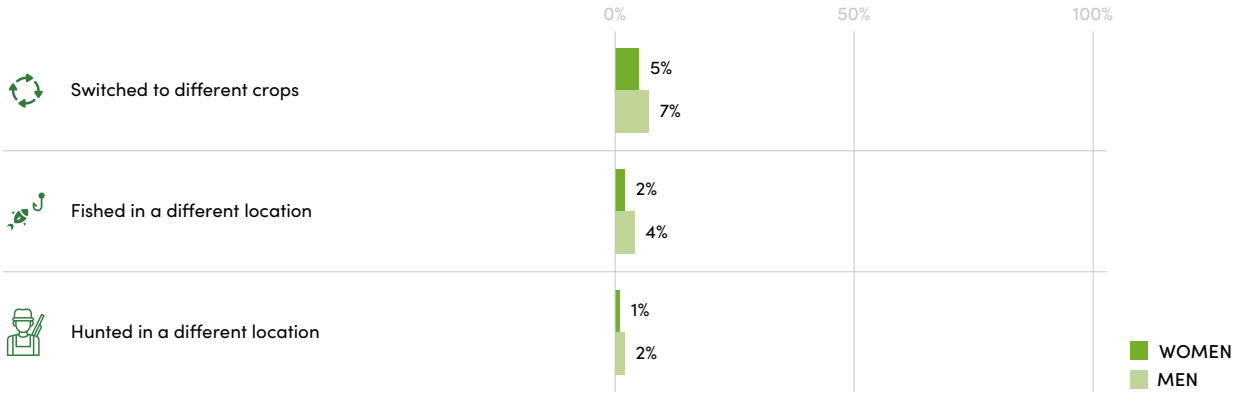


BIODIVERSITY LOSS IS PROMPTING THOSE RELYING ON ENVIRONMENT-RELATED LIVELIHOODS TO MAKE CHANGES TO MAINTAIN YIELDS.

The above-mentioned changes in soil quality, availability of fish stocks, and the quality and size of forests are impacting people's livelihoods. To maintain yields, people who cannot afford other coping mechanisms, such as applying pesticides in greater quantities or changing agricultural and fishing gear, are switching locations. In Samoa, men are more likely than women to engage in agriculture, fishing and hunting, and men have been more likely to switch locations or crops to maintain yields (figure 39). Women are switching at lower rates, as they may have fewer resources and less agency to move locations[19].

19 FAO, 2022, Documenting the gender gap for development. Available from: https://www.fao.org/4/i2050e/i2050e03.pdf.

Figure 39: Proportion of gatherers, fishers and hunters who switched locations as a result of climate change, by sex (percentage)



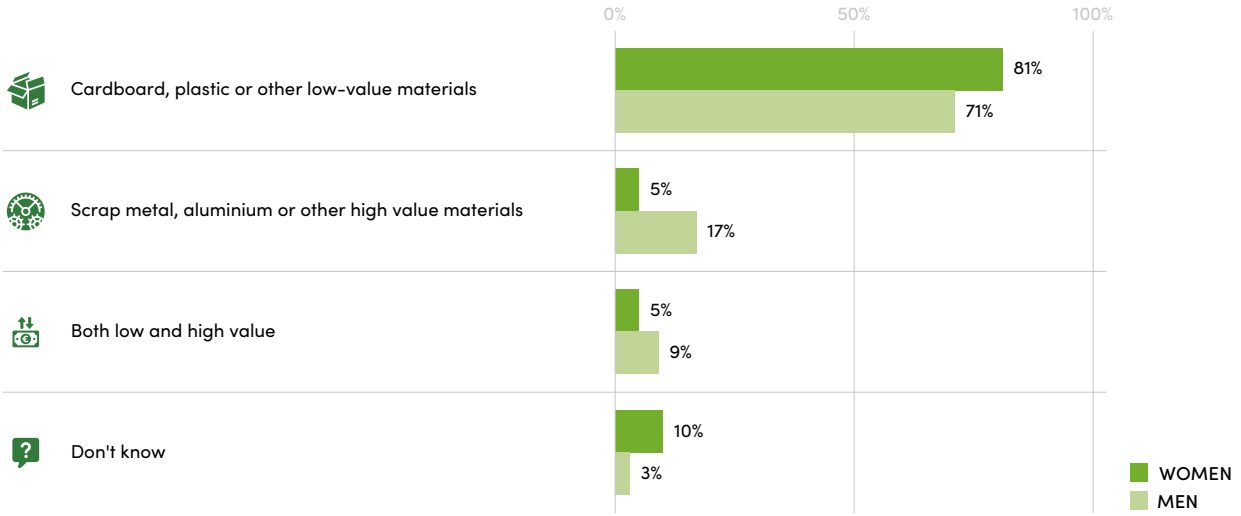
EFFECTIVE WASTE MANAGEMENT IS CRITICAL TO HALT THE SPREAD OF POLLUTION AND BIODIVERSITY LOSS, BUT UNEQUAL WAGES AND REMUNERATION REMAIN A CONCERN.

An estimated 3 per cent of women and 4 per cent of men in Samoa engage in waste management. These activities are critical to deal the triple planetary crisis of climate change, pollution and biodiversity loss. An estimated 60 per cent of women and 63 per cent of men who engage in waste management do it without any remuneration (table 8). They may carry out these tasks to help others, or they may be unpaid because of discrimination. For instance, an estimated 4 per cent of people who engage in waste management said that other people receive higher remuneration than they do for sorting and turning in the same materials. Interestingly, both men and women thought the opposite sex received higher remuneration. This perception may be based in the vulnerability of informal workers to wage discrimination. Barriers to accessing higher-value waste materials are also a sign of discrimination. Women are more likely than men to handle mostly cardboard, plastic or other low-value materials, while men have better access to higher value materials such as scrap metal and aluminium (figure 40).

Table 8: Proportion of people engaging in waste management and their access to wages and materials, by sex (percentage)

INDICATOR	WOMEN	MEN
Receive remuneration	40	37
Perceive wage discrimination (opposite sex gets higher pay)	4	4
Have access to protective equipment	39	49
Experience disease as a result	11	7

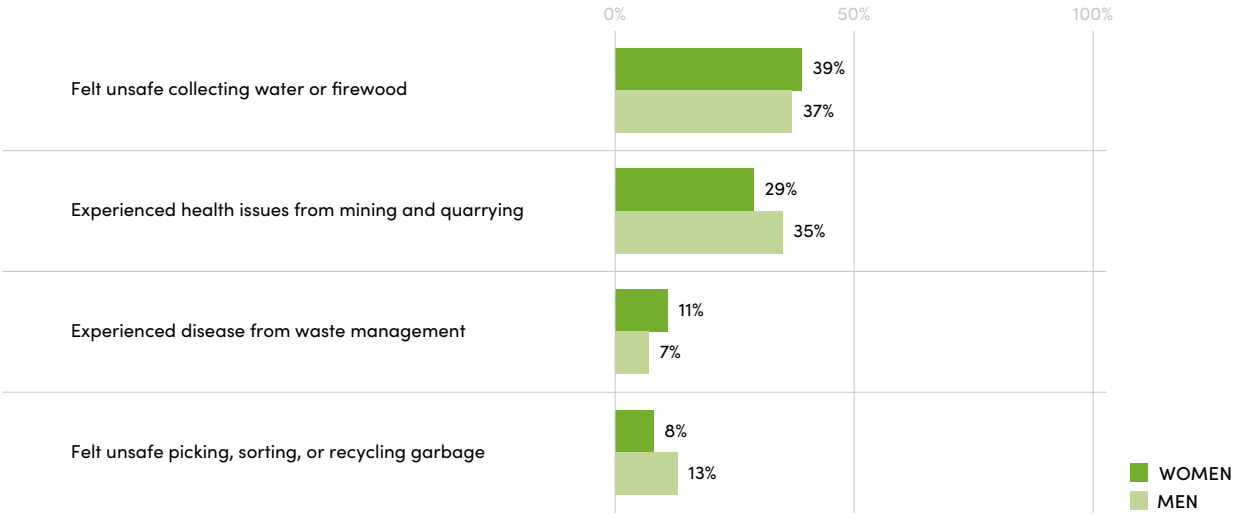
Figure 40: Proportion of the population handling waste management of high or low value materials or both, by sex (percentage)



SOME ENVIRONMENT-RELATED LIVELIHOODS CARRY IMPORTANT SAFETY RISKS, INCLUDING EXPOSURE TO DISEASE, CRIME AND VIOLENCE.

