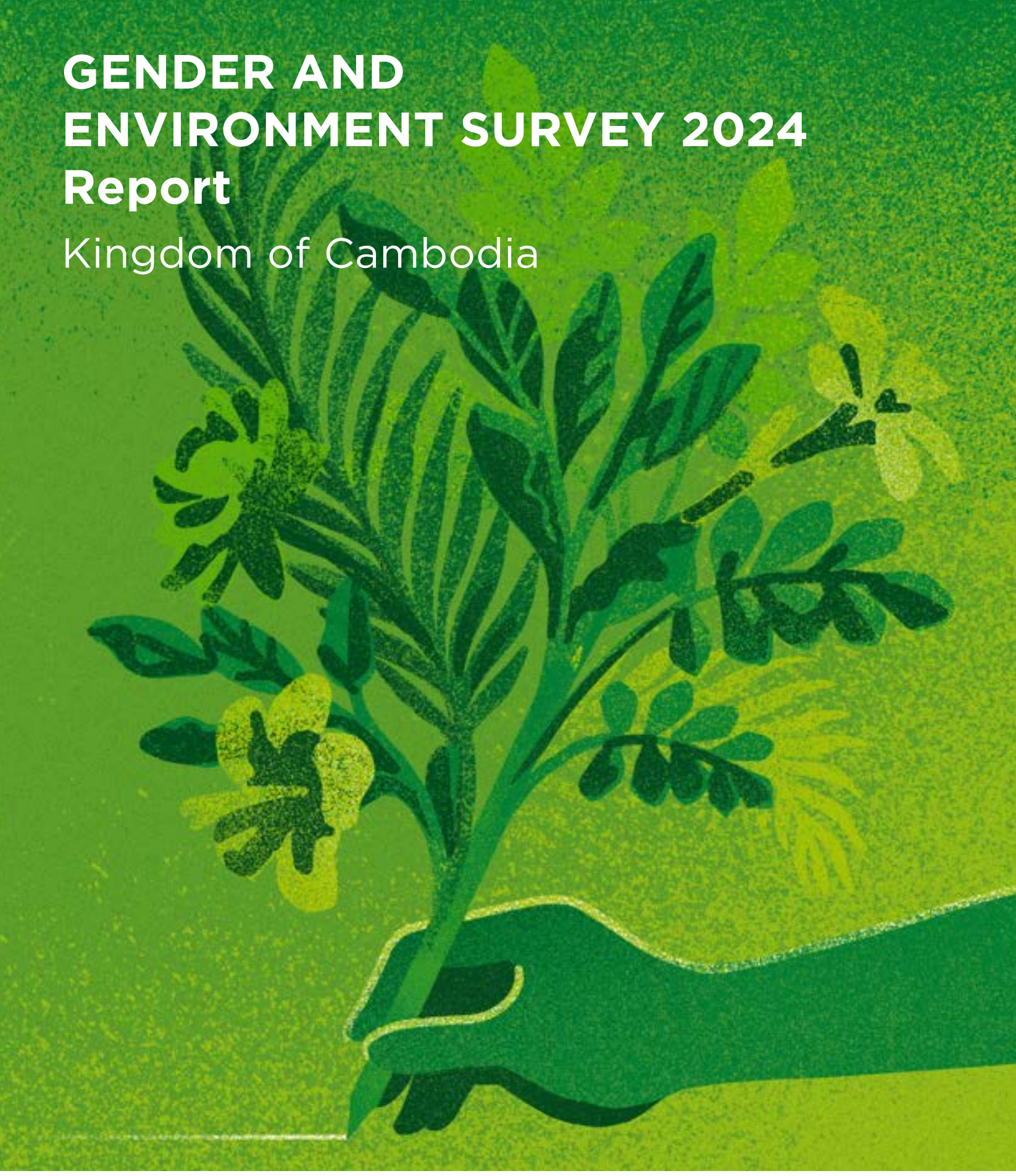
GENDER AND ENVIRONMENT SURVEY 2024 Report

Kingdom of Cambodia



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National Institute of Statistics

Aknowledgements

The Cambodia Gender and Environment Survey (2024) was implemented by the National Institute of Statistics of Cambodia (NIS), under the executive leadership of H.E. Try Rithea, Director of National Institute of Statistics. The survey was managed by Mr. Sok Kosal, Deputy Director of National Institute of Statistics who oversaw its planning, operations and roll-out. Ms. Chorn Ratha, Deputy Director-General of the Department of Social Development and Ms. Te Vouchlim Director of Planing and Statistics of the Ministry of Women's affairs, Mr. Ngorn Lyhourng, Deputy Head of the Office, Mr. Song Kea, Ministry of Agriculture, Forestry, and Fisheries and Ms. Kea Neaty, Deputy Director of the Department of Heritage Areas of the Ministry of Environment, who provided key guidance and advice.

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We are also grateful to the UN Women team, under the leadership of Sara Duerto Valero, who conceptualized the survey, designed guidance materials and financed the survey under the Women Count programme. Sophea Khun, Rotvatey Sovann and Chhun Ly Chhon from the UN Women Cambodia Office provided essential guidance and coordination for the survey planning. Sara Duerto Valero, Tsz Yu Chang, Sanghyun Jeon, Sneha Kaul and Kosal Sok drafted this survey report. Valentina Stoevska, Sangita Dubey and Maria Holtsberg provided important technical guidance. Mary Ann Perkins edited the report, and Blossom.it designed the report. The NIS and UN Women teams are grateful to the Governments of Australia, France, Ireland and Sweden, as well as to the Bill and Melinda Gates Foundation, for their financial support.

Finally, we wish to thank all the staff of the National Institute of Statistics, the Provincial officers, Village chiefs, field supervisors and enumerators for their dedication and hard work, which enabled us produce timely and quality data. Importantly, our acknowledgements would be incomplete if we failed to thank the women and men in Cambodia who spared their time to respond to the survey questions and provided the much-needed information without hesitation.

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Acronyms

CAPI	Computer-assisted Personal Interviewing
GES	Gender and Environment Survey
NIS	National Institute of Statistics of Cambodia
PHC	Population and Housing Census
TVET	Technical and Vocational Education and Training
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women

Introduction

The 2024 Gender and Environment Survey (GES) Cambodia is a comprehensive national household survey exploring women's and men's the multidimensional relationship with the environment in the Kingdom of Cambodia. 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 economic activities and livelihoods.

The 2024 GES Cambodia was implemented by the National Institute of Statistics of Cambodia (NIS) 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 for Measuring the Nexus between Gender and Environment,[1] and adapted for the Cambodian context in consultation with national stakeholders from the National Institute of Statistics, Ministry of Planning, National Committee for Disaster Management, Ministry of Women's Affairs, Ministry of Labour and Vocational Training, Ministry of Mines and Energy, Ministry of Agriculture, Forestry and Fisheries, Ministry of Economy and Finance, as well as civil society groups, including the Landesa, Cambodia Development Resource Institute and HEKS/EPER (Swiss Church Aid). Other international organizations and stakeholders that joined the consultation also include Cambodia Australia Partnership for Resilient Economic Development, Deutsche Gesellschaft für Internationale Zusammenarbeit, Plan International, International Organization for Migration, Asian Development Bank and World Food Programme. Estimates from this survey are expected to provide sex-disaggregated data for national and global monitoring frameworks, including the Five-Year Strategic Plan for Promoting Gender Equality and Empowering Women and Girls, the 2030 Agenda for Sustainable Development and the Sendai Framework for Disaster Risk Reduction, among others.

The data collection and analysis took place following a series of extreme heat and drought episodes in multiple parts of the country. In 2024, Cambodia recorded the hottest temperature registered in 170 years. The high temperatures and scant rainfall triggered a months-long drought, which had important economic, environmental and health effects across the country. The findings reflect on the vulnerability of the country to disaster events such as drought and heat episodes, severe thunderstorms and strong winds, as well as the long-term impacts of climate change and the individual experiences of women and men who are confronted daily with these impacts.

OBJECTIVE AND SURVEY SCOPE

The main objective of the 2024 GES Cambodia is to generate nationally representative sex-disaggregated statistics across several thematic areas. These areas include household-level data on housing characteristics and individual-level data on numerous environmental topics for male and female respondents. The individual-level data covers personal attributes, exposure to and experience of disasters and hazards, the impact of climate change, agriculture and land use, engagement in environment-related livelihoods, employment in the green economy, participation in environmental decision-making, asset ownership and mobility. The 2024 GES Cambodia largely adheres to international guidelines, as outlined in the Model Questionnaire for *Measuring the Nexus between Gender and Environment*, with adaptations specific to Cambodia, where relevant.

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

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	Employment in the green economy	Individual
7	Agriculture and land use	Individual
8	Environment-related livelihoods	Individual
9	Asset ownership	Individual
10	Decision making and mobility	Individual

GEOGRAPHICAL SCOPE

The sampling design for the 2024 Gender and Environment Survey (GES) in Cambodia used a stratified multistage probability approach to ensure representation across the national, urban, and rural levels, as well as the country's four main geographical zones: The Plains, Tonle Sap region, Coastal areas, and Plateau and Mountainous region. These zones reflect Cambodia's ecological and climatic diversity, allowing the survey to capture regional differences in vulnerability to climate change and disasters. Within each zone, a multistage selection process was used—beginning with districts or communes and ending with randomly selected households and individuals—to ensure reliable, representative data for region-specific policy and planning.

Within each geographic region, the 2024 GES Cambodia considered all regular household units as eligible and targeted individual-level interviews with adult household members ages 15 years or older.

REFERENCE PERIOD

Field data collection for the 2024 GES Cambodia occurred from 2 August to 2 October 2024. 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 those associated with slow-onset processes like climate change, which typically have a lifetime reference period.

SAMPLING PROCEDURE

The Cambodia Gender and Environment Survey 2024 (CGES) was conducted nationwide for the first time in the country. The survey is designed to provide nationally representative data on gender and environmental issues, with results disaggregated by urban and rural areas and by each of the four regional zones. The sampling design uses a multi-stage approach. Communes are selected as Primary Sampling Units (PSUs), with 250 selected in total. From each selected commune, two villages are chosen using equal probability, forming the Secondary Sampling Units (SSUs), resulting in 500 villages. In the Tertiary stage, 10 households were randomly selected from

each selected census unit. In the Fourth stage, one female adult and one male adult (age 15 years or older) were randomly selected from the household roster to respond to the survey. In single-adult households, only one person responded to the survey. Altogether, the survey was administered to 4,961 women and 4,843 men.

SAMPLING FRAME

The survey utilized a sampling frame based on listing of communes in the 2019 General Population Census of Cambodia (2019 GPCC), with no specific geographic areas being excluded. Information in the sampling frame included geographic codes relating to the location of the household and the name of the head of household. A summary of the survey sample is provided in table 1.

Within each geographic region, the 2024 GES Cambodia considered all regular household units as eligible and targeted individual-level interviews with adult household members ages 15 years or older.

At the time of interview, one adult man and one adult woman were chosen at random from the household demographic table gathered during the 2024 GES Cambodia survey interview. Before this selection, the list of household members was narrowed down to only include adults (age 15 years and older), grouped by sex. One woman respondent was randomly selected from the adult women, and one man respondent was randomly selected from the adult men. In instances where there were no eligible respondents within a specific subgroup, no interviews were conducted. In single-adult households, only one person was selected for an interview, regardless of their sex.

Table 1: Summary of the 2024 GES Cambodia sample set

			2024 GES CAMBODIA			
CODE	PROVINCE	2019 GENERAL POPULATION CENSUS	SAMPLE VILLAGES	SAMPLE SIZE (HOUSEHOLDS)	WOMEN INTERVIEWED	MEN INTERVIEWED
1	Banteay Meanchey	189,610	22	220	219	208
2	Battambang	227,280	26	260	260	256
3	Kampong Cham	217,258	16	160	160	159
4	Kampong Chhnang	126,338	14	140	140	139
5	Kampong Speu	195,899	54	540	540	537
6	Kampong Thom	160,869	18	180	179	180
7	Kampot	143,435	78	780	764	743
8	Kandal	266,276	18	180	180	175
9	Koh Kong	28,032	14	140	140	140

			2024 GES CAMBODIA			
CODE	PROVINCE	2019 GENERAL POPULATION CENSUS	SAMPLE VILLAGES	SAMPLE SIZE (HOUSEHOLDS)	WOMEN INTERVIEWED	MEN INTERVIEWED
10	Kratie	86,224	24	140	140	140
11	Mondul Kiri	20,409	6	240	237	216
12	Phnom Penh	499,521	36	360	356	326
13	Preah Vihear	56,738	14	160	160	160
14	Prey Veng	267,058	20	200	200	198
15	Pursat	103,866	12	120	119	114
16	Ratanak Kiri	49,741	14	140	139	140
17	Siemreap	224,720	26	260	260	260
18	Preah Sihanouk	47,388	26	260	260	259
19	Stung Treng	35,842	10	100	98	92
20	Svay Rieng	132,578	12	100	100	98
21	Takeo	208,801	14	140	132	125
22	Otdar Meanchey	60,886	6	60	59	59
23	Kep	9,613	6	60	59	60
24	Pailin	17,178	2	20	20	20
25	Tboung Khmum	179,069	12	120	120	119
	Total	**3,554,629**	**500**	**5,000**	**4,961**	**4,843**

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 2024 GES Cambodia weights are corrected for non-response and calibrated using the number of private households and individuals by region from the GPCC 2019.

FIELD OPERATIONS

All data in the 2024 GES Cambodia were collected via computer-assisted personal interviews (CAPI), using the World Bank's Survey Solutions software application, by a group of trained enumerators and supervisors. Supervisors were recruited internally by NIS (they were NIS staff). Enumerators were recruited externally by NIS, although many had previous experience enumerating surveys for NIS. Before the data collection period, all supervisors and enumerators completed a two-week training session covering the concepts, definitions and field procedures.

Prior to data collection, letters were sent by NIS, in coordination with local authorities, to the selected households, to ensure all household members stayed at home on the scheduled day of interview. As a result, household revisits were infrequent, and response rates are high. However, this may result in underestimation of the proportion of people displaced as a result of disasters or climate change in select locations, who would have not received the interview notification if they moved away from their original dwelling location.

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 using R statistical software at the national level and distributed to each field team, providing feedback on the interview status, pending interview appointments and major data inconsistencies for review. Data collection was facilitated by a server purchased by NIS and hosted by Amazon Web Services.

The survey manager, Mr. Kosal Sok of NIS, led quality assurance and oversaw the team of supervisors and 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 2024 GES Cambodia.

In 2024 GES Cambodia, the household response rate was 100 per cent. While enumerators were instructed to track down households who relocated due to disaster events, some households could not be contacted after repeat visits, and some dwellings were found to be no longer occupied.

DATA ANALYSIS

Data analysis for the 2024 GES Cambodia was performed using R and STATA statistical software. After data cleaning, validation, and the application of sampling weights, the analysis focused on generating accurate and regionally representative survey estimates. This included both descriptive and inferential statistical techniques to assess the impacts of climate change, disasters and environmental degradation across different geographical zones and demographic groups.

To ensure the reliability and robustness of the findings, the analysis incorporated internal coherence checks to verify consistency within the data, and external coherence checks to compare survey results with external sources, such as national statistics and existing research. These checks helped identify potential errors or inconsistencies that could affect the quality of the results.

Additionally, data were weighted to account for the complex survey design, ensuring that the findings were representative of the population at national and regional levels. Specific attention was given to how gender and environmental factors intersect, providing insights into the differential impacts of climate change and disasters on vulnerable groups.

GENERAL CHARACTERISTICS OF THE POPULATION

According to the 2019 GPCC of Cambodia, there are 3,594,031 households,[2] comprising a total population of 15,552,211 individuals (49 per cent male and 51 per cent female).[3] The general characteristics of the population are reflected in Infographic 1. These are useful to understand many of the findings presented later in this report.

Infographic 1: General characteristics of the population in Cambodia

Source: Cambodia 2019 Population and Housing Census, Final report, except for the higher education and TVET estimates (Unesco Institute for Statistics), as more recent estimates were available. In this figure, higher education refers to tertiary education.

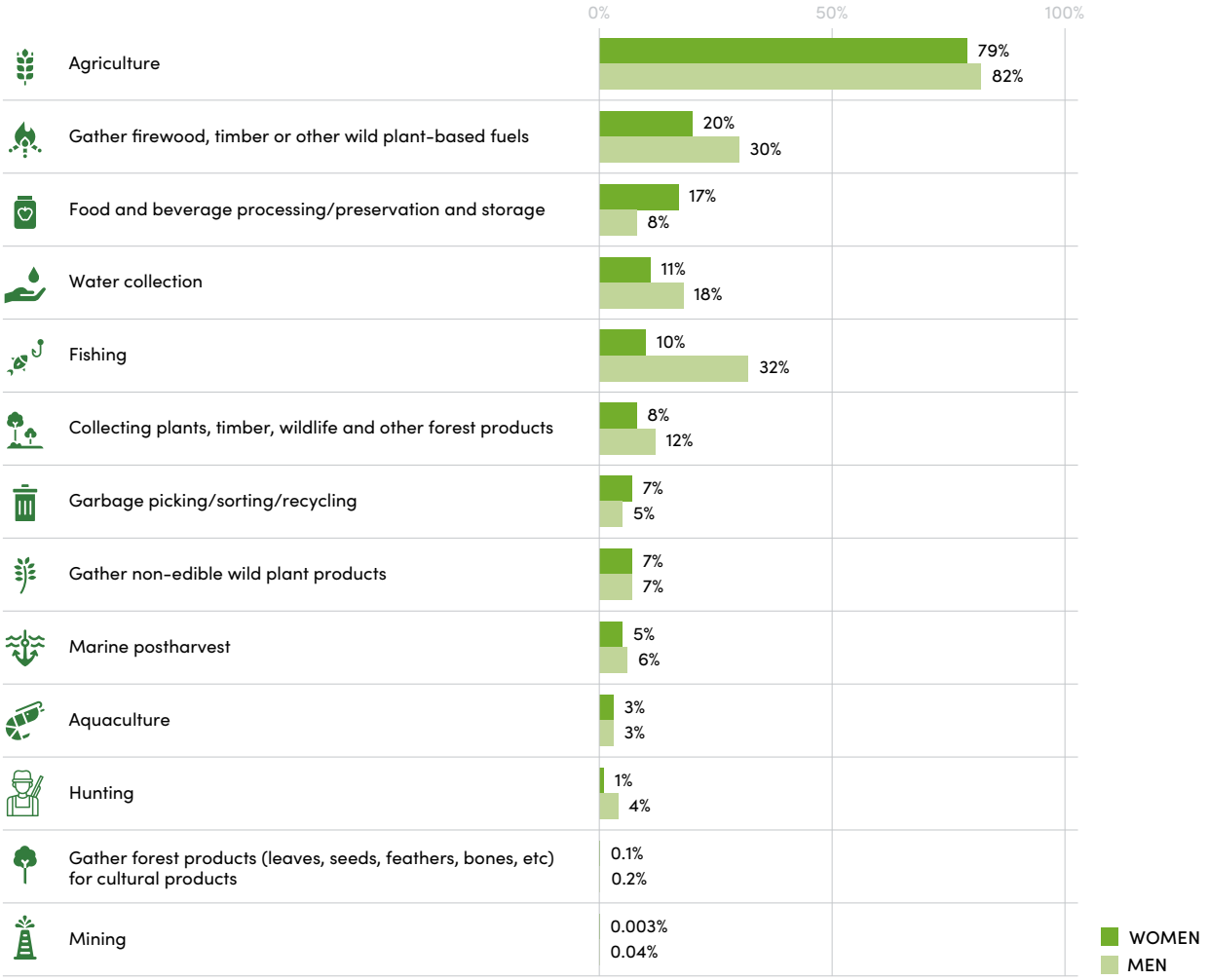
The bulk of the households in Cambodia (30 per cent) are made up of two adults and children. An estimated 2 per cent of households are women living alone with children, compared to 0.3 per cent of households composed of men living alone with children. Among these lone adults, women are also more likely to have a larger number of children under their care (1.46 on average, compared to 1.15 in the case of men).

A large share of the Cambodian population depends on the environment for their livelihoods. Agriculture, including animal husbandry, is the most common environment-related livelihood among both women and men, with roughly 8 in every 10 Cambodians practicing agriculture either for income generation, subsistence, tradition, leisure or any other reasons. Beyond agriculture, many men engage in fishing, while women are the most likely to engage in food and beverage processing, preservation and storage.

2 The 2019 Population and Housing Census of Cambodia categorizes households into five types: Regular households, Institutional households, Homeless households, Boat households and Transient households. See tables 10.2.1 and 10.2.2.

3 Ibid. See table 2.1.1.

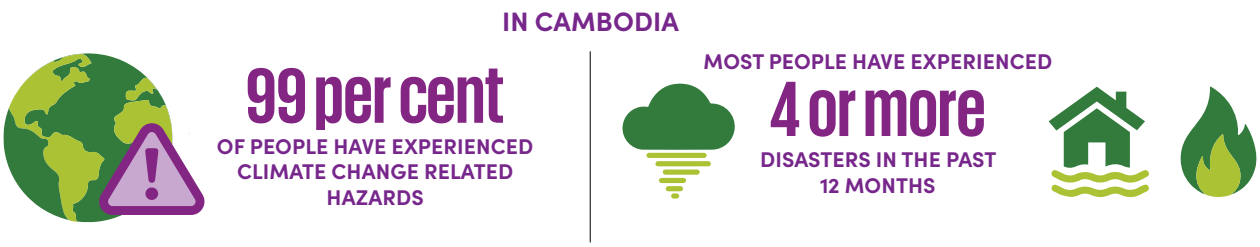
Figure 1: Proportion of adult population engaged in environment-related livelihoods, by sex (percentage)



Note: Differences between women and men are not statistically significant for the categories Aquaculture and Non-edible wild plant products operations.

Almost all survey respondents had experienced climate change and at least one disaster. Most individuals had experienced at least four disasters.

Infographic 2: Exposure to climate hazards by the Cambodia population



Note: According to UNDRR, a hazard is 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. Hazards may be natural, anthropogenic or socionatural in origin. Natural hazards are predominantly associated with natural processes and phenomena. Anthropogenic hazards, or human-induced hazards, are induced entirely or predominantly by human activities and choices. Socionatural hazards are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change. In this report, references to climate change related hazards refer to slow-onset natural, anthropogenic or socio-natural hazards, while disasters refer to rapid onset natural, anthropogenic or socio-natural hazards that caused substantial damage.

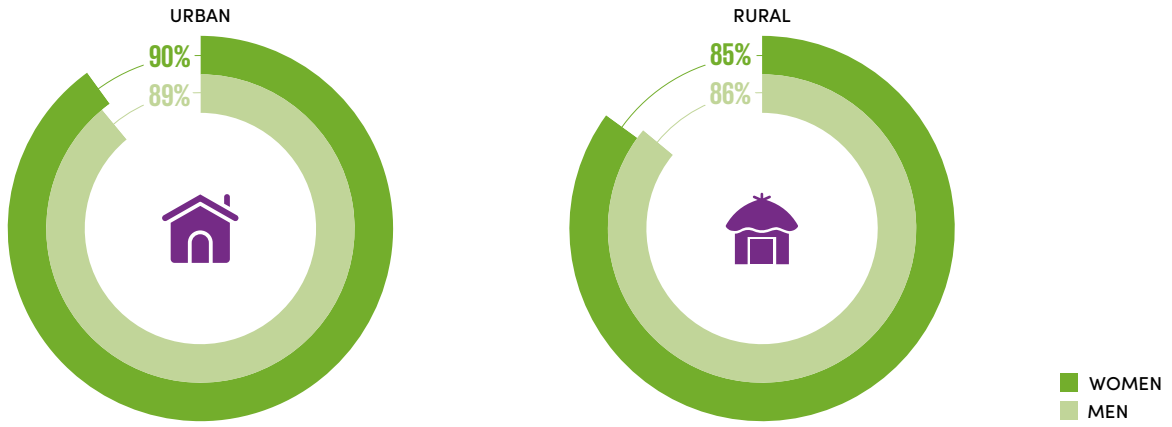
Findings

Section I. Disaster exposure, preparedness and consequences

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

An estimated 87 per cent of the population of Cambodia live in areas with high environmental risk (figure 2). Some of the most common hazardous sites near people's dwellings include high vehicle traffic areas, burning or cremation facilities and medium- to large-scale agricultural plots that make use of pesticides and other harmful substances, among others. This renders people highly vulnerable to disasters and other harmful events. People in urban areas are the most exposed, with 90 per cent of them living in risky areas. Although almost no differences in location-based exposure were identified between women and men, women's capacities to cope with hazards are generally lower as they are less likely than men to own productive assets, 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)



Note: Living near a high environmental risk refers to living within 2km or less than a 30-minute walk to sites that can pose a risk to human health and safety via disproportionate exposure to hazards. These include sea shores, industrial production facilities, artisanal production facilities that use dyes, paints, polishes or other chemicals, fracking locations, extractive sites, high-vehicle traffic areas, dumping sites, brownfield land, power plants or high-voltage power lines, burning or cremation sites, open defecation areas, agricultural plots that make use of pesticides, communal septic systems, underground waste storage spaces, industrial-level animal production facilities, storage facilities for chemicals, batteries or other potentially harmful items, lowlands, swamps or other flood-prone areas, active volcanos, fault lines or earthquake prone areas, cyclone, hurricane or high wind prone areas, deviated river land, lake shores, river banks, lake shores, and deforested areas or other areas prone to drought.

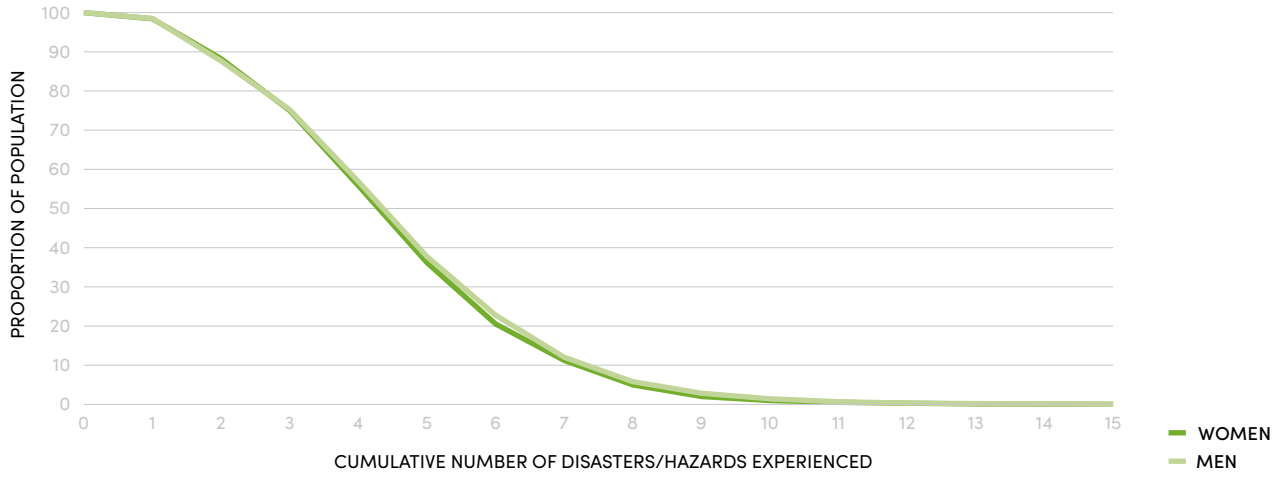
MOST PEOPLE IN CAMBODIA EXPERIENCED A DISASTER IN THE PAST 12 MONTHS, AND MANY EXPERIENCED MULTIPLE DISASTERS.

At the end of 2024, almost everyone in Cambodia had experienced at least one disaster in the past 12 months (figure 3). What's more, as many as 75 per cent of the population had experienced three or more disasters or related hazards. Extreme heat and droughts affected the livelihoods and personal health of many. In April, unusually high temperatures (42.8°C) were registered in the town of Preah Vihear and in Svay Leu District.[4] The following month, Phnom Phen also saw oppressive heat, with a peak high temperature of 42.2°C on 1 May, after more than 40 consecutive days with highs reaching more than 37°C. The rapid urbanization taking place across the country, including around Phnom Pehn, resulted in urban temperatures 1.3°C higher than suburban areas. These heat events were often accompanied by drought episodes.

In June 2024, satellite images[5] showed a water stressed landscape around the Tonle Sap Lake, with water displaying a turbid light blue, likely due to increasing sediment as water levels dropped. The repeated drought episodes severely affected agricultural yields, including damaging the production of Kampot pepper.

Severe thunderstorms and lightning strikes also affected people's safety and hampered access to some essential services in the 12 months prior to the survey. In many cases, these were accompanied by extreme wind episodes. For instance, in November, tropical cyclone Trami affected Ratana Kiri and Stung Treng. Throughout the year, there were numerous fatal lightning strikes in various locations. The GES survey highlighted that Kandal, Kampong Cham, Phnom Penh, Kampong Speu and Kampong Chhang saw the largest shares of population affected by lightning strikes.

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

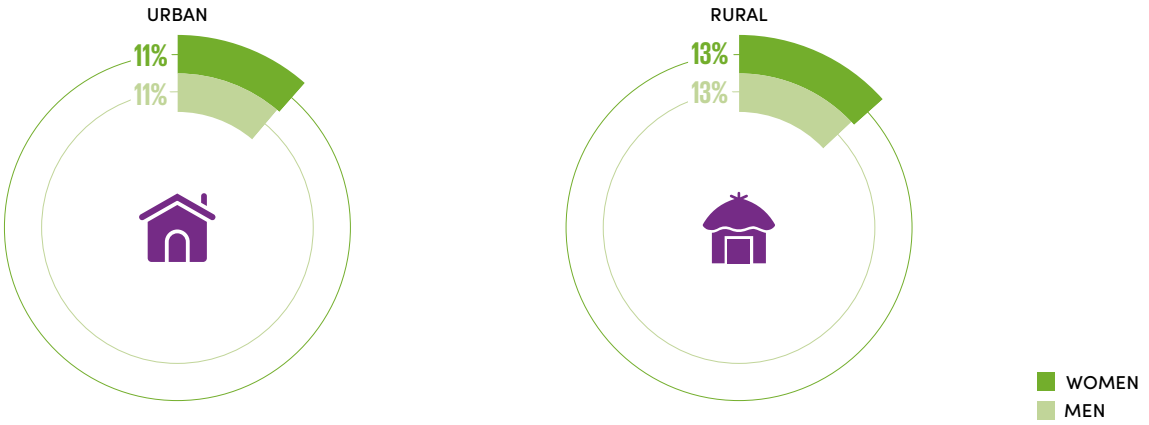


4 See historical temperature records at World Bank.
5 See NASA-MODIS.

DISASTERS PRESENTED BARRIERS TO ACCESS HEALTH AND HYGIENE, ESPECIALLY FOR DISPLACED WOMEN.

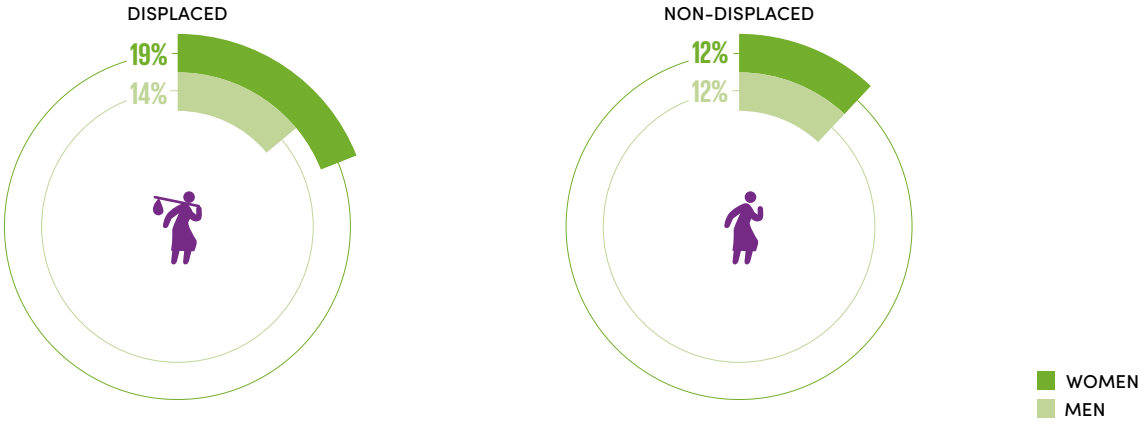
Disasters resulted in almost one in seven people experiencing barriers to access medical care and hygiene products, for instance as a result of road closures, market unavailability or affordability issues. People in rural areas encountered additional challenges, with as many as 13 per cent of people noting these challenges, compared to 11 per cent in urban areas (figure 4). For those who were displaced by disasters, whether they were temporarily evacuated or permanently changed their residence, these barriers were even steeper. An estimated 19 per cent of displaced women and 14 per cent of displaced men had difficulty procuring medical care and hygiene products (figure 5). Among those who were displaced, single adult women were more likely than single adult men to flee with children, which likely posed additional challenges to overcome barriers to access medical care and hygiene products (all displaced women who fled without a partner brought children along, compared to none of the displaced men who fled without a partner). The lack of female hygiene and specialized medical care in displacement settings, including for pregnant women, likely contributed to the barriers faced.

Figure 4: Proportion of the population 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 the 2024 GES Cambodia, 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. The differences between women and men are not statistically significant at $\alpha=0.05$.

Figure 5: Proportion of the population 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)

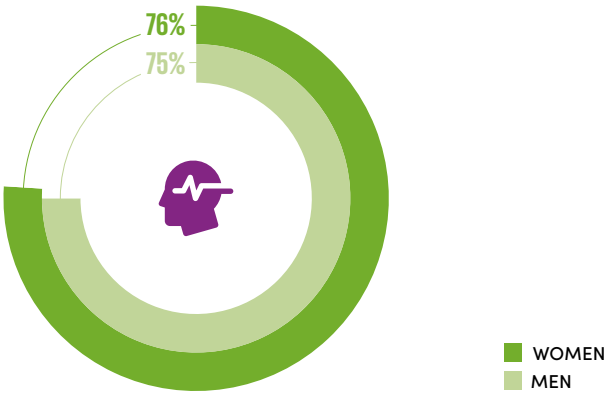


Note: The differences between women and men are not statistically significant at α=0.05 for those non-displaced.

ALMOST 8 IN 10 PEOPLE EXPERIENCED MENTAL HEALTH ISSUES AS A RESULT OF DISASTERS.

