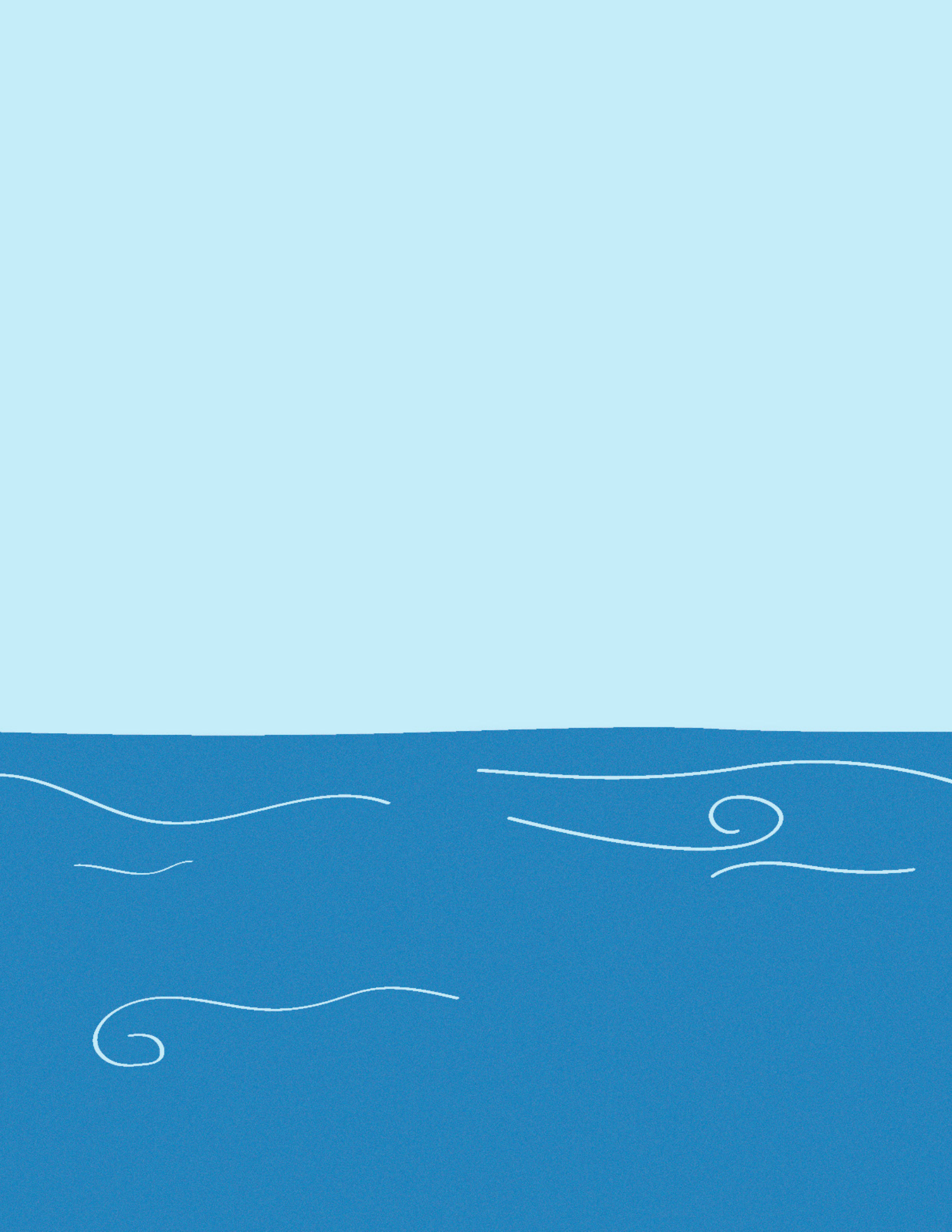


GENDER EQUALITY AND SUSTAINABLE ENERGY: LESSONS FROM PACIFIC ISLAND COUNTRIES AND TERRITORIES





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INTRODUCTION

In today's rapidly developing world, access to reliable and affordable energy is a crucial part of everyday life. With an increasingly nuanced understanding of climate change, it is becoming clearer that clean and renewable energy sources have a major place in the future of energy usage and production.¹

Gender equality and access to energy, particularly renewable, sustainable, clean energy are linked in multiple ways. Affordable, easily accessible, clean energy can greatly improve quality of life for women, especially as time use data shows that women are disproportionately in charge of unpaid care and domestic work tasks, as well as unpaid production of goods such as fetching water and collecting firewood. The time and health burden of these activities could be greatly reduced by enhancing access to clean energy in households. Access to clean and renewable energy allows people to spend less time on some of these tasks and to perform them more safely and reliably. Using clean energy also improves indoor air quality, a key driver of respiratory disease, especially for women and children, who often spend more time at home. Access to electricity, in addition, has also shown promising results in reducing the incidence of violence against women in public spaces, including during water and fuel collection trips.²

Women can be key agents of change, and their participation in natural resource management, including energy-related decision-making, is essential for environmental sustainability. Globally, only 12 per cent of all environment-related ministries³ have a woman minister; in the Asia-Pacific region this figure is even lower at 7 per cent.⁴ In the case of energy ministries specifically, only 6 per cent of all Asia-Pacific ministers are women, while in the Pacific only one country has a woman minister. Similarly, few women in Pacific island countries and territories (PICTs) occupy managerial positions in energy firms (available data show that only 24 per cent of positions are currently held by women) and women's employment is low in other energy-related fields.⁵ As PICTs transition toward cleaner energy, it is important to bring women into the field

as energy-related government officials, professionals and entrepreneurs.

In the region, however, there are multiple barriers to women entering the workforce. The Pacific Energy and Gender Network is dedicated to uncovering and dismantling these barriers so that women may have better opportunities to work in positions involving energy. The 2020 PEGSAP report⁶ regarding women and energy in PICTs, indicated that discriminatory legal practices, lack of access to resources regarding employment and gender-based violence are barriers to women entering energy sector employment. Other barriers include community values in many (though not all) PICTs that are heavily based upon traditionally patriarchal structures. The unequal division of household responsibilities such as childcare and domestic work is also a major barrier to women entering the workforce, as these unpaid responsibilities reduce available time for paid work.

In other regions, easy access to reliable and affordable energy sources such as grid electricity and solar power has been shown to significantly increase the number of women entering the workforce. For example, a study in South Africa found that access to electricity in rural areas increased women's employment in those areas by 9 to 9.5 percentage points, most likely because it reduced their burden of unpaid care and domestic work.⁷ When less time is needed for unpaid household work, more time can be spent in other ways, such as paid labour.

Further barriers are also in place. For instance, women may have trouble accessing credit due to their limited access to bank accounts and other financial services compared to men. In 2017, 56 per cent of women globally did not have a formal bank account as compared to 44 per cent of men.^{8,9} Insufficient data exists to assess the severity of this challenge in the Pacific, but countries with available data indicate that the gap is wide. In Vanuatu, for instance, only 25 per cent of women had an account at a financial institution or mobile money service provider.¹⁰ This may pose challenges to starting their own businesses and reduce their resiliency.

ce to cope with crises, including environment-related events. Under these circumstances, women in PICTs may also have less of a say in things that directly affect them and their families, such as access to clean and renewable energy.

Clean and renewable energy also has the potential to create economic benefits and changes in the world of women's employment and economic development, especially in regions where ambitious environmental targets continue to fuel a sustainable and renewable energy transition, such as Pacific Island countries and territories.¹¹ This, then, leads to the necessity for a gender-aware approach to sustainability and energy access PICTs.

Since 2003, the Pacific region has been working towards mainstreaming gender in the energy sector, including clean and renewable energy.¹² This work contributed to the establishment of the Pacific Energy and Gender Network, the development of awareness-raising materials, workshops and trainings, and the development of the second regional Pacific Energy and Gender Strategic Action Plan (PEGSAP) for 2021 to 2030. A key objective was the development of research and estimates on gender and energy in the Pacific region, an area that was lacking up to this point. This work began with a gender-based assessment on the energy sector in a small sample of Pacific island countries, including Fiji, Kiribati, the Marshall Islands, Samoa, Solomon Islands and Tuvalu, conducted by the Pacific Community. After consultation with stakeholders in the region, the findings and recommendations from the gender-based assess-

ment report were used to develop an action plan for dismantling barriers to women's involvement in clean energy projects in all PICTs. The action plan addresses four interwoven objectives, including those at the institutional, service provider, society/community, and individual levels.

A main institutional objective highlighted in PGSAP, and reinforced by the findings in the gender-based assessment report, is to address the lack of sex-disaggregated data on energy in the Pacific region by enhancing the production of sex-disaggregated official statistics on energy usage and women's participation in economic activities related to energy in all PICTs. The need for this information is also vital to the achievement of Sustainable Development Goal 7 on affordable and clean energy. Without it, it is impossible to accurately identify and, thus, address the needs of women with respect to accessing energy, managing energy resources and benefiting from economic opportunities in the Pacific energy sector.

The present report provides an initial analysis of women and energy in PICTs from available data sources. It includes sex-disaggregated estimates on access to and affordability of energy, estimates on women's participation in the Pacific energy sector, and women's enrolment in energy-related education programmes. The findings and recommendations are expected to serve to inform further collection and assessment of sex-disaggregated energy and economic data in the context of developing gender-sensitive energy policies in the region.

DATA SOURCES

The information presented in this report was obtained from different sources and analysed by the Pacific Community and UN Women. Where possible, household survey data has been disaggregated by sex of the respondent. However, for some indicators, information is also presented at the household level. In each case, clarification is given in the title of each graph.¹³ At no point has the data been disaggregated by sex of head of household, since this measure is not recommended for producing accurate gender analysis.¹⁴ A key limitation of this report is the lack of estimates disaggregated at multiple levels. In other words, no data has been included on women and men from different ethnicities, ages, disability status or income brackets. This is partly due to comparability issues across countries, as well as to limitations associated with survey sampling and the availability of data for these groups. Further analysis is therefore encouraged to capture issues around gender and energy for these population groups in particular.

2.1. Access to energy, including clean and sustainable energy

Sex-disaggregated estimates on access to energy, including clean and sustainable energy, were calculated from analysis of household- and individual-level microdata. Data to compute the indicators were accessible at the time of writing this report for 13 PICTs from household income and expenditure surveys (HIES) and population and housing censuses (in some instances, these data were augmented by published data for additional countries). Source information for the specific surveys used for each PICT is provided in table 1. Due to small sample sizes in most cases and subsequent confidentiality concerns, the microdata for these countries is not publicly available. For this reason, the aggregated information used to compute the indicators used in this report was generously provided by the Pacific Community and the Samoa Bureau of Statistics.¹⁵

Table 1: Data sources for indicators on access to grid electricity, small-scale power sources, cooking fuel usage by type, location of cooking area, and household expenditures on energy

	Country/territory	Survey
1	Cook Islands	Household Income and Expenditure Survey, 2015
2	Kiribati	Household Income and Expenditure Survey, 2019
3	Marshall Islands	Household Income and Expenditure Survey, 2019
4	Micronesia (Federated States of)	Household Income and Expenditure Survey, 2013
5	Nauru	Household Income and Expenditure Survey, 2012
6	Niue	Household Income and Expenditure Survey, 2015
7	Palau	Household Income and Expenditure Survey, 2014
8	Samoa	Samoa Bureau of Statistics, Population and Housing Census, 2016
9	Solomon Islands	Household Income and Expenditure Survey, 2012
10	Tokelau	Household Income and Expenditure Survey, 2015
11	Tonga	Household Income and Expenditure Survey, 2015
12	Tuvalu	Household Income and Expenditure Survey, 2015
13	Vanuatu	National Sustainable Development Plan Baseline Survey, 2019 (Household Income and Expenditure Survey, 2019)

Note: Microdata were not publicly available, so the data used to compute these indicators were provided by the Pacific Community and the Samoa Bureau of Statistics. Data were received on 11 August 2021 (updated 17 August 2021).

2.2 Gender equality in the energy sector

Estimates on women's participation in the energy sector in the Pacific were calculated analysing information on women's representation as energy-related ministers, on energy-related parliamentary committees, and women's employment in power utilities and other energy-related jobs. Information on sex-disaggregated enrolment in energy-related education programmes was also used to analyse pathways to increase women's participation in energy-related fields.

2.3 Ministerial and committee positions in energy-related ministries

An initial inventory of parliamentary websites to collect information on women and men serving as energy-related ministers and on energy-related parliamentary or governmental committees in PICTs took place in June 2021. Gaps in the information gathered in this initial inventory, particularly for sex-disaggregated information on energy-related ministers, were filled by the Pacific Community in July 2021.

2.4 Women staff in power utilities

Information on staff in Pacific power utilities by managerial level and sex was graciously made available for this report by the Pacific Power Association.¹⁶ The reference period for information on staff in power utilities presented in this report is 2018, the most recent year for which the majority of Pacific power utilities submitted data to the Association.¹⁷ Data for 2018 were available for 20 power utilities across PICTs.

2.5 Women in other energy-related jobs

The International Labour Organization (ILO) STAT Data Explorer has limited sex-disaggregated information for PICTs on employment in broad economic activities related to energy: electricity, gas, steam and air conditioning, for which recent data are only available for Cook Islands (2019), Kiribati (2019), Samoa (2017) and Tonga (2018).¹⁸ Having more data on women's participation in the energy labour force, particularly in clean and

renewable energy fields, would be essential to provide a fuller picture of women's engagement in green jobs and sex-differentiated roles regarding environmental degradation and conservation. These data, however, were unavailable at the time of this analysis.