Engaging in some environment-related livelihoods can increase the likelihood of contracting disease. For instance, an estimated 29 per cent of women and 35 per cent of men engaging in sand and coral mining and quarrying in Samoa experienced health issues as a result of these activities, such as respiratory complications and hearing loss. Similarly, 11 per cent of women and 7 per cent of men engaging in waste management experienced disease, such as musculoskeletal problems, respiratory issues and diseases associated with microorganisms. Safety is an additional challenge for those engaging in some environment-related livelihoods. As many as 39 per cent of women and 37 per cent of men felt unsafe at least once while fetching or carrying water (figure 41). When women walk long distances to collect water, they have more exposure to risk of violence or other crimes. In contrast, men in Samoa are more likely than women to have felt unsafe collecting, sorting and managing waste (8 per cent of women, compared to 13 per cent of men). This may be because women in Samoa are more likely than men to collect, sort and take waste to recycling and other waste management centres with their husbands or partners, while men are more likely to perform these activities alone.

Figure 41: Proportion of the population collecting water, managing waste or engaging in mining that felt unsafe or experienced health issues while performing these tasks, by sex (percentage)



Section IV. Environmental conservation, degradation and decision-making

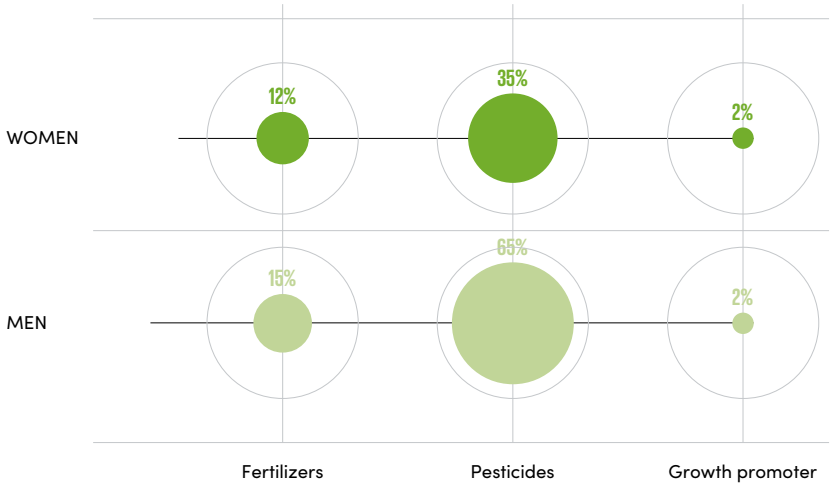
The inclusive management of natural resources is critical to secure a sustainable future for all. As women and men interact with the environment in different ways, they make decisions regarding how resources are managed, exploited or conserved. This section makes use of questions across all modules in the Model Questionnaire to explore how women's and men's engagement in different activities, platforms and groups contribute to environmental decision-making and therefore natural resource management.

MEN ARE MORE LIKELY THAN WOMEN TO USE ENVIRONMENT-DAMAGING FERTILIZERS, PESTICIDES AND GROWTH PROMOTERS, AND GENDER DIFFERENTIALS EXIST IN RELATED RISK MITIGATION MEASURES.

To understand the nature, frequency and intensity of human interactions with the environment, it is essential to recognize the important roles that women and men play in either conserving or further degrading the environment. For example, methods of promoting crop growth and increasing farming yields differ between men and women, and their previous knowledge, social roles and other factors dictate different behaviour in terms of conservation or degradation of natural resources.

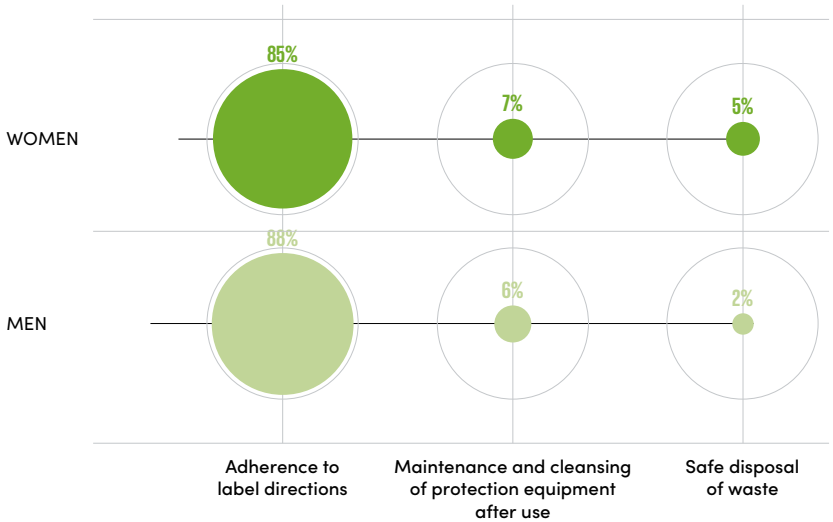
Men in Samoa are more likely than women to engage in farming activities, and thus generally have a larger environmental footprint in the form of fertilizer and pesticide use. Even in relative terms, among those growing crops or raising livestock, men are more likely than women to use environmentally detrimental substances such as synthetic pesticides, fertilizers and growth promoters. Men's engagement in larger agricultural operations, and higher purchasing power overall possibly contribute to this outcome. The gender gaps are particularly large in pesticide use, with as many as 65 per cent of men (compared to 35 per cent for women) using these substances in their agricultural activities (figure 42).

Figure 42: Proportion of the population operating land for agriculture or livestock that use synthetic fertilizers, pesticides, or growth promoter, by sex (percentage)