When exposed to disasters or other hazards, individuals may experience mental health issues such as stress reactions, grief, depression, post-traumatic stress disorder (PTSD), or anxiety, including related to uncertainties about meeting basic needs for food, water, or medical care. In Cambodia, as many as 76 per cent of women and 75 per cent of men exposed to disasters and related hazards experienced such feelings (figure 6). Hazards are known to affect women and men differently. While the overrepresentation of women in informal employment and overall barriers to women's asset ownership render them more vulnerable and ill-equipped to cope with the effects of disasters on their livelihoods; men's disproportionate engagement in search and rescue operations puts their lives at risk. Further, women typically bear the burden of caring for those who are ill or injured as a result of disasters. The disasters in Cambodia in 2024 caused multiple injuries and illnesses. For instance, an estimated 0.9 per cent of people experiencing floods reported related illnesses as a result, while 0.4 per cent of women and 0.3 per cent of men contracted illness as a result of acid rain. Floods also left numerous injured in 2024, with women's likelihood of injury almost doubling that of men.

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, WITH WOMEN SEEING DISPROPORTIONATE EFFECTS IN THEIR CROPS AND LIVESTOCK.

Since many people in Cambodia rely largely on environment-related activities as a source of income, the 2024 disasters had devastating effects for people's livelihoods. As many as 59 per cent of women and 44 per cent of men noted that the crops they grow were damaged or destroyed by disasters and related hazards, and more than 35 per cent of women and 26 per cent of men raising livestock saw their animals contracting serious illness or dying as a result of disasters. Women were more likely to see their crops and livestock affected overall (figure 7), as they engage in smaller agricultural operations compared to men, and are less likely to use pesticides, growth promoters and other safeguards. Women are also less likely to own financial assets that could help them insure their operations or put in place other protective measures. Similarly, they typically own and raise fewer and smaller animals than men, and invest less in livestock infrastructure, medication or vaccines.

Men, however, were more likely to note that their personal income had decreased as a result of disasters or exposure to hazards (41 per cent women, 43 per cent men). This is partly because men engage more in industrial crop production and other forms of large-scale agricultural operations for pay or profit. As a result, men in rural areas were the most likely to lose their income (46 per cent) although as many as 45 per cent of women in rural areas noticed income losses as well (table 2).

Despite these income losses, women, especially those practicing agriculture or raising livestock, may have suffered the consequences more substantially than men as they are less likely to diversify their income, and thus more reliant on environmental resources to subsist: for 44 per cent of women whose crops were damaged or destroyed, these activities were their main source of income, compared to 34 per cent of men (figure 8). To cope with income losses, people may turn to asking for loans or shifting the focus of their livelihoods, for instance, by purchasing climate resilient seeds, or flood proofing animal shelters. Because women overall own assets of lower value and are less likely to have access to finance, their capacity to cope and shift may be more limited. For instance, women in Cambodia are less likely than men to own ploughs and other large agricultural equipment. They are also less likely to own large fishing nets or motorized boats which they could use as collateral for accessing loans (see figures 72 and 73).

Among all hazards, extreme heat events and droughts were the most likely disasters to cause damage to crops or livestock, while extreme heat drove the most job and income losses. The multiple disasters that affected the country in 2024 left an additional 4 per cent of people unemployed, and many more had to switch jobs as a result. Severe droughts prompted job and income losses for the many people engaged in the production of cash crops, such as rice, rubber, cassava, maize and soybeans, which are widespread in Cambodia. Similarly, extreme winds and thunderstorms resulted in road closures and health-related hazards associated with outdoor exposure to thunderbolts and acid rain. The domestic and care work burdens exacerbated by disasters, such as the need to clean flooded areas or to care for those injured or sick, may all have worsened job and income losses. These losses were largest among rural populations.

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

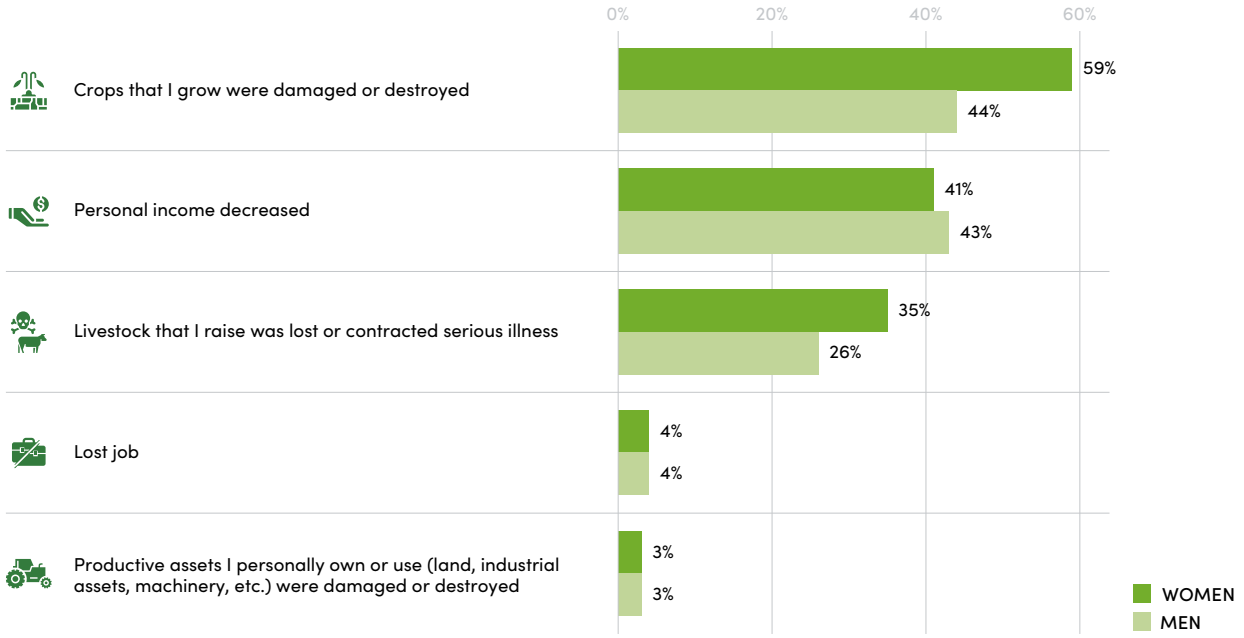


Figure 8: Proportion of the population whose crops and livestock were damaged or destroyed for whom these were their main source of income, by sex (percentage)

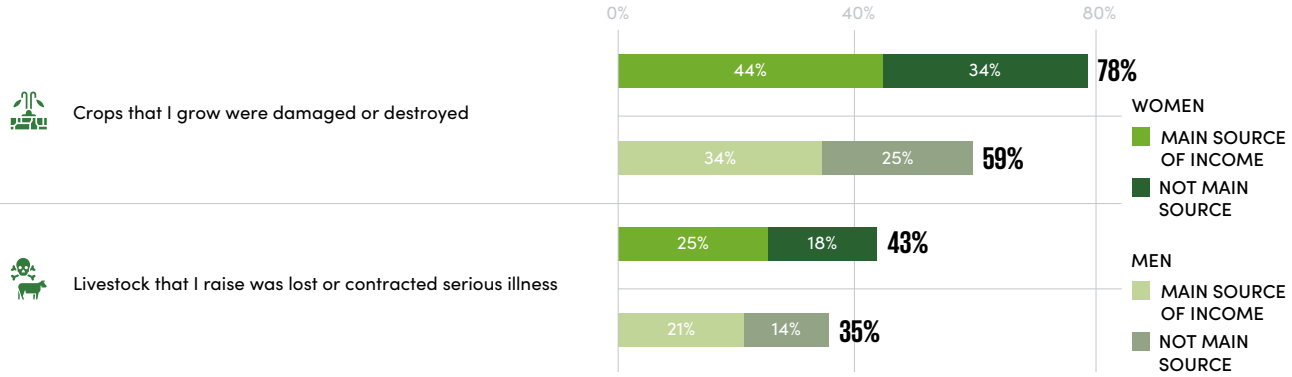


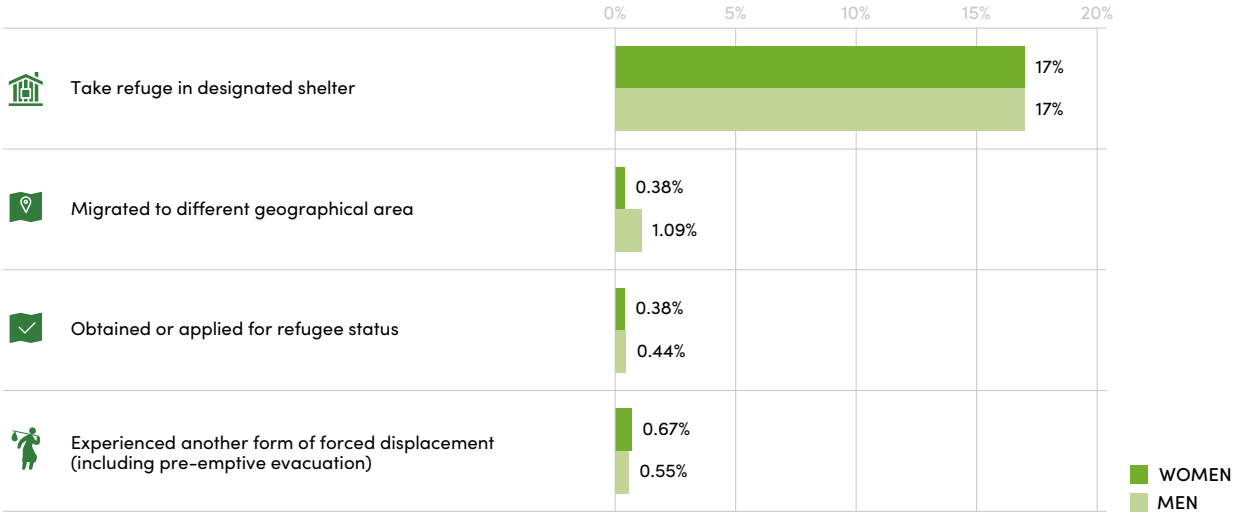
Table 2: Proportion of people who experienced income losses as a result of disasters, by sex, location, formality and age (percentage)

	URBAN	RURAL	FORMAL JOB	INFORMAL JOB	UNDER 30 YEARS OLD	30 YEARS OLD AND OVER
Women	35	45	38	46	36	42
Men	38	46	30	49	37	44

MULTIPLE DISASTERS IN CAMBODIA IN 2024 DISPLACED MANY WOMEN AND MEN.

The droughts and extreme heat and wind episodes that hit Cambodia in 2024 caused widespread destruction. As many as 11 per cent of people saw damage in their dwellings, largely as a result of extreme heat, and roughly 3 per cent of women and 2 per cent of men noted their homes were destroyed (figure 12, see further below). Damage to or destruction of homes compounded by the loss of livelihoods may have prompted some to migrate. Temporary displacement (including pre-emptive evacuation) affected more than 17 per cent of people in Cambodia, and some relocated permanently, either within or outside the country (figure 9). Relocating may carry important economic and safety consequences for many, especially for single parents that flee or migrate with children. Men were, overall, likelier than women to migrate to a different geographical area, often to find new income generation opportunities, which left many women behind in charge of caring for their families.

Figure 9: Proportion of the population exposed to hazards in the past 12 months who experienced temporary or permanent displacement as a result, by sex and type of displacement (percentage)

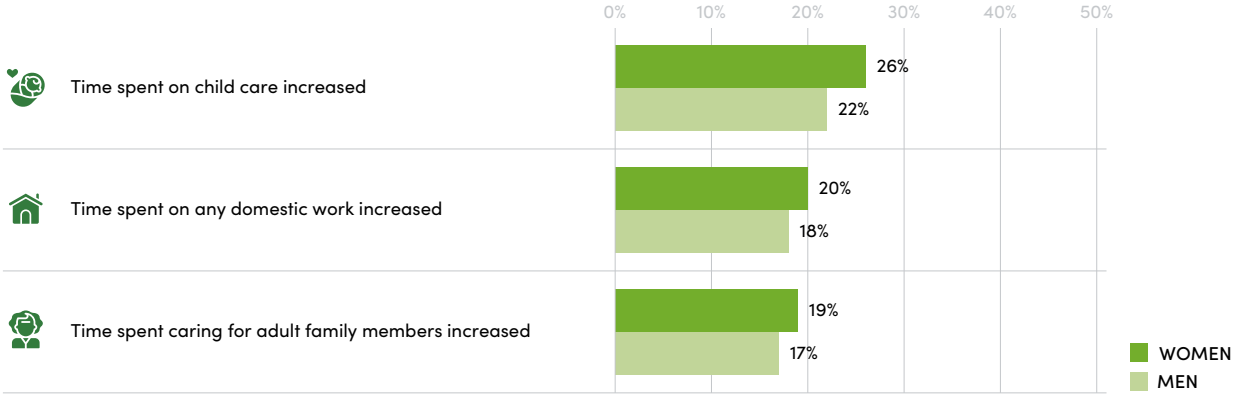


Note: An estimated 7 per cent of women and 4 per cent of men noted that no shelter was designated during disasters. The differences between women and men are not statistically significant at a=0.05 for the category "Take refuge in designed shelter".

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

Unpaid domestic and care work burdens multiplied in Cambodia as a result of the 2024 disasters and related hazards. With increasing risk of heat stroke, storm and wind-related injuries and waterborne disease, many parents and care givers had no choice but to reduce their paid work hours or limit their own care, to provide care and supervision for family members. As water sources were compromised and supply chains disrupted by heat, droughts and storms, many also had to spend more time procuring food and water and processing them for safe consumption. These increased burdens were disproportionately shouldered by women (figure 10). An estimated 26 per cent of women noted their unpaid childcare burdens had worsened as a result of disasters, despite the fact that they were already doing the bulk of these chores before the disaster took place. In addition, 19 per cent of them noted increases in time spent caring for other adults. Furthermore, to cope with increased workloads driven by disaster-related household damage, compromised water sources and effects on supply chains, 20 per cent of women and 18 per cent of men saw increases in time spent on domestic chores, including cooking, treating water for consumption and cleaning (typically performed by women) and making household repairs or fixing animal shelters (activities more often performed by men).

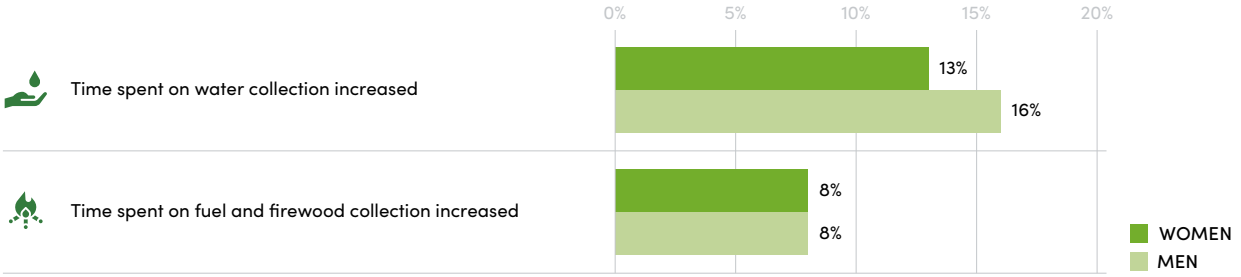
Figure 10: Proportion of the population exposed to hazards in the past 12 months whose time spent on unpaid care and domestic work increased as a result, by sex and type (percentage)



As many as 5 per cent of women and 6 per cent of men who experienced disasters saw their water sources compromised, and 11 per cent of women and 14 per cent of men noted that shortages affected their household's water use. This resulted in as many as 13 per cent of women and 16 per cent of men seeing their time spent collecting water increased following disasters (figure 11). Water collection may carry health and safety concerns, both associated with carrying weights and walking long distances alone. In some instances, water may require treatment before consumption, which is an additional time burden often undertaken by women.

The 2024 crises in Cambodia also affected the availability and use of clean fuels. An estimated 3 per cent of people had to switch to unclean fuel sources for lighting, heating or cooking for more than two weeks after the disasters. This may have been due to crisis-driven supply chain issues affecting fuels, but also, importantly, to changes in energy prices and cost of living, rendering clean fuels unaffordable for many. Using cheaper fuels, such as charcoal, wood and kerosene, worsens indoor air quality and puts those that cook and 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 shouldered disproportionately by men, women and men were equally likely to note that their time allocated to fuel collection had increased as a result of disasters or related hazards.

Figure 11: Proportion of the population exposed to hazards in the past 12 months whose time spent on water and fuel collection increased, by sex (percentage)

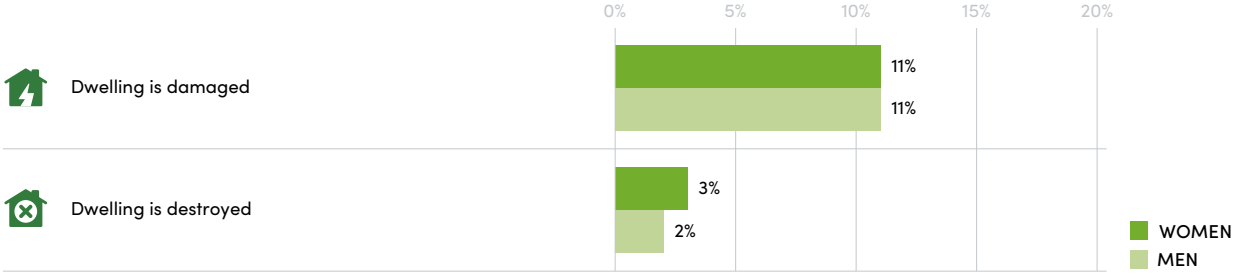


Note: The differences between women and men are not statistically significant at α=0.05 for the category "Time spent on fuel and firewood collection increased".

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

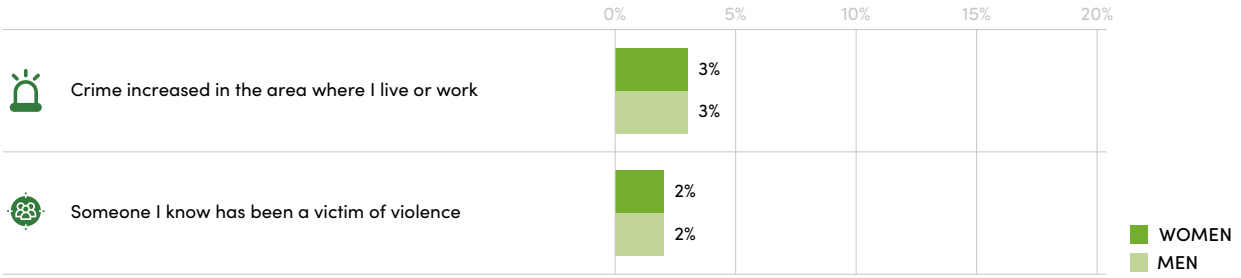
The 2024 disasters caused substantial damage on housing and infrastructure. As many as 11 per cent of people saw their dwellings damaged, and roughly 3 per cent of women and 2 per cent of men saw their homes completely destroyed (figure 12). Extreme wind episodes, floods and severe thunderstorms were the main events that caused this level of damage. In addition, besides more than 5 per cent of the population seeing their drinking water source compromised, and 3 per cent having to switch to unclean fuels for more than two weeks, sanitation systems were also affected. As a result of disasters, more than 5 per cent of people had to start sharing sanitation facilities with other households, while 1 per cent had to switch to unimproved forms of sanitation, including public latrines and open defecation. The use of shared sanitation facilities, other poorly illuminated facilities, or facilities without locks puts people, especially women, at a heightened risk of assault. These safety concerns may have been compounded by disaster-related power cuts. In Cambodia, where more than 40 per cent of the electricity is generated through hydropower, recurrent drought episodes might have contributed to electricity shortages and related power cuts in 2024. The lack of electricity supply and the absence of public lighting have compounded disaster-related economic instability and other stressors, which may have worsened crime and safety across the country. An estimated 3 per cent of people noted that crime had increased as a direct result of disasters, while 2 per cent knew someone that had been a victim of violence since (figure 13).

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



Note: The differences between women and men are not statistically significant at α=0.05 for the category "Dwelling is damaged".

Figure 13: 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 and type of event (crime/violence) (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for either of the two categories.

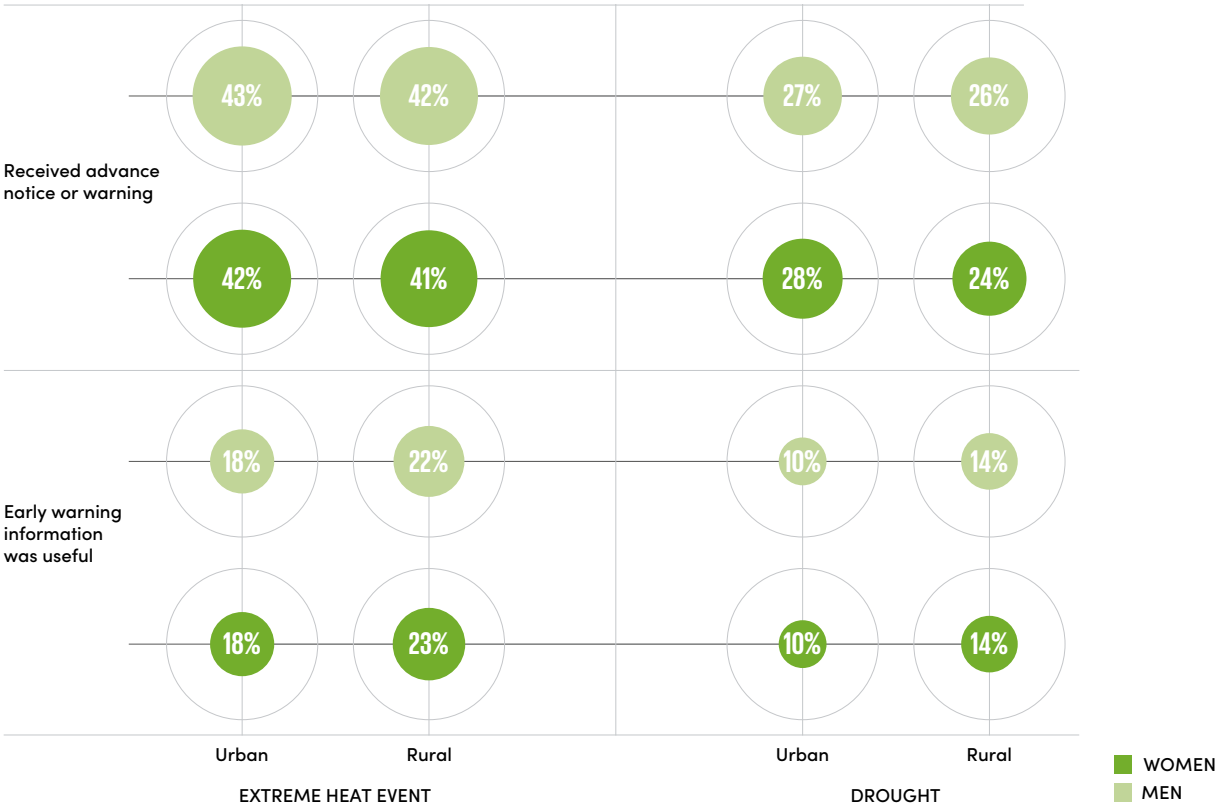
Infrastructure and road damage also affected access to public transportation, with an additional 2 per cent of people having lost access to public transportation as a result of disasters and related hazards. As women are less likely than men to drive private motorized vehicles (see figures 85 to 88), the lack of public transit options may further expose them to safety concerns. In the aftermath of disasters, the most affected areas may also have health care and other public service interruptions, and losing access to public transportation puts ill and injured people, older people and pregnant women at a disproportionate risk.

WHEN PEOPLE RECEIVED EARLY WARNING OF HAZARDS, THIS PROVIDED VITAL PREPAREDNESS INFORMATION.

Roughly two in every five people (42 per cent) received early warning information about extreme heat days, which helped them prepare for the upcoming events. Information on the droughts that battered the country throughout the year was not as widely broadcasted, with only 26 per cent of people receiving it in advance, mainly from the Internet (figure 14a and 14b). This may have hampered preparedness to deal with these hazards, which had some of the most devastating effects among all the 2024 disasters, causing substantial losses of livelihoods (income and crop losses) and impacts on people's mental health.

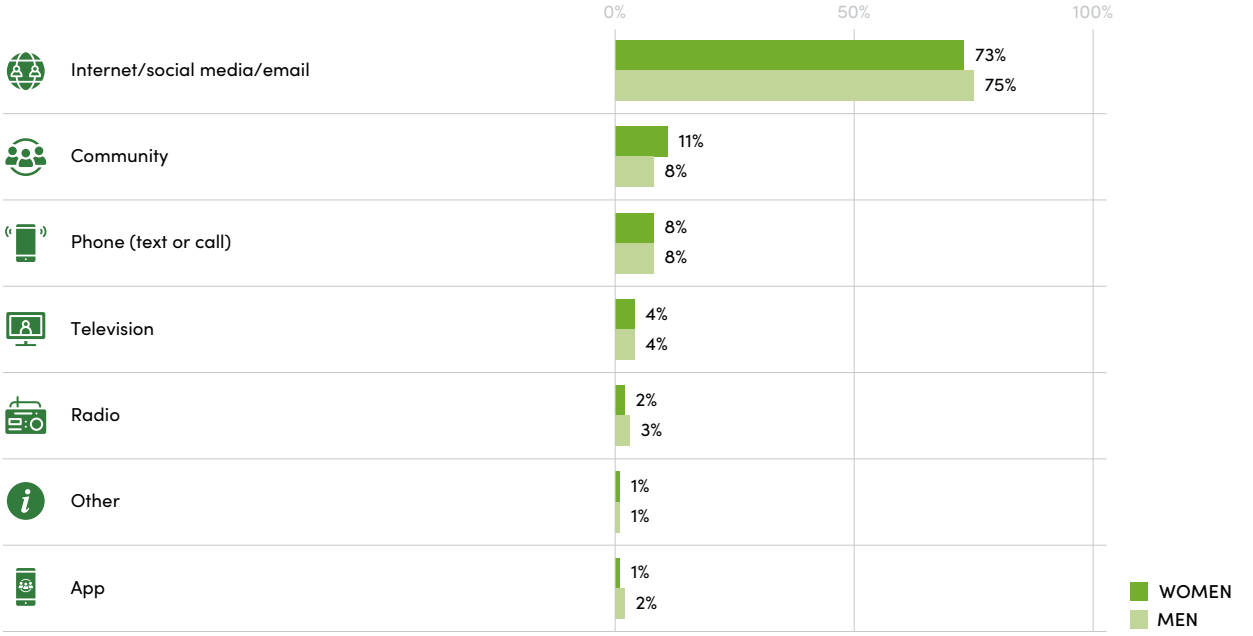
In Cambodia, there is an urban/rural divide regarding access to early warning information, with urban dwellers slightly more likely to receive it when needed. Differentials also exist on the likelihood of utilizing different information sources for early warning, with men more likely than women to use the Internet and women more likely than men to rely on their family, friends and other members of the community (figure 15). Since most people in Cambodia received early warning information about impending hazards from the Internet (including social media), expanding Internet penetration and access could contribute to better preparedness. As many as 18 per cent of households did not have a working Internet connection prior to disasters taking place. Overall, rural populations are less likely to have access to basic electronics for receiving early warning information: while an estimated 94 per cent of urban dwellers have these electronics, only 89 per cent of those living in rural areas do (figure 16).

Figure 14: Proportion of the population exposed to (a) extreme heat or (b) drought in the past 12 months who were able to access early warning information, by sex, location (percentage)



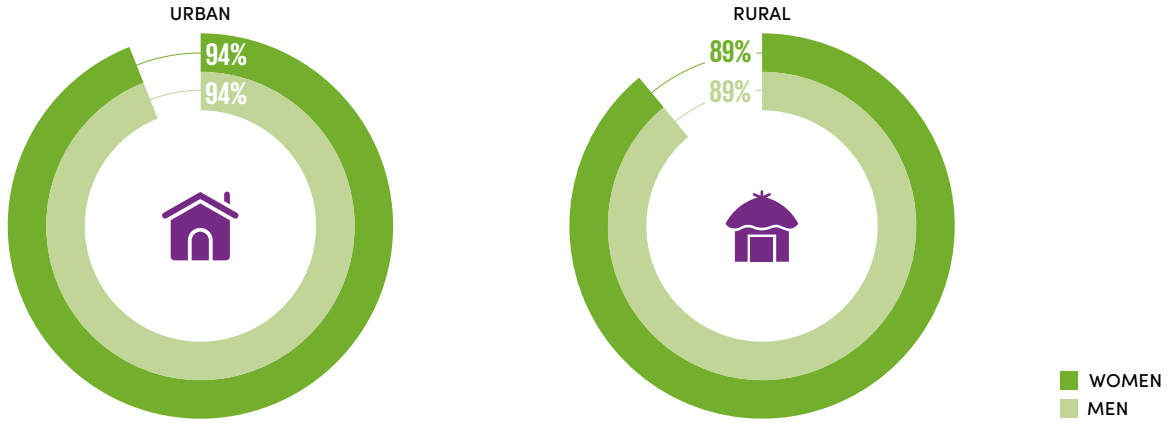
Note: The differences between women and men are not statistically significant at α=0.05 for the category "Early warning information was useful" in urban areas for extreme heat, and neither urban nor rural areas for drought.

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



Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Television", "Phone" and "Others". The graph refers to extreme heat episodes specifically, but distributions were similar for all other hazards.

Figure 16: Proportion of the population living in households with basic electronics for accessing early warning information, by sex and location



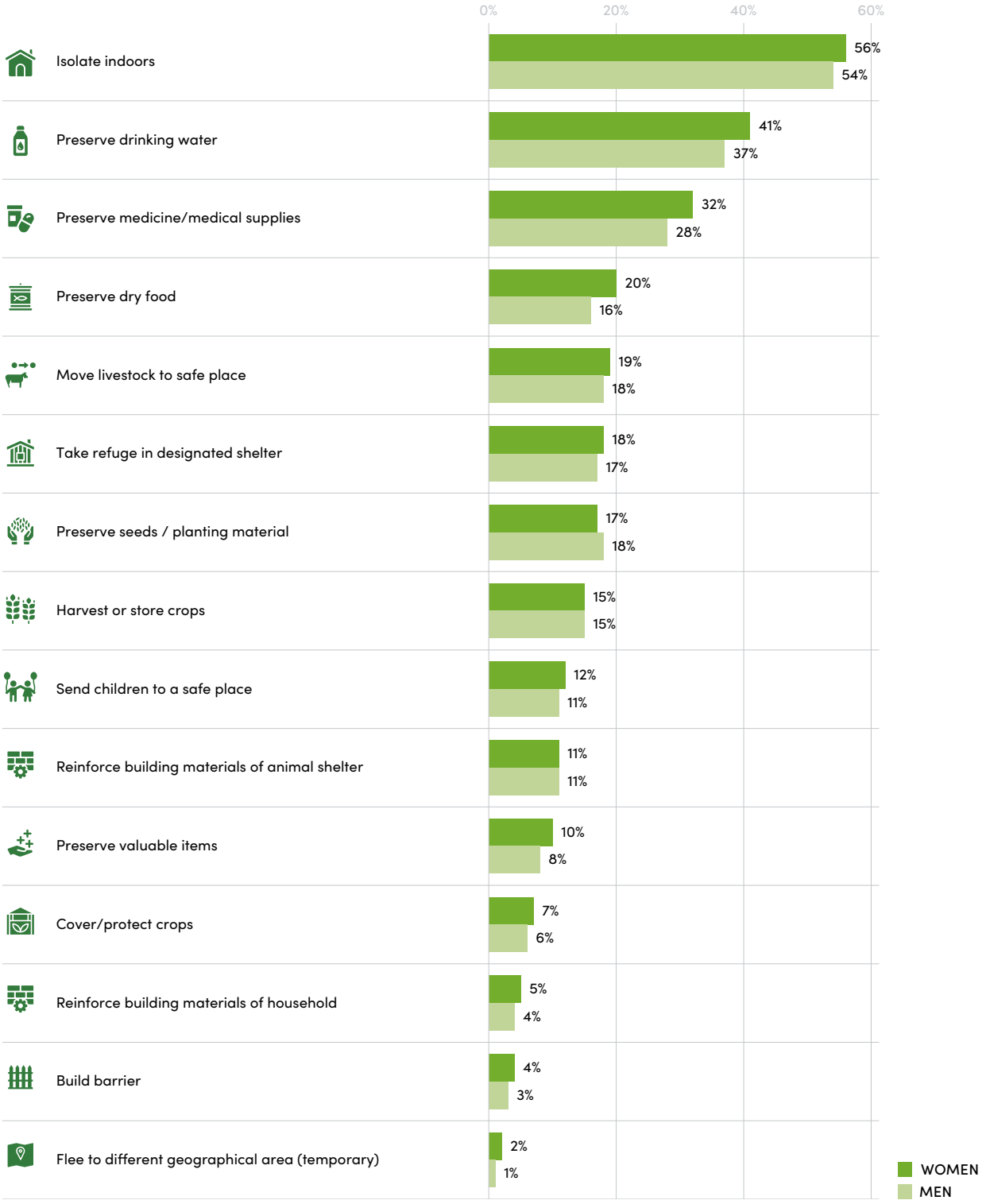
Note: The differences between women and men are not statistically significant at α=0.05.

AT HOME, WOMEN ARE MORE LIKELY TO CONTRIBUTE TO DISASTER PREPAREDNESS.

To prepare for upcoming hazards, many women and men in Cambodia spent time and effort preserving basic goods and gathering supplies, reinforcing buildings and preparing to leave their homes to seek shelter from impending disasters. Across almost every precautionary measure, women were more likely than men to have put it in place (figure 17).

Social norms often dictate the types of activities that women and men may do, including preparedness related tasks. The largest gender gaps in preparedness pertain to preserving water, food and medicines – precautionary tasks disproportionately done by women across the country, as they are also usually in charge of cooking and caring for sick family members. Men, on the other hand, were disproportionately in charge of preserving seeds and planting materials, given that they engage in agriculture more often than women in Cambodia. Overall, the two most common preparedness measures put in place by both men and women were isolating indoors and preserving drinking water, mostly in the context of dealing with increases in temperatures and droughts, respectively.

Figure 17: Proportion of the population exposed to hazards in the past 12 months who put precautionary measures in place for disaster preparedness, by sex and type of measure (percentage)



Note: The graph shows average percentages for all disasters and disaster-related hazards. The differences between women and men are not statistically significant at α=0.05 for the categories "Reinforce building materials of animal shelter" and "Harvest or store crops".