2.6 Women's enrolment in science, technology, engineering and mathematics and technical and vocational education and training programmes

The data on enrolment in science, technology, engineering and mathematics (STEM) and technical and vocational education and training (TVET) Energy Programmes by sex was sourced from the 2020 PEGSAP report.¹⁹ It pertains to 2019 enrolment rates by sex for STEM programmes at Fiji National University and the University of the South Pacific. The reference period for the available information on TVET programmes is 2007 to 2019 for the Australia Pacific Training Coalition and the College of Marshall Islands.²⁰

2.7 Access to credit

Data on women's access to credit is scant, showing the need for more work in this regard for women's resilience. Only global aggregates were available to inform this section, with the exception of a data point for Vanuatu sourced from the Mini-Census that took place in 2016. The global aggregates were obtained from the Statistical Annex of the Global SDG report.²¹

ACCESS TO ENERGY, INCLUDING CLEAN AND SUSTAINABLE ENERGY

3.1 Electricity access

Having access to electricity can greatly reduce the amount of time and effort required to perform unpaid work activities, such as cooking, cleaning, water collection and fuel collection. Since these tasks are typically done by women in PICTs, affordable, accessible electricity can greatly improve their quality of life. In turn, this enhances women's opportunities for paid work.²² In addition, research shows correlations between the availability of electricity and violence rates in some public areas.²³ The lack of electricity may also enable intimate partner violence in some cases, although no data is available in this regard. As of 2018, the Pacific continued to have one of the highest rates of intimate partner violence in the world. An estimated 29 per cent of ever-partnered women across the region were subjected to physical and/or sexual violence in the 12 months prior to the survey.²⁴ Violence has significant negative consequences for women, including health implications, reduced prevention of unwanted pregnancies, reduced participation of women in the economy and lower productivity.²⁵

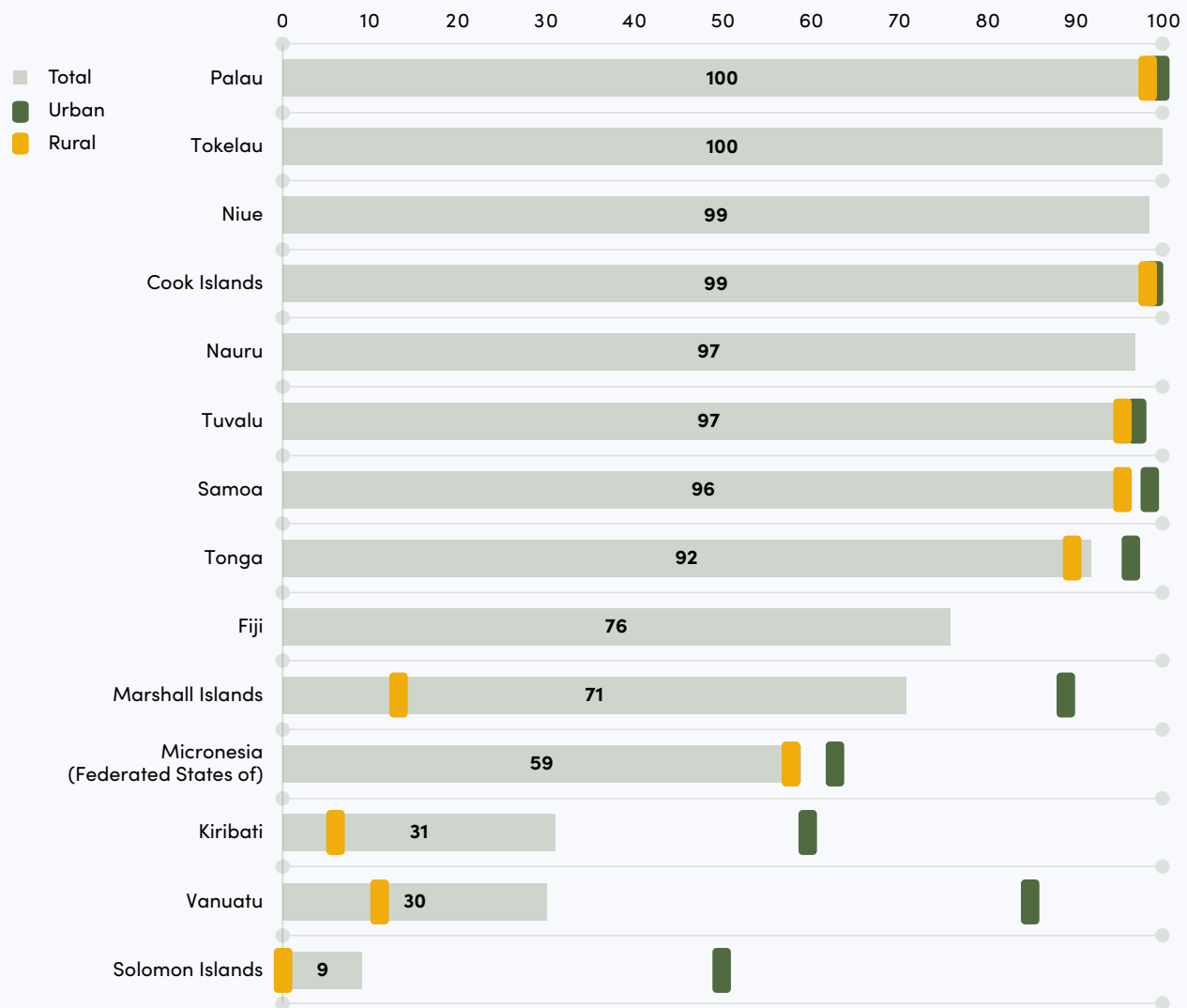
Access to electricity could, for instance, reduce women's exposure to violence when collecting fuel and water. Lighting in exterior areas could also help reduce the risk of violent attacks by non-intimate partners. This is particularly important for women working outside of the home or when toilet facilities, cooking amenities and water sources are located outside.

In densely populated areas, such as cities, connection to grid electricity is usually a more efficient way of

generating and accessing energy. However, many large-scale power plants run on fossil fuels,²⁶ and thus contribute substantially to environmental degradation. A shift towards hydropower, wind power and other forms of renewable energy is important to ensure environmental sustainability in the Pacific. Available data demonstrates that in more remote areas, where communities are few and far between, and there is more exposure to natural hazards that cause disasters and other weather events, larger shares of the population use electricity sources off-grid. Those sources may be more convenient in remote settings, but render overall sustainability assessments difficult. Off grid sources can range from fossil fuels to solar, among others. The limited availability of statistics disaggregated by type (with the exception of solar, see annex table A3) limits the possibility of fully assessing the proportion of people that rely on sustainable sources of energy in Pacific island countries.

3.1.1 Access to grid electricity

While significant strides have been made in grid electricity access in PICTs, more remains to be accomplished in the region, particularly in rural areas. Large differences also exist across countries. For instance, over 90 per cent of households are connected to an electric power grid in 8 of the 14 PICTs for which data were accessible for the present report (figure 1). This includes four countries – Cook Islands, Niue, Palau, Tokelau – in which all or nearly all households are connected to an electric power grid.²⁷

Figure 1: Proportion of households with access to grid electricity, by location, latest available year (percentage)

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys, 2021 Pacific Infrastructure Performance Indicators, and Population and Housing Census. Only countries with available data have been considered for this analysis. Data for Nauru, Niue and Tokelau were not available with urban/rural disaggregation due to their specific geographical features (Nauru is largely considered fully urban, and Niue and Tokelau fully rural). Total proportions for these countries stand at 97 per cent, 99 per cent and 100 per cent respectively. Data for Fiji were not available with urban/rural disaggregation.

At the same time, connectivity to grid electricity remains a challenge for many households in other PICTs. Notably, in Solomon Islands, just 9 per cent of all households are connected to an electric grid. A relatively small percentage of households also have access to grid power in Kiribati (31 per cent), Vanuatu (30 per cent) and Micronesia (Federated States of) (59 per cent).

Challenges of power grid connectivity tend to be more acute for households in rural areas, where less than 60 per cent of households are connected to grid electricity in 5 of the 10 countries with available data. This

urban-rural disparity is likely due to significant barriers to necessary electric grid infrastructure and services in remote regions. Connection to grid power is particularly low among rural households in Solomon Islands (0.2 per cent), Kiribati (6 per cent), Vanuatu (11 per cent) and the Marshall Islands (13 per cent). In urban areas, on the other hand, most households are connected to a power grid in all countries considered. In Cook Islands, Palau, Samoa, Tonga and Tuvalu, connection is almost universal, exceeding 96 per cent of households. However, accessibility to grid power still needs to be enhanced in urban areas of Solomon Islands, Kiribati

and Micronesia (Federated States of), where access rates stand at 50 per cent, 60 per cent and 63 per cent respectively.

Countries with higher penetration of the electric grid have smaller disparities between urban and rural areas, as almost all households are able to access grid electricity. The greatest gaps are found in the Marshall Islands, where only 13 per cent of rural households are connected to a power grid, compared to 89 per cent of urban households (a 76 percentage point difference). This disparity is likely due to the physical challenges and expense of bringing grid infrastructure to remote islands, particularly those with low population densities.²⁸ Large connectivity disparities also exist in Vanuatu (a 74 percentage point difference), Kiribati (54 percentage points) and Solomon Islands (50 percentage points). Population distribution across outlying islands, a lower degree of urbanization and limited government spending on

rural electrification all may be contributing to these inequalities.

Gender gaps in the proportion of women and men living in households with access to grid electricity are overall small in all PICTs with available data (figure 2 and annex table A2). The largest gap is in Kiribati where 38 per cent of women live in households that are connected to a power grid, compared to 36 per cent of men. While in urban areas women are less likely than men to access grid electricity in four of the countries considered (Cook Islands, Micronesia (Federated States of), Tonga and Tuvalu) in rural areas women have slightly more access to grid electricity than rural men in five of the nine PICTs (Cook Islands, Micronesia (Federated States of), Palau, Solomon Islands and Tonga). Although the differences in access are very small, lack of access to grid electricity often impacts women's lives disproportionately, as they are more likely to be in charge of fuel collection where needed.

Figure 2: Proportion of women to men living in households with access to grid electricity, by location, latest available year (ratio)



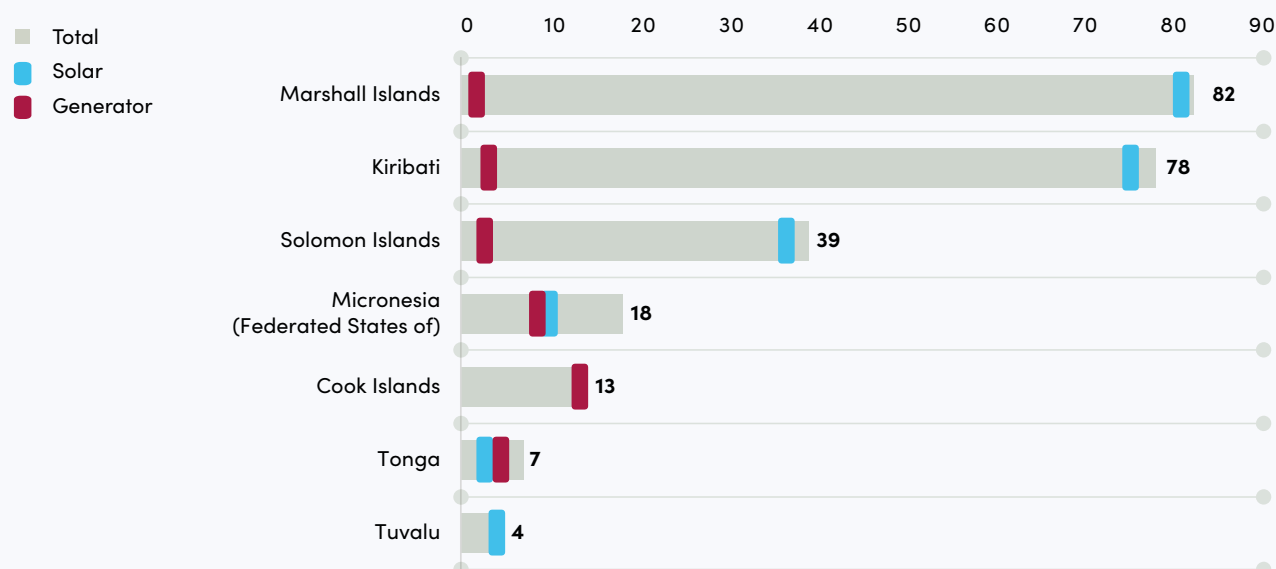
Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis. The share of women to men has been calculated using data on survey respondents, not household composition.

3.1.2 Access to small-scale power in rural households

Some of the challenges with energy access can be met by small-scale power sources, such as solar panels and generators. Often, small-scale power sources in the form of solar panels are more environmentally sustainable than most electricity sources, particularly

in the Pacific where most grid electricity is produced using fossil fuels, specifically petroleum products.²⁹ In PICTs, small-scale power usage is largely concentrated in rural areas, as per national energy policies, projects and programme priorities. Figure 3 showcases the prevalence of small-scale power usage, which may rely on solar panels or other forms of generators, often fossil fuel based.

Figure 3: Proportion of rural households with access to small-scale power, by type of small-scale power, latest available year (percentage)



Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis. Only partial data was available for Cook Islands and Tuvalu (Cook Islands only has data on generator; Tuvalu only has data on solar.)

In most PICTs, private fossil-fuel powered generators supply energy to fewer rural households than solar panels. In the Marshall Islands, for example, 81 per cent of rural households access power using solar panels whereas only 2 per cent use generators. In Kiribati, these figures stand at 75 per cent and 3 per cent respectively, while in Solomon Islands, they are 37 per cent and 3 per cent. The lower prevalence of generator use has benefits for environmental sustainability as well as health. Unclean fuel usage drives respiratory disease, and the use of fossil-fuel based generators and kerosene lamps may require fuel collection; a burden that may fall on women's shoulders.

The Marshall Islands and Kiribati are good examples of the use of clean, small-scale power to provide ener-

gy to households (figure 3 and annex table A3). In the Marshall Islands, an estimated 98 per cent of all rural households not connected to the grid use solar panels for electricity; a successful result of the efforts of the Government. Because women are overrepresented in rural areas in the Marshall Islands, evidence shows that they are more likely to rely on solar generators.

Continued expansion of the usage of solar panels for electricity could be particularly beneficial to rural women in Micronesia (Federated States of) and Solomon Islands, where both electric grid connectivity and solar panel usage remain relatively low. Similar experiences in the Marshall Islands have shown that usage of solar panels in rural areas also helped empower women, who are often engaged as community

technicians. Stand-alone solar systems may be more suitable for supplying electricity to remote households as they do not require the infrastructure development and expense of power grid electricity. They also have the potential of contributing to environmental sustainability in the Pacific region and globally.

3.2 Access to clean cooking fuels and technologies

The types of fuels used for cooking can have significant impacts on health and safety of household members, particularly women, who are typically in charge of cooking and spend more time at home. The use of fuels such as firewood or fodder, in addition, impinge on women's time, as they are often in charge of fuel fetching as well.³⁰ In times of disasters caused by natural hazards, these tasks are further hampered, in view of difficulties associated not only with collection but also ignition of wet fuels. In some PICTs the climate crisis and deforestation have added additional burdens to women. In addition to the amount of time and effort required for wood or husk collection, the health and environmental sustainability impacts of pollutants from wood fuel and open fire are of particular concern.