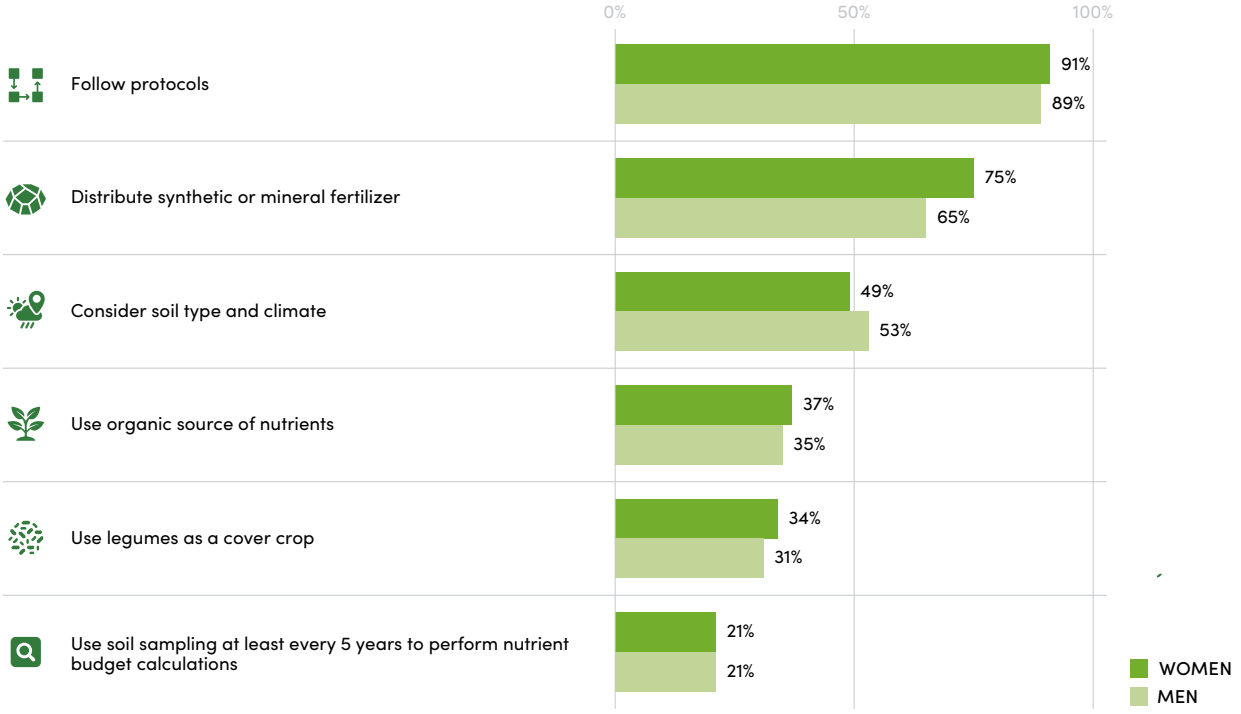
Pesticides may contribute to biodiversity loss and environmental pollution, as well as neurological and reproductive disorders in humans. Thus, it is essential to handle them carefully and put in place measures to mitigate these risks. Yet, not everyone follows health and safety protocols, and there are differentials in the behaviour of women and men. For instance, to protect human health, men in Samoa are slightly likelier than women to adhere to label directions (85 per cent of women, compared to 88 per cent of men), but only 6 per cent of people overall clean and maintain protective equipment after use (figure 43). Without proper cleaning and maintenance, they may be exposed to contamination in the future.

Figure 43: Proportion of the population applying synthetic or mineral pesticides who put safety measures in place to protect human health, by sex (percentage)



To protect the environment, 90 per cent of those using fertilizers follow retail directions or local regulations, such as not exceeding recommended doses. Women are more likely than men (75 per cent of women, compared to 65 per cent of men) to distribute synthetic or mineral fertilizers to prevent soil damage (figure 44). Worryingly, only half the people using fertilizers consider the soil type and climate before choosing fertilizer types, dosages and application methods; and less than one in four people sample the soil every five years to assess the nutrient load in terms of nitrogen and phosphorous. These are important measures to preserve soil quality and preserve its biodiversity and that of nearby water bodies. These measures also promote the sustainability of agricultural operations over time.

Figure 44: Proportion of the population operating land for agriculture or livestock that applied measures to mitigate fertilizer-related risks, by sex (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for any of the categories except distributing synthetic or mineral fertilizers.

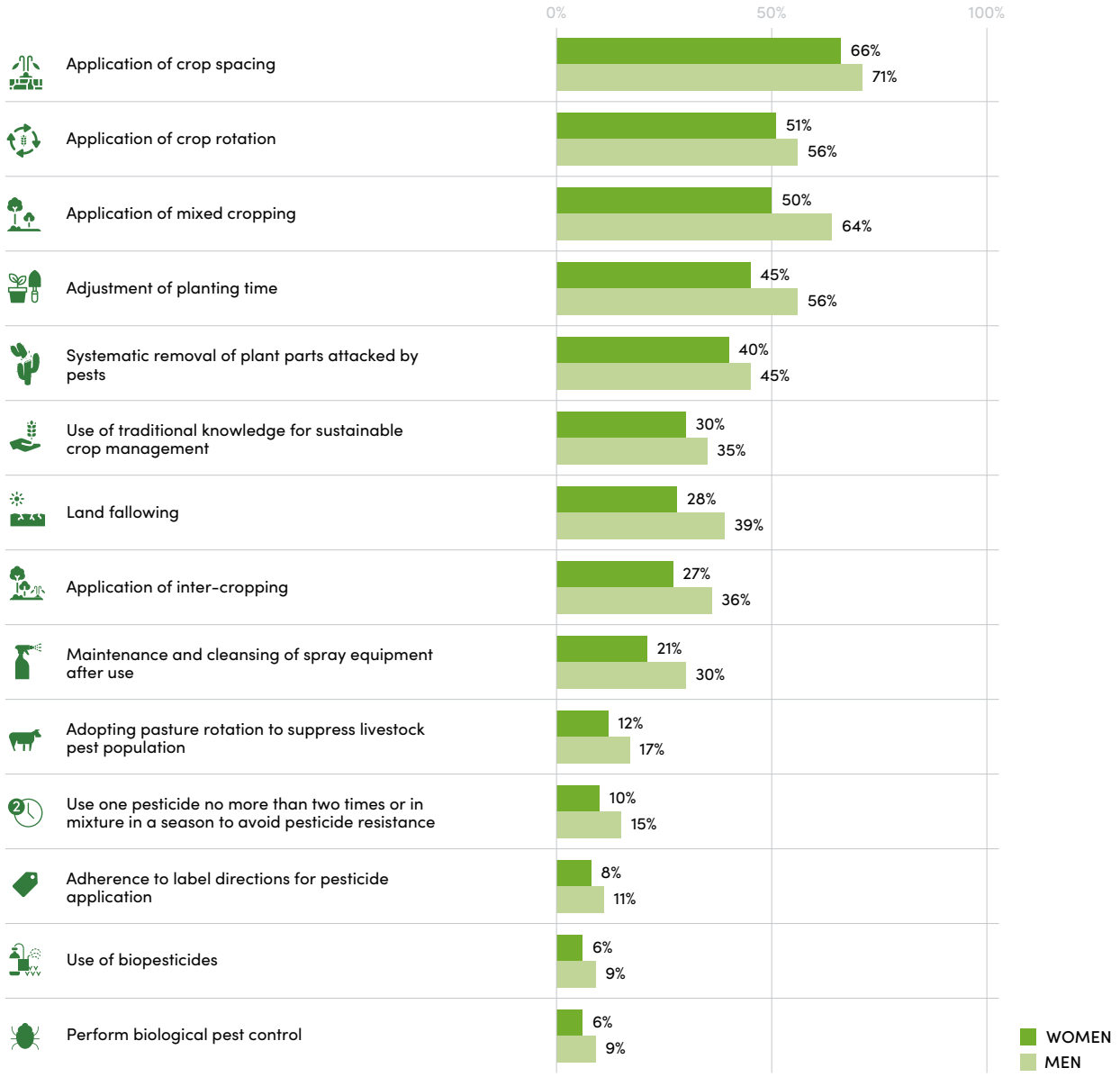
TRADITIONAL AGRICULTURAL KNOWLEDGE HELPS REDUCE THE ENVIRONMENTAL FOOTPRINT OF AGRICULTURE, AND MORE MEN THAN WOMEN APPLY IT IN SAMOA.

The implementation of natural measures to reduce the environmental footprint of agriculture is more common among men than women. Men are more likely to use crop spacing, cropped rotation, mixed cropping and inter-cropping in their agricultural practices (figure 45), which are more commonly applied on large agricultural extensions.