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

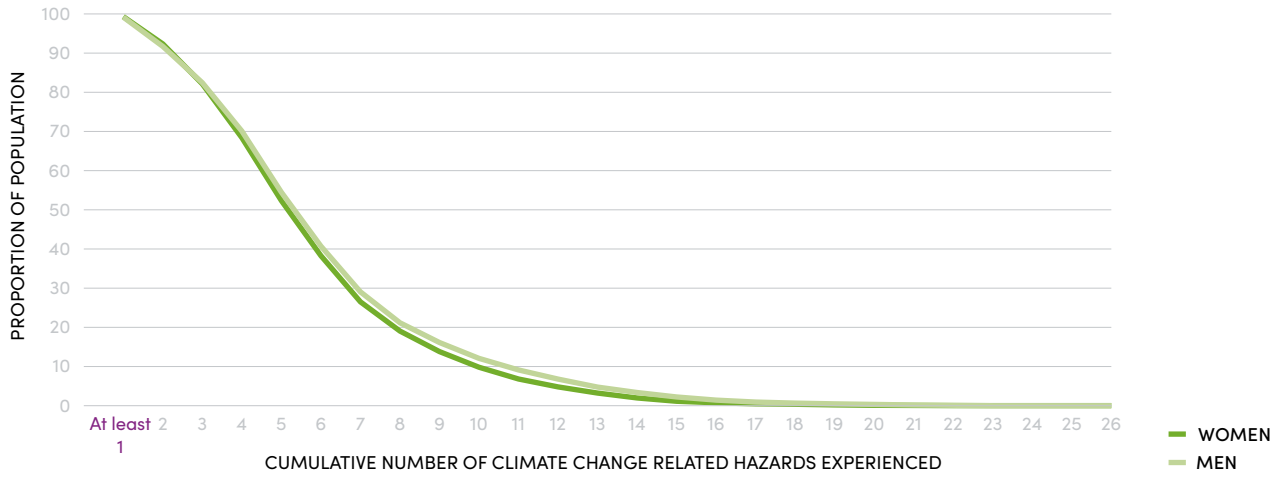
CLIMATE CHANGE AFFECTED EVERYONE IN CAMBODIA, MOST NOTICEABLY THROUGH SUSTAINED INCREASES IN TEMPERATURES, FREQUENT HEAT WAVES AND OVERALL ARIDIFICATION.

The effects of climate change permeate all parts of Cambodia. Almost all survey respondents noticed effects of climate change in their daily lives. Unlike the disastrous episodes showcased in Section 1 of this report, climate change events are slow-onset hazards and therefore have pervasive effects throughout people's lifetimes. For instance, 73 per cent of people felt the direct effects of sustained increases in temperatures throughout their lifetimes, 68 per cent dealt with recurrent heat waves, and 62 per cent noticed overall reductions in precipitation. Many of these effects are associated with the substantial levels deforestation taking place across the country, which is driving rapid aridification and temperature changes. Cambodia has lost 1.44 Mha of humid primary forests since 2002 (a 34 per cent loss in this time period), largely as a result of commodity driven deforestation and, to a lesser extent, forestry and shifting agriculture.[6] Deforestation affects humidity exchanges between land and atmosphere, and thus contributes to aridification. In addition, decreasing tree cover translates into lower capabilities for carbon sequestration, contributing further to increasing temperatures. This, together with a six-fold increase in carbon dioxide emissions between 2005 and 2023, has worsened the country's overall warming and made rain much less predictable.[7]

Climate change has also brought recurrent pest infestations and endemic insect-borne diseases to Cambodia, affecting 40 per cent and 33 per cent of people, respectively, and their lives and livelihoods. For instance, in recent years, insects such as rice whiteflies (Aleurocybotus indicus), fall armyworms (Spodoptera frugiperda) and rice leaf folders (Cnaphalocrocis medinalis) are affecting crops in multiple provinces, including Kandal, Prey Veng, Svay Rieng, Takeo and Tbong Khmum. In addition, vector-borne diseases such as dengue fever are also on the rise, with the incidence more than doubling since 2002.[8] While an overuse of fertilizers in agriculture has contributed to the rapid spread of pests, deforestation and rapid urbanization may have contributed to the spread of dengue fever. The specific impacts of these pests and diseases on women and men include worsening health, lowering income, lengthening the time spent at work and increasing domestic and care work burdens, among others.

6 Global Forest Watch, 2025, Dashboard: Cambodia (accessed 9 April 2025).
7 Our world in data, 2024.
8 National Institutes of Health, 2023.

Figure 18: Proportion of the population that experienced one or more climate change related hazards in their lifetime, by sex (percentage)

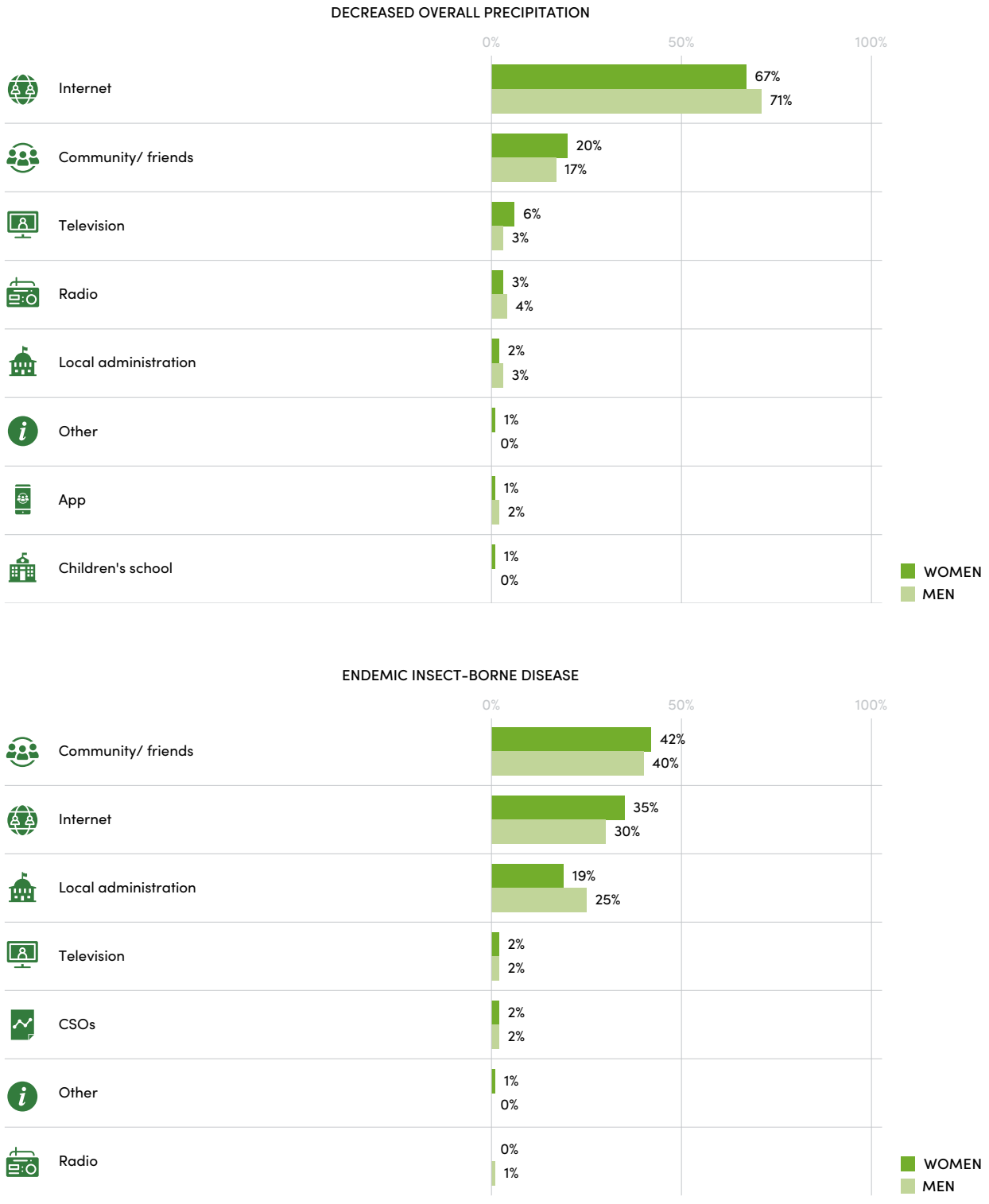


Putting in place mitigation and adaptation measures is important to cope with the effects of climate change. However, not everyone had access to accurate, useful and timely climate-related information. While information on some climate hazards, such as sustained increases in temperature and recurrent heat waves, reached many, only 14 per cent of people heard about the effects of recurrent pest infestations, and 20 per cent about endemic insect borne diseases. The sources used by people to gather this information also differed across hazards. The most common source of information about overall increased temperatures, heat waves and lack of precipitation was, by far, the Internet (figure 19a). Mass media and broadcasting services covered temperatures and rain patterns substantially, and thus people were able to receive this information through the Internet, television and other sources. However, for information on recurrent pest infestations and endemic insect-borne diseases, people relied mostly on their communities and friends – especially women, 42 per cent of whom heard about insect-borne disease from their communities, compared to 40 per cent of men. In the case of endemic insect-borne diseases, while communities were the main sources of information for both women and men, local administrations played an important role as well: an estimated 19 per cent of women and 25 per cent of men got their information from these offices (figure 19b).

Gender differentials do exist regarding access to critical information to prepare for climate change and cope with its effects. Generally, men were more likely than women to receive information from the Internet across all hazards, while women relied more than men on friends, family or their communities. Like the insect-borne hazards mentioned above, across all hazards, when the information was available from local administrations, men were more likely than women to turn to these authorities. Differences in literacy rates (women are less likely than men to be literate) and access to phones, computers and the Internet (men are more likely than women to have a mobile phone[9]) may explain some of these discrepancies.

9 According to the Global SDG Database, 70.9 per cent of men and 72.3 per cent of women owned a mobile phone in 2019.

Figure 19: Proportion of the population with access to information on the effects of (a) decreased overall precipitation and (b) endemic insect-borne disease, by sex and source (percentage)



Note: Only early warning information sources for hazards "Decreased overall precipitation" and "Endemic insect borne disease" are pictured. The distribution of early warning sources used was similar across all climate hazards. The differences between women and men are not statistically significant at α=0.05 for the categories "Television" and "CSOs" for endemic insect-borne diseases.

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

As a result of hazards related to climate change, 12 per cent of women and 9 per cent of men ate less as they lacked food or income to buy food (figure 20). 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 of lower quality and nutritional value. Single adults with children were the most likely to eat less in favour of offering the limited food supplies to their children (20 per cent of them used this coping strategy). In households with two adults, women were consistently more likely to note they gave up their food in favour of other household members (12 per cent of women, compared to 9 per cent of men). Other coping strategies adopted by many included preserving food due to limited availability and searching for additional sources of income. While women were overall likelier to sacrifice their nutrition and preserve food to cope with climate change, men were likelier to search for additional sources of income (figure 21).

Figure 20: Proportion of the population who decreased food intake as a result of climate change, by sex and household composition (percentage)

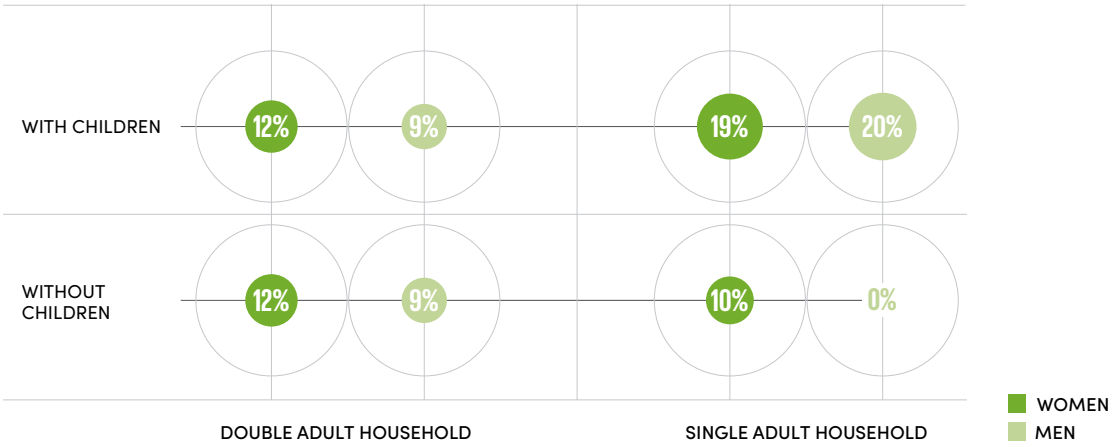
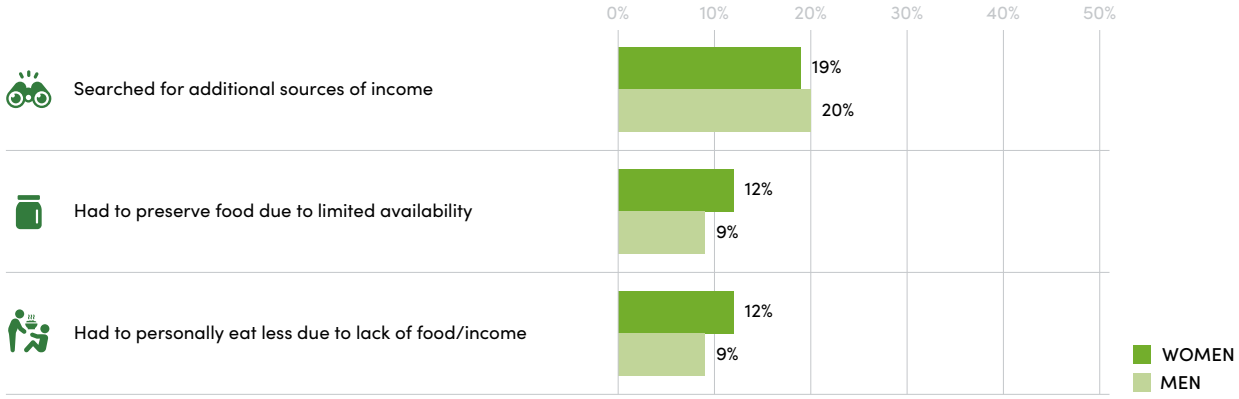


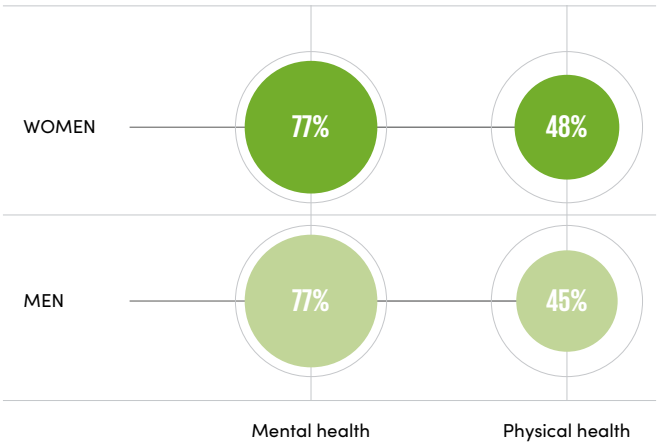
Figure 21: Proportion of the population who experienced (income and/or food) shortages as a result of climate change, by sex and type (percentage)



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

The effects of the changing climate affect people's livelihoods substantially, especially for those engaging in agriculture, fisheries or other environment-related livelihoods. On top of the effects of disasters on mental health (as showcased in Section I), climate-related economic instability and food insecurity, coupled with related displacement, migration and safety concerns, further affected people's physical and psychological health. As many as 77 per cent, or roughly four in every five people, noted that stress and anxiety associated with slow-onset climate hazards affected their mental health (figure 22). In addition, 48 per cent of women and 45 per cent of men highlighted that climate related phenomena affected their physical health. From respiratory disease driven by the increased frequency of wildfires to gastroenterological ailments driven by the spread of pathogens, vector-borne disease worsened by unpredictable rains, and heat-related cardiovascular issues, there can be numerous effects of climate change on people's physical health. In Cambodia, increased temperature, recurrent heat waves and decreased overall precipitation were the climate phenomena that respondents most associated with worsening health. Women were, overall, more likely than men to see their health directly affected.

Figure 22: Proportion of the population who attributed health ailments to the effects of climate change, by sex and type (percentage)



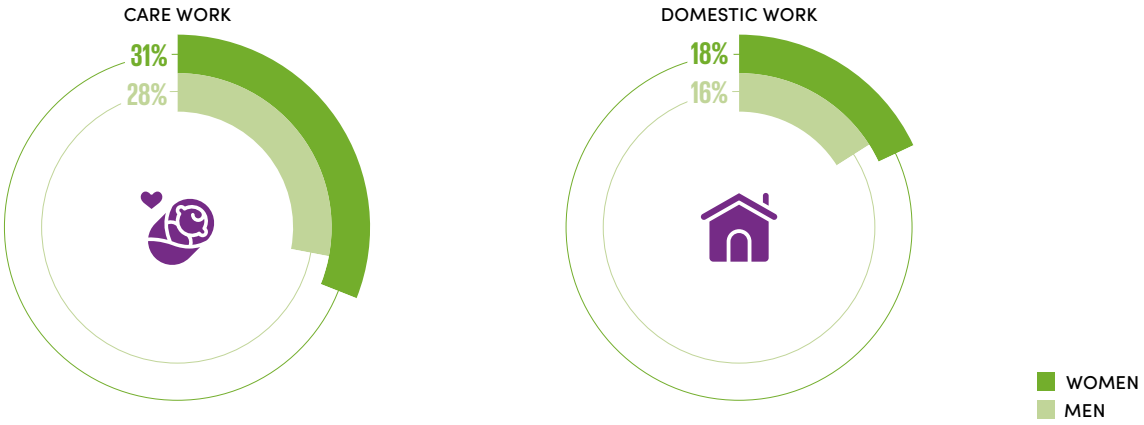
Note: The differences between women and men are not statistically significant at α=0.05 for the category "mental health".

When family members are sick, women are often in charge of caring for them. According to previous data, in 2023, women spent almost nine times the amount of time men spent on unpaid care and domestic work. This means that most women were in charge of feeding, cleaning and providing physical and medical care for children, older people and other adults.[10] To cope with the increased healthcare burdens brought about by climate change, an estimated 31 per cent of women and 28 per cent of men now spend even more time caring for family members (figure 23). As women were already doing the lion's share of these chores, the distribution of additional tasks shows that climate change is worsening inequalities in this regard.

10 UN Women, 2023, Forecasting time spent on unpaid care and domestic work.

Women are also seeing disproportional increases in the time they spend on domestic work chores such as cooking, cleaning and shopping for the family. All in all, 18 per cent of women and 16 per cent of men have seen their domestic workloads increase. The gender gap is not as large for domestic work, because many men perform domestic tasks such as making repairs to reinforce household structures against the effects of climate change, including protecting their homes against strong winds or heatproofing them. For instance, an estimated 2 per cent of men noted that they have had to repair or make changes to their house to cope with the most common effects of climate change, compared to 1 per cent of women.[11] Still, cooking and cleaning are activities largely taken up by women, and related demands continue to worsen as food becomes scarcer and waterborne diseases spread, thus women may to continue to feel disproportionate impacts.

Figure 23: Proportion of the population whose time spent on care work (left) or domestic work (right) increased as a result of climate change, by sex (percentage)



THE LIVELIHOODS OF PEOPLE ENGAGING IN AGRICULTURE, ANIMAL RAISING OR OTHER ENVIRONMENTAL ACTIVITIES HAVE BEEN SUBSTANTIALLY AFFECTED BY CLIMATE CHANGE.

Climate change continues to affect the livelihoods of millions of people in Cambodia. Worsening quality and availability of natural resources, climate-related supply chain disruptions and changes in meteorological conditions all contributed to people switching jobs, particularly those engaged in tourism, agriculture, animal raising, fisheries or other environment-related activities. As a result of climate change, an estimated 1 per cent of women and 3 per cent of men switched jobs, while 3 per cent of women and 6 per cent of men lost their jobs (figure 24). These figures do not include those that, as mentioned above, saw impacts on their jobs as a result of disasters.

11 Refers to the top five most noticed effects.

Men were slightly likelier than women to be affected by job loss as a result of climate change (3 per cent of women, compared to 6 per cent of men). In Cambodia, more men hold jobs compared to women, but women are disproportionately engaged in the informal sector (according to the 2019 LFS, approximately 88 per cent of all informal workers are women), rendering them vulnerable in the event of job loss due to lack of social security and unemployment benefits. Table 3 shows that people in urban areas were slightly more likely to lose their jobs (more than 5 per cent compared to more than 4 per cent in rural areas). Similarly, younger people have been slightly more likely to be affected by job loss as a result of climate change, although the differences are small: an estimated 4 per cent of women and 6 per cent of men under 30 have lost their jobs as a result of climate change.

Figure 24: Proportion of people that changed or lost their jobs as a result of climate change, by sex

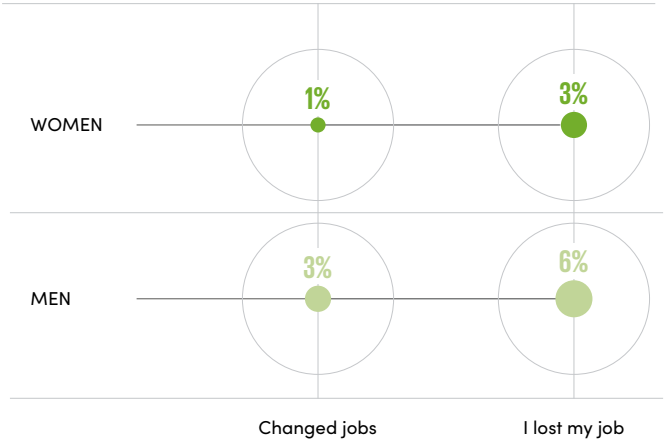
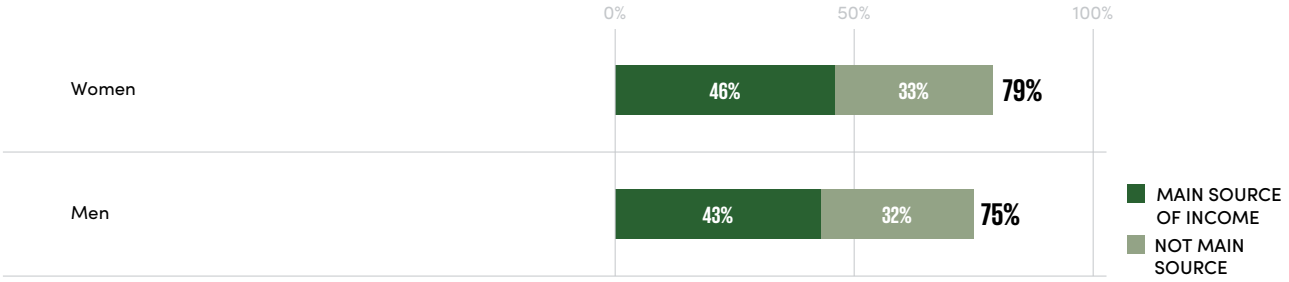


Table 3: Proportion of people who lost their jobs as a result of climate change, by sex, location and age (percentage)

	URBAN	RURAL	UNDER 30 YEARS OLD	30 YEARS OLD AND OVER
Women	3.2	3.1	4	3
Men	6	5	6	6

People growing crops or raising livestock saw some of the biggest climate change impacts. As many as 62 per cent of women and 60 per cent of men engaging in these activities (either for pay or profit, or for other reasons such as subsistence, leisure, tradition, religion or others) noted climate-related reductions in their agricultural or livestock yield in the past five years (figure 25). This may have led to severe impacts on their well-being, as for most of them, agricultural and livestock activities were their main source of personal income (for 45 per cent of farmers that noted decrease in agricultural yield, agriculture was their main income source of income). Reductions in yields are a worst-case scenario outcome that occurs when applying more pesticides, using more fertilizer, or spending more time performing these activities, for instance, fail to mitigate climate effects. Thus, many more people practicing agriculture and farming were likely affected by climate change, even if they were able to avoid a reduction in yields.

Figure 25: Proportion of land or livestock users who noted climate-related drops in agricultural yield in the past 5 years, by sex and whether this was their main source of income (percentage)

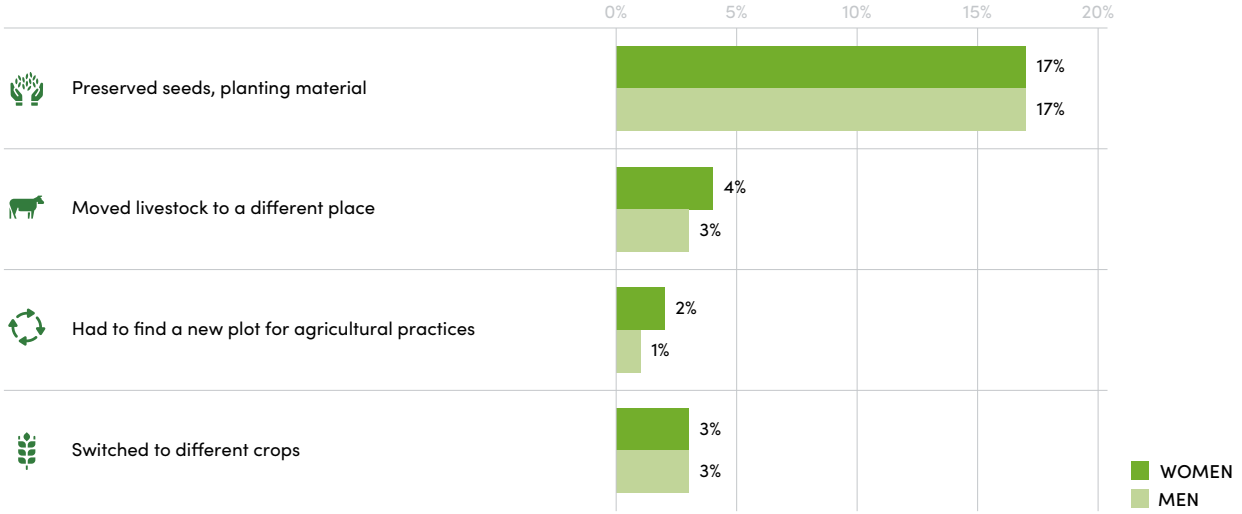


FARMERS ARE IMPLEMENTING VARIOUS CLIMATE CHANGE ADAPTATION STRATEGIES, INCLUDING PRESERVING SEEDS, A PRACTICE THAT SHOULD BE ENCOURAGED.

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 they have found alternatives such as switching to climate-resilient crops or relocating their livestock (figure 26). In areas of Cambodia where climate change has had severe effects on agricultural operations, such as in areas exposed to frequent heat waves and droughts, or where farming areas are exposed to pollution or other environmental degradation, many farmers had to relocate their agricultural operations. This was a slightly more common practice among women than men (among women 4 per cent moved their livestock and 2 per cent found a new agricultural plot, compared to 3 per cent and 1 per cent of men). As women typically have a smaller portfolio of income sources than men, many women who relied on farming alone might have been prompted to change locations altogether.

Other mitigation strategies, such as switching to different crops or preserving seeds and planting materials to deal with possible future shortages were equally practiced by women and men. Preserving seeds and other planting material is a fairly common practice in Cambodia, and thus it is the most common strategy farmers used to mitigate the effects of climate change, with 17 per cent of those practicing agriculture and livestock raising engaging in seed and plant preservation. This practice is of critical importance to preserve farmers' livelihoods, including the implementation of seed selection to propagate certain crop traits, such as resilience to climate impacts. It is essential that this practice is maintained throughout the country. Although Cambodia counts with strong regulatory framework relating to the control and management of genetically engineered organisms, in recent years, many Member States of the Association of Southeast Asian Nations (ASEAN) have seen an increase in the use of genetically modified seeds, to enhance pest-resilience and promote increased yield. Many of these seeds are patented and promote farmers' dependence on a few corporations that control large shares of intellectual property for seeds. Continuing the practice of using and preserving non-genetically modified seeds is therefore essential to safeguard farmer's livelihoods and prevent dependence on expensive proprietary seeds.

Figure 26: 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)



Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Preserved seeds, planting material" and "Switched to different crops".

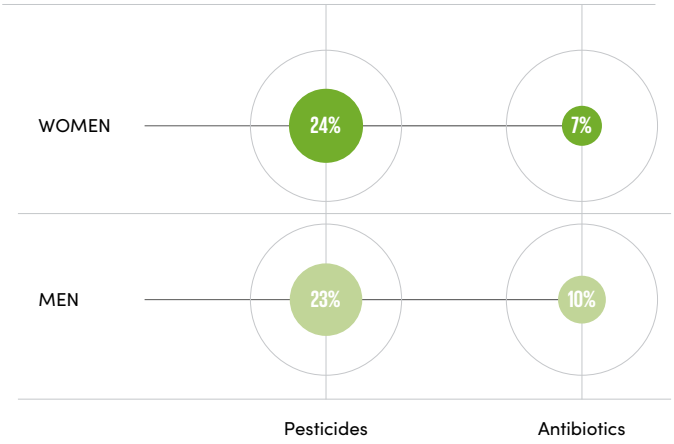
ALMOST A QUARTER OF ALL FARMERS NOW USE MORE PESTICIDES AND ANTIBIOTICS TO COPE WITH CLIMATE CHANGE, FURTHER CONTRIBUTING TO ENVIRONMENTAL DEGRADATION.

Increasing temperatures, ecosystem loss, unpredictable precipitation patterns and many other climate-change related hazards put agricultural activities at stake. For women and men who grow crops or raise livestock, a coping mechanism may be to increase the use of pesticides or antibiotics in their operations. This contributes to further damaging the environment, especially since increasing temperatures contribute to pesticide volatilization, increased rates of bacterial growth and heightened spread of antibiotic-resistant microorganisms. Furthermore, 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 Cambodia, an estimated 24 per cent of women and 23 per cent of men raising crops increased their pesticide use as a result of climate change, and 7 per cent of women and 10 per cent of men raising livestock increased their antibiotic use (figure 27). These are worrisome trends as the use of these substances is already widespread across the country (more than half of farmers growing rice, maize or cassava use pesticides[12]). Agricultural and farming runoff is causing substantial issues, as high concentrations of pesticides have been found in soil and water samples across the country, some posing high risk to aquatic organisms in the Mekong River, a key food source for many Cambodians.[13] Worryingly, this is due in part to the misuse of these substances, as vendors and farmers may not understand the safety instructions that accompany pesticides imported from neighbouring countries, such as China, Thailand and Viet Nam. For instance, many Cambodian farmers do not follow label directions or clean pesticide equipment properly (see Section III).

12 See Cambodia inter-censal agricultural Survey, 2019.
13 Pesticide screening of surface water and soil along the Mekong River in Cambodia.

Figure 27: Proportion of land or livestock users who attributed their increased use of pesticides or antibiotics to the effects of climate change, by sex and effect (percentage)



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

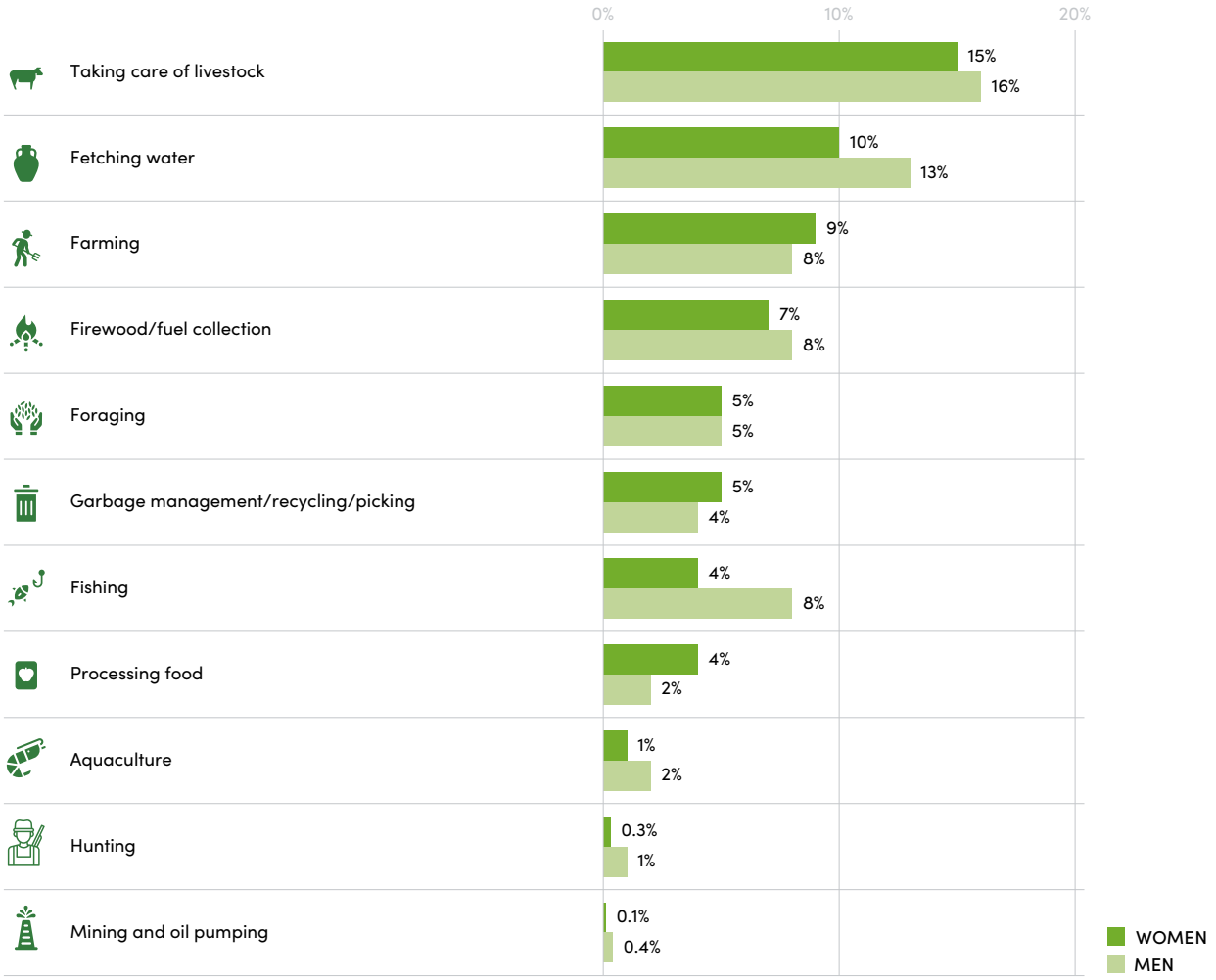
Climate change is affecting the predictability of rains and making temperatures more extreme. For women and men whose livelihoods rely on agriculture or animal raising, this has important consequences, as they need to allocate more time and resources to maintain yields. More than 15 per cent of people who raise livestock noted that they now spend more time caring for their animals as a result of climate change, including managing enclosures to control temperatures, and moving their animals to safe places (figure 28). Similarly, almost 10 per cent of those practicing agriculture noted effects on the time they now allocate to farming, as they must set up protective barriers, shady areas, or water management systems to control temperatures, humidity and promote crop resilience.