To assess the health effects of using unclean fuels, the World Health Organization (WHO) recommends an analysis of fuels used for cooking and heating households in connection with cooking and heating technologies (types of stoves). However, lack of information on cooking technologies limits this analysis for this report. Information on the main source of cooking fuel used in households is available for the 10 PICTs (annex tables A5 and A6). It shows that, in general, rural households are more likely to rely on unclean fuels for cooking, such as kerosene, wood and charcoal. Urban households, which are more likely to be connected to electric power grids, tend to use energy sources for cooking that are less harmful for household members, such as electricity and gas. Retail sale of gas (mainly liquefied petroleum gas) is also largely concentrated in urban centres.

In line with WHO guidelines, "clean fuels are those that attain the fine particulate matter (PM 2.5) levels recommended in the WHO Air Quality Guidelines (2005)

and the carbon monoxide (CO) air pollution levels in the WHO Guidelines for selected pollutants (2010)."³¹ Solar, electric, biogas, natural gas, liquefied petroleum gas and alcohol fuels, including ethanol, are clean fuels under this definition.

3.2.1 Main source of cooking fuel in rural and urban households

Given the types of fuels most commonly used in PICTs, the share of households relying on clean cooking fuels have been calculated by aggregating households using electricity and liquefied petroleum gas. Analysis of HIES data show that most households (more than 60 per cent)³² use clean fuel for cooking in all countries except Solomon Islands, Vanuatu, Micronesia (Federated States of) and Samoa, where the proportion of households using clean cooking fuels stands at 7 per cent, 14 per cent, 18 per cent and 35 per cent respectively (figure 4). The use of clean fuels for cooking is also more prevalent among households in urban areas than rural areas. The urban/rural gap is particularly large in Tuvalu, where 90 per cent of urban households use clean energy sources for cooking, compared to only 39 per cent of rural households. Sizable urban/rural gaps also exist in Vanuatu (a gap of 41 percentage points), Samoa (39 percentage points) and Solomon Islands (32 percentage points).

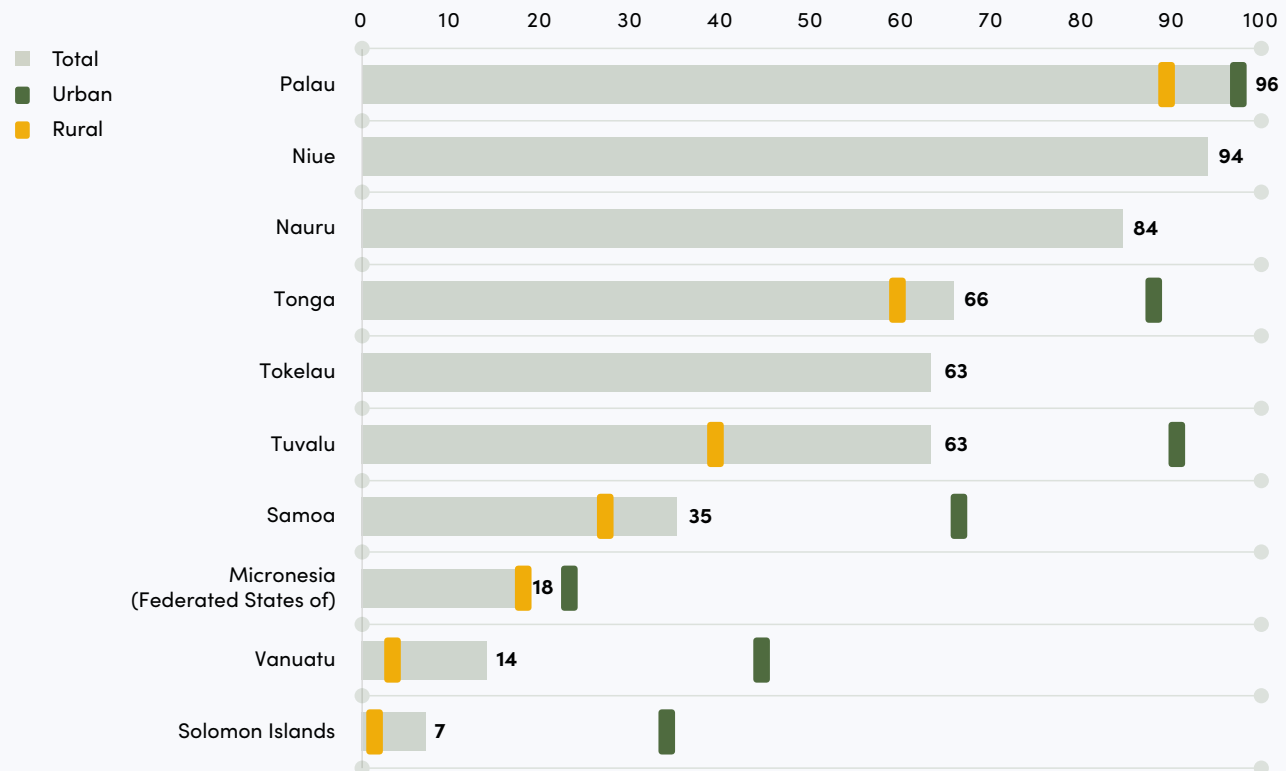
It is important that countries with the highest prevalence of use of harmful fuels, such as kerosene, wood and charcoal, switch to more environmentally friendly alternatives. Electricity and liquefied petroleum gas have less detrimental effects on household air quality. Switching to electricity generated from solar, wind and other renewable sources can substantially improve the lives of women and men in PICTs where rates of usage of unclean fuels remains high, such as the Solomon Islands (91 per cent), Vanuatu (85 per cent), Micronesia (Federated States of) (81 per cent) and Samoa (64 per cent).

In rural areas of Solomon Islands, the use of wood for cooking is particularly pervasive with 97 per cent of rural households using this unclean fuel type. In addition, a large share of rural households uses open fire³³ for cooking in Tuvalu (52 per cent), Micronesia (Federated States of) (43 per cent) and Tonga (40 per cent).

Plus, an estimated 61 per cent of urban households in Micronesia (Federated States of) use open fire, and 57 per cent of urban households in Solomon Islands use wood. The heavy reliance on these unclean fuels can be partially explained by the high cost of electricity and gas

in the region, as well as by traditional or customary ways of preparing food. Besides the detrimental contribution of these fuels to air quality, these sources often require extraction of wood, shrubs and coral, contributing substantially to environmental degradation.

Figure 4: *Proportion of households using clean cooking fuels, by location, latest available year (percentage)*



Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis. Only households relying on liquefied petroleum gas and electricity have been considered as reliant on cooking fuels for this section. Data for Nauru, Niue and Tokelau were not available with urban/rural disaggregation due to their specific geographical features (Nauru is largely considered fully urban, and Niue and Tokelau fully rural). This methodology differs from the official SDG indicator, as the indicator also considers the use of clean technologies and other fuels. For ease of reference, figure 6 showcases SDG data.

Where sex-disaggregated data are available,³⁴ they show that gender gaps in access to clean cooking fuels are small in most PICTs (figure 5 and figure 6, annex table A6). Despite this, women still carry a disproportionate burden when unclean fuels are used, from both a health and a collection time perspective. Analysis of

PICTs shows that the largest gender gaps in clean cooking fuel usage are in rural areas of Tuvalu, where 40 per cent of women use clean fuels (compared to only 38 per cent of men), and in urban areas of Vanuatu, where women are slightly more likely to access clean cooking fuels.

Figure 5: Proportion of women to men who use clean fuel for cooking, by location, latest available year (ratio)



Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis. For this report, only households using electricity or liquefied petroleum gas have been considered clean fuel users. This differs from the official SDG indicator, which also considers heating fuels and cooking technologies.

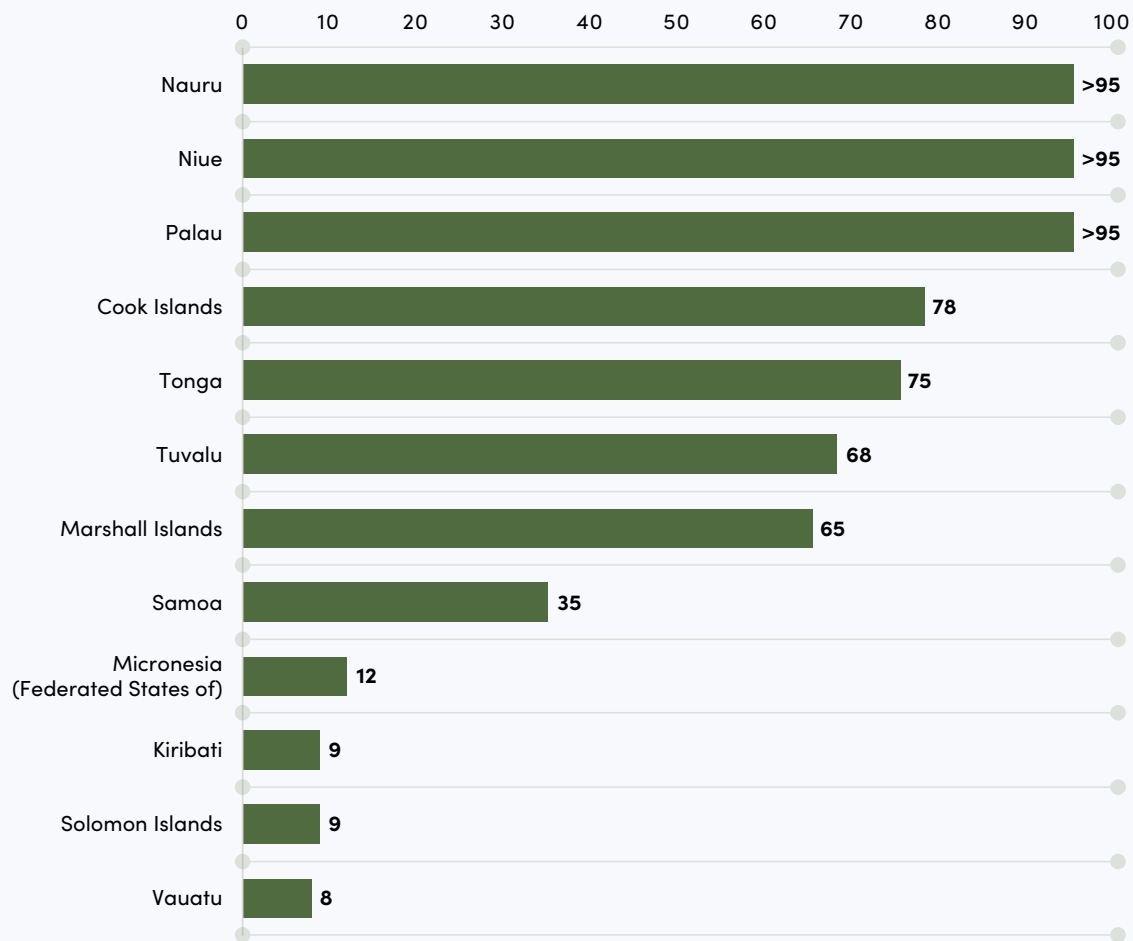
Emissions from clean cooking fuels, when coupled with clean technologies are known to be substantially lower, both for indoor and outdoor air quality. Although the HIES data used for this analysis did not include information on cooking technologies, official SDG data shed some light on this issue. Palau, Nauru and Niue stand out as countries with the largest share of people utilizing both clean fuels and clean cooking technologies (Figure 6). No disaggregated data, however, were available to assess the differences between urban and rural households.

3.2.2 Location of main cooking area in rural and urban households

The type of cooking fuel used by a household tells only part of the story of the impact of cooking on well-being, particularly of women. For this reason, assessing whether a cooking area is indoors or outdoors, and whether the kitchen is stand-alone or connected to the rest of the house can be important indicators of women's health, particularly in households using

cooking fuels that are detrimental to household air quality, such as firewood, coal, kerosene, shrubs and so on. While an ideal indicator for this would illustrate the proportion of households with indoor cook areas that use unclean fuels for cooking, the data necessary to compute this measure were not available for this report. Rather, the available data only provide the location of cooking facilities (Figure 7). Still, it is feasible to glean a few relevant insights from this information.

Overall, rural households are more likely than urban households to have their main cooking area outside of the main housing unit.³⁵ Since rural women are more likely to live in households that use unclean fuels for cooking, the greater prevalence of exterior cooking facilities may mitigate some of the health effects of using unclean fuels, particularly those associated with indoor air quality. It is important to note, however, that using unclean fuels has harmful effects on the health of the cook, even when performed outdoors (covered or uncovered).

Figure 6: Proportion of population with primary reliance on clean fuels and technologies, 2018 (percentage)

Source: SDG Indicator Database. Only countries with available data have been considered for this analysis.