Important environmental conservation practices such as land fallowing, which allows for land nutrients to regenerate, is practiced by 39 per cent of men compared to 28 per cent of women. Many women practice agriculture in home gardens, thus they are less able to make use of practices such as land fallowing.

Importantly, 30 per cent of women and 35 per cent of men in Samoa still rely on traditional knowledge to practice agriculture and raise animals. Rooted in the local culture, traditional knowledge makes use of local flora and hydrometeorological conditions to enhance yields, prevent pests, manage rainwater and curb livestock disease. Preserving this knowledge is important not only for cultural purposes, but also because many of these practices do not contribute to ecosystem degradation.

Figure 45: Proportion of the population engaging in agriculture and livestock grazing undertaking natural measures to reduce the environmental footprint, by sex (percentage)

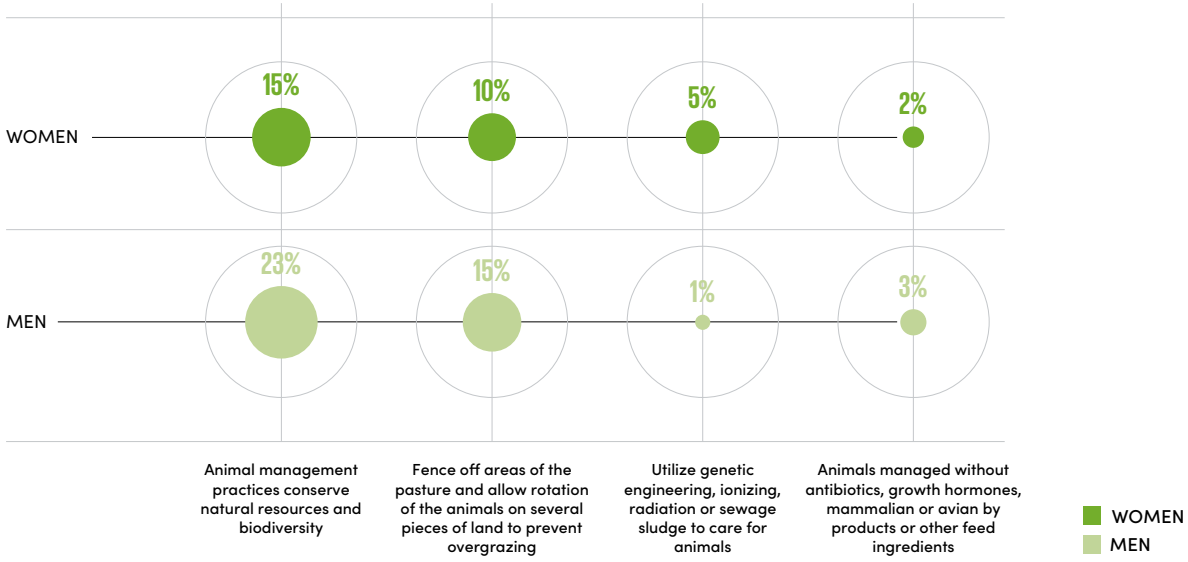


VERY FEW PEOPLE IN SAMOA MANAGE THEIR LIVESTOCK SUSTAINABLY. DIFFERENT PRACTICES ARE USED BY MEN AND WOMEN, AS THEIR FARMING OPERATIONS DIFFER WIDELY.

Environmental protection practices related to livestock grazing remain quite limited in Samoa (figure 46). Only 10 per cent of women and 15 per cent of men fence off areas within pastures to prevent destruction from overgrazing, while only 2 per cent of women and 3 per cent of men raise animals without antibiotics, growth hormones, mammalian or avian by-products or other artificial feed ingredients. The overuse of antibiotics, hormones and other artificial feed ingredients may put the health of both livestock and humans at risk and may have harmful effects on nearby waterways and ecosystems through manure contamination and other processes. Enhancing access to comprehensive information on dosages, application and potential side effects remains a priority for farmers to make informed decisions.

Women and men may lack information on the harmful effects of some agricultural and farming practices, as when asked whether their animal management practices conserve natural resources and biodiversity, 15 per cent of women and 23 per cent of men responded that they do.

Figure 46: Proportion of the population managing livestock who implemented various management practices, by sex (percentage)



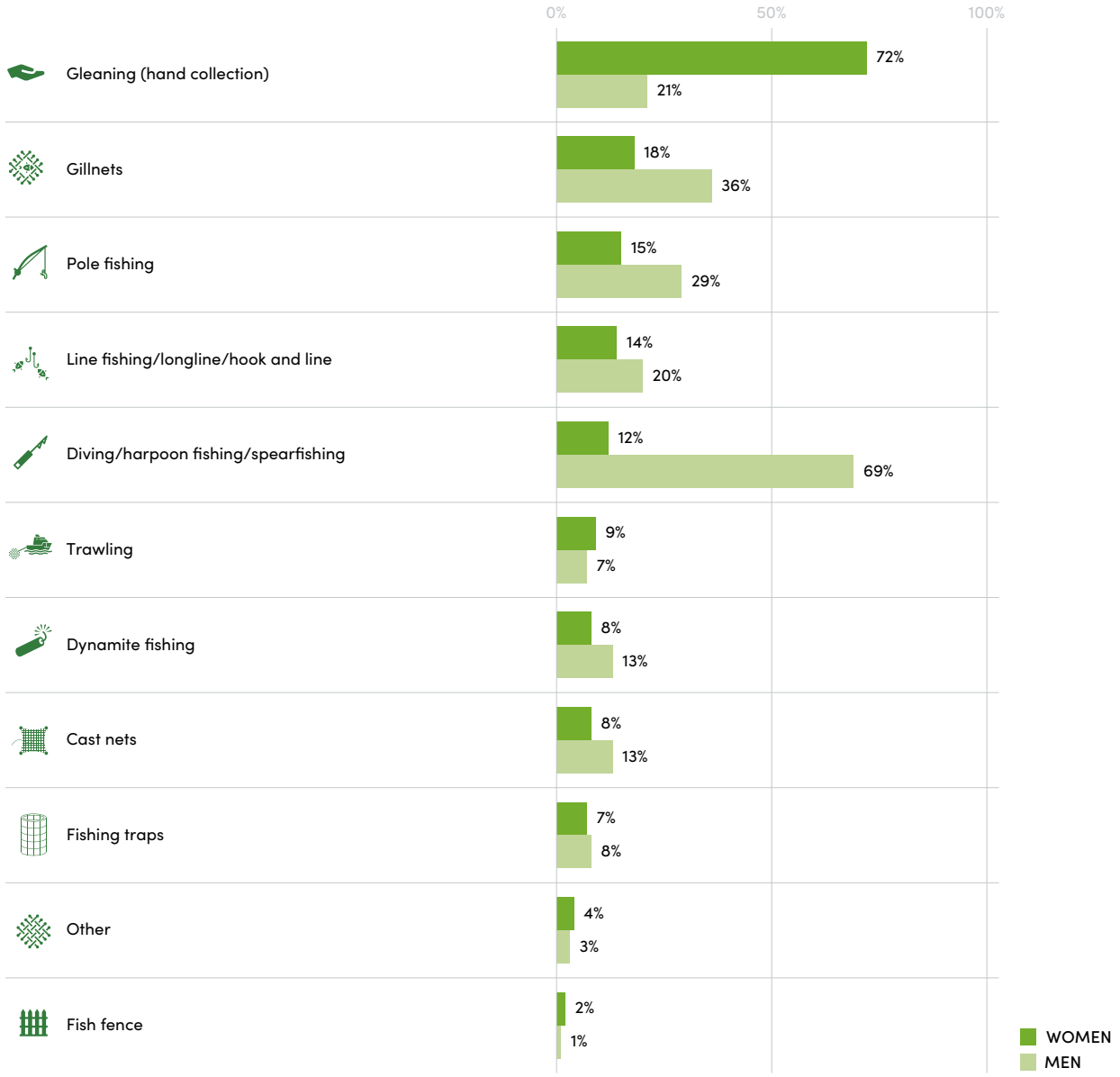
MEN'S FISHING PRACTICES ARE MORE ENVIRONMENTALLY DESTRUCTIVE THAN WOMEN'S, HOWEVER, MANY IN SAMOA RELY ON TRADITIONAL PRACTICES THAT ARE RELATIVELY SUSTAINABLE.