Climate change is also affecting the availability and quality of water sources, and those who lack clean water at home are seeing substantial increases in the time spent fetching water (more than 10 per cent of people noted increases – in addition to those whose water source was compromised by disasters, see Section I above). The same is true of fuels and firewood, climate impacts on livelihoods may make cleaner fuels, such as electricity, unaffordable. Although the increases in water and fuel collection burdens are shouldered disproportionately by men in Cambodia, burdens of farming, including the processing of harvested food for storage and delayed consumption, are shouldered disproportionately by women. Women are also more likely to see increased burdens related to waste management as a result of climate hazards.

Climate change has also lengthened the time allocated to fishing and aquaculture , with men noticing these time burdens the most as they engage in fishing more often than women for income generation purposes. Many women engaging in this sector are in charge of fish processing and pre- and post-harvest operations. Among them, as many as 4 per cent noted increased time was allocated to fish processing as a result of climate change. The increase might have to do with sorting target from non-target species, separating fish from seaweed or other unwanted material increasingly proliferating due to changes in water temperatures and acidity, or with additional layers of treatment (peeling, cleaning, dissecting, drying) linked to ocean acidification, acid rain, eutrophication and related damage to the shells and health of molluscs and other species.

As climate change brings about erratic and severe weather, biodiversity loss, disease and scarcity, those without alternatives to maintain their yields have no choice but to allocate more of their time to these chores. Different climate hazards may also result in different time burdens. For instance, changes in temperatures were the climate-related phenomena that triggered the largest increases in time spent processing food and farming.

Figure 28: Proportion of the population whose time spent on the production of environmental goods increased as a result of climate change, by sex and type (percentage)

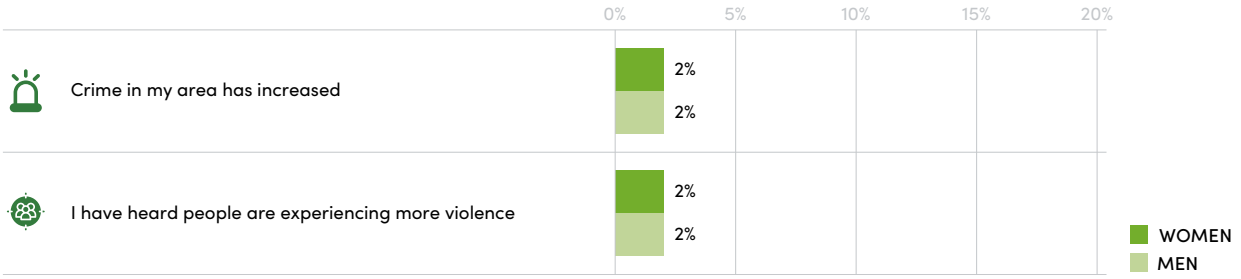


Note: The differences between women and men are not statistically significant at α=0.05 for the category "Foraging".

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

All the above-mentioned economic stressors, coupled with the increasing scarcity of environmental resources driven by 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 people in Cambodia noted that crime had increased, and roughly the same percentage heard that people are now experiencing more violence as a result of climate change (figure 29). Quantifying the incidence of crime and violence accurately requires the use of specialized surveys designed to obtain 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 29: Proportion of the population who saw increases in crime and violence as a result of climate change, by sex (percentage)



Note: The differences between women and men are not statistically significant at α=0.05.

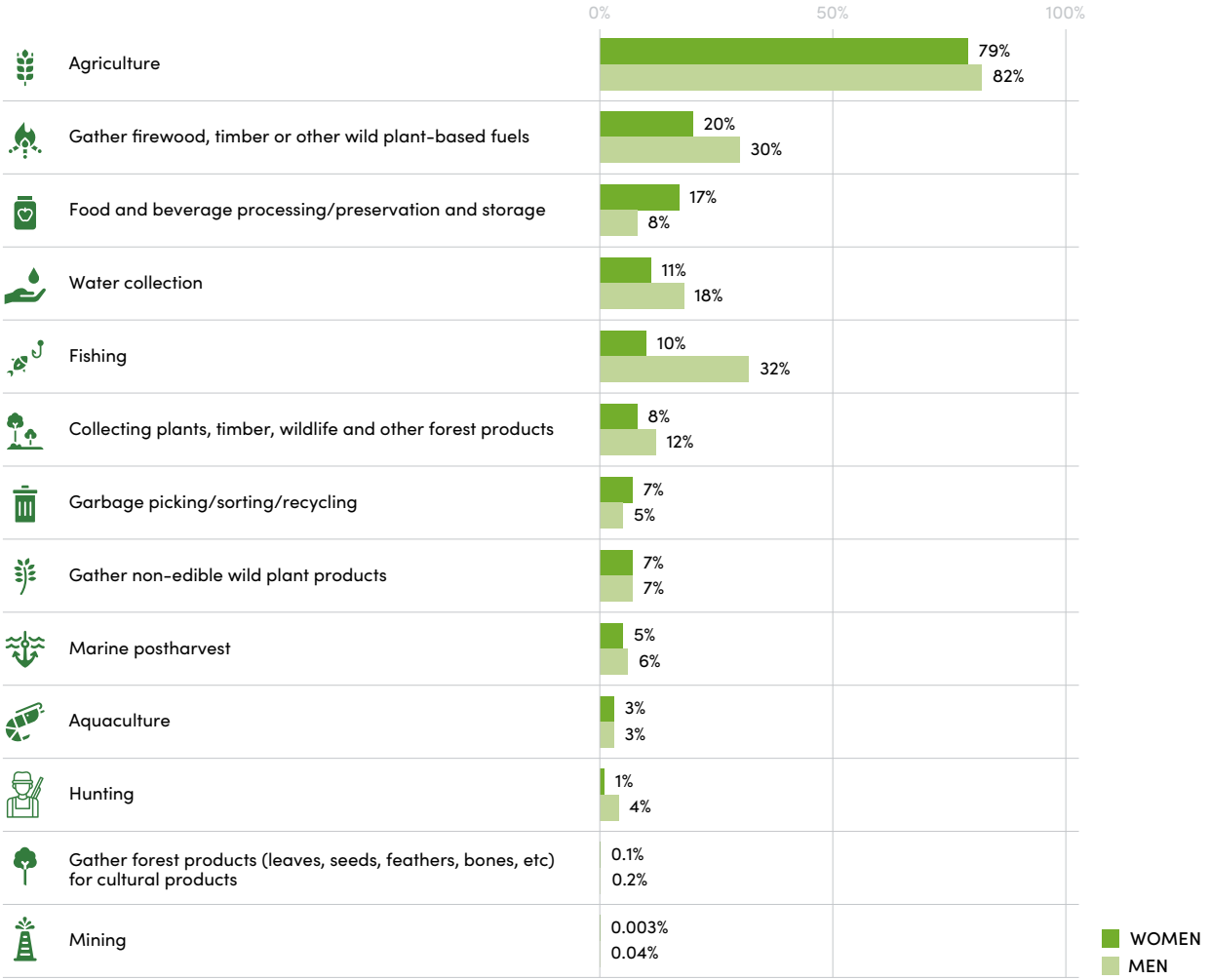
Section III. Natural resources, biodiversity loss and environment-related livelihoods

MOST CAMBODIANS ARE DEPENDENT ON NATURAL RESOURCES, HIGHLIGHTING THAT ENVIRONMENTAL DEGRADATION COULD HAVE DEVASTATING IMPACTS.

Heavy reliance in environmental resources makes the population in Cambodia substantially vulnerable to climate change and environmental degradation. An estimated 86 per cent of the Cambodian population relies on at least one environmental activity for their livelihoods, with agriculture being the most common, practiced by roughly 80 per cent of people (figure 30). One in five women rely on gathering firewood, timber or other wild plant-based fuels for their livelihoods, the second most commonly practiced environmental activity. Given that the Mekong River and Tonle Sap Lake play essential roles in the Cambodian ecosystem, fishery-related livelihoods are also widespread. Although men are more likely than women to fish, women are more likely than men to engage in fish processing and marketing operations.

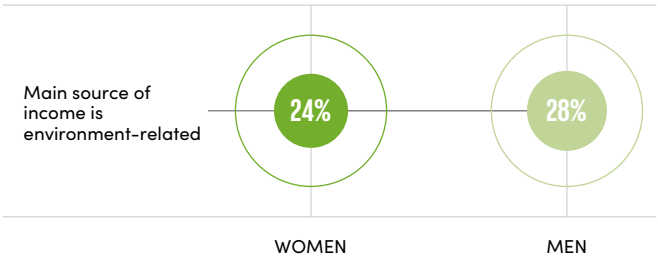
Many Cambodians have multiple sources of income, but environmental activities still make up the bulk of the income for 24 per cent of women and 28 per cent of men (figure 31). This dependence heightens their vulnerability and contributes to some of the outcomes showcased in previous sections, such as people investing more time in their farming activities to maintain livelihoods and substantial effects on their mental health as a result of any losses. This heavy dependence on natural resources demonstrates the importance of heightening conservation efforts across the country, to guarantee the well-being of people and ecosystems.

Figure 30: Proportion of the population relying on natural resources for their livelihoods, by sex and type (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Aquaculture" and "Gather non-edible wild plant products".

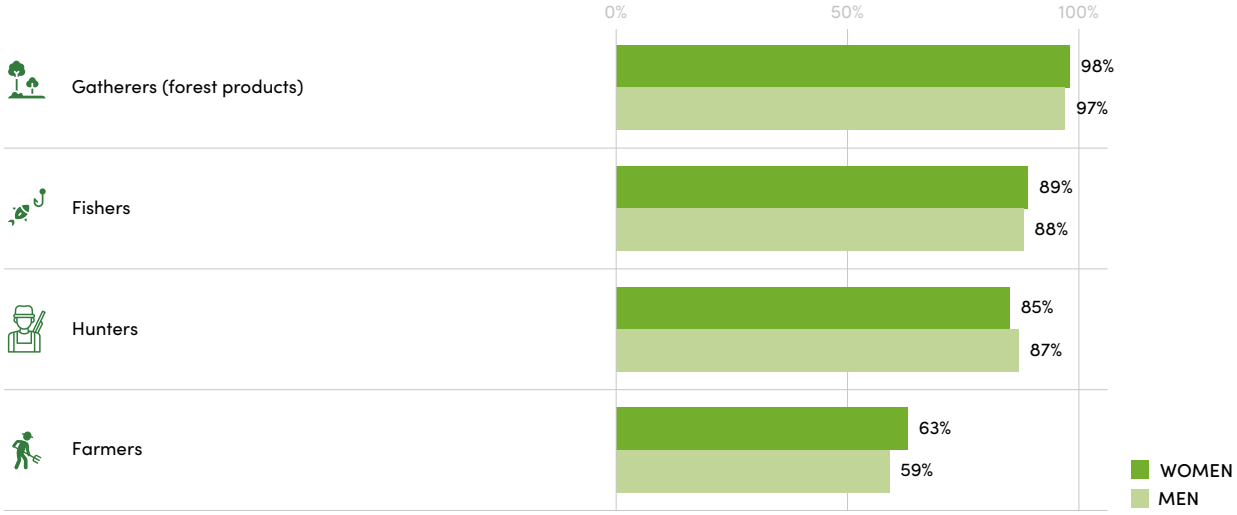
Figure 31: Proportion of the population whose main source of income is environment-related, by sex (percentage)



A substantial share of those engaging in environmental livelihoods still rely largely on small operations. As many as 99 per cent of those gathering forest products, do so for subsistence, and 88 per cent of fishing folk engage in small scale subsistence fisheries as well (figure 32). The lack of engagement in large corporations is encouraging from an environmental protection and management point of view, although it contributes to their overall vulnerability to environmental degradation, further highlighting the importance of protecting forests, as well as marine and aquatic ecosystems.

In the case of agriculture, engagement in large agroindustry corporations is more common. Only 63 per cent of women and 59 per cent of men engage in agriculture for subsistence purposes. The reliance on large agro-industry corporations is putting the ecosystems of Cambodia at risk, with overutilization and degradation rapidly taking place. The related use of pesticides and fertilizers is worsening soil and water degradation, as well as the health and safety of both humans and the environment (see Section IV).

Figure 32: Proportion of the farmer, fishing, hunting and gathering population that are subsistence farmers, fishers, hunters and gatherers, by sex (percentage)



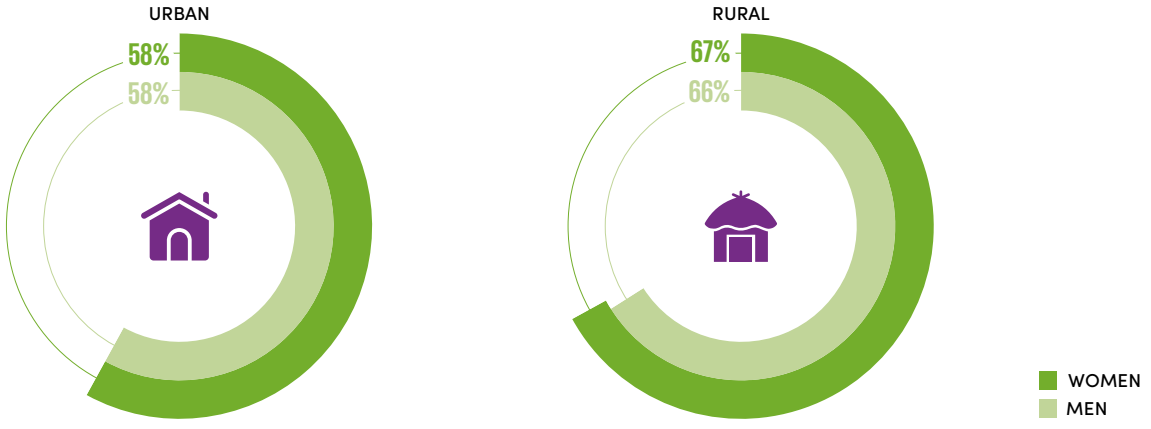
ONLY 64 PER CENT OF PEOPLE OWN THE LAND THEY USE FOR FARMING. THIS HEIGHTENS THEIR VULNERABILITY AND LIMITS THEIR CONTRIBUTIONS TO CONSERVATION.

Fewer than two of every three people in Cambodia own the land they use for agricultural purposes (figure 33). This means that more than a third of the agricultural population could lose access to the land supporting their livelihoods. Without land ownership or secure tenure their opportunities for resilience are limited, as land can be used as collateral for loans and other forms of financing to cope with disasters and other climate-related losses. Although gender differences in land ownership are not large in Cambodia for the bulk of the Khmer population, they do exist among those of other ethnicities. Among those that do not identify as Khmer, men are more likely than women to own or have secure tenure on the agricultural land they use (figure 34).

Some barriers that may contribute to non-Khmer women's more limited ownership of land compared to men include women's lesser access to finance, social norms dictating that land registration or bequeathing takes place under male family members, as well as limitations associated with ownership of communal lands or with rights to inherit land, especially for indigenous women in the northern part of the country (Mondul Kiri and Ratanak Kiri have the lowest rates of ownership by women).

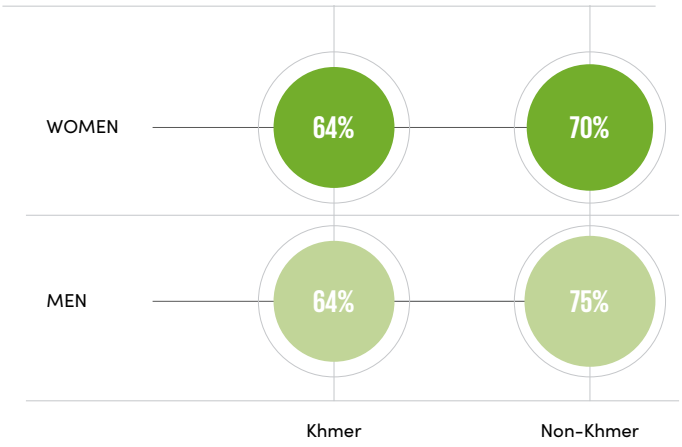
Social norms and limited ownership of agricultural land translate into heightened barriers for women's making-decisions regarding land management, and this may be detrimental to environmental conservation as women are less likely than men to use pesticides and other harmful substances. An estimated 96 per cent of Khmer women who own the land they use for agriculture, make decisions regarding purchases of agriculture and farming products, compared to 97 per cent of Khmer men (figure 35). The gender gap is more pronounced among those who do not own land, where 94 per cent of non-Khmer women and 85 per cent of non-Khmer men can make their own decisions. Making land management decisions over one's own land ultimately contributes to enhanced conservation practices. Landowners in Cambodia are more likely than non-land owners to make their own decisions about how to manage the land they use, including whether or not they use pesticides or fertilizers, or the type of irrigation or land remediation practices implemented. Women landowners are, however, overall less likely than men landowners to make their own decisions. Differences also exist between Khmer and non-Khmer population. Non-Khmer people who lack ownership or secure tenure over land are the least likely group to be able to make their own decisions about the land they use.

Figure 33: Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex



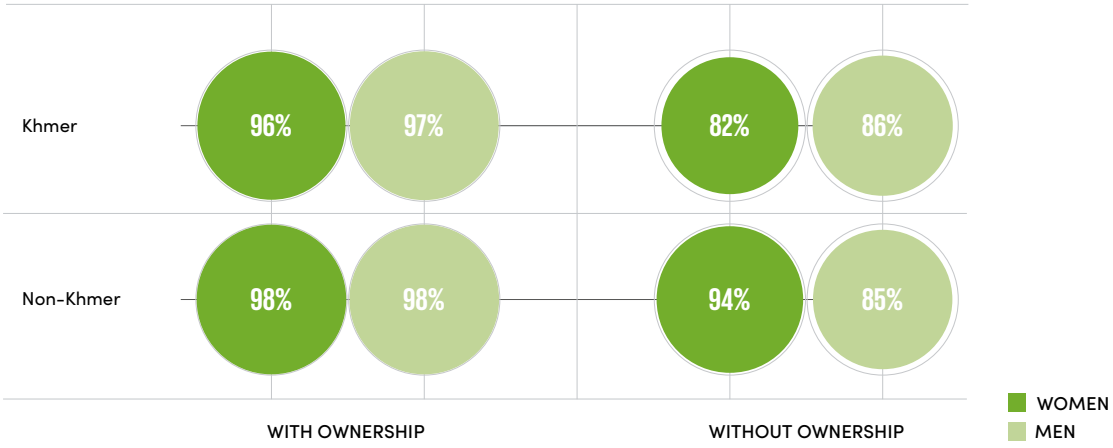
Note: The differences between women and men are not statistically significant at α=0.05 for urban areas.

Figure 34: Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex and ethnicity (percentage)



Note: None of the individuals sampled for this survey noted they have Chinese ethnicity.

Figure 35: Proportion of population who usually decide, alone or jointly, regarding purchases and sales of farming products and animals, by sex



Note: The differences between women and men are not statistically significant at α=0.05 for the Khmer women and men who are with ownership.

MORE THAN HALF THE FARMERS ARE INCREASINGLY NOTICING SOIL DEGRADATION AND WATER SHORTAGES.

Land degradation is associated with climate change, pollution and biodiversity loss, and farmers in Cambodia are increasingly noticing the progressive degradation of the land they use for agriculture and livestock grazing. More than half the people engaged in these activities noticed it (55 per cent). Key markers of soil degradation include fertility decline, changes in the soil acidity or alkalinity, vulnerability to erosion, increased susceptibility to hosting pests, loss of organic matter and overall biodiversity loss. These may have substantive impacts on agricultural and livestock yield and the health and quality of agricultural and livestock products. Because men in Cambodia engage in large agricultural operations more often than women and are overall more likely to use pesticides and

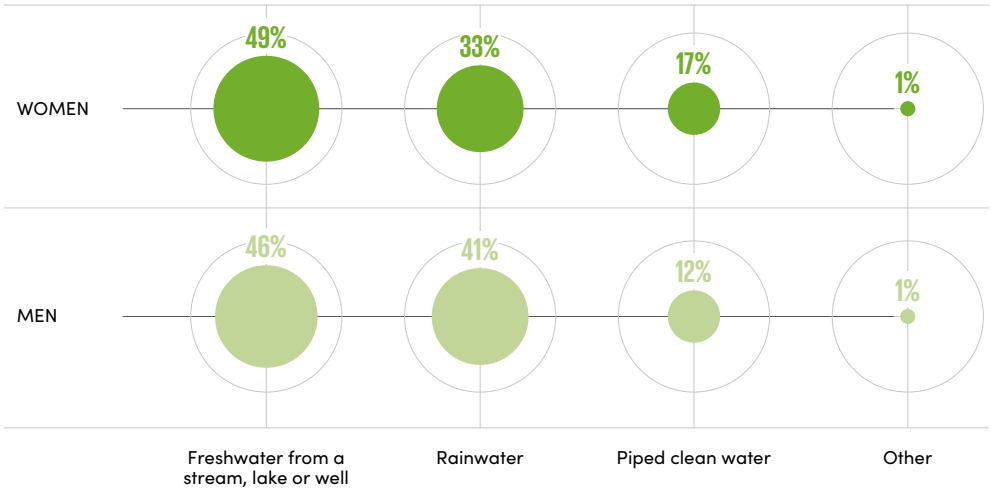
fertilizers (70 per cent of women use either of the two substances, compared to 72 per cent of men), they were also slightly more likely to notice soil degradation (65 per cent of women and 66 per cent of men noticed it. Overall, people who used these substances were more likely to notice soil degradation than those farmers who do not, demonstrating the substantial effect pesticides and fertilizers have on soils and other nearby ecosystems (figure 36).

Farmers are also likely to notice shortages in the availability of irrigation water as a result of climate change (34 per cent of women and 37 per cent of men). In Cambodia, fresh water from open sources and rainwater are the most common water sources for land irrigation (figure 37). Women farmers using freshwater for irrigation were the most likely to notice the shortages, as climate change, water pollution and overconsumption all contribute to an increasingly limited availability of water from open sources in Cambodia. Two in five people also noticed shortages in the availability of rainwater for irrigation (figure 38). As 41 per cent of people rely on rain for irrigation, they likely had to increase their rainwater collection and storage efforts to maintain irrigation levels.

Figure 36: Proportion of the population utilizing land for agriculture or livestock grazing who use pesticides or fertilizers, by whether or not they noticed soil degradation, and by sex (percentage)

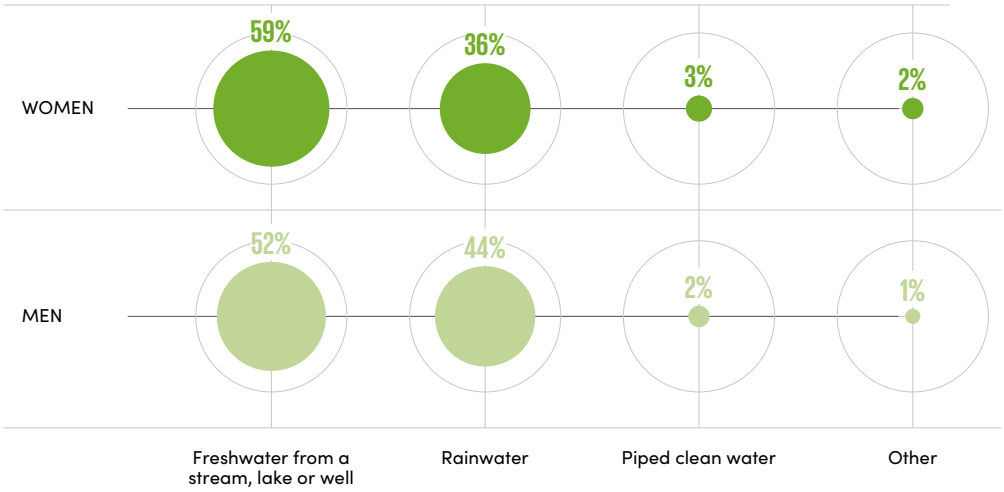
Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Use fertilizers" and "Use pesticides" in the case of people who noted soil degradation.

Figure 37: Proportion of the population utilizing land for agriculture or livestock raising who use water to irrigate, by sex and source (percentage)



Note: There are no observations for women and men who use wastewater and greywater for irrigation. The differences between women and men are not statistically significant at α=0.05 for the category "Other".

Figure 38: Proportion of the population that noted decreases in the availability of irrigation water, by sex and source (percentage)

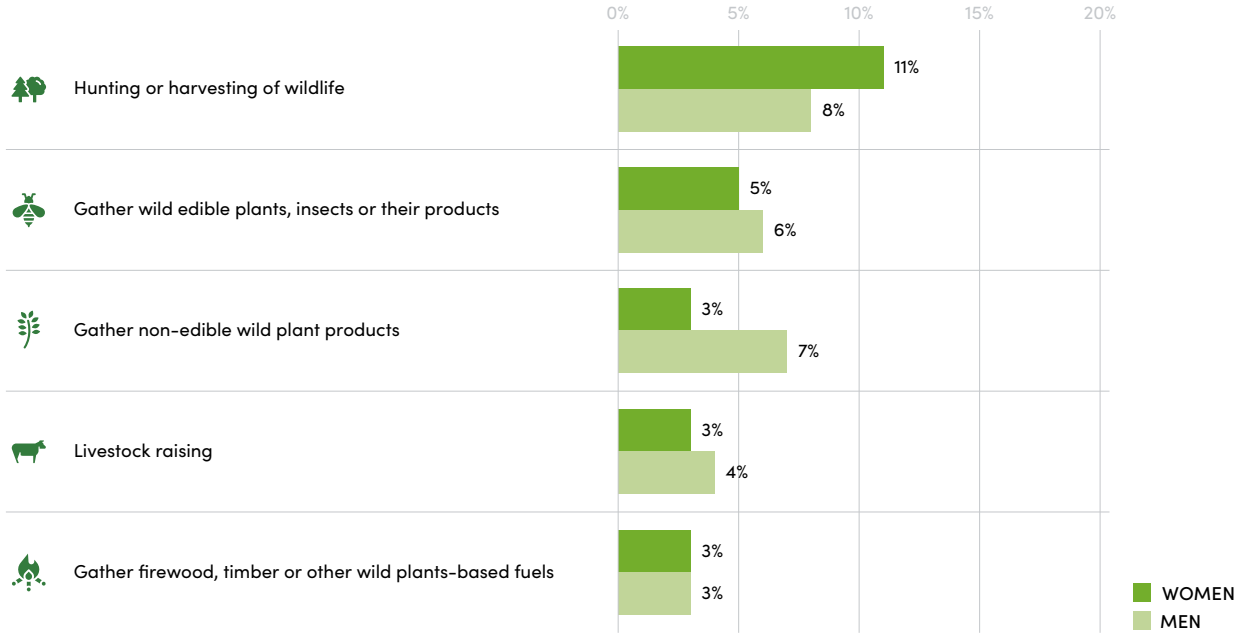


Note: Wastewater and greywater categories have not been depicted as these sources are not commonly used in Cambodia.

WOMEN ARE MORE VULNERABLE TO THE DEGRADATION OF PRIMARY FORESTS, WILD PASTURES AND UNDEVELOPED WOODED LAND

Wild areas, such as primary forests, pastures, mangroves or other forms of wild wooded land, are essential to preserve biodiversity. A native forest includes a larger 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 also provide essential protective roles against the effects of climate change and contribute substantially towards maintaining ecosystem productivity. Men engaging in forest-related activities in Cambodia are more likely to use wild forests than women (2 per cent of women use wild or primary forests, compared to 4 per cent of men). Those engaging in hunting or harvesting of wildlife are the most dependent on wild primary forests (11 per cent of women and 8 per cent of women practicing hunting or harvesting wildlife use wild forests) (figure 39). Given that women generally diversify their income sources less than men, a decline in forest area or biodiversity may affect women disproportionately. For instance, almost half the women who practice livestock grazing rely on primary forests for the majority of their income, making them substantially vulnerable to forest degradation.

Figure 39: Proportion of the foraging, logging, hunting or livestock raising population using wild forests, pastures or wild wooded land for livelihoods, by sex (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for the category "Gather firewood, timber or other wild plants-based fuels". Livelihoods refers to economic activities, subsistence, or other activities for purposes of leisure, tradition, religion or others. The survey did not gather information on which specific activities were performed in wild vs non-wild forests. The graph, therefore, showcases the proportion of people that practice these activities, and that also depend on wild forests for at least one of their foraging, logging, hunting or livestock grazing activities.

FOREST DEGRADATION RATES ARE ALARMING, AND WOMEN ARE FEELING THE CONSEQUENCES THE MOST.

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 (Cambodia lost almost 800,000 hectares of forest between 2015 and 2020 alone[14]) and wooded land gets partially or fully developed, the number of species calling forests their homes is decreasing rapidly. This, together with other climate and human driven forms of forest degradation, has considerable consequences for ecosystem production, and women have been more likely than men to notice these effects, as they are more reliant on wild and primary forests and rely on fewer sources of income than men. More than three out of every five women saw degradation of the forest area used; an alarming rate (figure 40). Decreases in total forest area were most commonly noticed, often linked to land transition for cropland or grazing purposes, followed by biodiversity loss, often related pesticide use in nearby areas, poor forest management practices and growing urbanization; and changes in relative aridity (figure 41). While women were the most likely to note overall reductions in forest area, men were more likely to indicate they cannot find the same variety and quantity of animals and plants in forests.

14 See Global SDG Database. Newer data not available.

Figure 40: Proportion of wild forest users who saw degradation of the forest area used, including drops in total area and biodiversity loss, by sex (percentage)

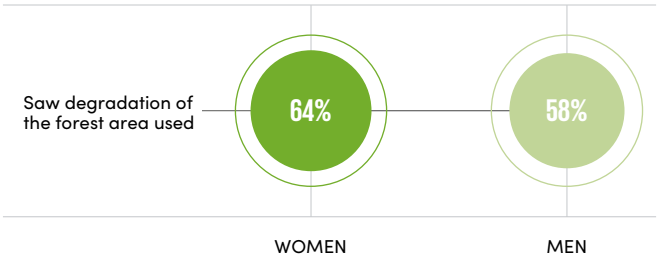
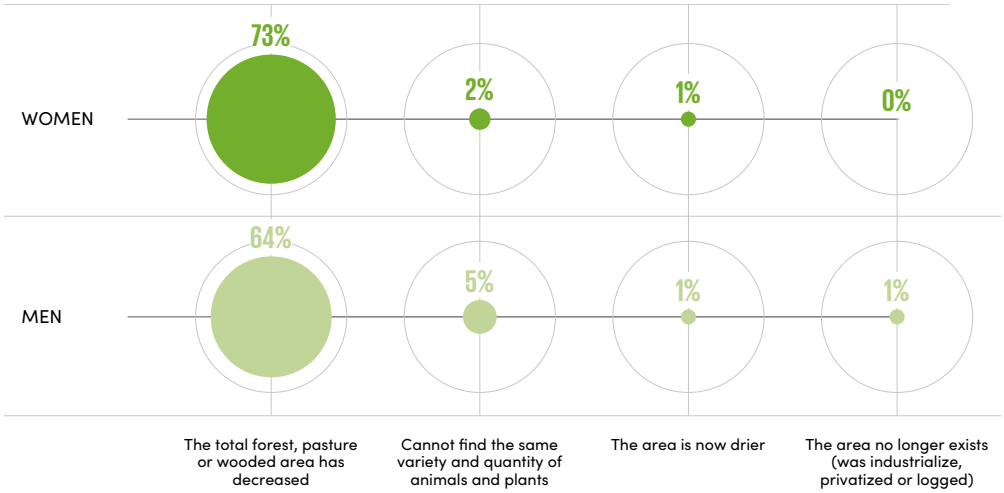


Figure 41: Proportion of wild forest users who saw degradation of the forest area used, by sex and type of degradation (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for the category "The area is now drier".

FISH STOCK DEPLETION IS OBVIOUS FOR FISHING FOLK. FOR FISHERWOMEN, COPING CAPACITIES ARE FEWER.

As many as one in five women (20 per cent) engaging in fishing or marine harvesting saw their catch dwindle over the past 10 years. The rate was slightly lower for men (18 per cent) though still alarmingly high (figure 42). As women are more likely than men to fish at the shore and harvest aquatic life by hand or using scoop baskets, they have fewer options to move to new locations to maintain catch levels. An estimated 15 per cent of women and 26 per cent of men changed fishing locations in the past 10 years. Fish stock depletion was the leading cause for as many as 18 per cent of women and 29 per cent of men who switched locations, followed by other causes such as pollution and changes in environmental protection regulations (figure 43). Men were more likely than women to cite depletion of fisheries as a reason for finding a new fishing location. Women, however, were more likely than men to be affected by pollution and by changing rules and regulations that prevent them from harvesting in previous locations, such as environmental protection rules put in place to help target species rebound.

To maintain catch levels, those who could not switch locations increased the time they spent fishing or hand harvesting. An estimated 4 per cent of women and 7 per cent of men have seen their fishing time lengthened as a result. For many women, none of these coping strategies was possible, and they simply saw direct effects on their catch size.

Worryingly, many people (18 per cent of women, 16 per cent of men) also noticed increases in the share of by-catch, with women slightly more likely to flag this, likely due to their disproportionate engagement in post-harvest sorting and cleaning activities, which offer more visibility of the increase in the volume or type of by-catch. Reduced availability of target species together with the use non-selective gear for larger fishing operations (such as gillnets, purse seine[15] and trawling, among others) contribute to increases in the share of by-catch, a clear indicator of biodiversity loss.