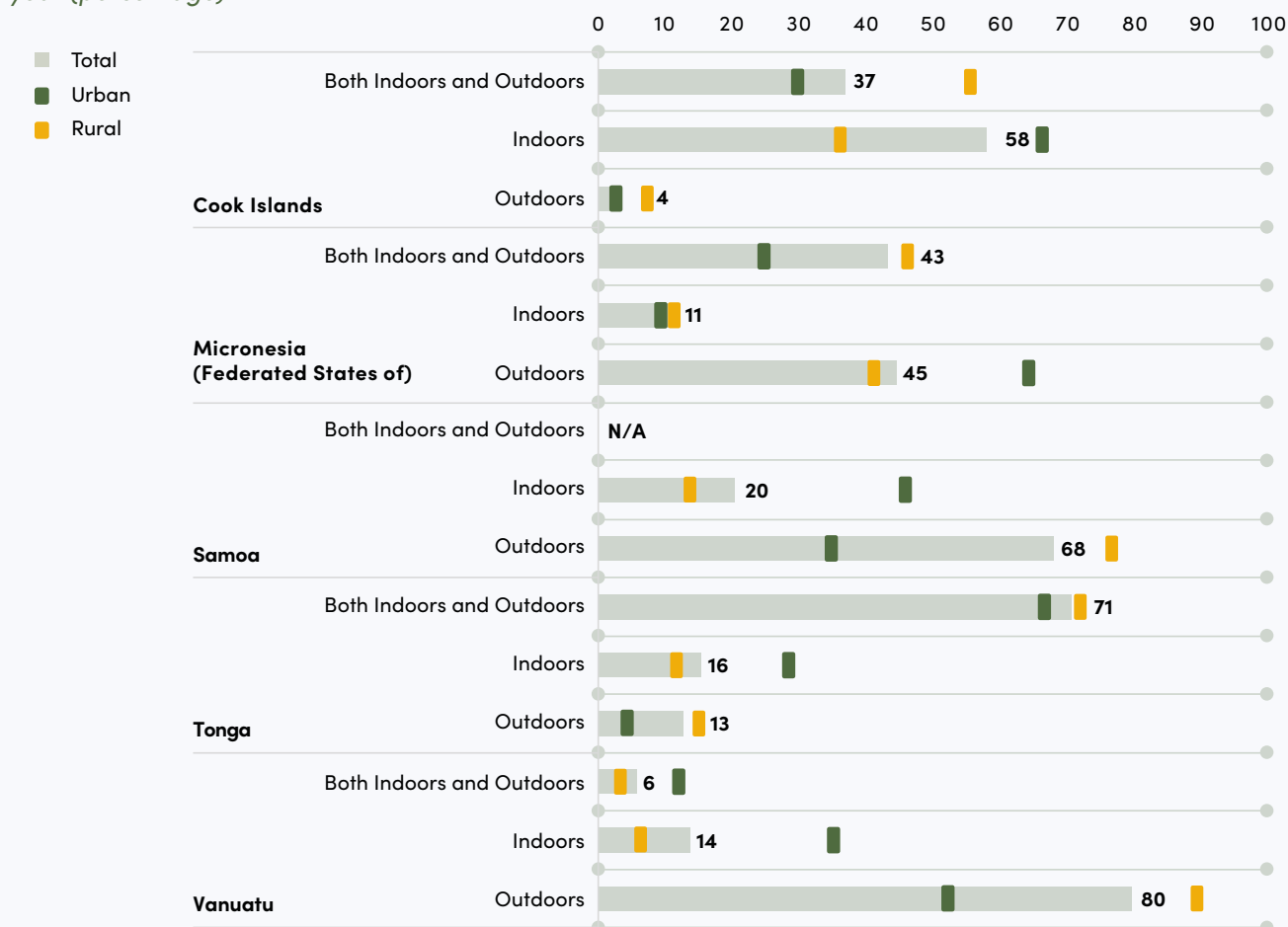
3.3 Affordability of energy

3.3.1 Household energy expenditure

Affordability is also a strong determinant of household access to energy, and the cost of grid electricity is particularly high in the Pacific. Four of the world's top five countries with the highest average price (1kw/h) are PICTs. The price of energy is often the driver for selecting an unclean type of fuel, even when physical access to clean fuels is available for households.³⁶ Across the 12

countries with available data on this indicator, the proportion of expenditures on energy, gas and other fuels compared to total household expenditures ranged from 2 per cent in Nauru to 7 per cent in the Marshall Islands (figure 8 and annex table A10). Rural households, on average, spent a smaller proportion of their budgets on energy, gas and other fuels than urban households (rural households' more limited access to retail may also influence this outcome). The largest urban/rural difference is in the Marshall Islands, where energy expenditures represent 8 per cent of urban household budgets compared to 3 per cent of rural household budgets.

Figure 7: Proportion of households with cooking facilities indoors, outdoors, or both, by location, latest available year (percentage)



Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: The sum of indoors+outdoors+both does not necessarily add up to 100 per cent within a country because (1) some households have no designated cooking area and (2) the figure excludes households that reported "other" for a cooking area.

Analysis by household composition³⁷ shows that households with two adults (double adult households) and children tend to spend the most on energy, gas and other fuels, as measured by mean household energy consumption, in all but four countries with available data.³⁸ Analysis of median expenditure values, that is, those unaffected by outliers, provides a similar finding: double adult households with children spent the most in all countries with the exception the Marshall Islands (single woman households without children spent more) and Tonga (single man households with children spent more);³⁹ but these households are also the most likely to have a higher median income. Data also show that

among single adult households (with or without children), single woman households with children spend more on energy, according to both the mean and median values.⁴⁰ Further data analysis is necessary to ascertain why, but a potential explanation is that single woman households with children tend to have more children on average than single man households with children, as women are more likely to have custody of children, including those from unplanned pregnancies or previous relationships. Single woman households with children are larger than single man households with children in 7 of the 12 PICTs for which data are available. The largest difference is in Palau where single

woman households with children have 1.6 children on average and single man households with children have an average of 1 child. On average, single woman households without children spent less on energy, gas and other fuels than single man households without children in all but four of the countries considered (Cook Islands, Solomon Islands, Tokelau, and Tonga). Median energy expenditures show a similar picture, with single man

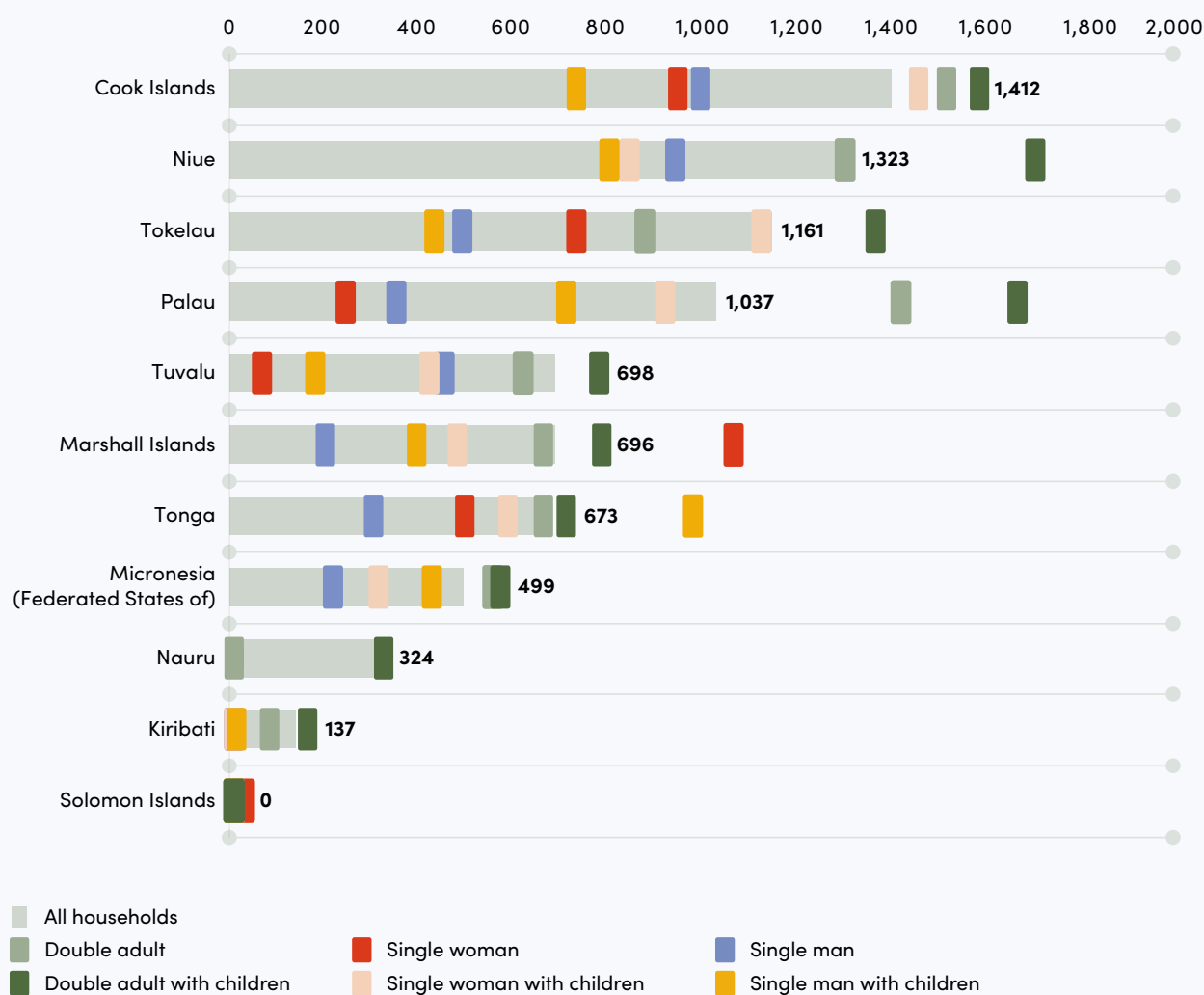
households without children spending more in all but 5 of the 12 countries (Cook Islands, the Marshall Islands, Solomon Islands, Tokelau and Tonga). Identifying reasons for this finding is challenging given available data, but explanations may range from women being more environmentally conscious, to having lower incomes and thus less money to spend on fuels, and pre-payment requirements in some countries, among others.

Figure 8: *Proportion of energy expenditure as a share of total household expenditure, latest available year (percentage)*



Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Figure 9: Median annual energy expenditure, by household composition (total, inflation adjusted 2021 United States dollars)



Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: Data were initially collected in local currency and converted to 2021 United States dollars, post adjustment for inflation.

WOMEN IN ENERGY-RELATED DECISION-MAKING

The transition toward cleaner energy in PICTs has included an emphasis on bringing more women into the energy sector as private sector professionals, government officials and community and grassroots stakeholders. This push is grounded in the understanding that women are key agents of change as they are well-situated to help develop and make decisions around clean, sustainable energy resources for households and communities. The clean energy transition is expected to bring environmental benefits to the Pacific region, which in turn are likely to improve overall health outcomes, particularly as, for example, indoor air quality improves with the use of clean fuels. This, in turn, will also reduce the unpaid care burden on women. Economic benefits are also expected to accompany this transition. For women, these benefits could translate into greater economic empowerment in the form of, for example, expanded access to paid employment and skills training in clean energy-related endeavours.

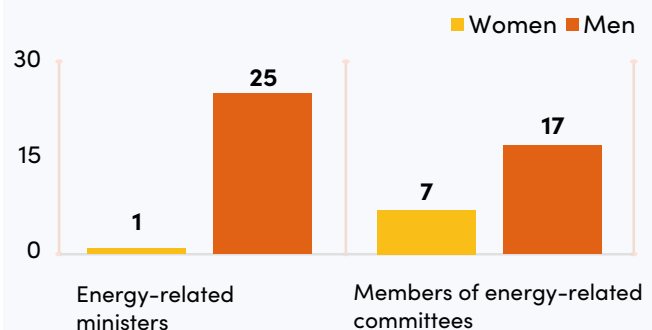
While women's participation in the clean energy sector is, thus, integral to environmental sustainability and inclusive economic development in PICTs, women's representation in key areas – including energy-related government positions, employment in the utilities sector and other energy-related sectors, and in energy-related education programmes – remains alarmingly low across these countries. What's more, a lack of access to credit and other assets may diminish women's agency in starting their own businesses and in community and family decision-making, particularly related to clean-energy matters.

4.1 Ministerial and committee positions in energy-related ministries

Women are severely underrepresented in high-level ministerial positions related to energy across PICTs

(figure 10 and annex table A11). Available data show that, at the time of this report, of 26 energy-related ministers across 21 countries, only one currently serving minister (equivalent) is female, Ms. Elina Akinaga in Micronesia (Federated States of). Much less information is available pertaining to women serving on parliamentary committees related to the energy sector. The limited available data, however, indicate that women are also underrepresented in these parliamentary roles. Of the 24 committee positions with available data across the region, just seven were filled by women. Enhancing women's engagement in energy-related decision-making in governments is essential to ensure sustainable energy policies are implemented that meet the needs of both women and men. Enhancing women's representation could also promote greater participation of women in the energy sector, both in public and private organizations.

Figure 10: Number of people serving as energy-related ministers and on energy-related parliamentary committees, by sex (total)



Source: Data collected from parliamentary websites and provided by the Pacific Community. Most recent parliaments as of August 2021.

Note: Data on energy-related committees was only available for French Polynesia and Northern Mariana Islands. Therefore, the count is not representative for the whole region (see annex table A11).

4.2 Women staff in power utilities

Power utility firms in PICTs are also male dominated. In 2018, women made up roughly 18 per cent of all staff in Pacific power utilities, or 1,133 of 6,337 total employees (table 2 and figure 11). Women workers comprised the largest percentage of power utility staff in New Caledonia, at 32 per cent, and the smallest percentage in Tuvalu, at 8 per cent. Gender diversity in power utility employment is important as women are uniquely situated to provide energy utility services to communities. As key energy users in the household, women engaged in power utilities can work directly to meet the needs of female customers as well as overall household needs. Evidence also shows that enhancing women's engagement in utility firms is vital for driving more innovative and inclusive solutions for clean energy transitions.⁴¹ In addition, participating in this economic sec-