An estimated 2 per cent of women and 8 per cent of men in Samoa practice fishing or marine harvesting, either for subsistence, pay, profit, leisure or other reasons (as shown in figure 1 of this report). While men are more likely to fish offshore, women are more likely to harvest marine animals or seaweed on or near the shore. Thus, their fishing methods are different, as is the impact of their activities on ecosystems. For instance, 72 per cent of women and 21 per cent of men engaging in marine harvesting practice gleaning (hand collection), generally considered a more sustainable practice (figure 47). In turn, although outlawed since 1998, men are more likely than women to practice dynamite fishing along with longline fishing, which are more damaging techniques as they harvest larger shares of by-catch and destroy coral reefs and other ecosystems. Similarly, men are more likely to use gillnets, a non-selective fishing method in which a floating net hangs vertically, trapping fish by their gills. These are highly destructive practices as they may capture substantial amounts of by-catch, including protected species.[20]

However, compared to people in other countries, Samoans rely substantially on traditional fishing practices, such as gleaning, harpoon fishing and pole fishing, which allow for better targeting of catch and are generally considered less damaging to marine life and ecosystems. Reliance on traditional methods is important to conserve the country's marine resources.

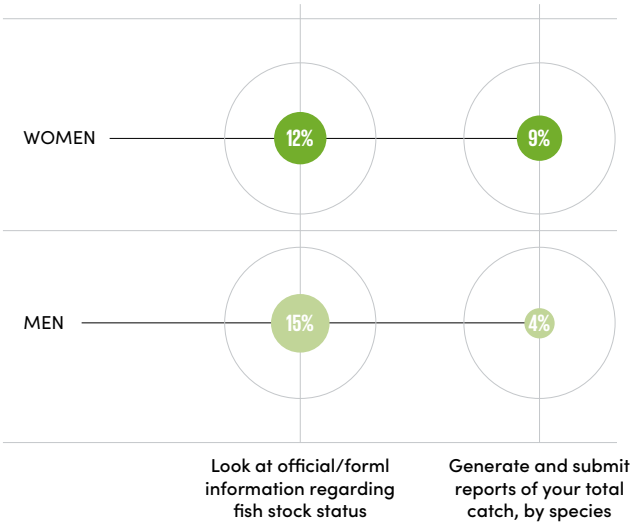
20 These figures differ slightly from previously reported figures by the Food and Agriculture Organization of the United Nations. The latter were drawn from the 2012 Samoa Socio-Economic Fisheries Survey, which included information on coastal fish catches by habitat and by gear. The difference may be due to changes over time, or to the fact that the Socio-Economic Fisheries Survey focuses exclusively on fishing operations carried out for economic purposes. The Gender and Environment survey, however, captures all fishing performed, regardless of the purpose.

Figure 47: Proportion of the fishing/marine harvesting population using different fishing methods, by sex (percentage)



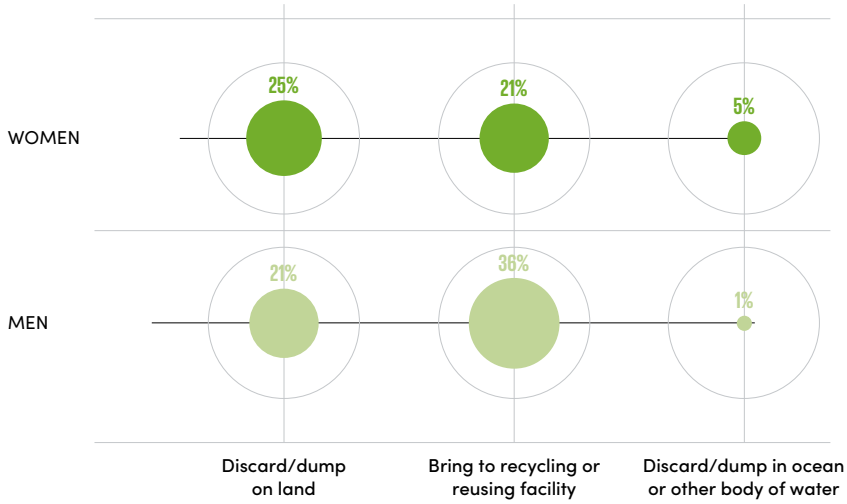
As men's fishing operations are normally larger than women's, men are also more likely to look at official information regarding fish stock status, both to target their catch and to prevent overfishing of overexploited or endangered species. Although this practice is not widespread, an estimated 12 per cent of women and 15 per cent of men look at fish stock status information regularly (figure 48). However, only 9 per cent of women and 4 per cent of men practicing marine harvesting generate reports on total catch and submit them to authorities. This may have to do with the prevalence of small-scale operations, many of which are informal. However, this is an important practice for the successful management of stocks and the conservation of marine biodiversity, regardless of whether fishing is performed for economic purposes or subsistence.

Figure 48: Proportion of the fishing/marine harvesting population who support fish stock monitoring by looking at fish stock status and reporting on catch, by sex (percentage)



Marine pollution, particularly plastic pollution originating from discarded fishing gear, is a key problem contributing rapidly to the loss of marine biodiversity, including the disappearance of coral reefs. Among those in Samoa who engage in fishing activities, men are more likely than women (36 per cent compared to 21 per cent) to bring their spent fishing gear to a recycling facility (figure 49). These figures are partially influenced by the fact that women are less likely to own large fishing gear, as they disproportionately practice hand harvesting. Worryingly, an estimated 25 per cent of women and 21 per cent of men discard their gear on land, and 5 per cent of women and 1 per cent of men dump it in the ocean or another body of water. Tackling the problem of discarded marine fishing gear is of critical importance to enable marine biodiversity and ecosystem productivity to rebound.

Figure 49: Proportion of the fishing/marine harvesting population contributing to recycling or reusing of gear, by sex (percentage)



ROUGHLY ONE IN THREE PEOPLE USE SUSTAINABLE PRACTICES IN WILD FORESTS.

Wild or undeveloped forests, pastures and wooded land play a critical role for the livelihoods of people in Samoa, as 20 per cent of women and 31 per cent of men use wild forests. Besides collecting fodder, hunting, and gathering construction materials, an estimated 2 per cent of people in Samoa harvest goods in wild forests for the creation of cultural products, such as mats, 'ava bowls, wood carvings and other products. Data on the use of wild forests is provided in table 9.