Figure 42: Proportion of fishing/marine harvesting population who noticed the effects of environmental degradation and biodiversity loss, by sex (percentage)

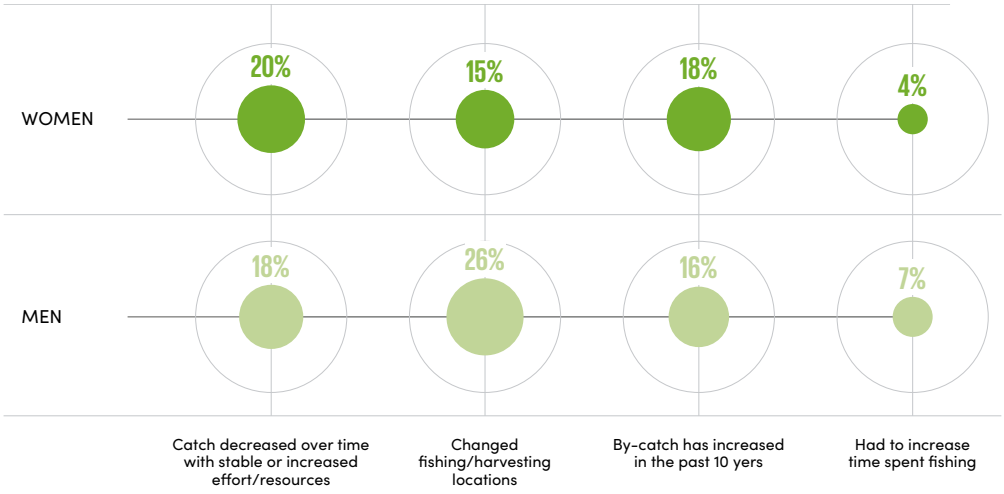
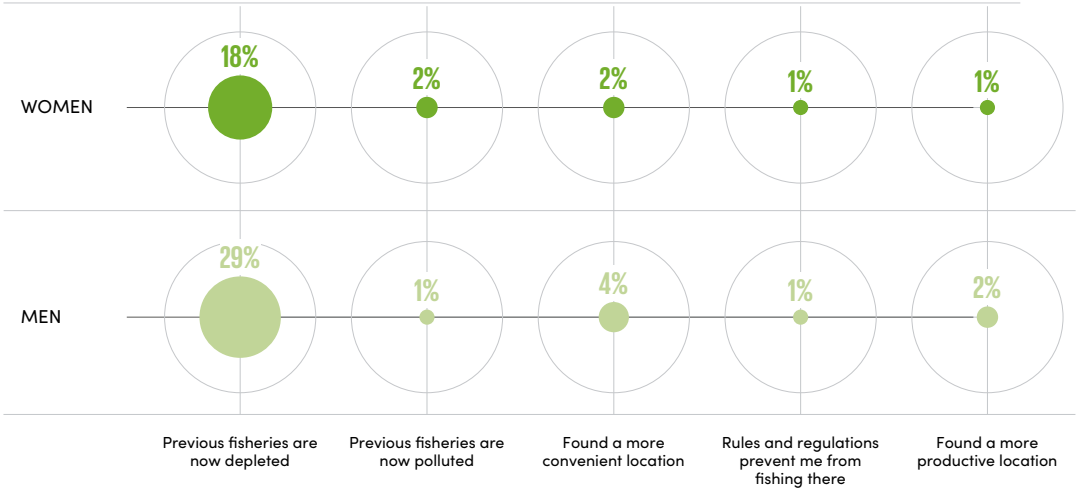


Figure 43: Proportion of the population who changed fishing/marine harvesting location in the past 10 years as a result of environmental degradation or biodiversity loss, by sex and reason (percentage)



Note: Differences between women and men are not statistically significant for the category "Rules and regulations prevent me from fishing there".

15 A purse seine is a floating net deployed to sweep large marine areas.

BIODIVERSITY LOSS IS PROMPTING FARMERS, FISHERS, HUNTERS AND GATHERERS TO MAKE CHANGES TO MAINTAIN YIELDS.

The changes in the quality of soils, availability of fish stocks and 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. The relocation rates are particularly noticeable for those who engage in fishing and gathering forest products such as plants, mushrooms and others, signalling the urgency of enacting environmental protection laws in water bodies and forests (figure 44). Overall, men in Cambodia have been more likely to switch locations to maintain yields, as women have fewer resources, less agency and more domestic responsibilities that may be preventing them from moving locations.

For those who practice agriculture, switching locations is harder, as they are typically bound to the land they own, rent or have access rights to. In their case, a common coping strategy has been to switch to climate and pest resilient crops. As many as 2.8 per cent of women and 2.5 per cent of men practicing agriculture switched crops as a coping strategy (figure 45). Examples of climate resilient crops that are being increasingly used in Cambodia include varieties of rice and maize seeds that better tolerate higher temperatures, salt water, drought and prolonged submersion.

Figure 44: Proportion of fishers, hunters and gatherers who switched locations as a result of climate change, by sex (percentage)

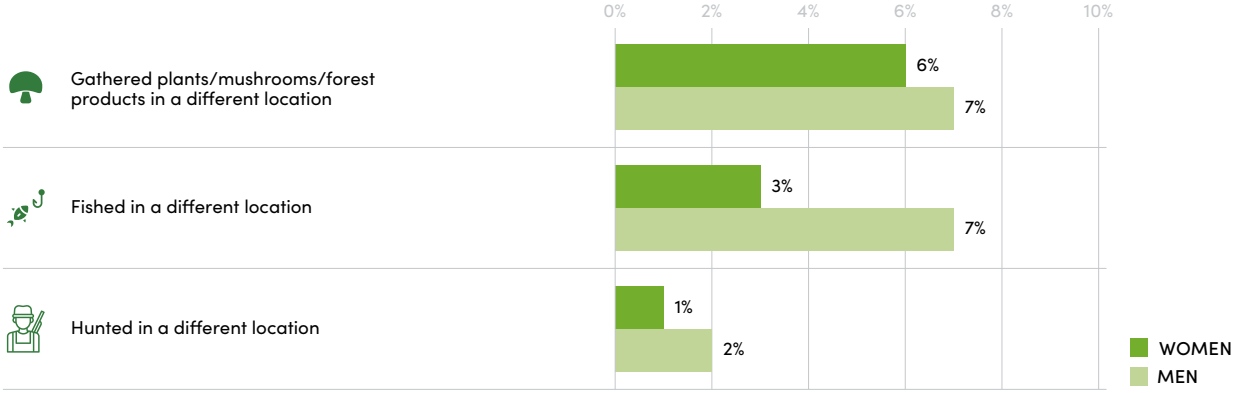
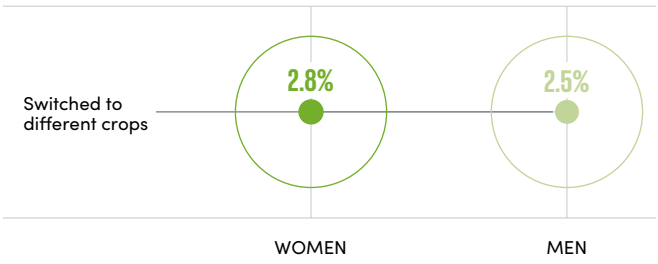


Figure 45: Proportion of agricultural population who had to switch crops as a result of climate change, by sex (percentage)



EFFECTIVE WASTE MANAGEMENT IS CRITICAL TO HALT THE SPREAD OF POLLUTION AND BIODIVERSITY LOSS. ALTHOUGH MORE WOMEN ENGAGE, PAY INEQUALITIES EXIST.

An estimated 6 per cent of women and men in Cambodia engage in waste management (outside their households). These activities, comprising collecting, sorting, cleaning and bringing waste to recycling and reuse centres, are critical to deal with pollution, a key contributor to the triple planetary crisis. Roughly 26 per cent of women and 30 per cent of men who engage in waste management noted they do it without remuneration (figure 46). This may be because they carry out these tasks to help others, or it may be due to discrimination. For instance, an estimated 20 per cent of women and 30 per cent of men engaging in waste management noted that other people receive higher remuneration than they do for sorting and turning in the same materials (figure 47).

Many men that gather waste, felt that that women receive higher remuneration for sorting and recycling waste. In Cambodia, women make up the bulk of those collecting recyclable and reusable refuse. Women engaging in this sector are often referred to as ad chais, most of whom migrated from rural to urban areas in search for work but are only able to reach low-paying jobs, so they do garbage collection to supplement their income, for instance, to pay their children's school fees and send some money to their families. As women largely dominate the waste collection market in Cambodia, they are also more likely than men to handle higher value materials such as scrap metal and aluminium, while men, more often than women, handle cardboard, plastic or other lower value materials (figure 48).

In contrast, men who engage in waste management are more likely than women to use carts or bicycles for these operations (3 per cent of women, and 11 per cent of men), which may help them optimize their time and effort. They are also more likely to use protective gear, which helps prevent injuries and infections (figure 50).

Figure 46: Proportion of the population engaging in waste management (left) and share of those engaging in waste management who make income/monetary gains from it (right), by sex (percentage)

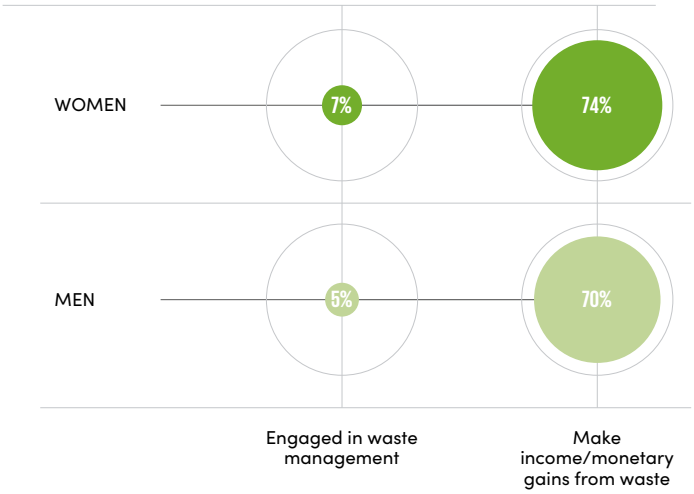


Figure 47: Proportion of the population engaging in waste management subjected to wage discrimination, by sex (percentage)

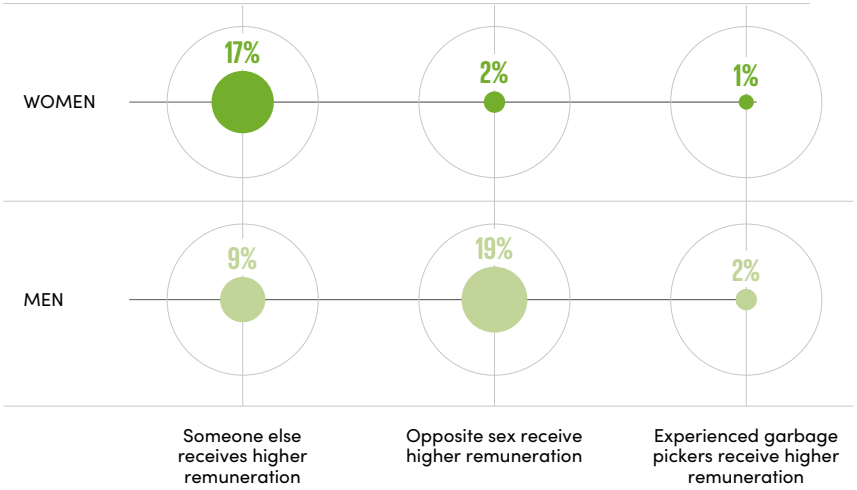
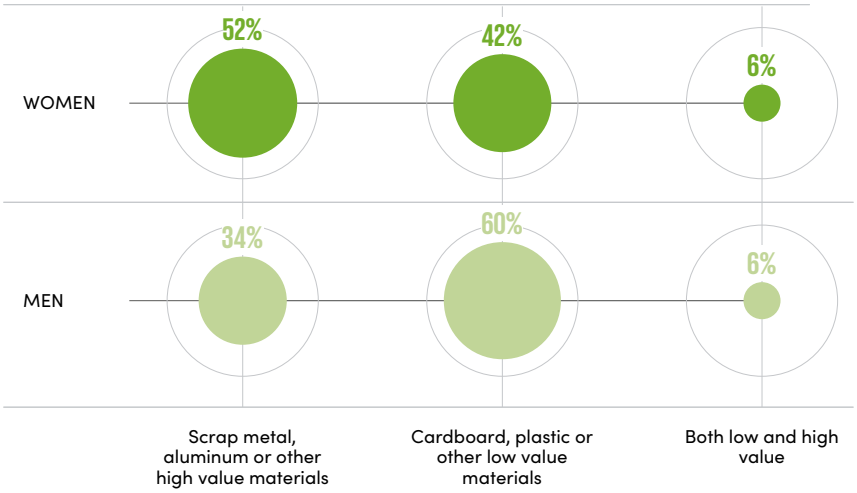


Figure 48: Proportion of the population engaging in waste management of high or low value materials, by sex and type of material (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for the category "Both low and high value".

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

Engaging in some environment-related livelihoods can increase health risks. For instance, an estimated 6 per cent of women and 11 per cent of men engaging in waste management in Cambodia experienced disease as a result (figure 49). The lack of protective gear and safety equipment renders people vulnerable to this risk. Only 7 per cent of women and 9 per cent of men use protective equipment for garbage management and collection (figure 50). The only materials commonly used for waste management are sacks, bags or baskets, which are utilized by 92 per cent of women and 90 per cent of men.

Furthermore, an estimated 16 per cent of women and 21 per cent of men engaging in waste management noted they have felt unsafe while picking, sorting or recycling garbage (figure 49). This may be related to exposure to disease and injuries, as well as to risk of violence in waste management settings, such as when competing for materials, bargaining for remuneration at sorting centres, or operating mostly at night or in unsafe locations. Most of those who collect garbage, do so with their husband, wife or partner or another family member, but as many as 44 per cent of women collect it alone (figure 51). The highest safety risks, however, were perceived by those who collect garbage alone.

Similarly, among those engaging in water and fuel collection, almost 20 per cent of people felt unsafe at least once (figure 49). In Cambodia, men are more likely overall to be in charge of water collection for the household (see Section IV), but women remain more likely to feel unsafe while performing these tasks, in urban areas and near villages, often because of risk of being exposed to violence or other crimes along the way (figure 52).

Figure 49: Proportion of the population engaging in waste management that felt unsafe collecting water or fuel, felt unsafe picking/sorting garbage or experienced disease/injury from waste, by sex (percentage)

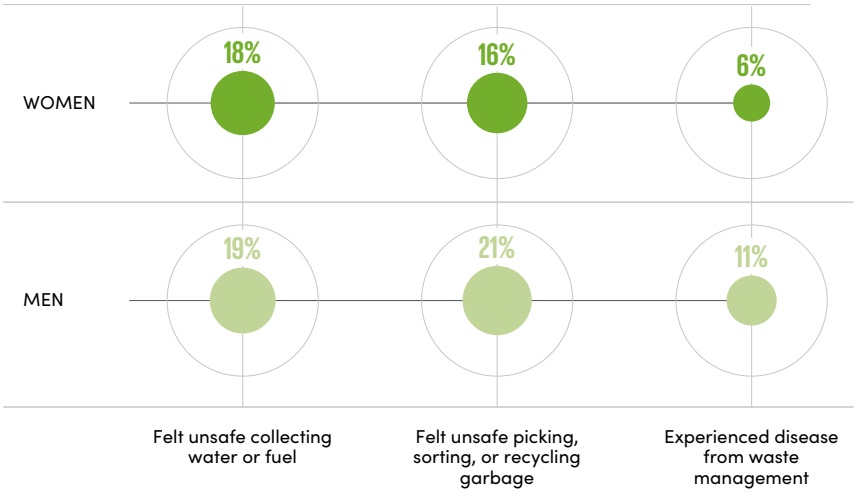


Figure 50: Proportion of the population engaging in waste management that used equipment, by sex (percentage)

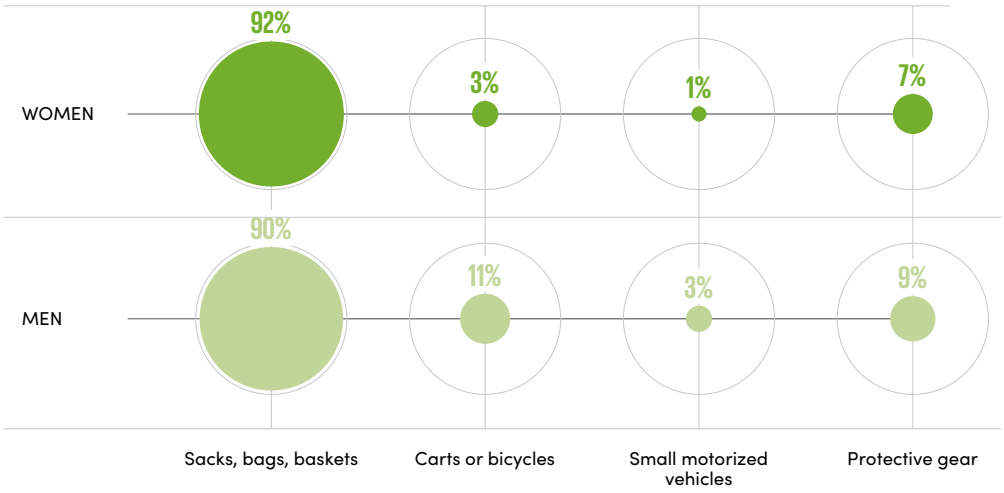


Figure 51: Proportion of the population engaging in waste management that perform these activities alone/accompanied and share of those that ever felt unsafe, by sex

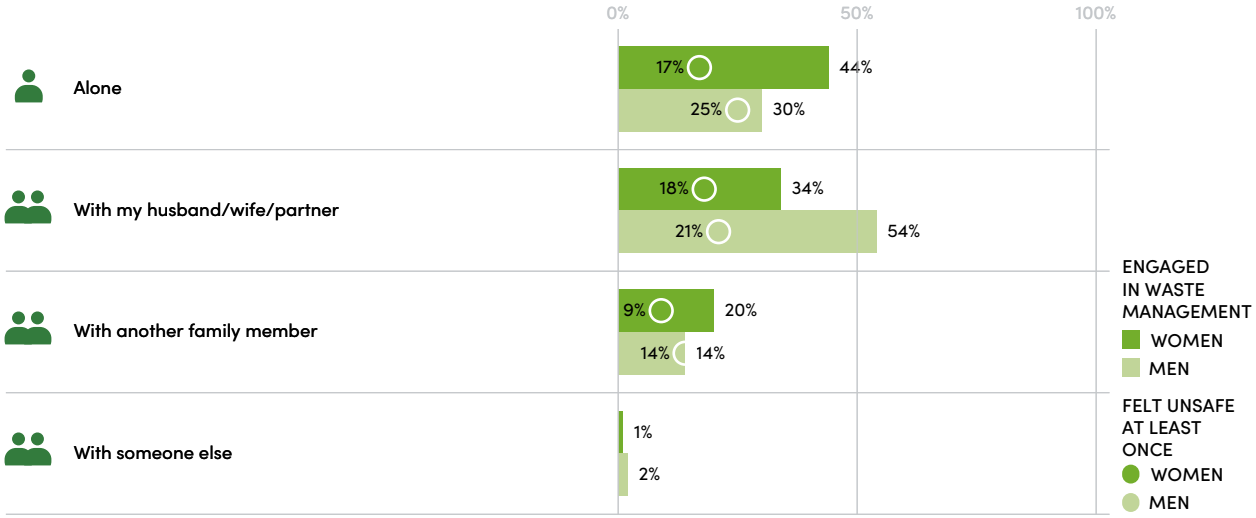
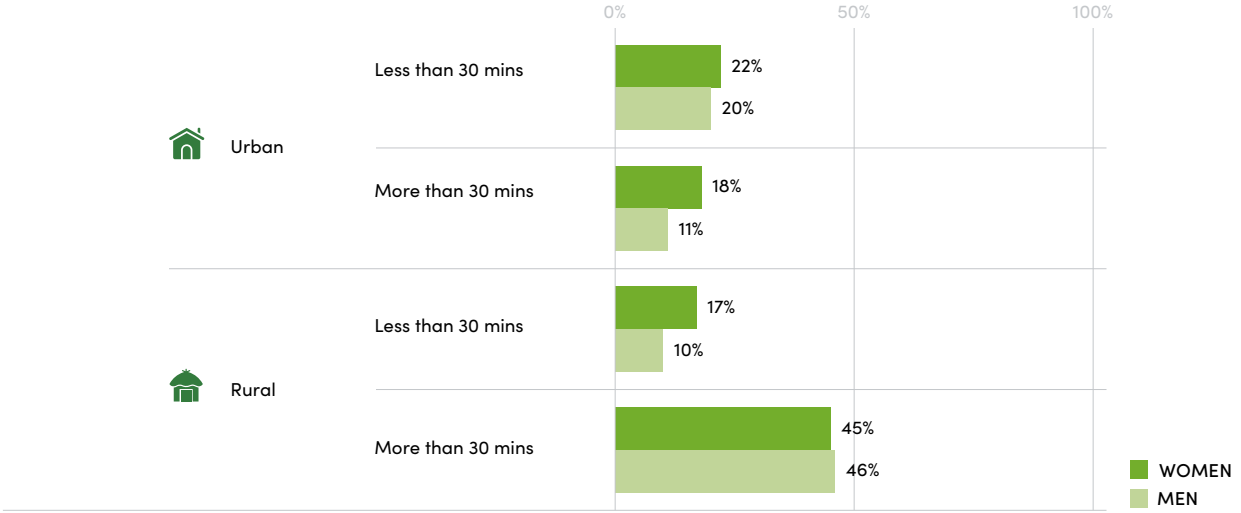


Figure 52: Proportion of the population engaging in water collection that felt unsafe while performing the task, by sex, distance to the water source, and location (percentage)



Section IV. Environmental conservation, degradation and decision-making

THE USE OF ENVIRONMENTALLY DAMAGING FERTILIZERS, PESTICIDES AND GROWTH PROMOTERS IS WIDESPREAD, AND GENDER DIFFERENTIALS EXIST FOR UNDERSTANDING AND MITIGATING RISKS.

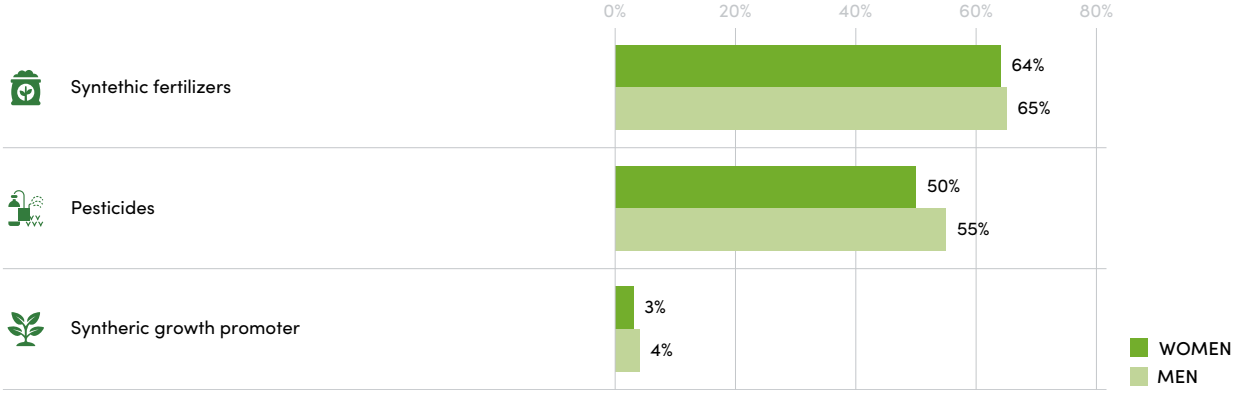
Understanding the nature, frequency and intensity of human interactions with the environment is essential to recognize the important roles that women and men can play in environmental conservation or in further environmental degradation. Gender differentials impact how men and women access various environmental products and activities and dictate their behaviour in the conservation or degradation of natural resources.

Among those growing crops or raising livestock, men are more likely than women to use synthetic pesticides and growth promoters (figure 53); possibly because men are more likely to afford them and because they typically engage in larger farming operations. The use of these substances may cause biodiversity loss, pollution and human health concerns such as neurological and reproductive disorders, thus it is essential to handle these substances carefully. Measures to mitigate these risks must be put in place, but not everyone follows the right protocols, and there are differentials in the behaviour of women and men. For instance, to protect human health, men are more likely than women to follow and adhere to label directions (53 per cent of women, 58 per cent of men), but less than 30 per cent of people overall clean and maintain the protective equipment after use, which may expose them to contamination in the future (figure 54). Men are less likely to dispose of pesticide bottles and equipment safely. Only 16 per cent of women and 11 per cent of men who use these substances dispose of them safely, with the large majority disposing them with household garbage, at burning sites or near use sites (e.g. agricultural fields or water bodies), which contributes to persistent pollutant contamination and may cause lasting damage in waterways and soils near disposal sites.

Despite the generalized belief among roughly half of pesticide users that they handle these substances properly to protect the environment and their own health, such as by following label directions, these are not always adequately understood. When asked whether the substances they handle pose any level of risk to human and environmental health, 97 per cent of people noted they use moderately hazardous substances, and only 4 per cent noted they apply highly toxic substances, which require specific application and disposal protocols such as using coarse droplet nozzles on sprayers to reduce misting, avoiding application on very hot, windy or rainy days, refraining from applying near water bodies, and disposing water used to clean pesticide equipment to a labelled site – most of which were not in place. In comparison, previous studies conducted in Cambodia have established that the use of highly hazardous pesticides is widespread across the country, indicating that farmers might not understand pesticide risks. For instance, a study by the Food and Agriculture Organization of the United Nations (FAO) in 2008 established that 43 per cent of farmers use class 1a pesticides (extremely hazardous), and 84 per cent use class II (highly hazardous) pesticides.[16] Similarly, studies of surface water and soil samples in 2023[17] and 2024[18] established that the concentrations of tebufenozide in water (considered very toxic to aquatic life) and bromphos-ethyl in soil (highly toxic to honeybees and aquatic invertebrates) were substantially above safety thresholds.

A further 2024 study determined that the fungicide dimethomorph was present in almost all types of vegetables tested and most of the fish, although this carries substantially lower risks compared to tebufenozide and bromphos-ethyl. International guidelines for the application of these substances require the use of goggles and respirators during application,[19] although these are rarely used in Cambodia.

Figure 53: Proportion of the population operating land for agriculture or livestock that use synthetic fertilizers, pesticides, or growth promoter, by sex (percentage)



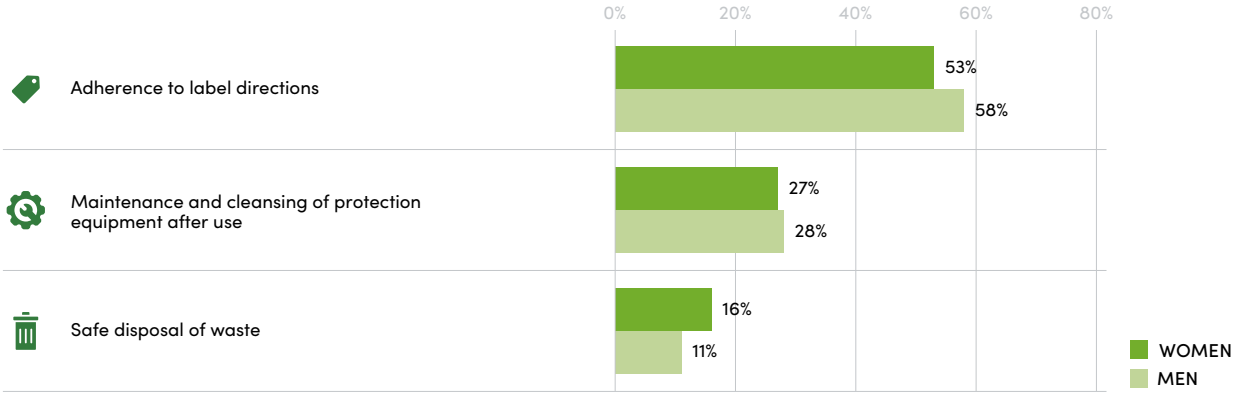
16 See Visarto Preap and Kang Sareth, 2016, Current use of pesticides in the agricultural products of Cambodia. AgNews (news.agropages.com). and FAO 2015, Progress in pesticide risk assessment and phasing-out of highly hazardous pesticides in Asia.

17 See Putheary Ngin et al., 2024, Pesticide screening of surface water and soil along the Mekong River in Cambodia, Science of the Total Environment, vol. 912.

18 See Putheary Ngin, 2024, Pesticides in Cambodia: usage, fate, and health risk. Umeå University, Department of Chemistry.

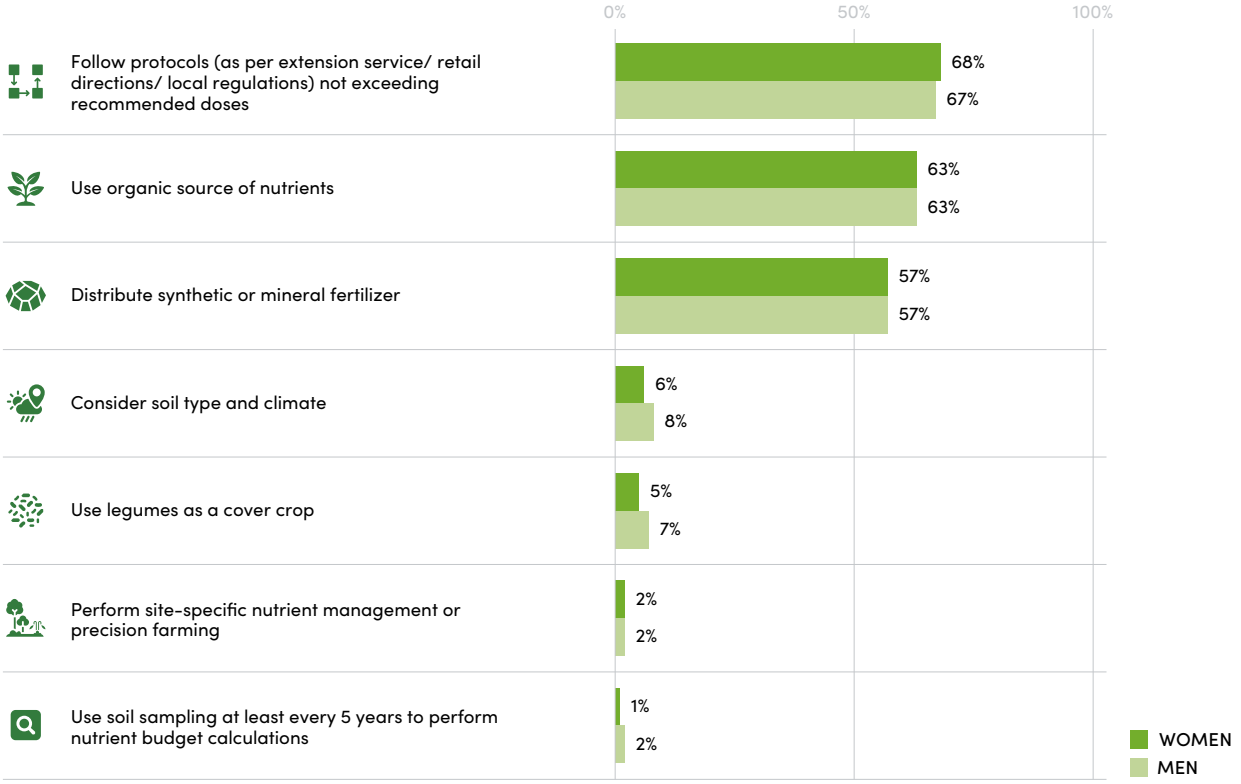
19 See Tebunfenocide and its associated end use products. Re-evaluation decision.

Figure 54: Proportion of the population applying synthetic or mineral pesticides that put in place measures to prevent impacts on human health, by sex (percentage)



When it comes to fertilizer application, 68 per cent of people believe they follow retail directions or local regulations to protect the environment, such as not exceeding recommended doses, and 57 per cent note they distribute these substances over the growing period according to recommendations (figure 55). However, the misuse of fertilizers is also widespread. Many people (63 per cent) use organic substances as sources of nutrients, such as manure, fish meal, seaweed-based sources, or others. These can be helpful for soil remediation when applied in moderation and taking soil PH and levels of nitrogen, potassium, phosphorus, calcium and magnesium into consideration. Yet, as few as 1 per cent of women and 2 per cent of men, mostly those working in larger agricultural operations, perform soil sampling every five years for nutrient budget calculations. Furthermore, as few as 6 per cent of women and 8 per cent of men consider soil type and climate to decide on the application of these substances. The widespread use of some damaging practices and the misconception among farmers that protocols are followed highlights the importance of enhancing farmer education and training to promote environmental conservation, for instance, by promoting a more widespread use of precision farming, and enhancing understanding of label directions and regulations related to pesticides and fertilizers and their human health effects and environmental impacts. Other practices that could help mitigate fertilizer-related soil degradation, include utilizing cover crops instead of synthetic and mineral fertilizer. In Cambodia, only 5 per cent of women and 7 per cent of men use legumes as a cover crop, which contributes to reinserting nutrients in soils naturally. Expanding the use of these practices could help curb dependence on chemical substances and enhance soil quality.

Figure 55: 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 the categories "Use organic source of nutrients", "Distribute synthetic or mineral fertilizer", and "Perform site-specific nutrient management or precision farming".

MEN ARE MORE LIKELY THAN WOMEN TO APPLY MEASURES TO REDUCE THE ENVIRONMENTAL FOOTPRINT OF AGRICULTURE AND LIVESTOCK RAISING.