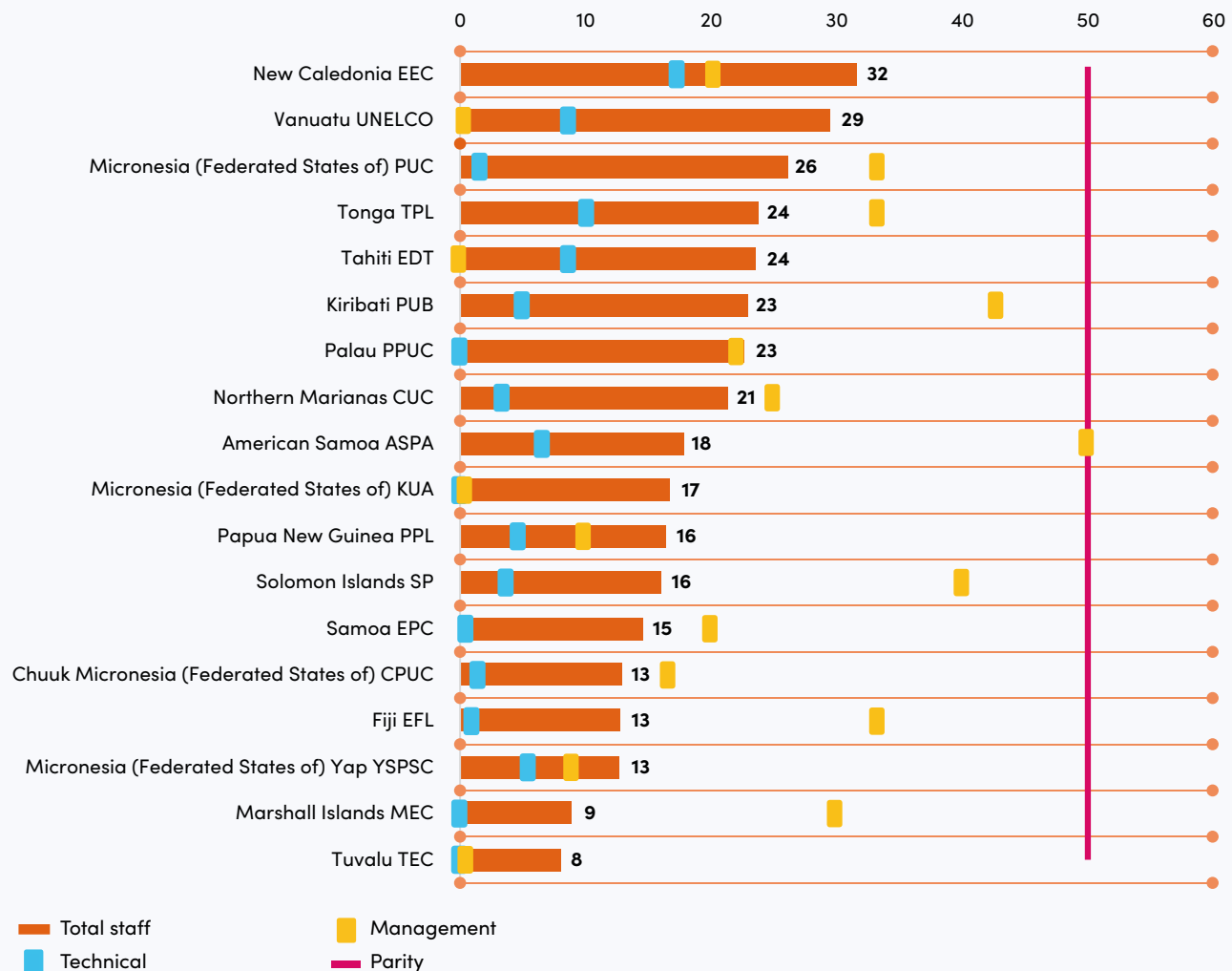
tor provides women with earnings, it may improve their access to training and skills, and provide other pathways to economic empowerment. In the Pacific, where women are key holders of traditional environmental knowledge, their participation in this sector has enormous power for transformation and conservation.

Women are even further underrepresented in high-level positions across Pacific power utility companies, limiting their decision-making power for the management of natural resources associated with energy generation. The gender gap is particularly large among chief executive officers (CEOs) and second-in-charge executives. Of the 19 CEO positions for which data are available, only one was filled by a woman (in Papua New Guinea). The same is true for second-in-charge positions: just one woman served in such a role (in Samoa).

Table 2. Staff in Pacific utilities, by sex and selected managerial levels, 2018

Country/territory	Utility	Chief executive (M/F)	Second in charge (M/F)	Percentage of women in management
American Samoa	ASPA	M	M	50
Fiji	EFL	M	M	33
French Polynesia	EDT	M	M	0
Kiribati	PUB	M	M	43
Marshall Islands				
Kwajalein	KAJUR	M	M	n/a
Majuro	MEC	M	M	30
Micronesia (Federated States of)				
Chuuk	CPUC	M	M	17
Kosrae	KUA	M	M	0
Pohnpei	PUC	M	M	33
Yap	YSPSC	M	M	9
New Caledonia	EEC	M	M	20
Northern Mariana Islands	CUC	M	M	25
Palau	PPUC	M	M	22
Papua New Guinea	PPL	F	M	10
Samoa	EPC	M	F	20
Solomon Islands	SP	M	M	40
Tonga	TPL	M	M	33
Tuvalu	TEC	M	M	0
Vanuatu	UNELCO	M	M	0

Source: Pacific Power Authority. Represents underlying data of the 2018 Pacific Power Utilities Benchmarking Reports, available at www.ppa.org.fj/publications/.

Figure 11: Proportion of staff in Pacific power utilities that are women, by job category, 2018 (percentage)

Source: Provided by the Pacific Power Authority. Represents underlying data for the 2018 Pacific Power Utilities Benchmarking Reports. Available at www.ppa.org.fj/publications/.

Acronyms: New Caledonia EEC: New Caledonia EEC ENGIE ; Vanuatu UNELCO: Vanuatu Union Electrique du Vanuatu; Micronesia (Federated States of) PUC: Federated States of Micronesia Pohnpei Utilities Corporation; Tonga TPL: Tonga Power Limited; Tahiti EDT: Electricite De Tahiti; Kiribati PUB: Kiribati Public Utilities Board; Palau PPUC: Palau Public Utilities Corporation; Northern Marianas Islands CUC: Northern Marianas Commonwealth Utilities Corporation; American Samoa ASPA: American Samoa Power Authority; Micronesia (Federated States of) KUA: Federated States of Micronesia Kosrae Utilities Authority; Papua New Guinea PPL: PNG Power Limited ; Solomon Islands: Solomon Islands Solomon Power; Samoa EPC: Samoa Electric Power Corporation; Chuuk Micronesia (Federated States of) CPUC: Chuuk (Federated States of Micronesia) Chuuk Public Utility Corporation; Fiji EFL: Fiji Energy Fiji Limited; Micronesia (Federated States of) Yap YSPSC: Federated States of Micronesia Yap State Public Service Corporation; Marshall Islands MEC: Marshall Islands Marshalls Energy Company; Tuvalu TEC: Tuvalu Electricity Corporation.

Overall, women held only 24 per cent of all managerial positions in Pacific power utilities. Across PICTs, they made up the largest percentage of managerial positions in American Samoa, at 50 per cent, and held none of these positions in four nations: French Polynesia, Micronesia (Federated States of), Tuvalu and Vanuatu. At 5 per cent, or 163 out of 3,413 jobs, women held very few technical staff positions in power utilities in the Pacific. Given this, it is notable, however, that women held 17 per cent of technical jobs in New Caledonia, or 24 out of 139 technical positions. Increasing women's partici-

pation in tertiary education in technical degrees could substantially contribute to their participation in technical positions in the energy sector; an essential step for promoting more inclusive and sustainable practices.

Conversely, women are overrepresented in secretarial and administrative support jobs in utility firms. An estimated 17 of the 19 secretaries to the CEOs of Pacific power utilities were women, comprising just about 90 per cent of staff employed in these positions. This data point – particularly when read in conjunction with the

contrasting employment figures noted above – suggests that additional career pathways are needed, for example to support women’s transition from technical areas into management or their advancement from clerical roles in Pacific utility firms.

4.3 Women in other energy-related jobs

Very little information is readily available on women’s employment in other energy-related jobs in PICTs. Where

available, it is aggregated too broadly to draw many conclusions on women’s participation in energy-related jobs in the region, particularly with respect to clean, renewable and sustainable energy endeavours. An ideal indicator would be refined enough to provide information on women’s and men’s participation in energy-related jobs, with disaggregation for clean, renewable and sustainable fields, but at present these data are not readily available.

Table 3 *Employees in other energy-related sectors, by sex, latest available year*

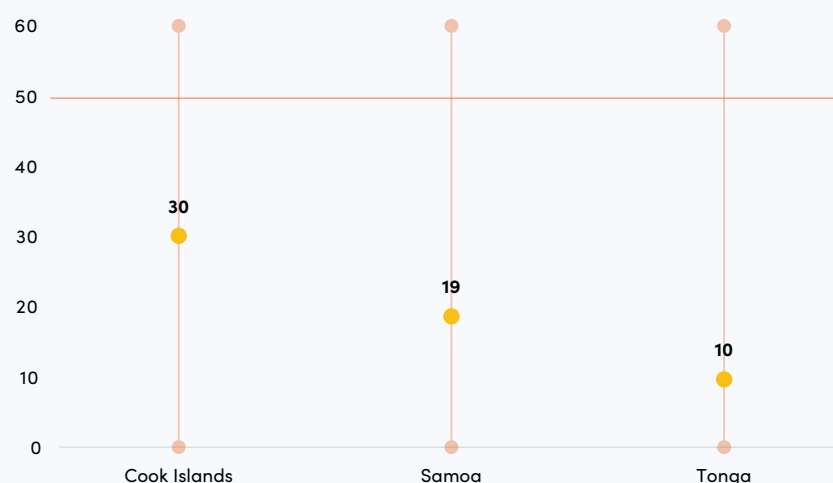
Country	Electricity, gas, steam and air conditioning supply		
	Number of women	Number of men	Percentage of women
Cook Islands	31	72	30
Tonga	19	178	10
Samoa	66	288	19

Source: ILO STAT Data Explorer. Downloaded on 23 September 2021. Other energy-related sectors include economic activities related to providing electric power, natural gas, steam, and hot water. For more details, please see: <https://unstats.un.org/unsd/classifications/Econ/Detail/EN/27/D>

Where data exists, it shows that women also tend to be underrepresented in other energy-related jobs in the Pacific region (table 3 and figure 12). In Tonga, for instance, women make up just about 10 per cent of the workforce in the electricity, gas, steam and air conditioning sector. They comprise a larger share of jobs in

this sector in Samoa (19 per cent) and Cook Islands (30 per cent), but still well below the 50 per cent parity rate. Increasing their participation could contribute to shifting practices towards more environmentally conscious behaviours, building on women’s mastery of traditional environmental knowledge.

Figure 12: *Proportion of employees in other energy-related sectors that are women, latest available year (percentage)*



Source: ILO STAT Data Explorer. Downloaded on 23 September 2021. Other energy-related sectors include economic activities related to providing electric power, natural gas, steam, and hot water. For more details, please see: <https://unstats.un.org/unsd/classifications/Econ/Detail/EN/27/D>

Note: Data are for the following years: Cook Islands (2019); Kiribati (2015); Tonga (2018); Samoa (2017)

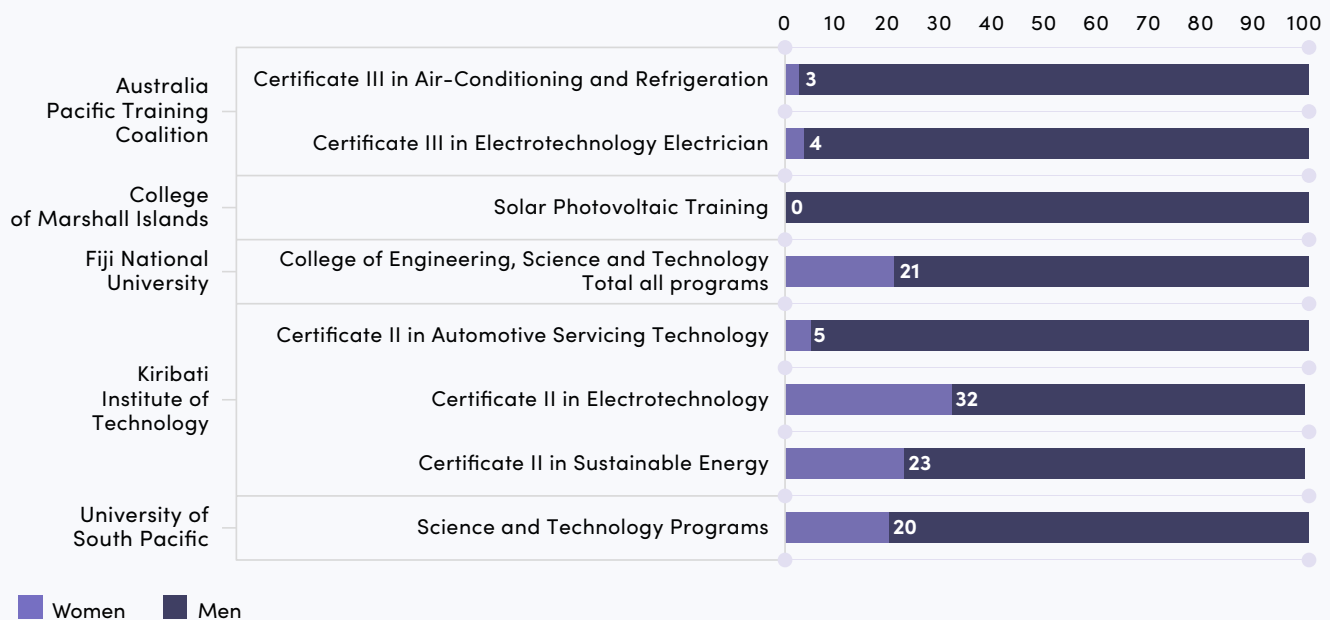
ENABLING FACTORS FOR WOMEN'S ENGAGEMENT IN ENERGY

5.1 Women's enrolment in science, technology, engineering and mathematics and technical and vocational education and training energy programmes

Increasing women's participation in education and training in energy-related fields is essential to increasing their involvement in the Pacific energy sector, particularly in technical positions and at higher managerial levels in the private sector and in government. Currently, however, women make up a relatively small proportion

of enrolments in STEM and TVET Energy Programmes at Pacific universities (figure 13 and annex table A12).⁴² In 2019, they comprised approximately 20 per cent of university students enrolled in STEM programmes. In addition, with the exception of certificate programmes in electrotechnology and sustainable energy at Kiribati Institute of Technology (KIT) where women comprised 32 per cent and 23 per cent of enrolled students, respectively, women comprised just 5 per cent or less of all students enrolled in energy-related TVET programmes in Pacific tertiary institutions where data was available.

Figure 13: Proportion of students enrolled in STEM and TVET energy programs, by sex and education institution, latest available year (percentage)



Source: Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020, table 27.

Notes: (1) Programmes include engineering, chemistry and marine science; (2) Data throughout programme lifetime; (3) Data are from 2007–2019.

5.2 Access to credit

Research shows that households and businesses in developing countries are often willing to purchase clean energy infrastructure, particularly when they think it will improve quality of life and the productivity of businesses.⁴³ However, larger upfront costs associated with clean energy as compared to conventional energy can be a significant obstacle to the transition to clean energy use. Limited access to affordable credit may further limit the ability of those who would otherwise purchase and use clean, renewable and sustainable energy sources. Women-run small businesses and micro enterprises in developing countries, including PICTs, are likely to be more disadvantaged in this regard as they are likely to have more trouble accessing credit due to their limited access to bank accounts and other financial services compared to men. This may pose additional challenges to women who wish to start their own businesses, and it may diminish their agency in clean energy-related community and household matters.