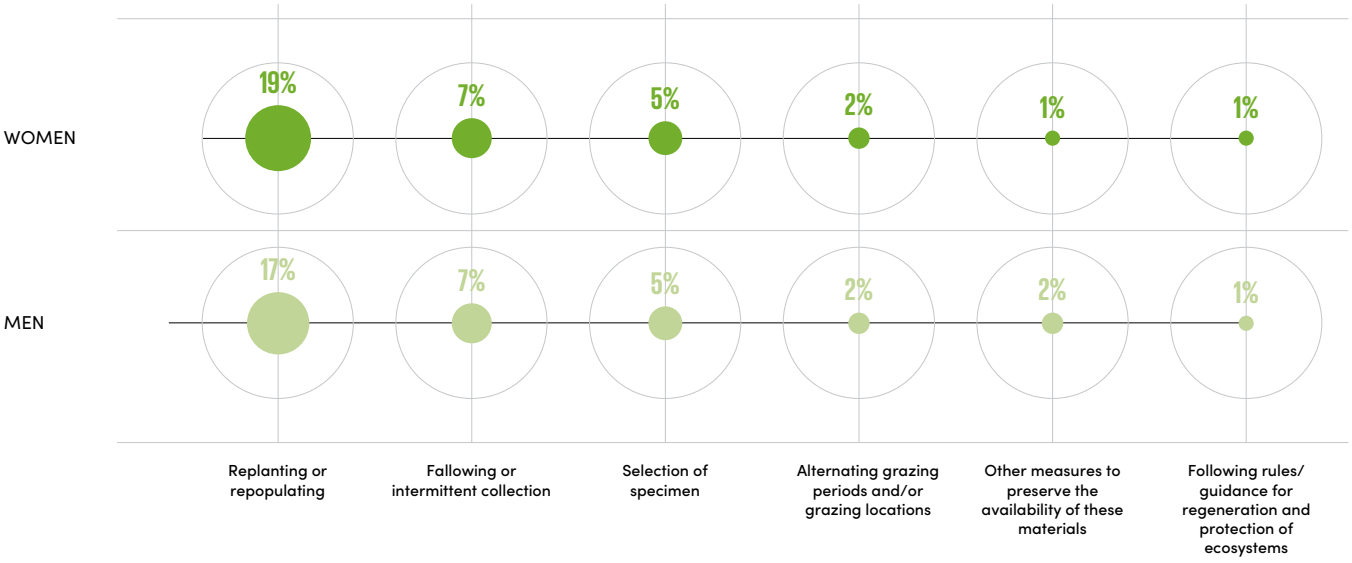
Table 9: Proportion of forests users that rely on wild forests, by use (percentage)

INDICATOR	WOMEN	MEN
Use wild or primary forests	100	100
Harvest edible or non-edible plants	19	14
Harvest animals and/or their products	19	24
Harvest materials for the creation of cultural products	4	2

Note: Using wild forests includes users who rely on these forests for foraging, plant collection or logging, hunting, harvesting of animal products, livestock grazing or collection of materials for cultural products.

Forest products are thus essential for livelihoods and for traditions and cultural practices, but only a few more than one in three people (37 per cent of women and 33 per cent of men) use sustainable practices when extracting products from forests. For instance, only 19 per cent of women and 17 per cent of men replant and repopulate forest areas after harvesting; while only 7 per cent of people practice intermittent collection, and 5 per cent practice specimen selection with conservation in mind (figure 50). Enhancing the use of these measures and promoting practices such as fallowing and alternating grazing periods, which are seldom practiced in Samoa, could enable the regeneration of species, and ultimately promote forest health.

Figure 50: Proportion of the population using wild forests who use sustainable management practices, including traditional knowledge, by sex (percentage)



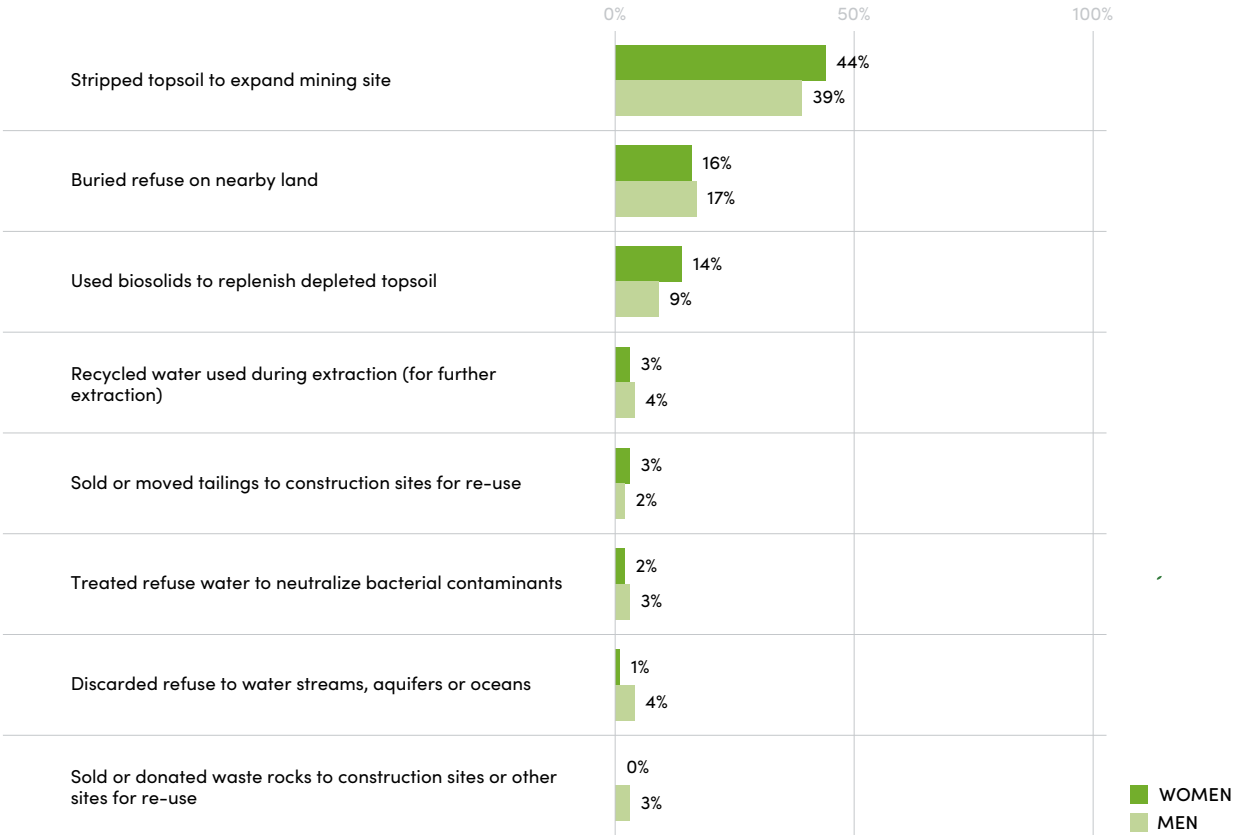
Note: The differences between women and men are not statistically significant at α=0.05 for any category except for replanting or repopulating and other measures to preserve the availability of these materials.

ROUGHLY HALF OF THOSE ENGAGING IN SAND MINING AND QUARRYING APPLY MEASURES TO MITIGATE ENVIRONMENTAL DEGRADATION.

An estimated 6 per cent of women and 14 per cent of men in Samoa engage in sand and coral mining and quarrying.[21] The extraction of sand from rivers, lakes, beaches and the seabed is not uncommon, but can be highly detrimental for ecosystems if not performed carefully. An estimated 30 per cent of women and 26 per cent of men practicing mining and quarrying put in place measures to mitigate environmental degradation: burying refuse on nearby land, was practiced by as many as 17 per cent of those engaged in mining and quarrying; and using biosolids to replenish depleted topsoil, was practiced by 14 per cent of women engaged in mining and quarrying compared to 9 per cent of men (figure 51).