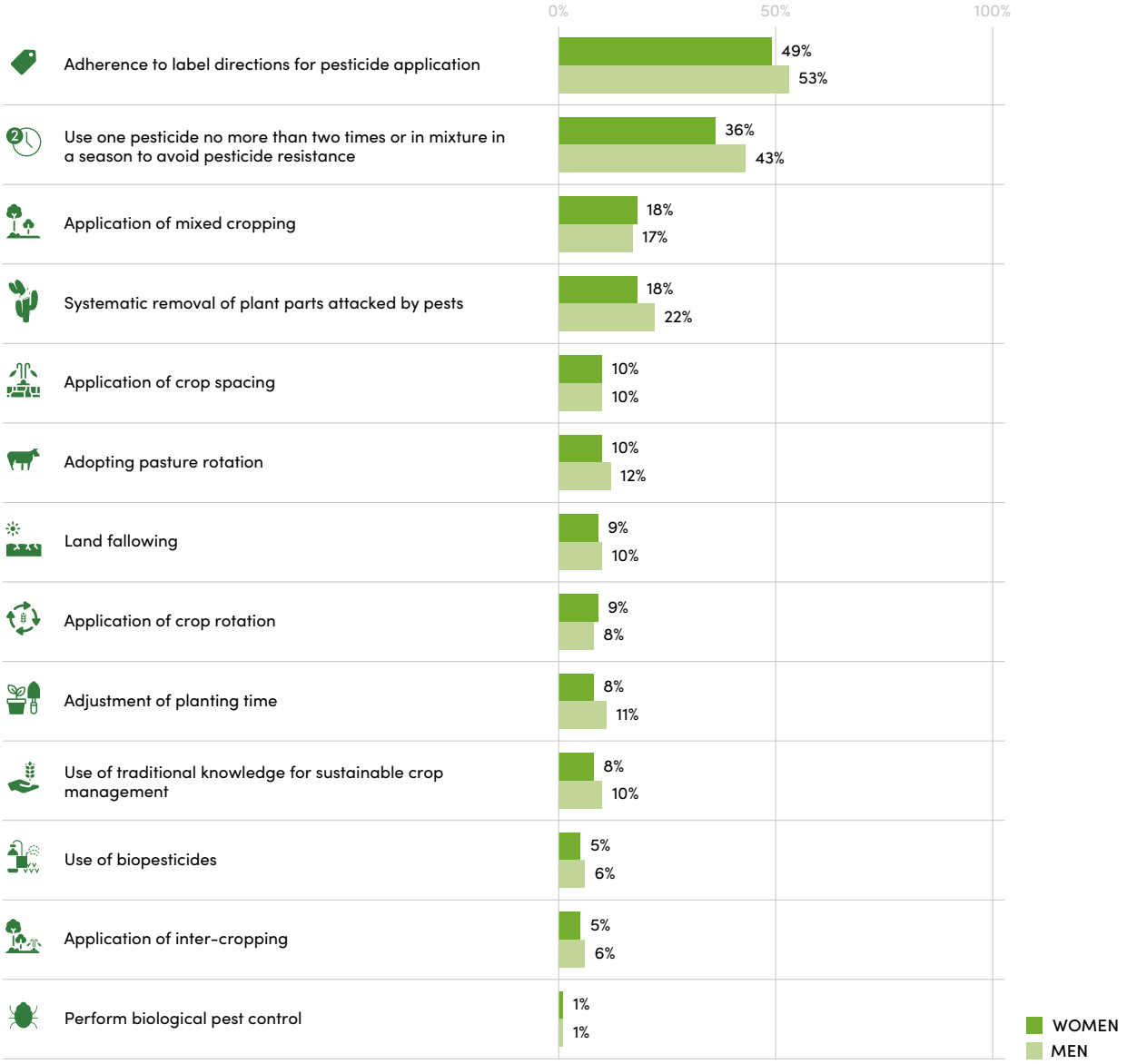
The implementation of measures to reduce the environmental footprint of agriculture and livestock raising is more common among men than women (figure 56). For instance, men typically manage larger agricultural operations compared to women and are more likely to adhere to label directions in pesticide packaging during application (49 per cent of women and 53 per cent of men), and to keep limits in pesticide concentrations and frequency of application to prevent pesticide resistance. On the other hand, women are more likely than men to utilize non-chemical solutions such as applying mixed cropping and crop rotation to protect soil quality. Important environmental conservation practices such as land fallowing, which allows for soil nutrients to regenerate, is practiced by only 9 per cent of women and 10 per cent of men. Given that many women practice agriculture in home gardens and generally own less land than men, they are slightly less likely to make use of fallowing.

The use of slash and burn, a practice whereby farmers burn either natural vegetation (to clear areas for farming) or the shrubs and plant materials leftover in agricultural land after harvesting, remains widespread in Cambodia, with as many as 8 per cent of women and 10 per cent of men practicing it seasonally. This practice results in significant soil erosion and nutrient depletion in the long term, contributes to loss of insect and animal species, worsens the quality of nearby water bodies and contributes to air pollution substantially. Curbing this practice is of outmost importance to promote soil quality, biodiversity conservation and human health.

Maintaining natural vegetation, such as wildflowers, natural grasslands and natural ponds, interspersed with agricultural land, promotes biodiversity conservation and prevents soil degradation. As many as 36 per cent of women and 35 per cent of men in Cambodia practice agriculture on land with natural grasslands or pasture (figure 57). However, only 6 per cent of women and 7 per cent of men practice agriculture on land with natural wetlands or ponds, and as few as 4 per cent of people practice agriculture on land with wildflower strips. The rapid disappearance of these features is contributing to losses in insect quantities and varieties, including pollinators, which has direct consequences on agricultural yields. Similarly, the loss of wetlands poses significant challenges for the availability of irrigation and drinking water, the regulation of rain cycles, and it contributes substantially to aquatic and terrestrial biodiversity loss – all of which have negative effects on ecosystem productivity and ultimately affect agricultural operations as well.

Environmental protection practices related to livestock grazing are more widespread in Cambodia. As many as 95 per cent of people noted that they manage their animals without antibiotics, growth hormones or mammalian or avian by-products in animal feed (figure 58). This is an important practice to ensure both environmental and human health and should continue to be encouraged. Other environmental protection practices, however, are not as common. Only 30 per cent of women and 29 per cent of men raising livestock use pasture rotation to suppress livestock pest populations and prevent destruction from overgrazing. Still, when asked whether their animal management practices conserve natural resources and biodiversity, 19 per cent of women and 23 per cent of men responded that they do. This may be because they forego use of antibiotics, growth hormones, feed ingredients or other chemicals. For instance, only 4 per cent of women and 5 per cent of men utilize genetic engineering, ionizing, radiation or sludge to care for animals, which is encouraging. Still, building farmer's capacity about the importance of fencing off areas to allow for controlled pasture rotation that prevents overgrazing and soil degradation is important and must be emphasized across the country.

Figure 56: Proportion of the population engaging in agriculture and livestock grazing undertaking measures to reduce its environmental footprint, by sex (percentage)

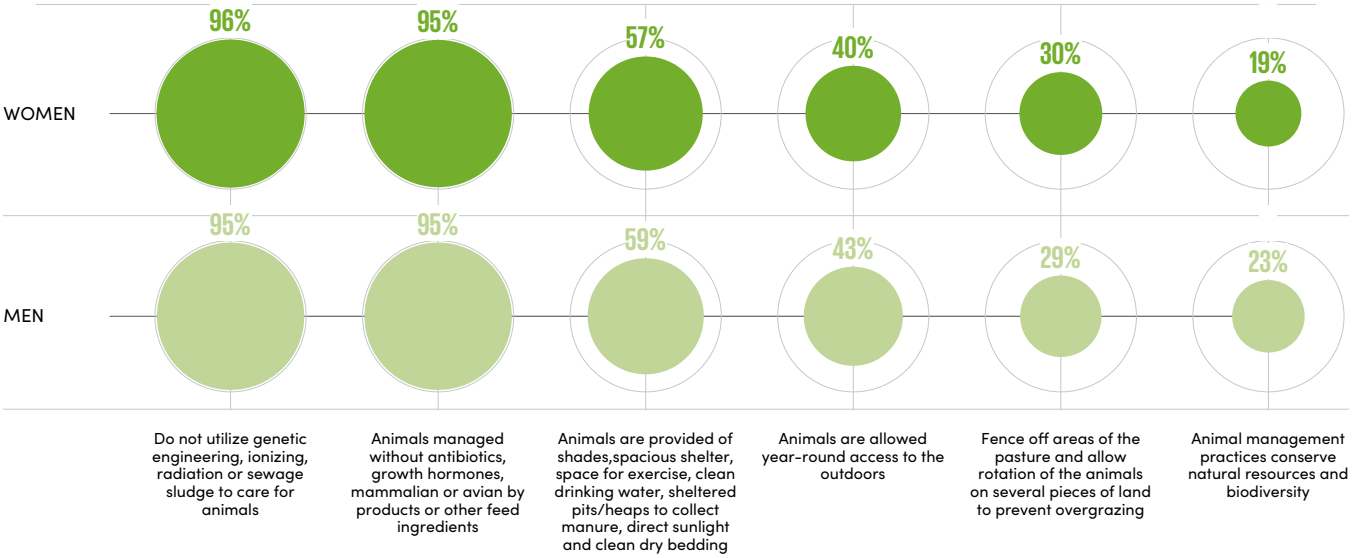


Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Application of crop spacing" and "Perform biological pest control".

Figure 57: Proportion of people who practice agriculture on land that includes natural or diverse vegetation or other features conducive to preservation of biodiversity and conservation of soil quality, by sex (percentage)

Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Wildflower strips" and "Stone or wood heaps".

Figure 58: Proportion of people managing livestock who implement livestock management practices to conserve natural resources and biodiversity, by sex (percentage)



Note: The differences between women and men are not statistically significant at α=0.05 for the category "Animals managed without antibiotics, growth hormones, mammalian or avian by products or other feed ingredients".

AQUACULTURE OPERATIONS CARRY SUBSTANTIAL ENVIRONMENTAL RISKS, HEIGHTENED BY MEN'S DISPROPORTIONATE USE OF PESTICIDES AND WOMEN'S DISPROPORTIONATE USE OF FEED.

Aquaculture operations are relatively common in Cambodia, practiced by 3 per cent of people. These operations can be highly damaging for the environment, particularly if antibiotics or feed are used, and especially if these are practiced near or within bodies of water, such as the ocean, rivers or wetlands, where release events may contribute to the spread of disease, invasive species or pollutants. For instance, almost 20 per cent of those practicing aquaculture in rivers in Cambodia utilize pesticides or fertilizer, which poses significant risks to aquatic biodiversity.

In Cambodia, however, roughly 90 per cent of those practicing aquaculture use neither pesticides nor antibiotics (table 4). Pesticide use is more widespread among men than women practicing aquaculture (7 per cent of women, and 10 per cent of men use pesticides only, while an additional 2 per cent of people use both pesticides and antibiotics) (figure 59). The use of feed, however, is a lot more widespread, and women are substantially more likely to use it than men (73 per cent of women use feed in their aquaculture operations, compared to 66 per cent of men) (figure 60). Using feed (usually processed pellets made with fish meal and fish oil, which contribute substantially to marine overfishing globally) contributes to disease among the species being raised if uneaten pellets remain and rot in the aquaculture pond. As such, using feed may lead to enhanced use of antibiotics to prevent disease, further damaging the nearby environment. The relatively low pesticide and antibiotic use in aquaculture operations in Cambodia is encouraging and promotes environmentally friendlier practices, but the widespread use of feed is cause for concern.

Considering the compound use of antibiotics, pesticides and feed, the aquaculture management behaviour of women and men is substantially likely to pose threats to the environment. This is particularly true for those practicing aquaculture in rivers, where the use of harmful substances is widespread and has devastating effects. However, decisions around aquaculture management and the use of these compounds are not always made by the women and men who undertake these aquacultural activities. For instance, only 75 per cent of women who practice aquaculture make their own decisions about the use of these substances, compared to 89 per cent of men (figure 61). In 6 per cent of cases, women noted that the pond owner made the decisions for them, and someone else such as their husband or other family member made the decisions in 19 per cent of cases

Table 4: Proportion of aquaculture operations by location, by sex of person practicing aquaculture and whether or not their practices pose an added threat (percentage)

LOCATION OF AQUACULTURE OPERATION	MANAGED BY WOMEN	MANAGED BY MEN	USES PESTICIDES		USES ANTIBIOTICS		USES FEED	
			WOMEN	MEN	WOMEN	MEN	WOMEN	\
Land	98	95	8	10	2	1	73	64
River	2	5	50	46	17	8	92	92
Other	0.5	1	0	0	0	0	24	59

Note: No observations were recorded for women and men whose aquaculture operations are located in the ocean. The number of observations for women and men whose aquaculture operations are located in rivers and other areas is less than 100, thus, the figures for these locations must be interpreted with caution.

Figure 59: Proportion of people who use pesticides and/or antibiotics in aquaculture operations, by sex (percentage)

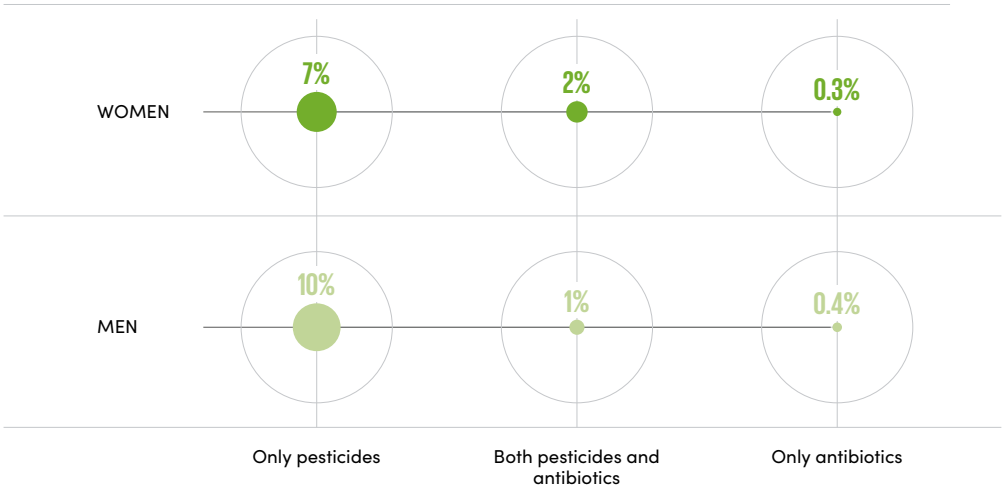


Figure 60: Proportion of people who use feed in aquaculture operations, by sex (percentage)

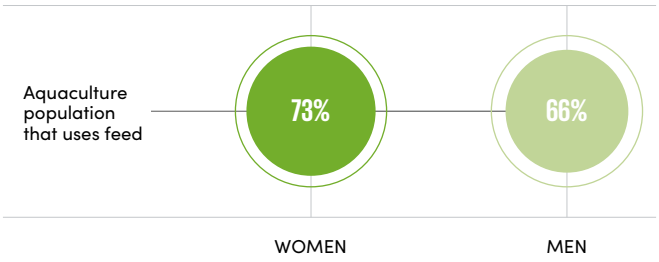


Figure 61: Proportion of people who make aquaculture management decisions, by sex (percentage)

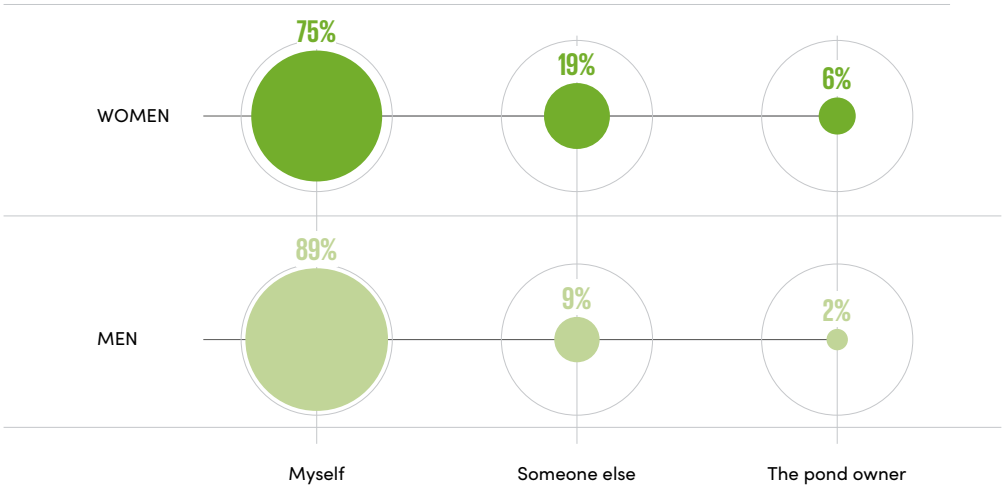
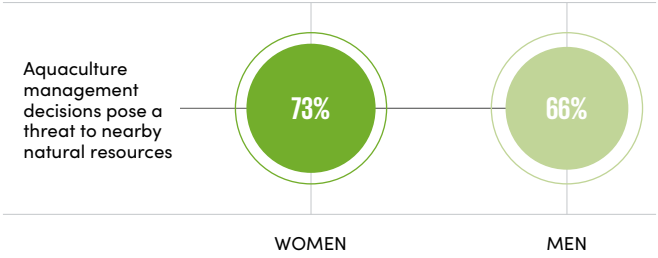


Figure 62: Proportion of people whose aquaculture management decisions pose a threat to nearby natural resources, by sex (percentage)



MEN'S FISHING PRACTICES ARE MORE ENVIRONMENTALLY DESTRUCTIVE THAN WOMEN'S.

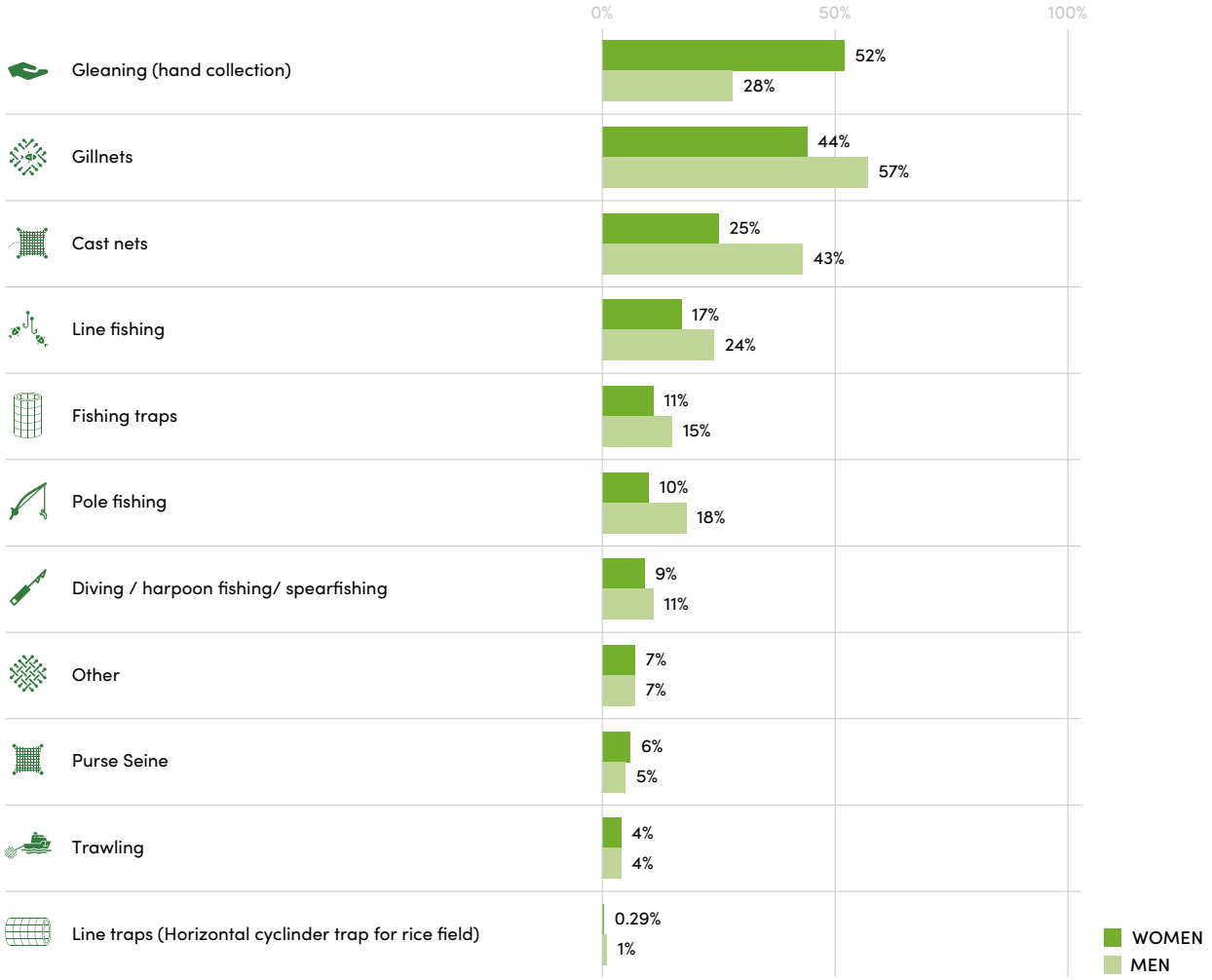
An estimated 10 per cent of women and 32 per cent of men in Cambodia practice fishing or harvesting of aquatic life, either for subsistence, pay, profit, leisure, tradition or other reasons. While men are more likely to fish offshore, women are more likely to harvest marine animals or seaweed on or near the shore. Thus, their fishing methods are different, as is the impact of their activities on ecosystems. For instance, 52 per cent of women and 28 per cent of men engaging in marine or other forms of aquatic harvesting practice gleaning, generally considered a more sustainable practice (figure 63). In turn, men are substantially more likely than women to use gill nets, vertical nets attached to the ocean floor that trap marine life by their gills when they attempt to swim through nets (the most widely used fishing method among men, practiced by 57 per cent). Similarly, men are more likely to use long lines, a non-selective fishing method in which a floating line with hooks, sometimes kilometres long, captures and entangles both target and non-target species. Both of these are highly destructive practices as they capture substantial amounts of by-catch, including protected species.

Compared to people in other countries, Cambodians still rely substantially on traditional fishing practices, such as cast nets and wedge-shaped scoop baskets, which allow for better targeting of catch and are generally considering less damaging to marine life and ecosystems. Reliance on some of these traditional methods is important to conserve the country's marine, riverine and overall aquatic resources. Yet, the use of other more destructive traditional methods, such as various forms of fishing traps, remains relatively common. Overall, an estimated 62 per cent of women and 74 per cent of men in Cambodia use at least one highly destructive fishing method[20] regularly.

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. An estimated 5 per cent of men and 2 per cent of women look at fish stock status information regularly (figure 64). However, only 1 per cent of men and 0.4 per cent of women practicing marine harvesting generate reports on total catch and submit them to authorities. This is an important practice for the successful management of stocks and the conservation of marine, riverine and other forms of aquatic biodiversity.

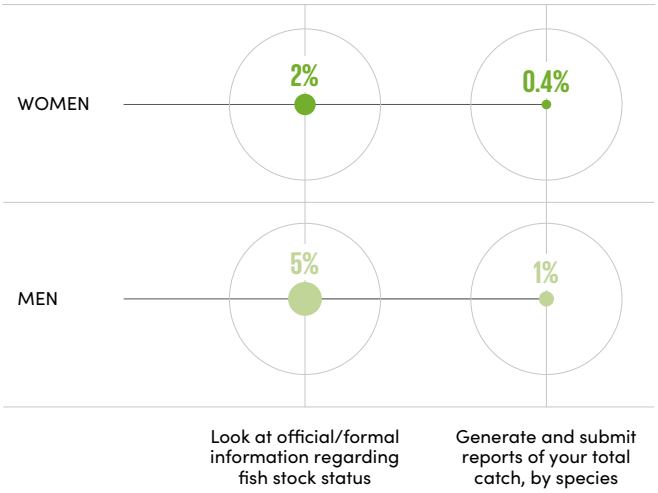
20 These include purse seines, other seines, trawling, gillnets, long lines, fishing traps (including FADs), dynamite fishing and dredging.

Figure 63: Proportion of fishing/aquatic harvesting population, by sex and fishing method (percentage)



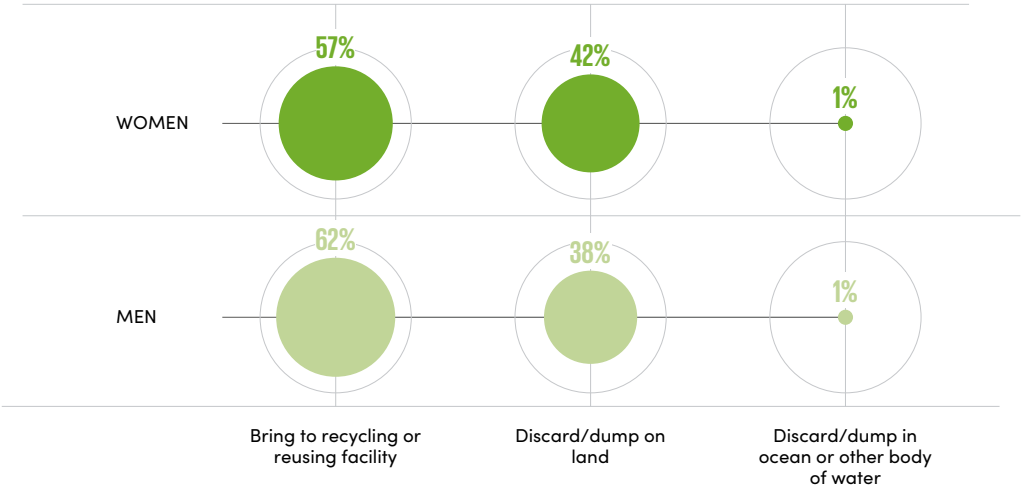
Note: The differences between women and men are not statistically significant at α=0.05 for the categories "Trawling" and "Other".

Figure 64: Proportion of people who support fish stock monitoring by looking at fish stock status and reporting on catch, by sex (percentage)



Pollution in water bodies, particularly plastic pollution originating from discarded fishing gear, is a key problem contributing rapidly to the loss of marine and other aquatic biodiversity, including the disappearance of coral reefs. Among those in Cambodia who practice fishing or aquatic harvesting, men are substantially responsible for this type of pollution, as they engage disproportionately with fishing operations that make use of large nets. Of all people who practice fishing, an estimated 60 per cent bring their spent fishing gear to a recycling facility or somewhere it could be reused (figure 65). Worryingly, as many as 40 per cent of people still discard their gear on land, and 1 per cent dump it in the ocean or another body of water. Tackling the problem of discarded fishing gear is of critical importance to enable marine biodiversity and ecosystem services to rebound.

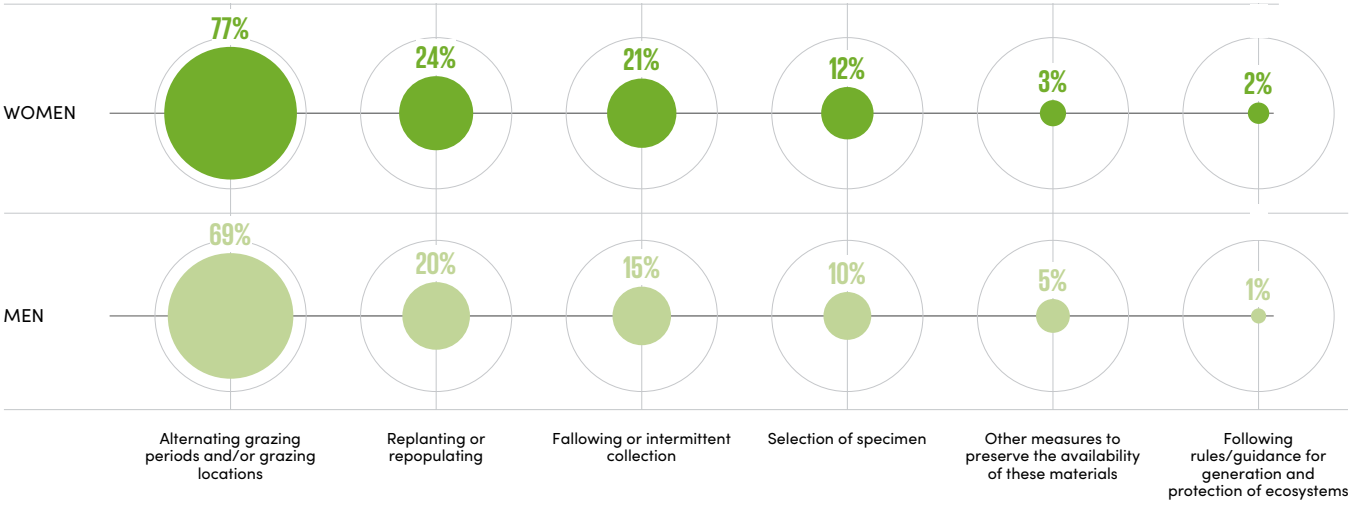
Figure 65: Proportion of fishing/marine harvesting population contributing to recycling or reusing of gear, by sex (percentage)



WOMEN ARE MORE LIKELY THAN MEN TO USE SUSTAINABLE PRACTICES FOR THE CONSERVATION OF WILD PRIMARY FORESTS.

Wild primary forests, wild pastures and other forms of wild wooded land play a critical role for the livelihoods of people in Cambodia. As many as 2 per cent of women and 4 per cent of men rely on these spaces, and for less than 1 per cent of them, activities performed in primary forests and wild wooded land represent the majority of their income. Forest products are thus essential for livelihoods, traditions and cultural practices, but many people fail to use sustainable practices when extracting products from forests. An exception, perhaps, is the practice of alternating grazing periods or locations to allow the forest to regenerate, practiced by 77 per cent of women and 69 per cent of men. In contrast, only 24 per cent of women and 20 per cent of men replant and repopulate forest areas after harvesting; and just 21 per cent of women and 15 per cent of men practice fallowing or intermittent collection (figure 66). Worryingly, as few as 12 per cent of women and 10 per cent of men practice specimen selection with conservation in mind (e.g. leaving eggs, fledglings and young or growing animals and plants, and refraining from harvesting the totality of specimens of a single species to guarantee replacement). Promoting the consistent implementation of these practices could enable the regeneration of plant and animal species, enhance economic opportunities and ultimately promote forest health.

Figure 66: Proportion of wild forest users who use sustainable management practices, by sex (percentage)



MEN IN CAMBODIA ARE MORE LIKELY THAN WOMEN TO ENGAGE IN GREEN JOBS. BUILDING WOMEN'S SKILLS IS KEY FOR A JUST TRANSITION.

As the Government of Cambodia works to shift towards a low emission economy, reduce pollution and preserve natural resources, the contributions of women and men through their jobs will play a critical role in achieving these goals. At present, an estimated 3 per cent of women and 4 per cent of men are employed in at least one green job in Cambodia (either through their primary or secondary economic activity), that is, decent jobs that contribute to preserve or restore the environment (figure 67). Among these, the most popular green job category pertains to employment related to the reduction and removal of pollution and air emissions, with 0.9 per cent of employed women and 1.5 per cent of employed men holding decent jobs for the generation of related products, and 1.5 per cent of women and 1.8 per cent of men holding decent jobs on related processes (figure 68).[21]

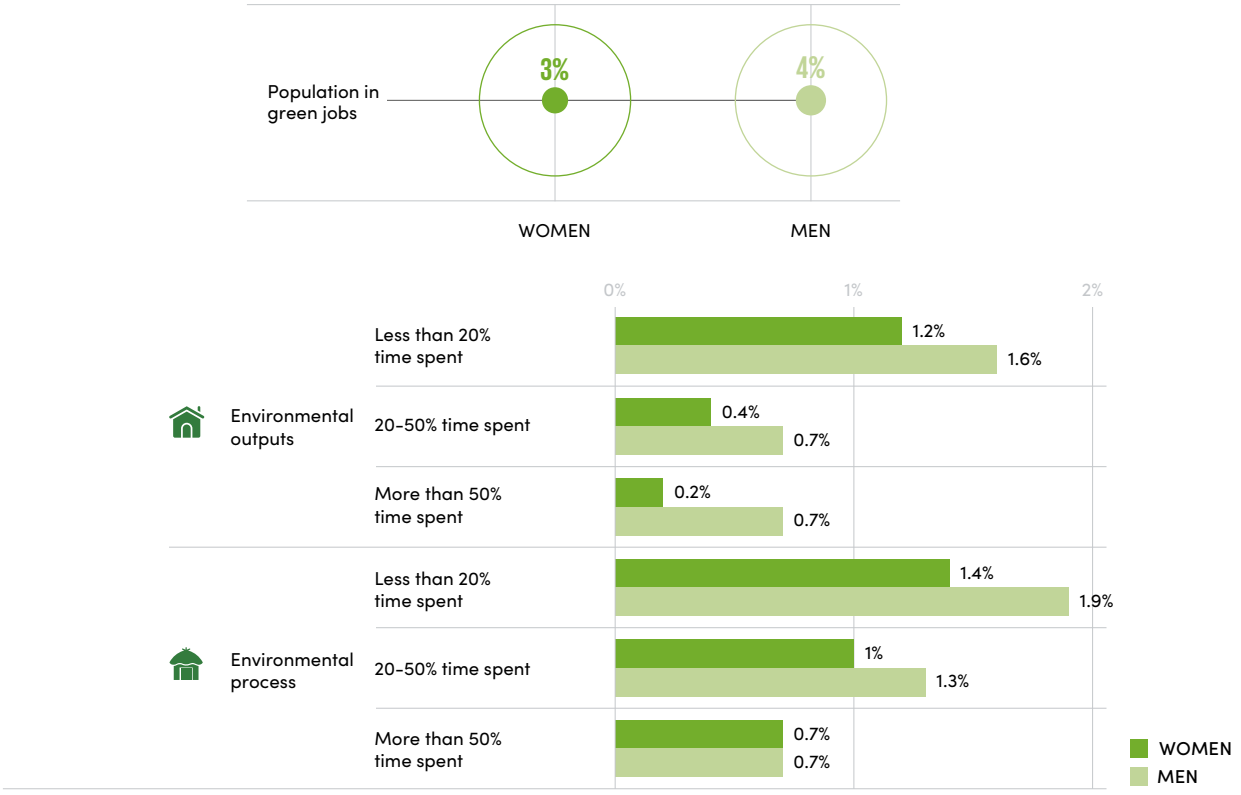
Overall, men are more likely than women to engage in green jobs that contribute to the production of both environmental goods and services, as well as environmental processes, which make up the bulk of the green jobs in Cambodia. The largest gender gap overall, in absolute terms, exists among those engaging in energy and water efficiency processes (0.5 per cent of employed women, compared to 1.4 per cent of employed men) – one of the most critical areas to advance towards environmental sustainability in Cambodia, given the substantial impacts of climate change, air pollution and water scarcity in key parts of the country (figure 69).

21 Many people are employed in both product-related and process-related green jobs of the same category. As such, people can be considered to have more than one green job, and the sum of all categories may not add up to the total number of people holding green jobs.

Critical sectors such as sustainable agriculture, forestry and fisheries remain underdeveloped, making up 0.75 per cent of the employed population (production environmental outputs) and 1.05 per cent (environmental processes), respectively. Similarly, environmental protection and natural resource conservation jobs engage 0.8 per cent of the employed population in production and 1.1 per cent in processes. In light of key challenges associated with overuse of pesticides and fertilizers, and widespread levels of deforestation and overfishing taking place across the country, prompting a shift towards these more sustainable practices for farmers, fishers and gatherers, remains a key priority.