Lack of access to credit and insurance, combined with limited financial literacy may also reduce the resilience of women and women-operated businesses to cope with crises, including health and environment-related events. Improving women's financial literacy and access to credit could help mitigate the negative repercussions of natural hazards that cause disasters and crises through several pathways. Evidence shows that credit is often better utilized by women than men in developing countries as women typically spend more of their available resources on things that benefit their families and households.⁴⁴ This can include spending on resources for mitigating natural and other crises as well as investing in clean energy resources to improve productivity and household living standards. Access to credit could provide low-cost financial resources to directly aid recovery and reconstruction following a crisis or environmental event, thus improving resilience.⁴⁵ In addition, as noted above, access to credit may facilitate the usage of stand-alone, clean energy infrastructure, like solar panels. These energy sources may be less vulnerable to, or more easily repaired/replaced following natural hazard events than grid energy. They may also be used to power batteries to be used for energy, for example, while grid electricity is being restored. Improving women's financial literacy and access to credit in PICTs is, thus, vital in aiding people and small businesses run by women that are facing crises and natural hazard events, as it enables them to recover

more quickly from external shocks. Available data on access to credit is scant, but it shows that a lot remains to be done to enhance women's resilience. Globally, only 65 per cent of women compared to 72 per cent of men have access to a bank or other financial institution, including mobile money service providers. Recent data are not available to determine what this picture looks like in PICTs, with the exception of Vanuatu, where only 25 per cent of women had access to an account at a financial institution in 2016 (compared to 37 per cent of men). Across other countries and territories, disparities are expected to remain large.

5.3 Placing women at the centre of energy related plans, policies and projects

Available evidence indicates that designing and implementing plans, policies and projects with women's needs and priorities in mind can have transformational effects. In Tonga, for instance, the Outer Islands Renewable Energy Project, implemented by Tonga Power Limited with the support of the Government of Australia and the Asian Development Fund, installed solar power systems in nine Outer Islands. An important component of the project included capacity development for women on better use of efficient electricity. The project included a Gender Action Plan, ensured the engagement of women through consultations from the design phase and set specific quotas for their participation on operation and maintenance of power systems. More gender-specific targets were set out, such as ensuring 50 per cent participation of women across all trainings, promoting women's engagement in consultations, and identifying at least 50 per cent of business incubators run by women. So far, all targets have either been achieved or are on track. As a result, more Tongan women are engaging in energy jobs.⁴⁶ This project is an example of the importance of mainstreaming gender across planning and implementation processes of activities and strategies.

Many development partners and civil society organizations working in the Pacific are already mainstreaming gender across their work, although much remains to be done. Of note is the work of civil society organizations such as Live and Learn,⁴⁷ which advocates for environmental sustainability, including through energy practices, and educates girls and boys across the region. The consistent inclusion of gender-specific concerns across these types of initiatives is key to promoting gender-sensitive policies and women's participation in the energy sector.

COVID-19, ENERGY AND GENDER

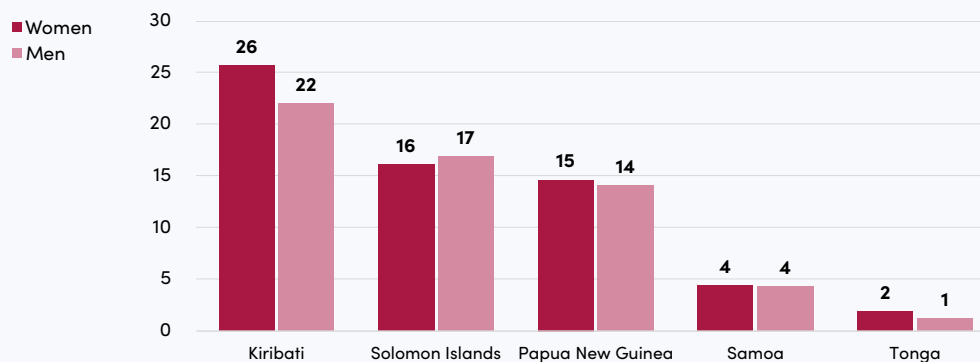
The COVID-19 pandemic has deepened the multiple and intersecting challenges discussed in this report that women face accessing energy. The need for modern, clean and affordable energy for households and businesses is pressing. A reliable source of clean and affordable energy in households may facilitate unpaid care and domestic work, such as caring for sick family members, cooking, washing clothes and other cleaning tasks. In turn, reliance on biomass and other forms of unclean energy, will require more trips outside the household for fetching fuels, adding to the existing unpaid work burdens and heightening risk of contagion in countries where the virus is prevalent.

Research has highlighted the pandemic may be driving an increased use of energy in households, including as a result of movement restrictions, school closures and home schooling, which have resulted in more cooking

done at home, more time spent shopping and managing food and fuel, and more frequent and thorough hygienic practices needed. At work, women entrepreneurs in the formal and informal sector have seen their operating costs, including energy prices, increased. This, coupled with reductions in incomes driven by the overall economic downturn, is resulting in many women working less paid hours or losing their jobs.

Rises in energy costs, compounded by economic strains and severe weather events linked to environmental crises that overlapped with COVID-19, have resulted in many women and men losing access to power since the onset of the pandemic. Preliminary data from Rapid Gender Assessment Surveys indicates that as many as 15 to 20 per cent of adults in some countries have lost access to their power supply⁴⁸ since the pandemic onset (excludes those who initially lost access but have since regained it).

Figure 14: Proportion of people who lost access to power supply since the onset of COVID-19, 2021 (percentage) (preliminary estimates)



Source: UN Women–ADB Rapid Gender Assessment Surveys on the consequences of COVID-19

Note: As this is preliminary data, the final estimates may change. Final estimates forthcoming (2022). Refer to data.unwomen.org for the most updated estimates.

For many, this may have resulted in shifts to other energy sources, including unclean fuels, and the consequent increase in time spent fetching fuels. Energy access is essential for cooking and food preparation, pumping and treating water for sanitation, heating water for hygiene, refrigeration for food preservation while sheltering in place, adequate lighting in work and stu-

dy areas, and phone and internet access to maintain crucial communications, including online schooling and access to safety information during the pandemic.⁴⁹ A gender-sensitive response to the crisis must promote access to affordable and sustainable energy for all, as this analysis has illustrated that this access is essential to building women and men's capacity to cope.

CONCLUSION AND POLICY RECOMMENDATIONS

Women's full and equal participation in the energy sector, particularly clean energy, is integral to environmental sustainability and economic development in PICTs as women are very well situated to help develop and make important decisions around clean, sustainable energy resources for their households and communities. Clean and renewable energy also has the potential to create changes in women's well-being in the Pacific through several pathways. An expanded energy sector could, for instance, translate into greater economic empowerment by increasing women's access to paid employment and skills training in clean energy-related endeavours. Greater access to clean and renewable energy could also reduce the burden of unpaid domestic work and unpaid production of goods, enabling women, who tend to bear greater responsibility for these tasks, to spend less time and energy on them. When women spend less time on household work, their time and energy can be used in other ways, such as paid labour. In addition, using clean, sustainable energy sources reduces the health risks to women (and children) of daily household tasks, such as cooking, by improving indoor air quality, a key driver of respiratory disease.

Weaknesses persist, however, in the ability to harness these benefits in the Pacific energy sector. The sex-disaggregated analysis provided in the present report shows, for instance, that while improvements have been made in grid electricity access in PICTs, more remains to be accomplished with respect to sustainable energy access and women's participation in energy-related decision-making. Women's representation in key energy-related areas, such as government positions, employment in Pacific utilities and other energy-related sectors, remains low. Increasing women's participation in energy-related education

programmes, and their access to productive and financial assets could make a difference in ensuring women are better placed to lead energy action and policies across the region. The following recommendations, in particular, could help ensure women's roles are recognized and leveraged for sustainable energy actions in the Pacific.

1. **Ensure women and girls complete technical post-secondary level qualifications in STEM and TVET energy programmes.** Promoting and incentivizing women's enrolment and supporting completion is essential to create a future generation of women energy leaders. The provision of low-interest student loans and scholarships for women in these fields could help to promote their engagement. Setting up female quotas in admissions processes has also proven effective in other countries and fields.
2. **Promote women's access to productive and financial assets.** Access to loans, ownership of land or secure tenure of land and other assets that could be used as collateral for accessing finance and coping with crises is key to promote women's entrepreneurship, including by creating businesses that may contribute to sustainable energy production and consumption. Microfinancing, stimulus programmes and other schemes that enable women to build and expand their sustainable businesses should be prioritized.
3. **Mainstream the use of solar-powered generators, especially for those not connected to grid electricity.** By promoting and supporting households to use solar and other renewable energy-based generators, women's unpaid work burden decreases

substantially. Furthermore, when these generators are in place, cooking with electric stoves produces fewer emissions, which limits damage on indoor and outdoor air quality. As women are typically in charge of fuel collection and cooking, the beneficial effects on women's health and time burdens are twofold – this also frees up their time for paid work and thus empowers them from an economic point of view.

- 4. Shift grid electricity production to renewable sources.** In PICTs, most grid electricity relies on fossil fuels. This has wildly detrimental effects for Pacific ecosystems, from contributing to global warming and sea level rise, to lowering outdoor air quality and triggering respiratory disease. As women are disproportionately dependent on natural resources for their livelihoods (since they own fewer economic assets), environmental damage affects them disproportionately. A study in Asia revealed that increases in temperatures and aridity contributed substantially to increasing child marriage, adolescent births and scarcity of clean water and fuel for households.⁵⁰ Similar effects are expected to be taking place in the Pacific.
- 5. Give women equal seats at the table for energy-related decision-making.** Women's underrepresentation in the energy sector is particularly noticeable in technical jobs and decision-making positions, such as CEOs of utility firms (noting that many are State Owned Enterprises), and ministers for the environment, among others. Ensuring wo-

men have access to these positions, is essential to promote gender-sensitive policies and corporate practices. Most importantly, given the long history of Pacific women's mastery of traditional environmental knowledge, ensuring their participation in decision-making is key for ensuring sustainability. Setting up gender quotas in public bodies, such as ministries of energy and related posts in local governments, is an important first step. Corporations should also consider promoting women through managerial tracks, including through targeted training programmes and special policies to eliminate existing barriers.

- 6. Enhance the availability of energy-gender data.** To inform national energy policies, sustainable development plans and climate change mitigation strategies, it is essential to have information on women and energy for evidence-based decision-making. Gender data in the area of energy is also key for monitoring progress in the implementation of related policies, for holding decision-makers accountable, and for advocating for more gender-sensitive measures in the energy sector. Thus, enhancing the availability and use of these data should be prioritized, including in key areas such as women's participation in decision-making in energy-related committees, grassroots initiatives and at home. Gathering insights on who makes decisions around energy purchases and consumption could help shed light on use patterns and reveal ways to promote sustainable energy use and management.

ANNEX

The following tables showcase data associated with each of the graphs presented in the report. Figure numbers are indicated alongside table titles.

Table A 1 (figure 1): *Proportion of households with access to grid electricity, by location, latest available year (percentage)*

Country/territory	Total	Rural	Urban
Cook Islands	99.2	98.7	99.4
Kiribati	30.9	6.3	59.9
Marshall Islands	70.8	13.4	89.2
Micronesia (Federated States of)	58.7	58.1	62.5
Nauru	97.0		
Niue	98.7		
Palau	99.8	98.5	100.0
Samoa	96.4	95.8	98.8
Solomon Islands	9.0	0.2	50.0
Tokelau	100.0		
Tonga	91.7	90.3	96.7
Tuvalu	96.5	95.7	97.4
Vanuatu	30.1	11.2	85.2

Source: Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020, table 27.

Table A 2 (figures 1 and 2): *Proportion of households with access to grid electricity, by sex and location, latest available year (percentage)*

Country/ territory	Total			Women			Men		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Cook Islands	99.3	99.2	99.3	99.1	99.3	99.1	99.4	99.1	99.6
Kiribati	36.9	7.1	63.0	37.6	7.0	63.7	36.1	7.2	62.2
Marshall Islands	70.8	12.8	90.2	71.5	12.6	90.4	70.2	12.9	90.0
Micronesia (Federated States of)	55.6	55.6	55.9	56.1	56.1	55.7	55.1	55.0	56.1
Nauru	98.3			98.5			98.1		
Niue	99.0			99.2			98.8		
Palau	99.7	98.6	100.0	99.8	98.8	100.0	99.7	98.4	100.0
Solomon Islands	10.3	0.3	54.1	10.4	0.3	54.4	10.2	0.3	53.8
Tokelau	100.0			100.0			100.0		
Tonga	93.1	92.0	97.0	93.2	92.1	96.9	93.0	91.9	97.1
Tuvalu	97.5	96.5	98.5	97.3	96.3	98.3	97.7	96.7	98.6
Vanuatu	31.3	11.8	86.1	31.6	11.8	86.7	31.1	11.8	85.6

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Table A 3 (figure 3): Rural households with access to small-scale power, by type of small-scale power, latest available year (percentage)

Country/ territory	Percentage			Number			Number of rural households
	Generator	Solar	Both	Generator	Solar	Both	
Cook Islands	13.3		13.3	167		167	1,257
Micronesia (Federated States of)	8.5	9.8	18.2	1,215	1,397	2,612	14,325
Kiribati	3.0	75.0	78.0	318	7,966	8,284	10,615
Marshall Islands	1.6	80.8	82.4	60	2,938	2,998	3,636
Palau	3.6	0.3	3.9	35	3	39	985
Solomon Islands	2.5	36.5	39.1	2,262	32,524	34,787	89,026
Tonga	4.4	2.6	7.0	607	368	975	13,908
Tuvalu	0.3	4.0	4.3	3	40	43	1,002
Vanuatu	0.6		0.6	297		297	46,717

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Table A 4 (figure 3): Proportion of rural households with access to small-scale power, by sex and type of small-scale power, latest available year (percentage)

Country/ territory	Total		Women		Men	
	Generator	Solar	Generator	Solar	Generator	Solar
Cook Islands	16.7		16.2		17.2	
Kiribati	3.4	74.7	3.3	75.2	3.5	74.2
Marshall Islands	3.1	82.0	3.3	82.2	2.9	81.8
Micronesia (Federated States of)	8.7	11.1	8.5	11.3	9.0	10.9
Palau	3.4	0.2	3.5	0.2	3.3	0.2
Solomon Islands	2.2	37.5	2.0	36.7	2.3	38.2
Tonga	4.3	2.4	4.3	2.5	4.3	2.4
Tuvalu	0.3	4.1	0.3	5.0	0.3	3.3
Vanuatu	0.6	0.0	0.7		0.6	

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys (HIES) and Population and Housing Census. Only countries with available data have been considered for this analysis.