21 These figures differ slightly from those showcased in the Samoa Agricultural Census 2019. This may be due to changes over time, or to the Agricultural Census recording mostly cases of mining and quarrying that happen in more formal settings or at larger scales.

Figure 51: Proportion of the mining population who followed various mining-related practices, by sex (percentage)



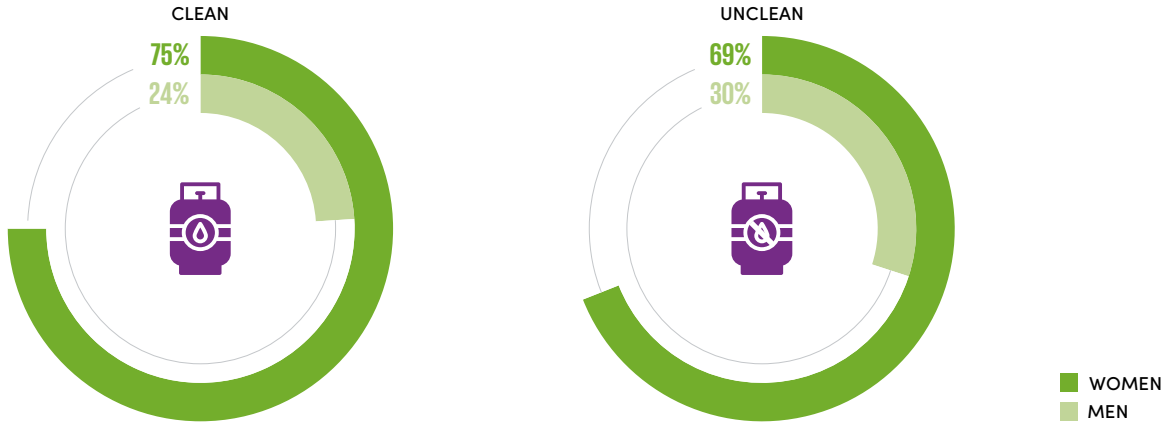
Note: The differences between women and men are not statistically significant at α=0.05 for buried refuse on nearby land.

HOUSEHOLD PRACTICES CONTRIBUTE TO ENVIRONMENTAL CONSERVATION AND DEGRADATION.

The use of various power sources and cooking fuels, and sanitation practices all contribute to environmental degradation at different levels. In Samoa, where almost everyone has access to electricity, the electrical grid is powered mainly by non-renewable sources. According to the International Renewable Energy Agency (IRENA), 67 per cent of the total grid energy supply relies on oil, with the remaining 33 per cent coming from renewables (mostly bioenergy and hydropower/marine energy).[22] As such, household use of electricity contributes to environmental degradation to some extent. Most households benefit from using grid electricity, but among those relying on off-grid power, only 0.2 per cent use solar generators or other renewable energy generators.

For cooking, roughly one in three households (32 per cent) rely on unclean fuels, such as gasoline, kerosene, coal, charcoal, wood, straw or other solid residue, which threaten human health. Women, who are disproportionately in charge of cooking, are overly exposed to the harmful effects of indoor air pollution when unclean fuels are used. In an estimated 75 per cent of households using clean cooking fuels and 69 per cent of households using unclean fuels, women are in charge of cooking (figure 52). When households do not have access to piped gas or electricity for cooking, women and men often have to go and fetch fuels.

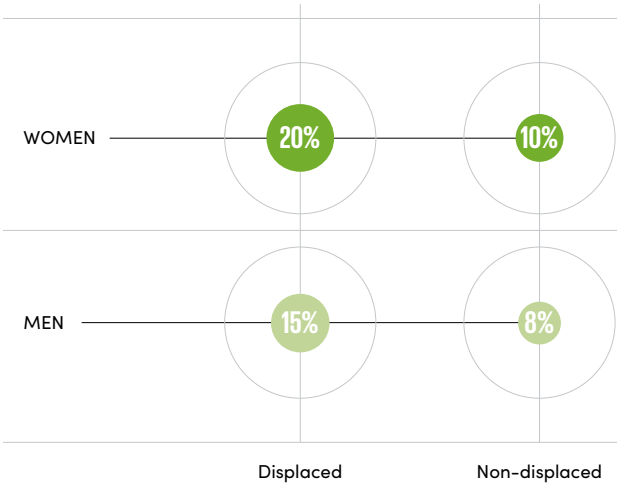
Figure 52: Proportion of households using clean or unclean cooking fuel, by person in charge of cooking (percentage)



22 See https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Oceania/Samoa_Oceania_RE_SP.pdf.

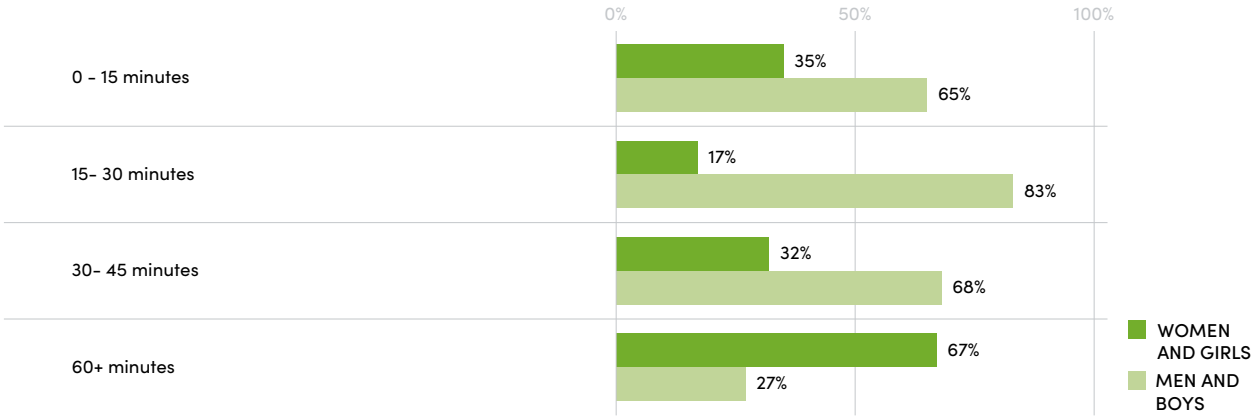
In Samoa, men are more likely than women (64 per cent compared to 32 per cent) to go and collect cooking fuels (figure 53). The use of sustainable forest management practices among those in charge of fuel collection is of utmost importance to preserve ecosystem production and forest health.

Figure 53: Proportion of households by person gathering cooking fuel (percentage)



According to GES data, an estimated 94 per cent of Samoan households drink water piped to their household or plot. Among those that lack water infrastructure at home, the majority rely on rainwater (5 per cent) followed by bottled water. Samoa faces water scarcity, as groundwater is rapidly depleting and aquifers are affected by salt intrusion, which makes it challenging for those without piped water at home to extract water from wells or other sources. The use of rain and bottled water contributes to lower risks of water borne disease, but many people have to fetch bottled water or treat rainwater. Water collection involves an important time burden for those performing this task. Men in Samoa are more likely to take on water collection burdens (figure 54). Relying on bottled water is also associated with plastic pollution and its role in environmental degradation.