To enhance efforts towards reducing emissions in Cambodia and preserving the environment overall, it is critical that women and men shift their employment towards green jobs. At present, however, some key barriers may be deterring women from engaging in these jobs. For example, women have lower participation in science, technology, engineering and mathematics (STEM) education, which leaves them less prepared to engage in engineering jobs for reducing emissions, as well as jobs in renewable energy and technology sectors in general, where green jobs concentrate. In Cambodia, only 17 per cent of STEM graduates are women.[22] Even when educated in these fields, work culture and social norms may push many women away from these careers. Their more limited access to finance compared to men may also prevent many women from starting green businesses. In Cambodia, men are more likely than women to have a bank account, life insurance and pension funds (figure 70). This limits women's capacity to engage in startups or to invest in innovation. Overcoming some of these barriers is essential to ensure a just transition towards a low emission economy.

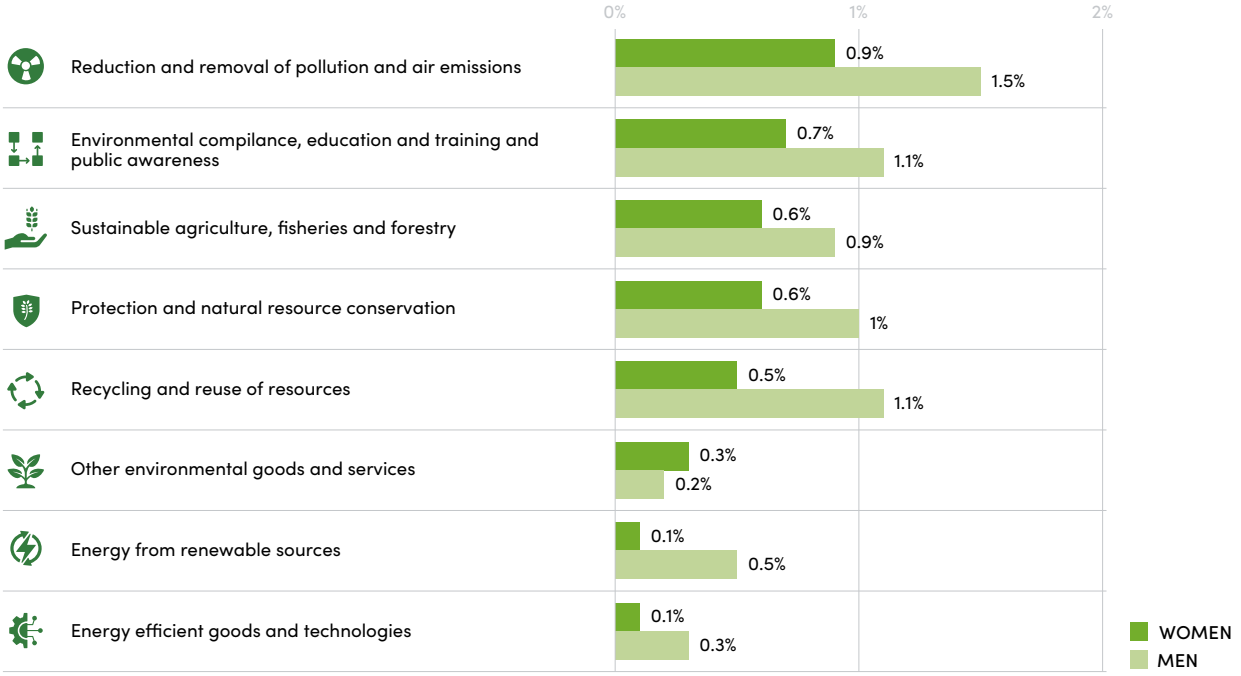
Figure 67: Proportion of the employed population that engaged in green jobs over the past month, by sex, and by share of working time spent (percentage)



Note: The analysis considers individuals aged 18 or older whose main or secondary economic activity qualifies as a green job. The differences between women and men are not statistically significant at α=0.05 for the category "More than 50% time spent" on environment outputs.

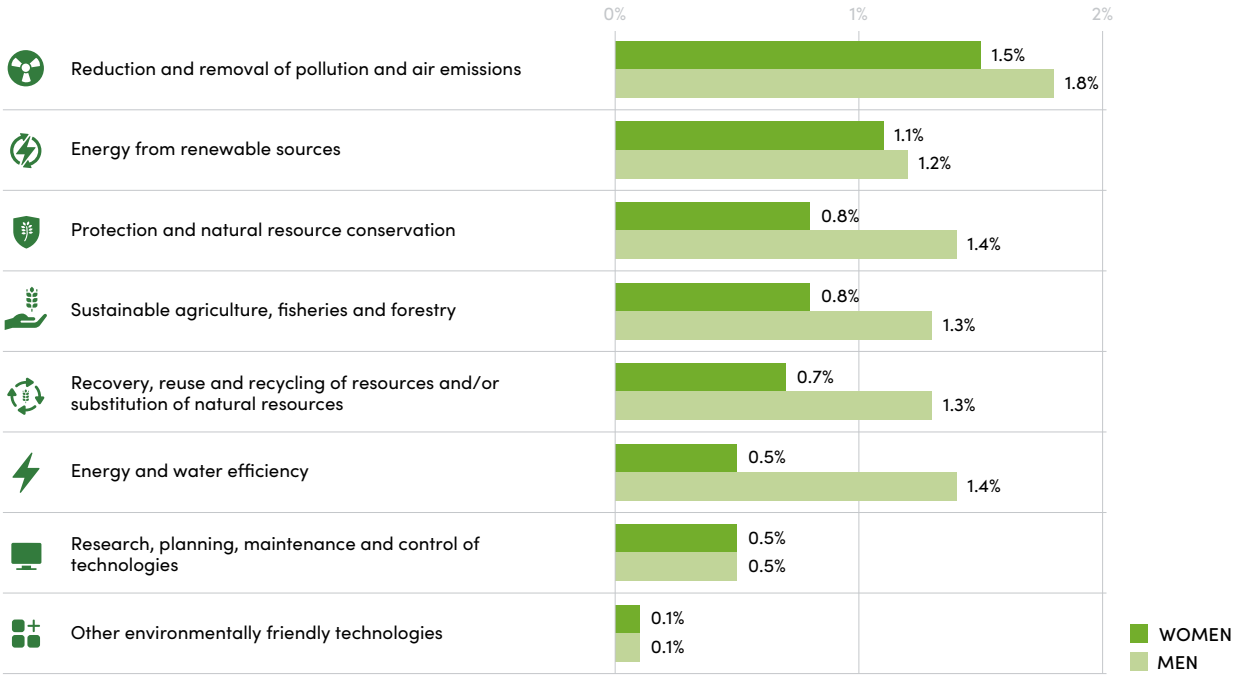
22 Latest available data point refers to 2015. See Gender Data Portal, World Bank.

Figure 68: Proportion of the employed population whose green jobs pertain to the production of environmental outputs, by sex



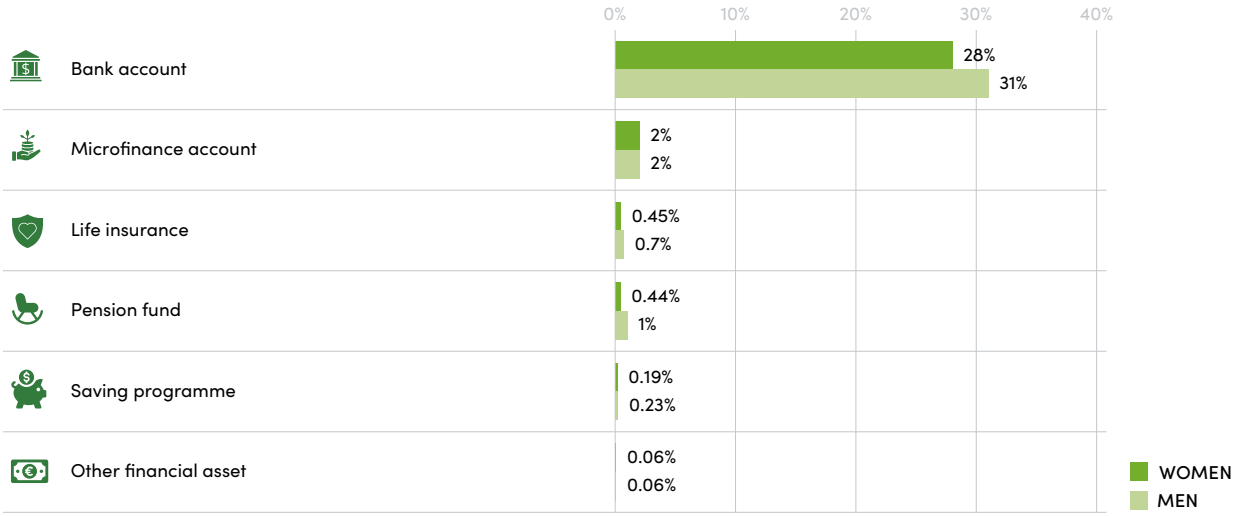
Note: The analysis considers individuals aged 18 or older whose main or secondary economic activity qualifies as a green job.

Figure 69: Proportion of the employed population whose green jobs pertain to environmental processes, by sex



Note: The analysis considers individuals aged 18 or older whose main or secondary economic activity qualifies as a green job. Differences between women and men are not statistically significant for the categories “Research, planning, maintenance and control of technologies” and "Other environmentally friendly technologies".

Figure 70: Proportion of the population who, alone or jointly, owns financial assets, by sex



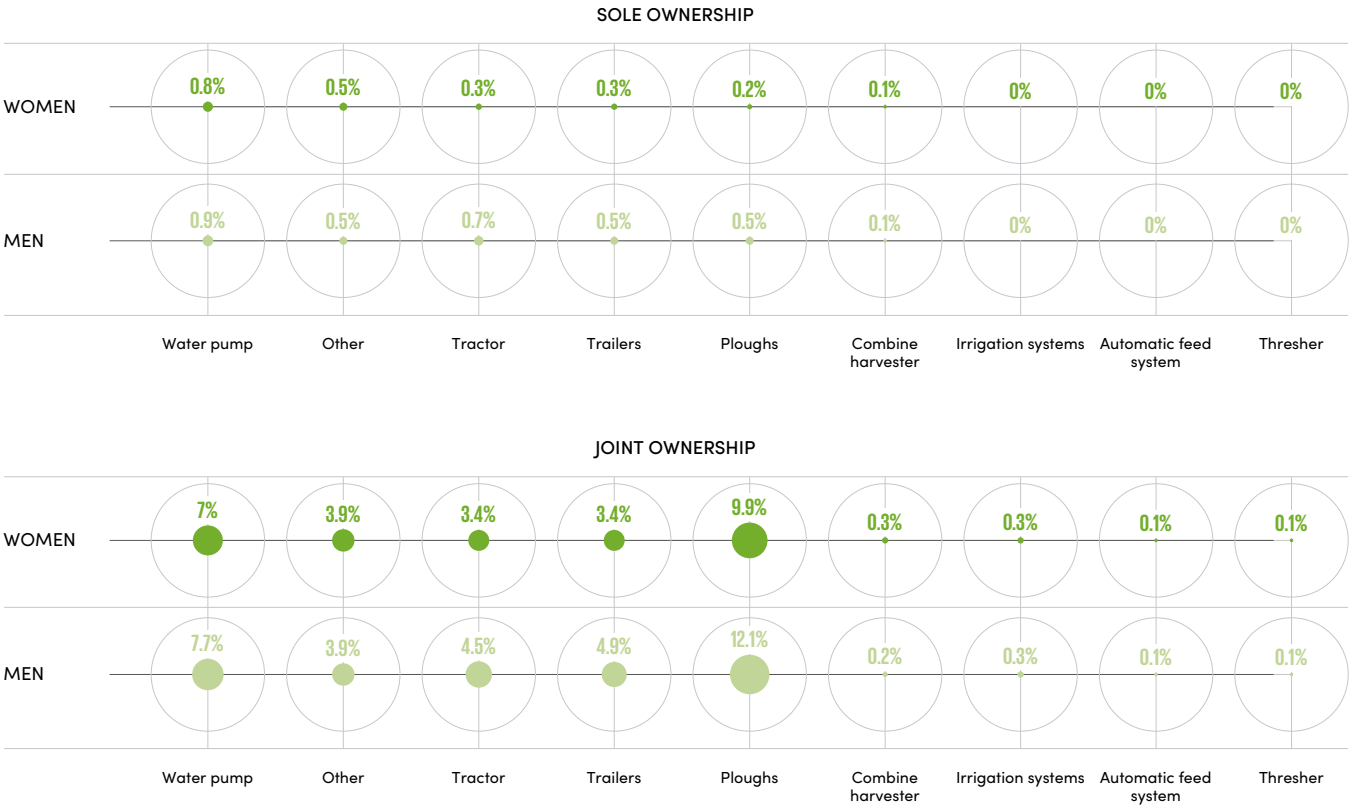
Note: The differences between women and men are not statistically significant at a=0.05 for the categories "Microfinance account" and "Other financial asset". The number of observations for stocks and shares saving programme are less than 0 and thus not depicted here.

GENDER DIFFERENCES IN ASSET OWNERSHIP RESULT IN DIFFERENTIATED IMPACTS ON ENVIRONMENTAL CONSERVATION AND DEGRADATION

Men engaging in agriculture are overall more likely than women to own ploughs, trailers and other agricultural assets (figure 71). The use of tractors, trailers and other heavy machinery enhances yield relative to time and other resources invested and allows people to engage in more intensive agricultural operations. However, the use of these assets has greater impact on environmental degradation, which may worsen if intensive operations proceed without the necessary conservation safeguards.

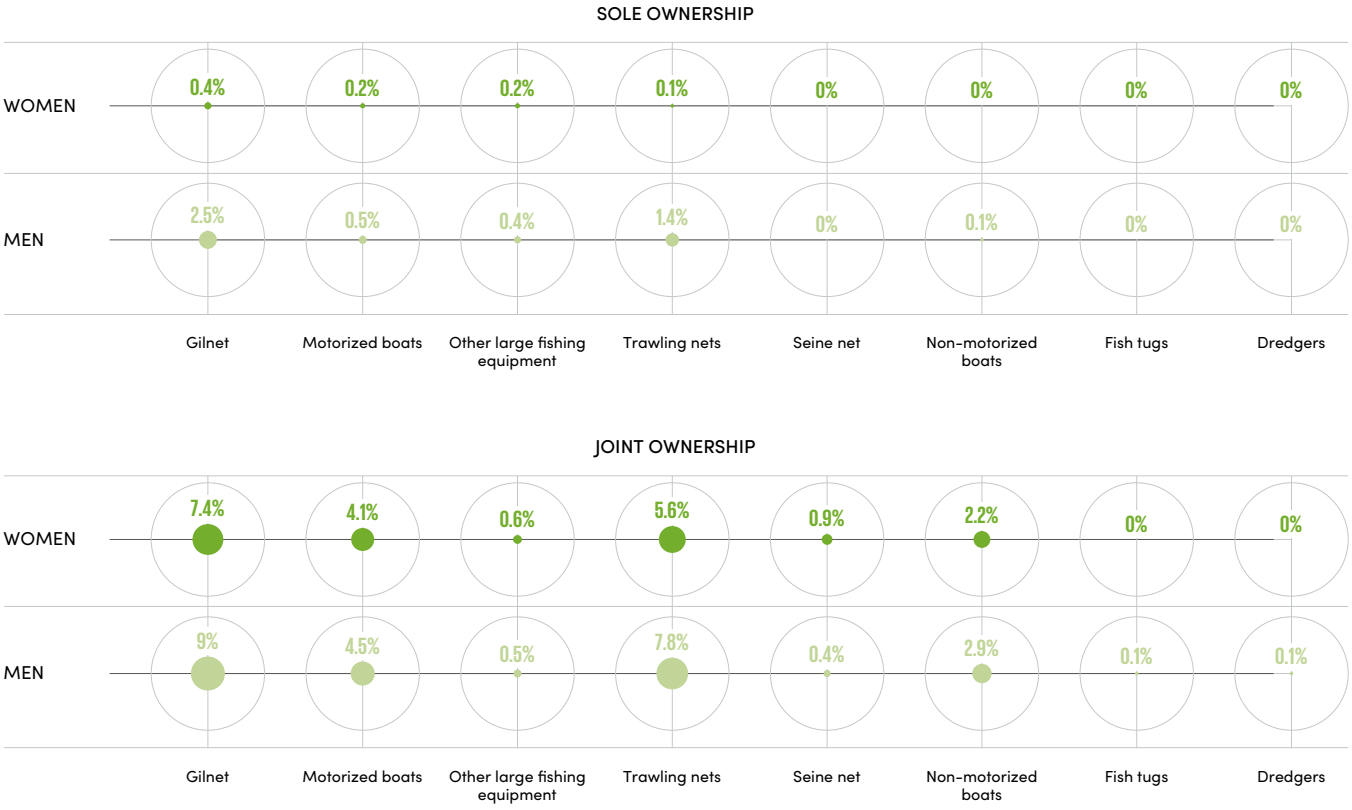
Asset ownership is important because those who own assets may sell them in case of need, which could enhance their resilience. Across all types of environmental assets, women are generally less likely than men to note they have ownership, showcasing their enhanced vulnerability. For instance, gender differences also exist regarding ownership of large fishing equipment. Men are more likely than women to own gillnets and trawling nets alone, which enable non-selective intensive fishing practices with devastating effects on marine biodiversity (figure 72). Men's disproportionate engagement in these intensive harvesting activities, which contribute to marine degradation, may be affecting women's livelihoods directly, as women often rely on coastal harvesting. It is harder for women than men to switch locations to cope with declining fish stocks, and women are increasingly noticing the effects of aquatic biodiversity loss, caused in large part by overfishing and the use of non-selective gear.

Figure 71: Proportion of the population practicing agriculture that own large agricultural assets alone or jointly, by sex



Note: The differences between women and men are not statistically significant at α = 0.05 for those who who have sole ownership of a combine harvester, and for those who have joint ownership of irrigation systems, automatic feed systems and threshers.

Figure 72: Proportion of the population who engages in aquaculture, fishing or marine harvesting that, alone or jointly, own large fishing equipment, by sex



Note: There are no observations for categories “Radars” and "Boat communication systems" and thus these are not depicted in the figure.

OWNING ASSETS ENABLES MANY WOMEN TO HAVE A SAY IN ENVIRONMENTAL DECISIONS

Men are, overall, more likely than women to make environmental decisions related to agricultural and farming activities. An estimated 94 per cent of men noted they make their own decisions (alone or jointly) regarding purchases of farming products, and just as many men make decisions regarding the selling of these products. These rates stood at 90 and 92 per cent for women, respectively (figure 73). A similar gap exists regarding decision-making around purchases of farm animals. While social norms, age differences among partners, educational attainment and employment status are all known to influence women’s decision-making power and agency in general, the ownership of environmental assets also contributes. For instance, as many as 97 per cent of women who own agricultural assets such as ploughs, tractors and trailers, make their own decisions regarding purchasing of farming products, compared to 83 per cent of women who do not own large agricultural assets. Similar gaps exist regarding other decisions, such as purchases of farm animals and sales of farming products (figure 74). As women’s and men’s behaviours in agricultural and fishing practices differ widely (as seen in previous sections of this report), with women’s practices overall being gentler towards the environment, differences in the ownership of environmental assets, and therefore on the decisions taking regarding agricultural and farming practices, can also play an important role in the conservation or degradation of ecosystems.

Figure 73: Proportion of the population who usually decide, alone or jointly, regarding purchases and sales of farming products and animals, by sex

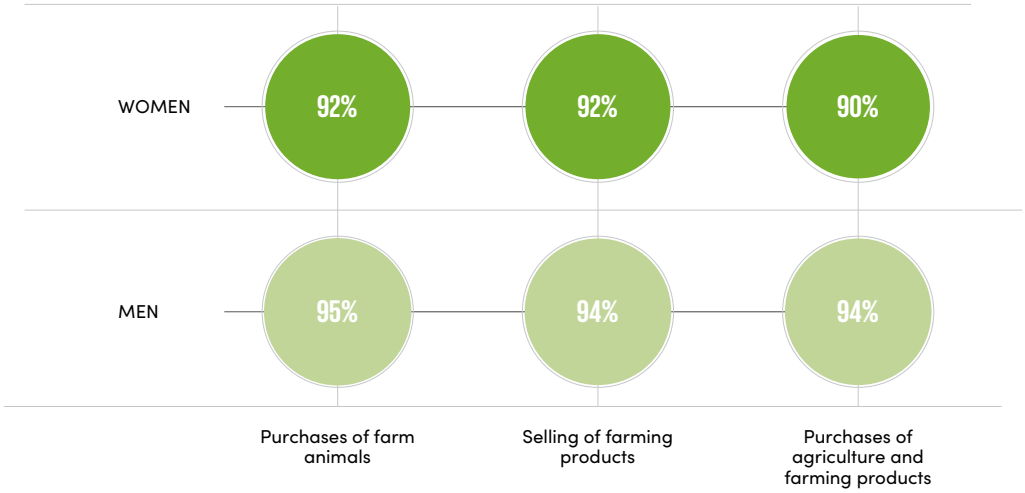
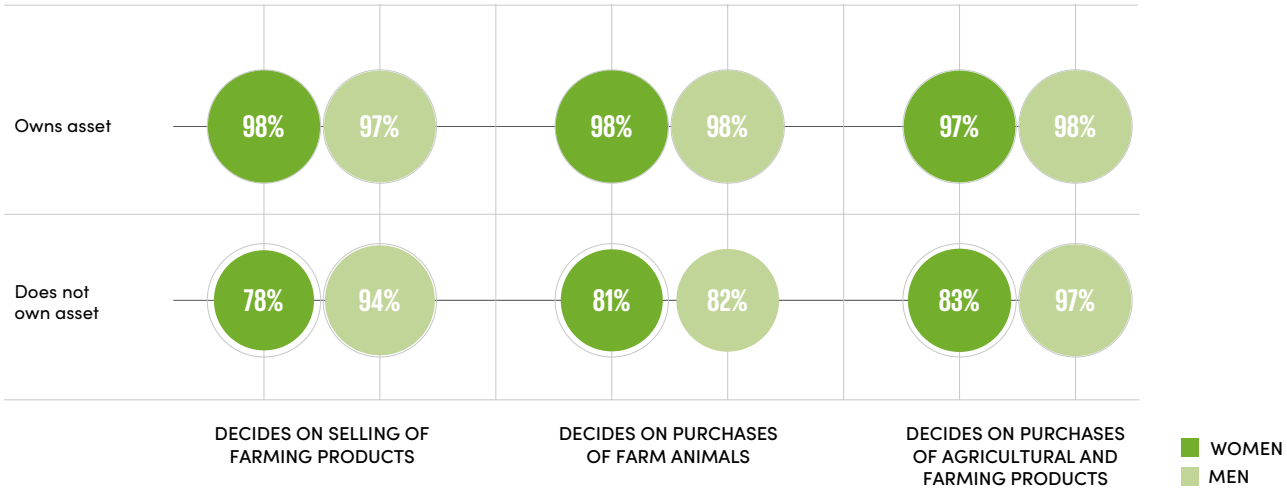


Figure 74: Proportion of the population who usually decide alone, regarding purchases and sales of farming products and animals, by sex and type of ownership (percentage)



Note: Farm animals comprise larger types of livestock only, including cows, buffalo, goats, sheep, pigs and horses. For the category "Decides on purchases of farm animals", the designation "Owns asset" indicates the respondent's household owns farm animals, and the person is either the sole or joint caretaker of these animals, as the survey did not gather specific data about who within each household owns each animal. Under the bars for "Decides on selling of farming products" and "Decides on purchase of agricultural and farming products," Own asset" refers to the respondent's sole or joint ownership of any of the following: tractor, plough, irrigation system, trailer, water pump, thresher, combine harvester, automatic feed system for livestock, manure removal system, or other large agricultural equipment. The differences between women and men are not statistically significant at $\alpha = 0.05$ for those who decide on purchases of farm animals and own the asset.

HOUSEHOLD PRACTICES ALSO CONTRIBUTE TO ENVIRONMENTAL CONSERVATION AND DEGRADATION.

The use of different power sources, cooking fuels and sanitation practices at home all contribute to environmental degradation at different levels. In Cambodia, where 97 per cent of households utilize grid electricity, the electrical grid is powered mainly by non-renewable sources. According to the International Renewable Energy Agency (IRENA), 49 per cent of the total grid energy supply relies on oil, 17 per cent relies on coal, and the remaining 35 per cent comes from renewable energy sources.[23] As such, household use of electricity contributes to environmental degradation. Although most households benefit from using grid electricity (97 per cent), some, especially in rural areas, still rely on generators. Among those relying on off-grid power in rural areas, almost everyone uses solar generators or other renewable energy generators (figure 75).

Although much smaller than industrial activities, fuels for household energy, whether lighting, heating, cooling or cooking, have an important impact on overall emissions. Overall, decisions over which type of fuel is used are more likely to rest in the hands of men (figure 76). An estimated 93 per cent of men noted they make their own decisions, alone or jointly, regarding purchases of fuels, compared to 89 per cent of women. These decisions are often shared (81 per cent of men note they decide jointly on purchases of fuels, compared to 78 per cent of women).

Figure 75: Proportion of the population living in households whose off-grid electricity uses renewable energy, by sex and location (percentage)

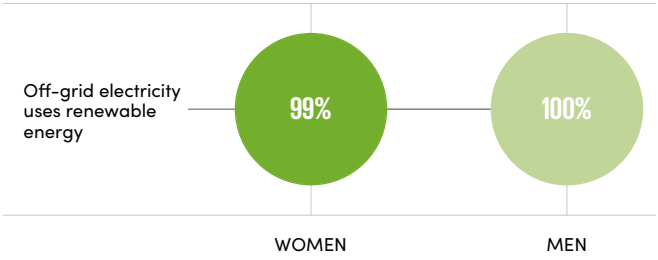
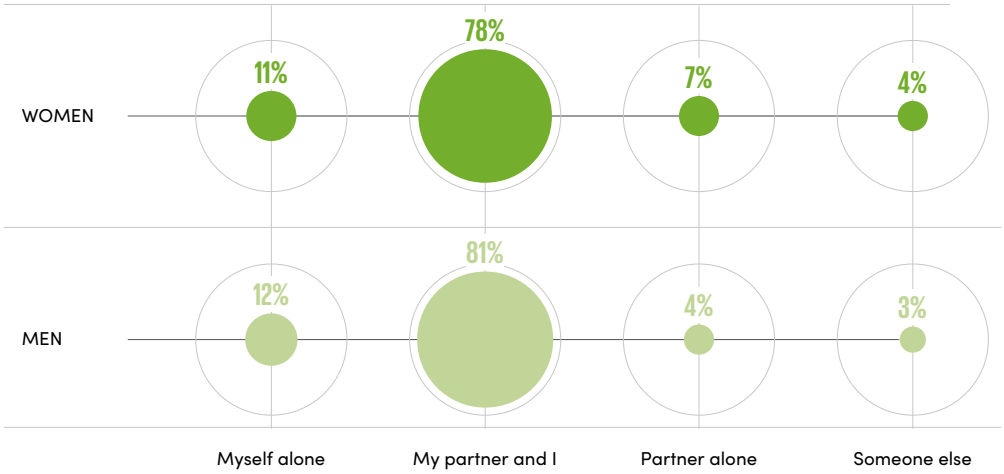


Figure 76: Proportion of the population who usually decide, alone or jointly, regarding purchases of fuels, by sex (percentage)



23 Latest available data point is 2016. See Energy Profile of Cambodia, prepared by IRENA.

For cooking, almost three in every five households (55 per cent) rely on unclean fuels, such as wood, charcoal, straw, shrubs or grass, which pose threats to human health. Wood, in particular, is widely used; as many as 82 per cent of those who lack access clean fuels rely on it. 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 95 per cent of households using clean cooking fuels, women are in charge of cooking. The figure is similar (96 per cent) for those using unclean fuels (figure 77).

In Cambodia, an estimated 53 per cent of households use unclean fuels indoors and have no ventilation, thus exposing household members to substantially higher levels of indoor air pollution. In these households, 96 per cent of women are in charge of cooking – this group are the most exposed to the harmful health effects of these fuels.

When households do not have access to piped gas or electricity for cooking, women and men often have to go and fetch fuels (figure 78). In Cambodia, men are more likely than women to go and collect cooking fuels (men are in charge in 53 per cent of households, while women do it in 47 per cent of households). The use of sustainable forest management practices among those in charge of fuel collection is important to maintain ecosystem services and forest health.

Figure 77: Proportion of households by person in charge of cooking, by sex and type of fuel (percentage)

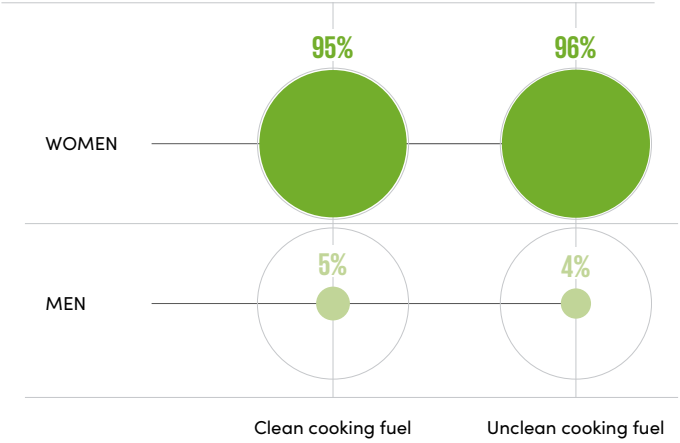
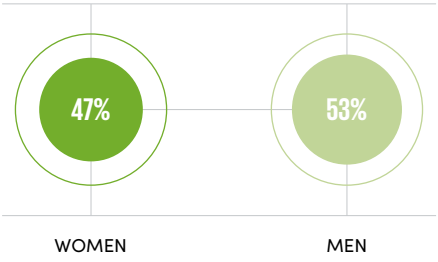


Figure 78: Proportion of households by person in charge of gathering cooking fuel, by sex (percentage)



An estimated 24 per cent of Cambodian households consume drinking water piped to their household or plot (25 per cent during the dry season and 23 per cent during the wet season). Among those that lack water infrastructure at home, the majority rely on bottled water (27 per cent during the dry season, 23 per cent during the wet season) followed by tube wells (24 per cent and 23 per cent, respectively) and water carts (3 per cent, 2 per cent, respectively). However, as parts of Cambodia face increasing water scarcity because groundwater and other sources are rapidly depleting, the procurement of clean water may become increasingly challenging. For instance, in Siem Reap,

where overpopulation is leading to water shortages, the authorities had to turn to exploit the groundwater, which is dangerously lowering the water table, posing risks to the preservation of terrestrial ecosystems and causing a subsidence of the soil. Similarly, due to climate change, Takeo is now one of the driest provinces in Cambodia, and water levels on the Mekong can drop by almost half during the dry season, causing nearby households that lack access to piped water to deal with contaminated and scarce water resources. All of this makes it challenging for those without piped water at home to extract water from wells or collect it from other sources.

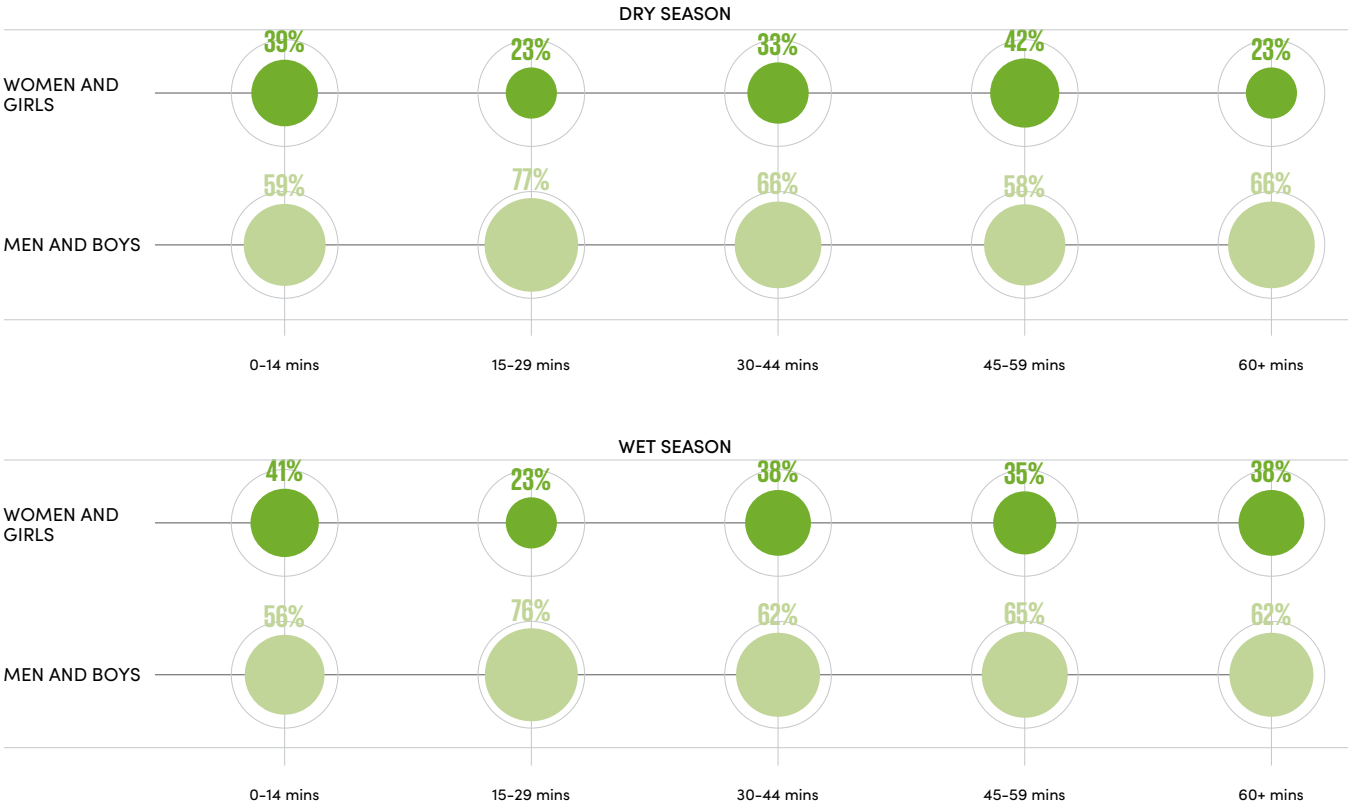
The widespread use of bottled water contributes to lowering risks of waterborne disease, but still carries a collection burden for the many people that have to go and fetch the bottled water, and often contributes to environmental degradation as empty bottles are not always reused and often discarded into the environment. Men in Cambodia are overall more likely than women to take on water collection burdens (figure 80). This is partly due to the physical effort required for carrying the water over long distances, and partly to the safety risks associated with women walking these distances alone, which may expose them to violence and assault.