Table A 5 (figure 4): Proportion of households with access to clean cooking fuels, by location and type of cooking fuel, latest available year (percentage)

Country/ territory	Total			Rural			Urban		
	Clean fuel	Electric	Gas	Clean fuel	Electric	Gas	Clean fuel	Electric	Gas
Micronesia (Federated States of)	18.2	4.7	13.5	17.5	5.0	12.4	22.8	2.7	20.0
Nauru	84.1	35.7	48.4						

Country/ territory	Total			Rural			Urban		
	Clean fuel	Electric	Gas	Clean fuel	Electric	Gas	Clean fuel	Electric	Gas
Palau	96.0	21.4	74.6	88.9	6.8	82.1	97.4	24.3	73.1
Samoa	34.7	11.2	23.4	26.7	9.1	17.6	66.1	19.7	46.3
Solomon Islands	7.2	0.5	6.7	1.6	0.4	1.2	33.7	1.2	32.6
Tokelau	62.9	6.2	56.6						
Tonga	65.6	1.5	64.1	59.1	1.2	57.9	87.5	2.7	84.8
Tuvalu	62.8	0.9	62.0	39.0	0.9	38.1	90.2	0.8	89.4
Vanuatu	13.8	0.4	13.4	3.4	0.1	3.3	44.1	1.3	42.0

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: Clean fuel + unclean fuel does not sum to 100 per cent within a country due to rounding and because the category "other fuels" is not used in the calculations.

Table A 6 (figure 5): Proportion of people who use clean cooking fuels, by location and type of cooking fuel, latest available year (percentage)

Women						
Country/ territory	Total		Rural		Urban	
	Clean fuels	Unclean fuels	Clean fuels	Unclean fuels	Clean fuels	Unclean fuels
Micronesia (Federated States of)	15.7	84.2	15.6	84.3	16.8	83.2
Nauru	86.2	1.9	0.0			
Niue	95.1	4.2	0.0			
Palau	95.8	4.1	87.6	12.3	97.7	2.2
Solomon Islands	7.3	90.5	1.2	97.8	33.6	58.4
Tokelau	68.2	31.8	0.0			
Tonga	63.7	36.3	56.8	43.2	86.9	13.1
Tuvalu	66.0	34.0	40.2	59.8	90.7	9.2
Vanuatu	13.7	84.7	3.3	96.4	42.8	52.3
Men						
Country/ territory	Total		Rural		Urban	
	Clean fuels	Unclean fuels	Clean fuels	Unclean fuels	Clean fuels	Unclean fuels
Micronesia (Federated States of)	16.0	83.8	15.6	84.2	18.3	81.4
Nauru	84.3	2.8	0.0			
Niue	93.5	5.3	0.0			
Palau	95.9	3.7	89.1	10.9	97.5	2.1
Solomon Islands	7.2	90.3	1.2	97.6	33.6	58.3
Tokelau	66.7	33.0	0.0			
Tonga	62.7	37.3	55.9	44.1	86.1	13.9
Tuvalu	66.2	33.7	37.6	62.4	91.8	8.0
Vanuatu	13.4	85.2	3.0	96.7	42.7	52.8

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: Clean fuel + unclean fuel does not sum to 100 per cent within country due to rounding and because the category "other" fuels is not used in the calculations.

Table A 7 (figure 7): Proportion of households that use indoor/outdoor cooking facilities, by location, latest available year (percentage)

Country/ territory	Total			Rural			Urban		
	Both	Indoor	Outdoor	Both	Indoor	Outdoor	Both	Indoor	Outdoor
Cook Islands	37.1	58.3	4.1	55.8	36.5	7.4	30.1	66.4	2.8
Micronesia (Federated States of)	43.5	11.3	44.6	46.5	11.6	41.3	24.9	9.4	64.6
Nauru	5.1	74.9	4.9						
Niue	67.3	24.4	5.8						
Palau	32.3	59.2	7.9	65.4	31.2	3.4	25.7	64.8	8.8
Samoa		20.5	68.3		14.0	76.8		46.0	34.9
Solomon Islands	7.2	8.1	83.1	3.3	6.2	89.4	25.9	16.9	53.8
Tokelau	53.7	38.7	6.7						
Tonga	71.0	15.7	12.8	72.3	11.9	15.3	66.7	28.5	4.6
Tuvalu	65.8	23.8	9.3	72.6	10.1	15.9	57.9	39.7	1.9
Vanuatu	5.7	13.9	80.0	3.4	6.6	89.5	12.3	35.2	52.4

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: Does not sum to 100 per cent within a country because (1) some households have no designated cooking area and (2) the table excludes households that reported "other" for a cooking area.

Table A 8: Mean energy expenditure by household composition (inflation adjusted 2021 United States dollars)

Country	Single woman	Single man	Double adult	Single woman with children	Single man with children	Double adult with children	All households
Cook Islands	1,265	1,179	1,632	1,737	882	1,787	1,629
Kiribati	74	98	273	90	104	342	320
Marshall Islands	1,318	1,765	1,148	863	789	1,270	1,278
Micronesia (Federated States of)	543	1,377	956	684	976	950	963
Nauru	0	222	414	464	420	780	717
Niue	818	894	1,428	839	806	2,201	1,626
Palau	424	581	1,981	1,214	715	2,078	1,453
Solomon Islands	396	83	276	68	876	254	255
Tokelau	700	679	1,200	952	657	1,811	1,500
Tonga	644	368	719	573	703	782	751
Tuvalu	325	463	853	460	176	886	850
Vanuatu	126	167	240	146	92	220	217

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: Data were initially collected in local currency and converted to 2021 United States dollars, post adjustment for inflation.

Table A 9 (figure 9): Median energy expenditure by household composition (inflation adjusted 2021 United States dollars)

Country	Single women	Single men	Double adult	Single women with children	Single men with children	Double adult with children	All households
Cook Islands	951	1,003	1,529	1,471	735	1,601	1,412
Kiribati	0	0	78	0	9	157	137
Marshall Islands	1,072	198	663	479	395	790	696
Micronesia (Federated States of)	313	214	556	313	427	570	499
Nauru	0	0	0	324	324	324	324
Niue	817	946	1,310	847	806	1,716	1,323
Palau	238	350	1,430	925	715	1,682	1,037
Solomon Islands	22	0	0	0	0	0	0
Tokelau	732	490	883	1,130	432	1,373	1,161
Tonga	496	298	662	587	986	711	673
Tuvalu	63	453	621	422	176	781	698

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Note: Data were initially collected in local currency and converted to 2021 United States dollars, post adjustment for inflation.

Table A 10 (figure 8): Household energy expenditure as a share of total household expenditures by household composition (percentage)

Country/ territory	Single women	Single men	Double adult	Single women with children	Single men with children	Double adult with children	All households		
							Total	Rural	Urban
Cook Islands	7.3	5.0	5.3	6.2	7.1	4.7	5.0	5.0	5.0
Kiribati	1.9	2.1	3.5	1.5	1.7	2.9	3.0	1.3	4.1
Marshall Islands	10.1	14.1	6.2	5.3	9.0	6.4	7.0	2.5	8.0
Micronesia (Federated States of)	6.2	11.4	6.0	6.2	7.2	5.4	5.7	5.8	5.0
Nauru	0.0	0.9	1.0	1.3	1.8	1.8	1.7		
Niue	8.0	4.5	5.1	4.4	7.8	5.4	5.3		
Palau	4.8	6.1	7.4	5.9	5.9	6.8	6.7	7.4	6.6
Solomon Islands	4.6	1.1	2.7	1.2	11.2	2.3	2.3	1.4	4.3
Tokelau	7.8	6.3	7.1	6.2	2.9	6.7	6.6		
Tonga	7.4	3.8	4.6	5.7	4.3	4.4	4.5	4.2	5.3
Tuvalu	7.8	7.2	7.7	6.7	2.8	6.6	6.8	5.1	8.2
Vanuatu	2.6	3.0	2.3	2.1	1.1	1.8	1.9	0.9	3.3

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Table A 11 (figure 10): *Number of women and men serving as energy-related ministers and on energy-related parliamentary committees*

Country/ territory	Energy-related ministers		Members of energy-related committees	
	Women	Men	Women	Men
American Samoa	0	1	–	–
Cook Islands	0	1	–	–
Fiji	0	1	–	–
French Polynesia	0	1	4	9
Micronesia (Federated States of)	1	0	–	–
Kiribati	0	1	–	–
Nauru	0	4	–	–
New Caledonia	0	1	–	–
Niue	0	1	–	–
Northern Mariana Islands	0	1	3	8
Palau	0	1	–	–
Papua New Guinea	0	1	–	–
Pitcairn	0	1	–	–
Marshall Islands	0	1	–	–
Samoa	0	2	–	–
Solomon Islands	0	1	–	–
Tokelau	0	1	–	–
Tonga	0	1	–	–
Tuvalu	0	1	–	–
Vanuatu	0	2	–	–
Wallis and Futuna	0	1	–	–
Total	1	25	7	17

Source: Data collected from parliamentary websites and provided by SPC.

Note: Most recent governments/parliaments as of August 2021.

Table A 12 (figure 13): *Proportion of women enrolled in STEM and TVET energy programmes, 2019 (percentage)*

Education institution	Programme/course title	Percentage of women
Fiji National University (FNU)	College of Engineering, Science and Technology – Total all programmes	21
	Bachelor of Engineering (Electrical and Renewable Energy)	0
	Bachelor of Engineering (Electrical Engineering)	11
	Bachelor of Engineering (Mechanical Engineering)	10
	Advanced Diploma in Engineering (Electrical and Electronics)	17
	Trade Diploma in Electrical Engineering (Electrical and Renewable Energy)	0
	Trade Diploma in Electrical Engineering	0
University of South Pacific (USP)	Science and Technology programmes (1)	20
	Bachelor of Engineering (Electrical Engineering)	10
	Bachelor of Engineering (Mechanical Engineering)	8
College of Marshall Islands (Ebeye) (2)	Solar Photovoltaic Training: 2-week programme/3-month internship with the electricity utility (vocational training)	0

Education institution	Programme/course title	Percentage of women
Australia Pacific Training Coalition (APTC) (3)	Certificate III in Electrotechnology Electrician	4
	Certificate III in Air-conditioning and Refrigeration	3
Kiribati Institute of Technology (KIT)	Certificate II in Automotive Servicing Technology	5
	Certificate II in Electrotechnology (career start)	32
	Certificate II in Sustainable Energy	23

Source: Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020, table 27.

Note: (1) Programmes include engineering, chemistry and marine science. (2) Data throughout programme lifetime. (3) Data are from 2007–2019.

Table A 13: Proportion households by location of main cooking area for Kiribati and the Marshall Islands, by location (percentage)

Country/ territory	Total				
	Outdoor	Indoor kitchen	Livingroom or bedroom	Separate cook area	Other
Kiribati	23.6	23.5	11.4	41.1	0.4
Marshall Islands	18.8	35.8	26.5	18.3	0.6
Country/ territory	Rural				
	Outdoor	Indoor kitchen	Livingroom or bedroom	Separate cook area	Other
Kiribati	30.5	11.2	2.5	55.3	0.5
Marshall Islands	46.2	17.4	4.2	31.4	0.7
Country/ territory	Urban				
	Outdoor	Indoor kitchen	Livingroom or bedroom	Separate cook area	Other
Kiribati	15.6	37.9	21.9	24.3	0.3
Marshall Islands	10.0	41.7	33.7	14.1	0.6

Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

Table A 14: Mean number of children per household (Ratio)

Country/ territory	Women	Men	Double adult	Total
Cook Islands	1.6	1.6	2.1	1.0
Kiribati	1.8	1.9	2.9	2.4
Marshall Islands	1.6	1.7	2.2	1.2
Micronesia (Federated States of)	1.8	2.2	3.2	2.5
Nauru	2.0	1.7	3.5	3.1
Niue	1.0	1.5	2.1	0.9
Palau	1.6	1.0	2.1	0.8
Solomon Islands	2.4	2.1	3.1	2.7
Tokelau	1.5	1.4	2.5	1.7
Tonga	2.0	1.7	3.1	2.4
Tuvalu	1.5	1.0	2.8	2.2
Vanuatu	2.4	2.0	2.6	2.0