Figure 54: Proportion of households and distance to water collection source, by person in charge of water collection (percentage)

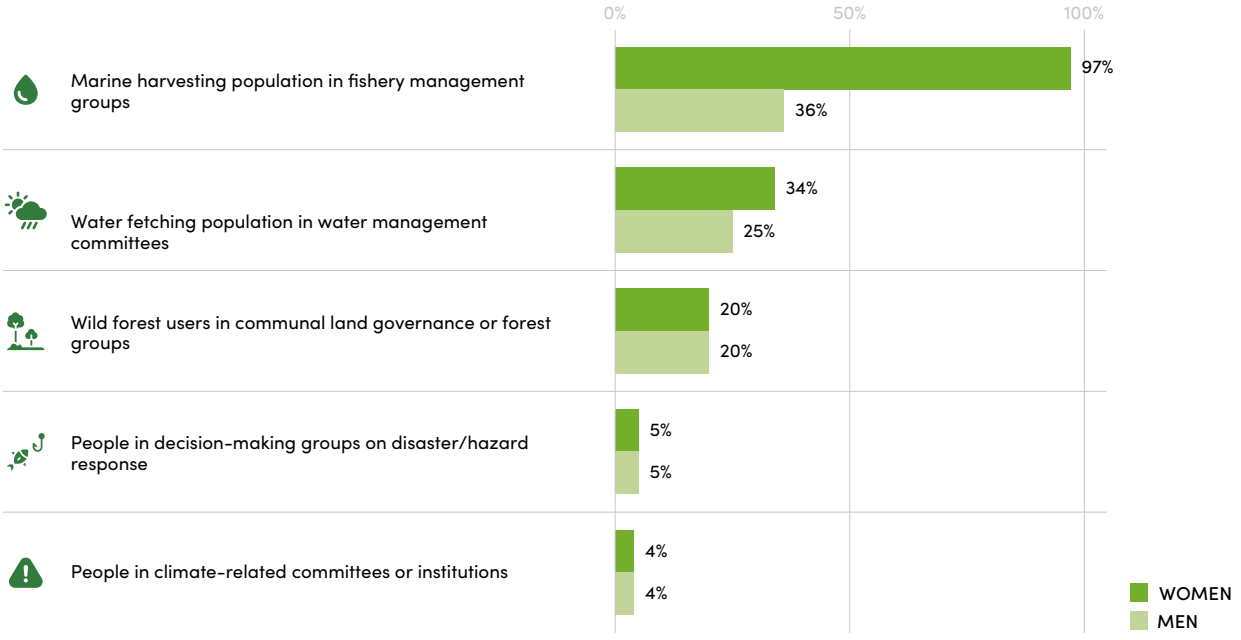


Note: The survey sample only captured two households located 45–60 minutes from the water source. Therefore, the category has been omitted from the chart.

WOMEN IN SAMOA PARTICIPATE ACTIVELY IN THE MANAGEMENT OF FISHERIES, WATER AND OTHER KEY RESOURCES.

Most of the population in Samoa do not participate in climate-related decision-making in institutional settings. Only 4 per cent of people engage in groups discussing climate change and 5 per cent participate in those discussing disaster and hazard response (figure 55). However, people in Samoa engage more actively in discussions pertaining land and water governance, and especially fisheries. In the case of water management committees and fishery management groups, women are more likely than men to engage. As many as one in three women that lack piped water at home participate in water-related decision-making, whether at the local or national level. What is more, almost all women engaging in marine harvesting are also part of fishery management groups. In Samoa, village fisheries management areas are established by the government in consultation with the village fono (assembly), and these are often managed by village communities. The village fono can make village fishery bylaws to conserve, protect, manage, and sustain their village fisheries management area.[23] In addition, many women engage in harvesting seaweed in shallow waters, and selling it for income in local markets. Many of these women engage with related management groups for reef protection and management of marine resources. This is important to ensure natural resource management decisions are in line with the needs of both women and men and contribute to environmental conservation.

Figure 55: Proportion of the population engaging in environmental decision-making, by sex (percentage)



23 SPC, 2024. Echoes of Oceania: Building and sharing community-based fisheries management knowledge in the Pacific. Available from: https://cbfm.spc.int/

Annex 1. List of staff working in the survey

	TEAM 1			TEAM 2	
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2	Loise Nimarota	Enumerator	2	Aliitasi Viali	Enumerator
3	Aliitasi Tavita	Enumerator	3	Fereni Leslie Tofilau	Enumerator
4	Tulipe Lapalapa	Enumerator	4	Pipiimaeleele Natia	Enumerator
5	Faith Ekeroma	Enumerator	5	Aukusitina Taeaonamua	Enumerator
6	Faafetai Fitu	Enumerator	6	Christopher Afiafi	Enumerator
7	Palea Eteuati	Enumerator	7	Anthony Telea	Enumerator
8	Fusipala Coffin	Enumerator	8	Aulo Aumau	Enumerator
9	Iose Tagaloa	Driver	9	Luteru Logoialii	Driver

	TEAM 3			TEAM 4	
	FULL NAME	ROLE		FULL NAME	ROLE
1	**Kaisarina Moananu**	**Supervisor**	1	**Poinsettia Epati**	**Supervisor**
2	Talaulapeta Romeni	Enumerator	2	Osana Pomare	Enumerator
3	Maima Tomane	Enumerator	3	Pamata Tu'ulima	Enumerator
4	Fuataiolemauga Tiuga	Enumerator	4	Dulcie Aukusitino	Enumerator
5	Sela Tausaga Leutogi	Enumerator	5	Fafa'i Melody Afele	Enumerator
6	Imakulata Sula	Enumerator	6	Esther Panapa	Enumerator
7	Tapu Lopa'u	Enumerator	7	David Uaine	Enumerator
8	Elisha Elisaia	Enumerator	8	Eliu Eliu	Enumerator
9	Fana Tapu Lopa'u	Driver	9	Tofiga Lualua	Driver

	TEAM 5			TEAM 6	
	FULL NAME	ROLE		FULL NAME	ROLE
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2	Eseneiaso Memea	Enumerator	2	Naima Sausaulele	Enumerator
3	Filifili Lotu	Enumerator	3	Nerisa Sanele	Enumerator
4	Helen Fruean	Enumerator	4	Tautala Kasio	Enumerator
5	Vaoiva Sausaulele	Enumerator	5	Miracle Toloa	Enumerator
6	Earcy Lauilo	Enumerator	6	Ruth Solialofi Luatele	Enumerator
7	Gerickson Taulealo	Enumerator	7	Potuna Maimau	Enumerator
8	Fatu Amosa	Enumerator	8	Tasman Ioka	Enumerator
9	Andrew Nona	Driver	9	Eteuati Samu	Driver

	TEAM 7	
	FULL NAME	ROLE
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2	Anya Lemau Perenise	Enumerator
3	Jaxlene Malaga	Enumerator
4	Maria Sokimi	Enumerator
5	Panoama Iakopo Va	Enumerator
6	Shalom Sagaga	Enumerator
7	Natapu Paaa	Enumerator
8	Anthony Mitchell	Enumerator
9	Sinapati Faalele	Driver

	TEAM 8	
	FULL NAME	ROLE
1	**Pepe Vaiau**	**Supervisor**
2	Queenie Alesana	Enumerator
3	Lise Faaolataga	Enumerator
4	Fati Avefeau	Enumerator
5	Faasili Tua	Enumerator
6	Liva Pomare	Enumerator
7	Tyson Leota	Enumerator
8	Selepa Siliva	Enumerator
9	Fonofaavae Asiasiga	Driver

	TEAM 9	
	FULL NAME	ROLE
1	**Meipo Lomiga**	**Supervisor**
2	Matauaina Fuatia	Enumerator
3	Iva Aleipata	Enumerator
4	Kapeneta Tamati	Enumerator
5	Suria Isopo	Enumerator
6	Falaniko Vaa Faitalia	Enumerator
7	Fauula Vini	Enumerator
8	Jason Tioa	Enumerator
9	Andrew Su'a	Driver