The overall scarcity of water may also affect women's and men's hygiene and safety in other ways. For instance, the lack of water may affect the availability and accessibility of improved sanitation facilities and heighten women's and men's health risks. Similarly, when sanitation facilities are not available within the home, this may pose safety risks, particularly women and especially at night. In Cambodia, an estimated 18 per cent of people use sanitation facilities that lack proper illumination, 57 per cent use facilities that lack a lock (figure 81).

Figure 79: Proportion of the population using safely managed drinking water services, by sex

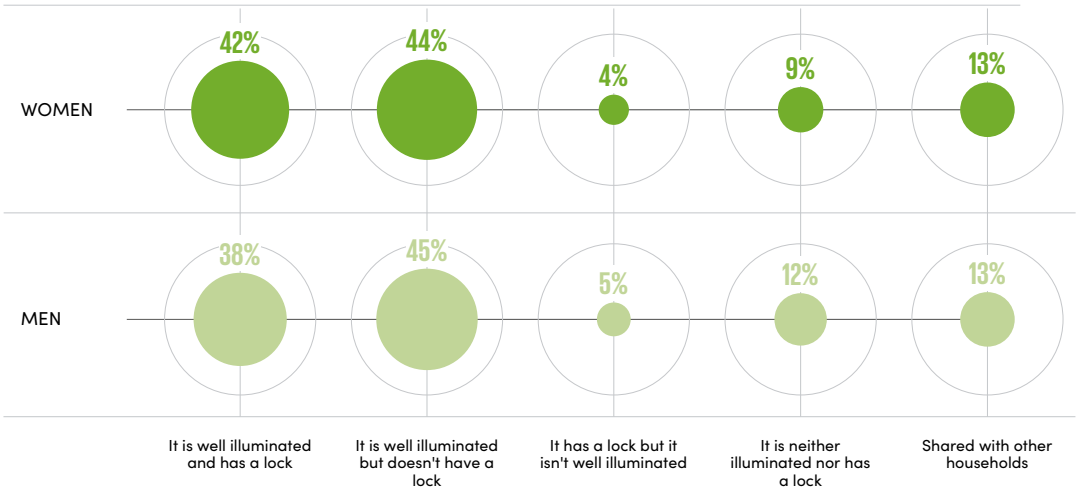
Note: The differences between women and men are not statistically significant at α = 0.05 for the following categories: 'Protected well' and 'Cart with small tank/drum' in both seasons; 'Surface water' and 'Tanker-truck' in the dry season; and 'Piped into yard or plot' in the wet season.

Figure 80: Proportion of households by person in charge of water collection, by sex and distance to water source (percentage)



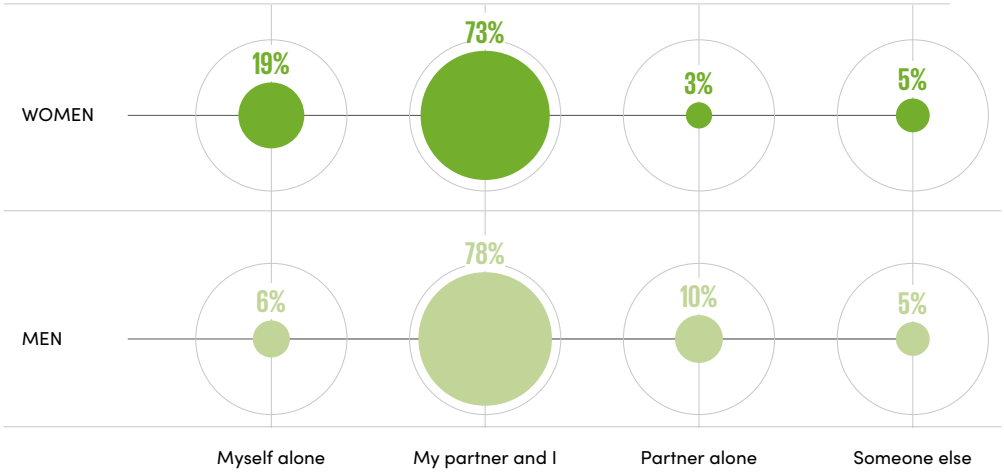
Note: The survey sample only captured two households located 45-60 minutes from the water source. Therefore, the category 45-60 minutes has been omitted.

Figure 81: Proportion of the population living in households where sanitation facilities are poorly illuminated, lack a lock, or are shared with other households, by sex (percentage)



As opposed to purchases of fuel, which rest disproportionately in the hands of men, household waste management decisions are more likely to be made by women (figure 82). Roughly 92 per cent of women and 84 per cent of men note they make decisions regarding the management of waste in the household where they live, including whether it is sorted and sent to recycling, whether materials are reused, or whether and how it is disposed of. The gaps are proportionately larger when it comes to deciding alone, with 19 per cent of women noting they decide on this topic solely, compared to 6 per cent of men. Household waste management decisions can have tremendous impact on environmental degradation. Globally, it is estimated that 60 per cent of all food waste is generated in households.[24] In Cambodia, although 84 and 90 per cent of all municipal solid waste generated in Phnom Penh and Preah Sihanouk is collected and sent to landfills or reprocessing centres, this rate is much lower in other cities, such as Krong Kaeb, where it stands at 58 per cent, generating a substantial amount of waste that is either incinerated by individuals or directly released into the environment without any treatment. Also, only 47 per cent of domestic wastewater is safely treated across the country,[25] contributing to contamination of waterways and soils. As such, household decisions may have substantial impact on the overall environment.

Figure 82: Proportion of the population who usually decide alone or jointly regarding household waste management, by sex (percentage)



WOMEN'S AND MEN'S MOBILITY PATTERNS DIFFER, AND MEN'S CONTRIBUTE TO AIR POLLUTION DISPROPORTIONATELY

People's daily activities contribute substantially to air pollution and other forms of environmental degradation. As such, related decision-making regarding everyday tasks can have important contributions towards sustainability. At work, men are overall more likely than women to engage in environmentally degrading activities (as seen through use of pesticides, non-selective fishing gear and others). For daily commutes, women are overall more likely than men to travel shorter distances to perform their daily activities, whether paid or unpaid work. Men are more likely to use private vehicles.

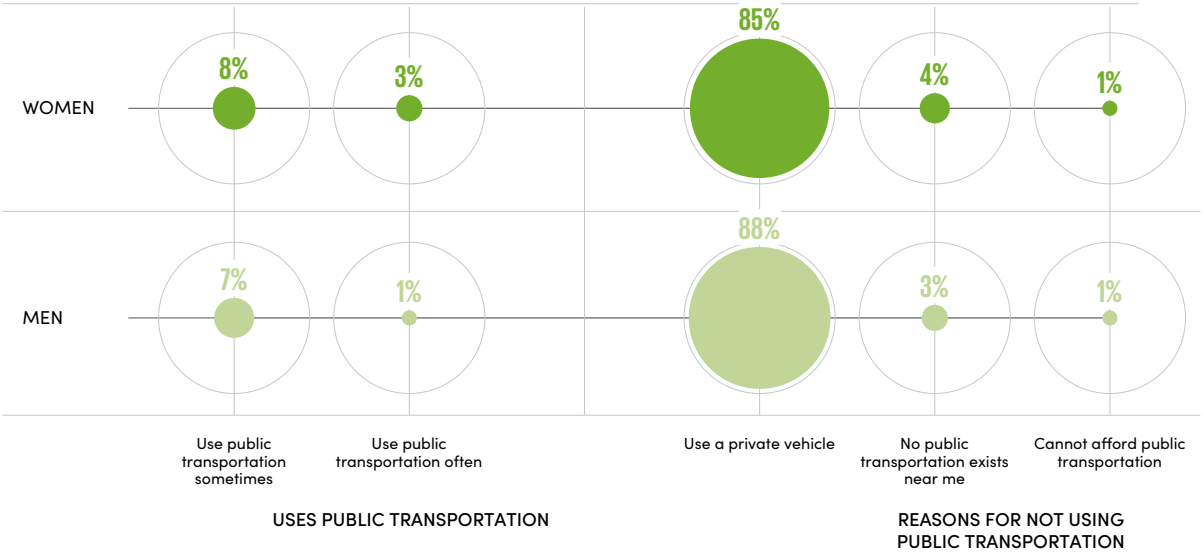
24 See UNEP 2024, Food Waste Index Report.
25 See Global SDG Database 2025.

In Cambodia, 85 per cent of women and 88 per cent of men use a private vehicle, which often translates into larger contributions to air pollution per capita (figure 83). Public transportation helps curb overall emissions, and women are more likely than men to use it often (11 per cent of women, 8 per cent of men). Yet, some people who do not have access to private vehicles, still find barriers to using public transportation. For women who do not use private vehicles, the most common reasons for not using public transportation include not having public transportation options near their households (85 per cent), or not being able to afford public transportation all together (11 per cent).

The type of means of transportation utilized also contributes to differentiated impacts on air pollution. The most common means of public transportation in Cambodia are taxis and motorbike taxis, both of which have important contributions to overall emissions. Men are much more likely than women to travel by taxi, the most polluting option among all means of public transit in Cambodia (figure 84). For most of the women that use cars for their commutes, the frequency of their use was low (figure 87).

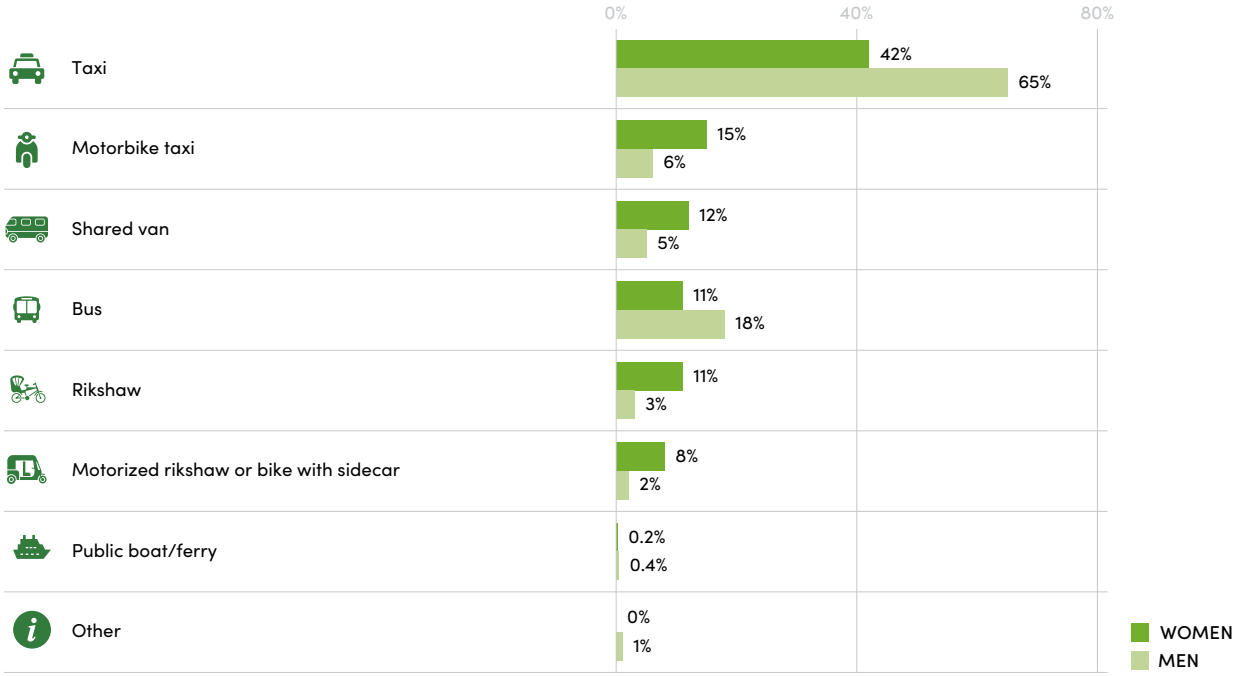
Differences also exist regarding the use of private vehicles. Men are more likely than women to use almost every type of private vehicle frequently, with the exception of rikshaws/remorques, which women use slightly more often than men. For both women and men, motorbike is the most frequently used vehicle, although men use it more than women (figure 85). Bicycles are also used with high frequency in Cambodia; women use them almost as frequently as motorbikes. Across households, men are more likely than women to make decisions regarding the use of public transportation, with as many as 95 per cent of women noting they have some level of decision-making power over this issue, compared to 98 per cent of men (figure 86).

Figure 83: Proportion of people that uses/does not use public transportation, by sex and reason (percentage)



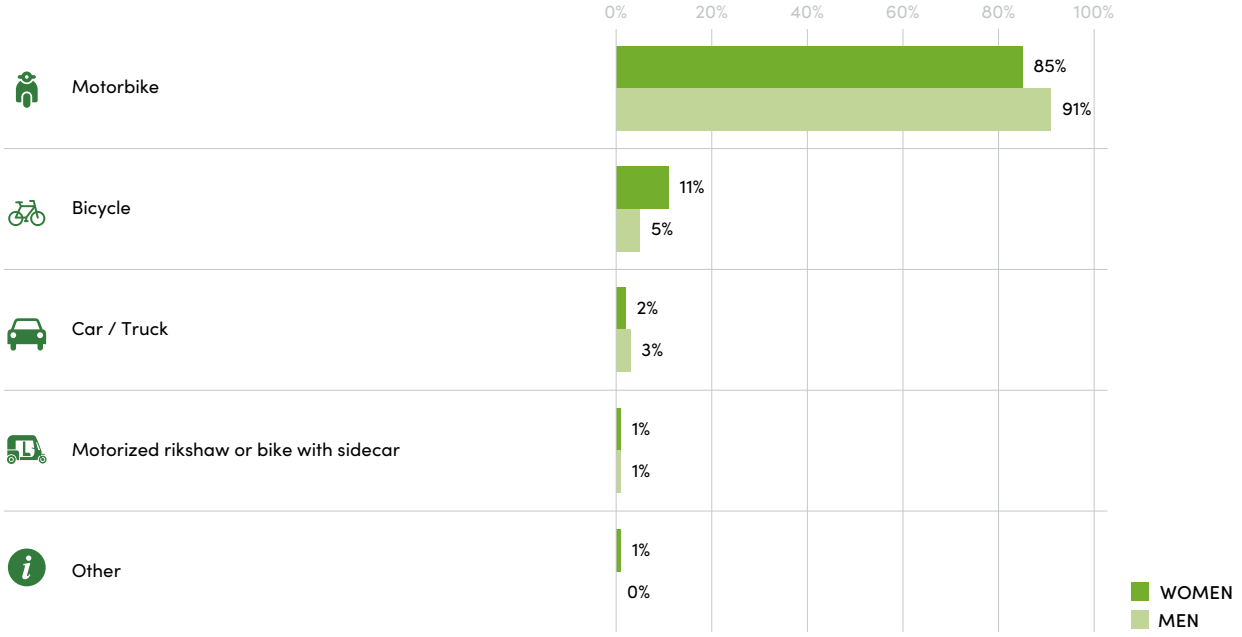
Note: there are no observations for the categories "No public transportation reaches the desired destination", "Public transportation is too slow or inconvenient" and "Don't feel safe in public transportation". The differences between women and men are not statistically significant at α=0.05 for category "Cannot afford public transportation".

Figure 84: Proportion of the population who uses public transportation, by sex and type (percentage)



Note: There are no observations for the categories" Subway/ Metro/ Skytrain/ Monorail" and "Tram".

Figure 85: Proportion of the population who uses a private vehicle at least twice a week, by sex and type (percentage)



Note: there is no observation for the categories "Boat" and "Other". The differences between women and men are not statistically significant at α=0.05 for category "Motorized rikshaw or bike with sidecar".

Figure 86: Proportion of the population who typically make decisions about using public transportation, by sex and whether the decision is made alone or jointly (percentage)

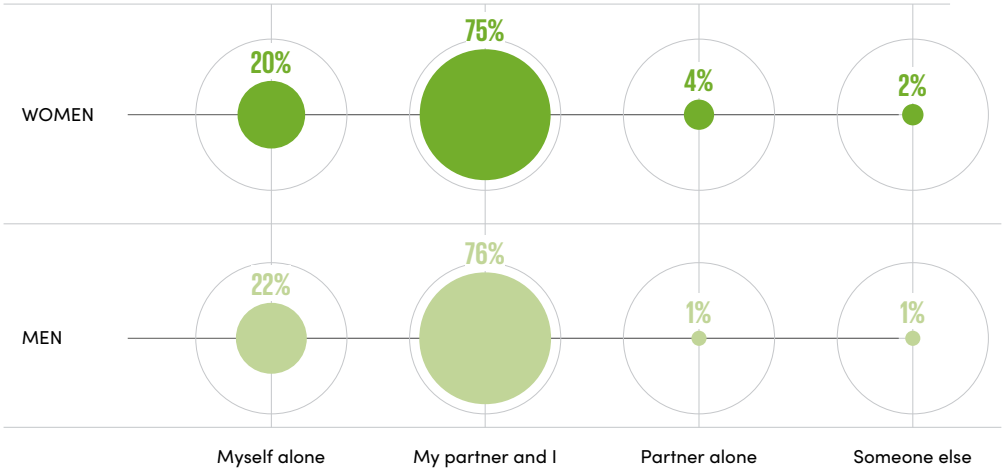


Figure 87: Average frequency of private vehicle usage, by type of private vehicle and sex (weighted mean)

PRIVATE VEHICLE TYPE	BICYCLE	CAR/TRUCK	MOTORBIKE	BOAT	MOTORIZED RIKSHAW OR BIKE WITH SIDECAR	OTHER
WOMEN	4.62	3.58	4.64	4.56	3.59	3.97
MEN	4.63	4.49	4.86	4.67	3.48	3.67

HIGH FREQUENCY MEDIUM FREQUENCY LOW FREQUENCY

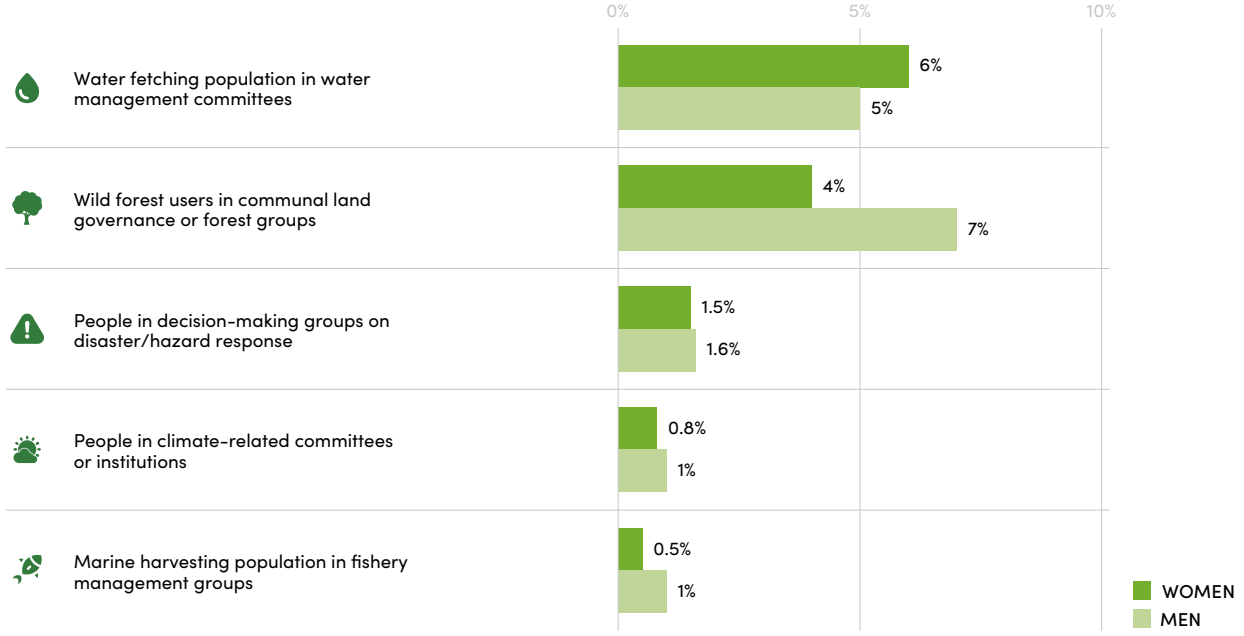
Note: "High frequency" refers to using a private vehicle every day, "Medium frequency" refers to using a private vehicle twice a week or more, and any usage frequency lower than that is considered "Low frequency."

VERY FEW PEOPLE CONTRIBUTE TO ENVIRONMENTAL MANAGEMENT DECISIONS, BUT GENDER GAPS ARE NOT LARGE.

Most of the population in Cambodia does not participate in environmental decision-making in institutional settings. Only 6 per cent of women and 5 per cent of men who fetch water regularly engage in water management groups and related committees (figure 88). The share of participation is even lower in other areas, such as discussing solutions for climate change and participating in disaster or hazard response groups, the participation in which overall stands between 1 and 2 per cent. The largest gender gaps in participation, albeit relatively small, are found in forest management groups. An estimated 4 per cent of women and 7 per cent of men who utilize wild and primary forests regularly engage in communal land governance and forest groups. This is essential to ensure these resources are managed according to the needs of all population groups and participation should be encouraged. Promoting women's increased participation in these groups is of outmost importance. At present, women remain underrepresented, and this may result in these resources being managed for the benefit of male dominated activities, such as logging, rather than subsistence forestry. Also, because women manage these spaces more sustainably than men (as seen in this report, women are more likely to practice alternating in gathering areas, replanting of forest products and fallowing of forest areas), their contribution towards land and forest governance is essential to promote a more sustainable management of these spaces.

Besides forest and communal land management, the gender gaps are small across all other decision-making categories. Men, however, are more engaged that women in decision-making in almost every category; an important indication that women's participation needs to be encouraged. Engagement in these groups is important to ensure natural resource management decisions are in line with the needs of both women and men and contribute to environmental conservation in a holistic manner.

Figure 88: Proportion of the population engaging in environmental decision-making, by sex (percentage)



Conclusion and next steps

The 2024 GES Cambodia is the country's first national survey showcasing women's and men's interactions with the environment, including the impact of climate change and disasters, engagement in environmental livelihoods, environmental decision-making and others. The following is a summary of key findings of the survey, along with potential next steps to utilize this data.

1. Hazard exposure is high in Cambodia. Enhancing women's coping capacities and reducing their vulnerability remain critical.

Almost 9 in every 10 Cambodians live in areas of high environmental risk,[26] and almost every person has experienced at least one disaster in the past 12 months. What is more, an estimated 75 per cent of the population has experienced at least three disasters over the same time period. This is on top of the many climate-related hazards that have affected people over their lifetimes, such as sustained increases in temperatures, reductions in overall precipitation and recurrent pest infestations.[27] Although women and men are equally likely to be exposed to these hazards, their impacts on women's and men's lives are differentiated. Rural women and those displaced by disasters or other climate hazards are the most likely to experience barriers to access medical health and hygiene products (19 per cent of displaced women experienced challenges, compared to 13 per cent of non-displaced people). Women are also more likely than men to note their crops and livestock were damaged or destroyed as a result of disasters (53 per cent of women saw their crops affected, compared to 42 per cent of men). These impacts on livelihoods are accompanied by disproportionate impacts on unpaid care and domestic work burdens. As many as 26 per cent of women saw an increase in their unpaid childcare work as a result of disasters, compared to 22 per cent of men. In addition, an estimated 31 per cent of women and 28 per cent of men saw care burdens increase as a result of climate change. These increases contributed to worsening women's burdens substantially, as women were already doing more unpaid care work than men prior to the hazards. Guaranteeing access to affordable healthcare for all, including those in rural areas, and supporting women's transition to climate-resilient crops, for instance, could contribute to reducing some of these impacts.

2. Climate change is affecting both the physical and mental health of many Cambodians, with women suffering disproportionately. Changing social norms and promoting access to information could save lives and livelihoods.

As many as 75 per cent of people have seen their mental health worsen as a result of disasters, and 77 per cent as a result of slow-onset climate hazards. The stress and anxiety caused by these phenomena affected women and men similarly, although women were slightly more likely than men to note these impacts. In addition, 48 per cent of women and 45 per cent of men saw their physical health affected as well, as climate hazards may cause or worsen respiratory illness, digestive issues, cardiovascular problems, heat stroke or insect-borne disease, among many others. Furthermore, as a result of the changing climate, including frequent droughts, heat episodes and many other hazards, many people resort to giving up their food in favour of feeding others. Single parents, in particular, are the most likely to note they had to eat less as a result of climate change (20 per cent), although partnered women, with and without children, were overall more likely than partnered men to reduce food intake (12 per cent of women, 9 per cent of men). Social norms play an important role in these outcomes, and changing them could encourage women and men to share these burdens more evenly. Furthermore, promoting better access to hazard-related early warning information can also help people to better prepare for, and mitigate impacts.

26 See definition of high-environmental risk in page 12.
27 See page 11 for the definitions of climate-related hazards and disasters.

In Cambodia, heat and precipitation-related hazards have been widely broadcasted, and most people were able to access on-line information on how to prepare. However, events such as recurrent pest infestations and the spread of insect-borne disease received less attention. When early warnings are not broadcasted on mass media, women and men rely on different information sources (e.g. friends and family vs. local municipalities, respectively), thus the quality and timeliness of the information received may have conditioned their preparedness.

3. Agricultural practices are changing, but many contribute to soil degradation. Tightening regulations around pesticide and fertilizer use is key to protecting people and ecosystems.

As a result of climate change, agricultural yields are dropping. To maintain their livelihoods many farmers are practicing seed selection, an encouraging practice that should be maintained. Others, however, are applying pesticides and fertilizers in larger quantities to limit their losses. As many as 50 per cent of women and 55 per cent of men apply pesticides, and roughly 65 per cent of people apply fertilizers. What is worse, 24 per cent of people now apply pesticides in higher quantities. Although these practices may help maintain yields in the short term, they have devastating consequences in the long term. For instance, more than half the farmers have noticed soil degradation in the land they farm, but among those applying pesticides, this figure rises to 70 per cent. A key issue is the lack of compliance with protocols. Although men are more likely than women to note they follow and adhere to pesticide label directions (53 per cent of women, 58 per cent of men), less than 30 per cent of people overall clean and maintain protective equipment after pesticide use, and only 16 per cent of women and 11 per cent of men dispose of empty containers safely. Also, pesticide risks are overall misunderstood. While 97 per cent of pesticide users note they only use moderately hazardous substances, soil sampling proved otherwise. This lack of awareness contributes to farmers failing to follow application and disposal protocols that could limit impacts on ecosystem and human health. The same is true of fertilizer use: while 68 per cent of people believe they follow retail directions and local regulations to protect the environment, the misuse of fertilizers is also widespread. As few as 1 per cent of women and 2 per cent of men perform soil sampling for nutrient budget calculations, and as few as 6 per cent of women and 8 per cent of men consider soil type and climate to decide on the application of these substances. The widespread use of these damaging practices, and the misconception among farmers that protocols are followed, highlights the importance of enhancing farmer education and tightening regulations, including to promote the use of precision farming, enhancing the understanding of label directions, enforcing limitations on hazardous substance use, and encouraging the use of promising practices such as seed selection.

4. Primary forests and their ecosystems are rapidly disappearing, and women are noticing these losses the most. Enhancing protections on forest areas and educating on sustainable management remain urgent.

Wild primary forests, wild pastures, mangroves or other forms of wild wooded land, are cornerstones for biodiversity conservation, critical sources of food, firewood and construction material, and they play essential protective roles against the effects of climate change. In Cambodia, these spaces are rapidly disappearing, and their ecosystem services are increasingly reduced. As many as 64 per cent of women and 58 per cent of men who use these spaces saw degradation of the forest area. Roughly 7 in every 10 of these people, observed losses in total area, with some of these primary forests being logged, urbanized or encroached on. Many also noted they cannot find the same variety and quantity of animals and plants as they did in the past. Although more men than women rely on these forests for their livelihoods, women were more likely to note that wild primary forest activities made up the bulk of their income. Limiting forest and related biodiversity loss is critically urgent in Cambodia, but the practices of most wild forest users do not consistently contribute to sustainable forest management. One key exception is alternating grazing periods or grazing locations to enable replenishment, a practice utilized by as many as 77 per cent of women and 69 per cent of men. All other sustainable forest management practices were implemented by less than 30 per cent of the population that uses these forests, with women more likely than men to manage forests sustainably overall. For instance, only 24 per cent of women and 20 per cent of men replant or repopulate the forest products after collection. Similarly, 21 per cent of women and 15 per cent of men practice intermittent

collection, and 12 per cent of women and 10 per cent of men practice specimen selection (e.g. leaving some eggs, leaves, fledglings, etc.) to allow the forest species to reproduce and regenerate. These low figures help to explain the rapid rates of forest and forest biodiversity loss across the country, although high-scale industrial processes, including construction, urbanization or industrialization, contribute as well. To ensure the forests of Cambodia continue to play their critical role in supporting livelihoods and ecosystems, enhancing protection of forest areas is an important first step. Changing individual behaviours to promote sustainable management through education and training can also make substantial contributions towards this goal.

5. Fish stock depletion is affecting both women's and men's livelihoods, but men have more resources to bounce back. Further collaboration between local fishing folk and national authorities could help aquatic species to rebound.

As many as 20 per cent of women and 18 per cent of men who practice fishing or other forms of aquatic harvesting in oceans, rivers, lakes or other bodies of water have noticed their catch decrease over time. This, together with a substantial increase in by-catch (observed by 17 per cent of people) is a clear sign of fish stock depletion. To cope with this issue, people are spending more time fishing or to change fishing locations. However, for women fishers, relocating is not easy. An estimated 58 pe cent of fishing women practice gleaning or hand collection as their main fishing method, compared to 28 per cent of men. In contrast, men are more likely than women to use gillnets, cast nets, long line fishing, fishing traps and other methods, most of which are non-selective fishing methods that capture non-target species and contribute substantially to aquatic biodiversity loss. In addition, as men rely on fishing methods that require, for the most part, motorized vessels, they can more easily change locations when fish stocks plummet. While only 15 per cent of women changed locations to deal with reductions in fish catch, 26 per cent of men adopted this strategy. To limit the impact of fisheries on marine and other forms of aquatic biodiversity loss, enforcing fishing regulations, including catch limits and bans on destructive fishing methods, is essential. When asked whether they support fish stock monitoring by looking at official information regarding fish stock status prior to choosing fishing locations, only 2 per cent of women and 5 per cent of men noted they do. In addition, less than 1 per cent of fishing folk generate and submit reports of their total catch by species. These steps are important to monitor and maintain fish stocks, and local fishing populations must work closely with national authorities to ensure the existing regulations are adequately enforced and reporting is more consistent. Cambodia currently has expansive marine protected areas and other aquatic wildlife sanctuaries. Monitoring and expanding these areas, including to cover river and lake communities, are important steps towards promoting better conservation.

6. From green jobs to waste management and transportation, urban areas contribute substantially to environmental conservation and degradation. Enhancing the reach of environmental and technical education can facilitate just transitions.

An estimated 20 per cent of women and 26 per cent of men in Cambodia are engaged in at least one green job. For most of these people, this is not their main job, but any engagement in environmental conservation is encouraging. The most prevalent types of green jobs include reduction and removal of pollution and air emissions, and production and management of energy from renewable sources. Most of the green jobs are held in or near urban centres, demonstrating that cities can be key drivers of environmental progress. Cities, however, are also major contributors to air, soil and water pollution. In Cambodia's main urban hubs, women are more likely than men to engage in gathering refuse and bringing it to recycling or sorting centres (7 per cent of women, compared to 5 per cent of men). Despite their critical role in environmental conservation, these women often face health, safety and income discrimination issues. For instance, 17 per cent of women that engage in waste management note that others receive higher remuneration, despite of the fact that they are more likely than men to have access to high value materials such as scrap metal and aluminium. Furthermore, women are more likely to lack access to specialized equipment (only 3 per cent of women gather waste with a cart or bicycle, compared to 11 per cent of

men, and only 7 per cent use protective gear). Daily commutes practiced in urban areas are also major contributors to air pollution. In Cambodia, 85 per cent of women and 88 per cent of men use a private vehicle, while only 11 per cent of women and 8 per cent of men use public transportation. Yet, most of these public transportation users rely on taxis (42 per cent of women, 65 per cent of men), followed by motorbikes. Only 23 per cent of those using public transit make use of shared rides, such as buses and shared vans, which limit contributions to air pollution. Enhancing the availability and safety of public transport could contribute to reduced pollution levels, but this must be accompanied by changing attitudes to promote more sustainable practices. For instance, enhanced access to environmental education, training and public awareness, could play a critical role in reducing waste generation, promoting ridesharing for daily commutes, and equipping the Cambodian population to enhance their participation in green jobs, therefore facilitating just transitions towards a low emission economy.

7. Participation in environmental decision-making remains limited. Promoting inclusive decisions is essential for lasting solutions.

Very few Cambodians engage in formal environmental decision-making processes. For instance, approximately 5 per cent of those who fetch water engage in water management committees, and only 4 per cent of women and 7 per cent of men who gather forest products participate in communal land governance and forest groups. The shares are even lower for fishery management or climate-related processes. As a result, environmental management decisions may not reflect everyone's needs. At the individual level, many of those who use environmental resources regularly also face barriers to contribute to related decisions. For instance, decisions around the use of pesticides and fertilizers, the purchase or sale of farming products and animals, typically rest in the hands of the person that owns the environmental asset, not the person that utilizes it regularly, and would logically make more sustainable choices to protect their source of livelihoods and their own health. While almost everyone who owns tractors, ploughs and other agricultural assets makes decisions around the purchase and sale of farming products, only 3 per cent of women and 2 per cent of men who do not own these assets, regularly make related decisions. Similarly, more than 70 per cent of the people who own land make related decisions, compared to less than 20 per cent of those who do not own it. In Cambodia, only 64 per cent of women and 63 per cent of men own the agricultural land they use. Promoting ownership of agricultural land and other assets, could contribute to expanding participation in the sustainable management of these resources. Empowering people to participate in both formal and informal decision-making processes could therefore have substantial impacts on environmental sustainability in the long term.