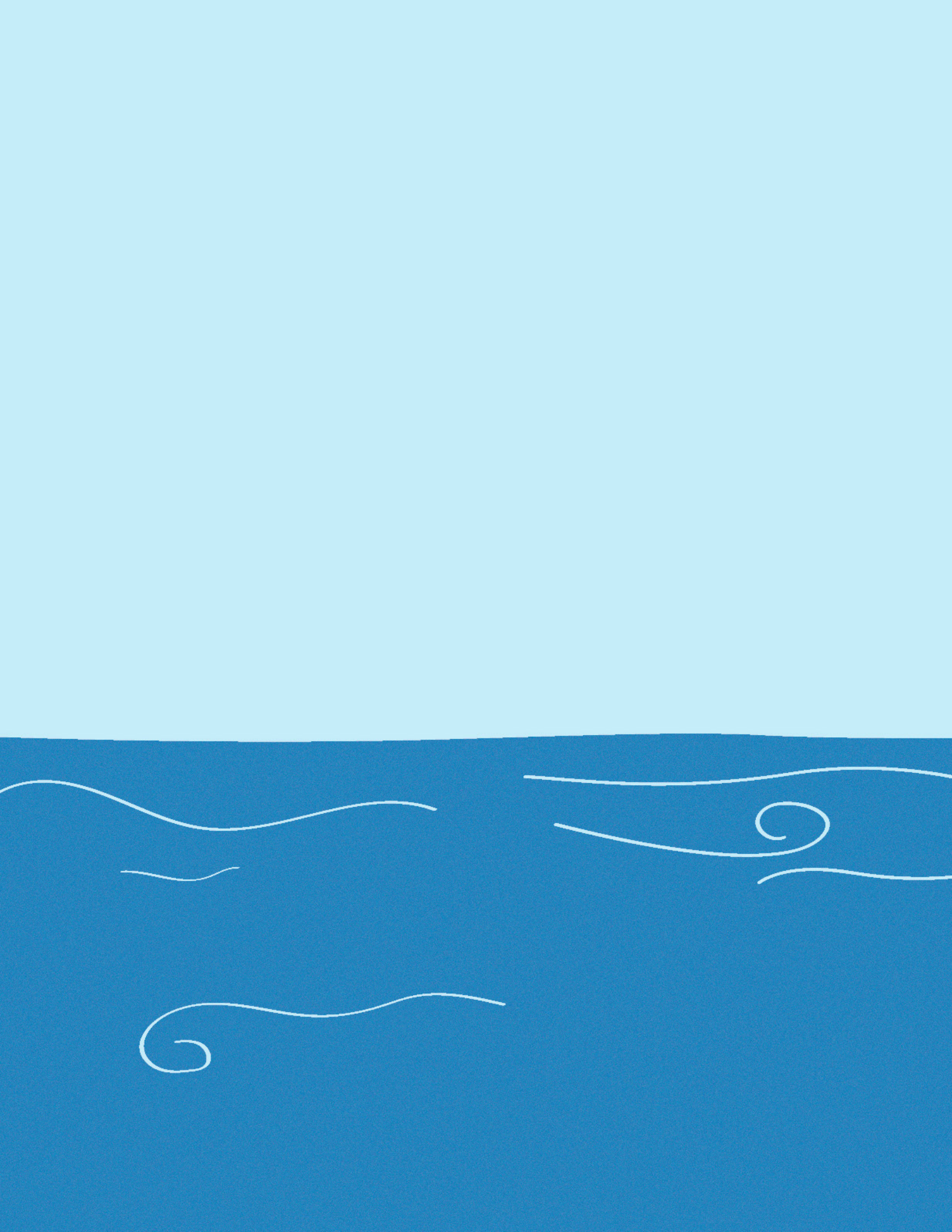
Source: Calculations by UN Women and the Pacific Community based on Household Income and Expenditure Surveys and Population and Housing Census. Only countries with available data have been considered for this analysis.

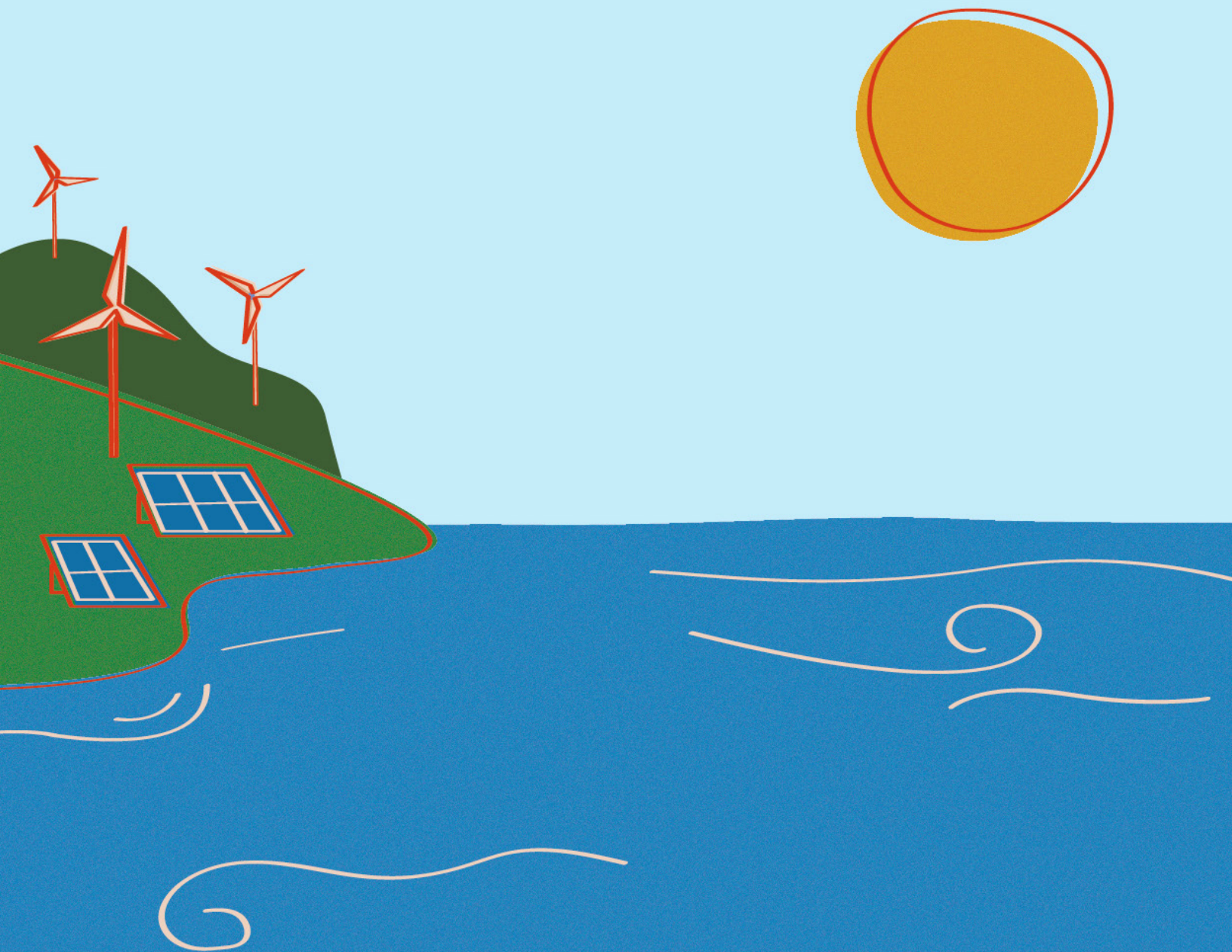
ENDNOTES

Note: Across this report, for analytical purposes, the term women refers to data on females aged 18 and above, and the term men refers to data on males aged 18 and above.

- 1 See, for instance, The Energy Progress Report, which tracks important efforts related to Sustainable Development Goal 7 on access to affordable and clean energy. Available at <https://trackingsdg7.esmap.org>.
- 2 Available at www.unwomen.org/en/digital-library/publications/2017/10/safe-cities-and-safe-public-spaces-global-results-report.
- 3 Comprising agriculture, crude oil, climate change, energy, fisheries, irrigation, marine resources, mines, rural development, transportation and others.
- 4 Available at <https://asiapacific.unwomen.org/en/news-and-events/in-focus/csw/snapshot-of-womens-leadership-in-asia-and-the-pacific>.
- 5 Women made up approximately 22 per cent of the worldwide oil and gas workforce. Women held approximately 17 per cent of senior and executive level positions in this sector. See K. Rick, I. Marten and U. Von Lonski (2017), Untapped Reserves: Promoting Gender Balance in Oil and Gas, World Petroleum Council and the Boston Consulting Group, 12 July. Available at www.bcg.com/publications/2017/energy-environment-people-organization-untapped-reserves.aspx.
- 6 Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020.
- 7 Taryn Dinnkelman (2011). "The Effects of Rural Electrification on Employment: New Evidence from South Africa". American Economic Review, 101 (7): 3078-3108.
- 8 Asli Demircuc-Kunt et al. 2018. "The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution". Washington, D.C.: World Bank. Available at https://globalfindex.worldbank.org/sites/globalfindex/files/2018-04/2017%20Findex%20full%20report_0.pdf.
- 9 In Asia and the Pacific, these figures stand at 32 per cent for women and 27 per cent for men, but country estimates for Pacific island countries are not available. Available at <https://databank.worldbank.org/source/world-development-indicators>.
- 10 Vanuatu National Statistics Office, 2016 Mini-census.
- 11 Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020.
- 12 Ibid.
- 13 Where the information is presented at the household level, the graphs are entitled "Proportion of households", while information presented at the individual level is included in graphs entitled "Share of women" or "Proportion of population".
- 14 The use of proxy respondent (for example, heads of household responding to questions on behalf of other household members) is also broadly discouraged for the measurement of gender issues.
- 15 The contact at the Pacific Community was Scott Pontifex. Initial data were received on 11 August 2021 and were updated on 17 August 2021 to include the data for Samoa.
- 16 Their website is available at www.ppa.org.fj.
- 17 The power utility staff data used for this report were received on 24 June 2021.
- 18 Data downloaded from the ILOSTAT Data Explorer on 23 September 2021. Available at <https://ilostat.ilo.org/data/>. While "Extraction of crude petroleum and natural gas" is an additional energy-relevant economic activity listed in the ILOSTAT database, sex-disaggregated data were not available for any PICTs.
- 19 Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020, Table 27. This data produced for the PEGSAP report in communication with institution administrators in February 2020.
- 20 The specific year range for the college of Marshall Islands was not provided in the 2020 PEGSAP Report.
- 21 Available at https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202021%20refinement_Eng.pdf.
- 22 Energy Access and Gender, Getting the right balance, SEAR and the World Bank, 2017. Available at <https://documents1.worldbank.org/curated/en/463071494925985630/pdf/115066-BRI-P148200-PUBLIC-FINALSEARSFGenderweb.pdf>.
- 23 UN Women, "Better lighting, wider pavements: steps towards preventing sexual violence in New Delhi," May 6, 2013. Available at www.unwomen.org/en/news/stories/2013/5/better-lighting-wider-pavements-steps-towards-preventing-sexual-violence-in-new-delhi.
- 24 Available at <https://unstats.un.org/sdgs/files/report/2021/secretary-general-sdg-report-2021--Statistical-Annex.pdf>.
- 25 Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020, p. 18.
- 26 UNESCAP, Coal Phase Out and Energy Transition Pathways for Asia and the Pacific, 2021. Available at www.unescap.org/sites/default/d8files/knowledge-products/Coal-Phase-Out-and-Energy-Transition-Pathways-25-Feb-2021.pdf.
- 27 "All or nearly all" is defined as 99 per cent (rounded) or more of households.
- 28 Marshall Islands, Navigating our Energy Future: Marshall Islands Electricity Roadmap, December 2018. Available at <https://islands.irena.org/-/media/Files/IRENA/Sids/NavigatingourEnergyFutureMarshallIslandsElectricityRoadmapDecem.ashx>.
- 29 Global Energy Network Institute, Renewable Energy Resources in Oceania, June 2016. Available at <http://www.geni.org/globalenergy/library/renewable-energy-resources/world/oceania/index.shtml>.
- 30 Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020, p. 49.
- 31 World Health Organization (WHO), "Defining clean fuels and technologies", Clean Household Energy Solutions Toolkit. Available at www.who.int/tools/clean-household-energy-solutions-toolkit/module-7-defining-clean.
- 32 Proportion of households that use clean or unclear fuels is calculated using households that report the use of any cooking fuels as the denominator.
- 33 For the countries that report open fire as a source of cooking fuel in the surveys, the cook fuel categories reported are as follows: electric range, microwave, electric stove, gas stove, kerosene stove, wood stove, open fire, and other.

- 34 Data disaggregated by sex of survey respondent. It does not consider household composition (such as sex of children and other dependents).
- 35 Data on location of cooking facilities used by rural and urban households are not fully comparable across all PICTs considered. However, sufficient information is available on the sources considered to determine whether the location of the main cooking area is inside or outside the household for most countries. Data for Kiribati and the Marshall Islands, which was not directly comparable to the data provided in the table above, is included in the Appendix, Table A13.
- 36 Determinants of household energy choices in rural sub-Saharan Africa: An example from southern Ethiopia, May 2020. Available at: <https://www.sciencedirect.com/science/article/pii/S0360544221000347>
- 37 Household surveys provide opportunities to look at the relationships between people present in each household to produce analysis disaggregated by household composition.
- 38 These are the Marshall Islands (single-male households without children spent more), Federated States of Micronesia (single-male households without children spent more), Solomon Islands (single-male households with children spent more), and Vanuatu (double adult households without children spent more). Insufficient information is available to ascertain the reasons, but the prevalence of different types of households in each country may be contributing to these outliers.
- 39 Insufficient information is available for this report to assess why the results in the Marshall Islands and Tonga are different, as it is reasonable to assume that larger households would consume more energy than smaller ones. Low prevalence of single-adult households in both these countries (e.g. small sample size for this analysis) may be contributing to this unexpected finding, and thus these results must be interpreted with caution. An in-depth analysis of energy use patterns and economic differences across household structures in each of these countries would be necessary for developing a better understanding, but is, unfortunately, beyond the scope of this report.
- 40 This is the case in all but four countries at the mean (Kiribati, Federated States of Micronesia, Solomon Islands, Tonga) and all but three at the median (Kiribati, Federated States of Micronesia, Tonga).
- 41 See Nick Johnstone and Marta Silva (2020). "Gender diversity in energy: what we know and what we don't know," International Energy Agency, March 6. Available at www.iea.org/commentaries/gender-diversity-in-energy-what-we-know-and-what-we-dont-know.
- 42 Pacific Energy and Gender Network, Gender-Based Assessment. Part I: Clean Energy Sector Analysis, May 2020.
- 43 Wohlgemuth, Norbert, and Jyoti Painuly. Promoting Private Sector Financing of Commercial Investments in Renewable Energy Technologies, United Nations. Advanced Copy. Available at http://www.un.org/esa/sustdev/csd/csd16/documents/unw_monitoring.pdf.
- 44 Bernasek, Alexandra (2013). "Banking on Social Change: Grameen Bank Lending to Women." International Journal of Politics, Culture, and Society, vol. 16, no. 3, Springer, pp. 369–85
- 45 OECD (2015), Disaster Risk Financing: A global survey of practices and challenges, OECD Publishing, Paris.
- 46 See www.adb.org/sites/default/files/project-documents/43452/43452-022-esmr-en_6.pdf.
- 47 See <https://livelearn.org/>.
- 48 The survey did not specify whether losing access to power supply refers to grid power exclusively.
- 49 ENERGIA, Gender and energy at center stage in COVID-19 battle: COVID-19, energy and gender equal recovery. <https://www.energia.org/document/gender-and-energy-at-center-stage-in-covid-19-battle-powering-a-more-gender-equal-recovery/>
- 50 UN Women (Forthcoming), Duerto-Valero, Kaul, Chang et al.





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