MIMU

NEXUS RESPONSE MECHANISM

Funded by the European Union

Household Amenities in Myanmar (2014 - 2019)

a MIMU Analytical Brief

May 2022

MIMU Analytical Briefs shine a light on topical, emerging and under-explored issues relevant to humanitarian and development support in Myanmar based on analysis of available information.

Each Brief includes a short narrative document and accompanying infographic as well as the dataset, methodology and an interactive dashboard to enable others to take this analysis further.

This Analytical Brief focuses on the situation of household amenities in Myanmar based on the review of data from nationwide surveys over the five-year period from 2014 to 2019. As household amenities affect human health, productivity, and overall quality of life, this reveals some important developments in households' living situation.

Summary

- Whereas a million more people were in paid/for profit employment nationwide by 2019, women continued to be less likely to be employed than men, and rural households were earning significantly less than those in urban areas. While ownership of mobile phones and home internet grew massively, a million households – mainly in rural areas - owned no communications devices at all as of late 2019.

- Despite considerable improvements in shelter and access to electricity for many Myanmar households, a third of the country's households were still living in bamboo houses or short-term huts as of 2019. Myanmar's electrification rate was the lowest in South East Asia with as many as 30 million people still not connected to the main power grid in 2019, and around 6.7 million households were dependent on solid cooking fuels, presenting additional health risks for women and children in particular.

- Although more households had access to safer drinking water from improved sources, over 2 million households were still using unimproved water sources in 2019, mainly in rural areas, with the highest reliance on unimproved water sources in Rakhine and Ayeyarwady.

- The use of improved sanitation also improved. However, 2 million people countrywide were still dependent on unimproved sanitation facilities, and a further 3 million people were practicing open defecation which brings particular risks to health, equity, dignity and safety, especially for women and girls.

Contents

Figures

Introduction

Household amenities affect human health, productivity, and overall quality of life in a wide variety of ways. Access to safe drinking water, sanitation facilities, and electricity are the three main household amenities most closely associated with improved health outcomes and quality of life. Research in India showed a number of amenities to be consistently linked to improved socio-economic status and children's health, including the type of toilet facilities, water source, refrigerator, pressure cooker, type of cooking fuel, land usable for agriculture, household building material, mobile phone, and ownership of a motorcycle/scooter. The type of toilet and sanitation facility were particularly important, associated with a reduction in child mortality of up to 35% and 28% respectively.[1]

This Analysis reviews available information on household amenities from Myanmar's national level census exercises in 2014 and 2019 along with other sources. It looks particularly at results of the township level data provided by the 2014 Population and Housing Census[2] alongside the data provided from the 2019 Intercensal Survey[3] (provided at district level). Both included household ownership of various productive assets, housing quality, water and sanitation facilities, and energy for cooking and lighting. The resulting information can be disaggregated to better understand the differing socio-economic situation of families in urban and rural areas over this five-year period. However, there are a number of limitations in the use of these sources, most notably the differing levels to which information was collected (township vs district), under-enumeration of some populations in the 2014 Census, and limited availability of data from the 2019 Intercensal survey. All values presented are based on the enumerated population in these surveys and may not fully reflect non-enumerated groups or certain areas, particularly Rakhine.

Annual Average Household Income

62% of Myanmar's population aged 15 years and over were employed in 2014 and 2019[4] , corresponding to a million more people in paid/for profit employment nationwide by 2019. Women remained less likely to be employed than men (51% women: 74% of men), though there was a noticeable improvement in women's employment between 2014 and 2019 (6% increase) corresponding to a 5% reduction in men's employment. Despite the increasingly significant role of Myanmar's women in the social and economic spheres during this period of economic growth, women's participation in the formal labour market continues to be limited by cultural, financial, systemic, political, and social constraints.[5] Although the proportion of women working without pay in a household/family business decreased from 2.4 million people in 2014 to 1.9 million people in 2019, it remains at 59% nationwide. As of 2019, 72% of the nation's employed population were in rural areas with people aged 15 and over in rural areas significantly more likely to be employed (63%, estimated 16.4 million people) than the urban population (57%, estimated 6.5 million people employed).

The majority of the employed population were either own account workers (45%) or private employees (28%). Almost half of the employed can be found in agriculture, forestry and fishing industries (45%) while other industries such as wholesale and retail trade (including repair of motor vehicles and motorcycles) and manufacturing employ a sizable proportion (16% and 10% respectively).

Despite the lower employment rate, urban households earn significantly more than rural households. In 2019[6], most urban households earned 3 to 6 million kyats per year (USD 2,000-4,000)[7] in contrast to the majority of rural households' earnings of 0.5 to 1.5 million kyats (USD 330-1000). Rural areas also have a higher proportion of low-income households with 12% earning less than 0.5 million kyats per year. Countrywide, two thirds of Myanmar's households earn less than 3 million kyats annually, with 10% categorised as very-low-income households earning less than 0.5 million kyats per year.

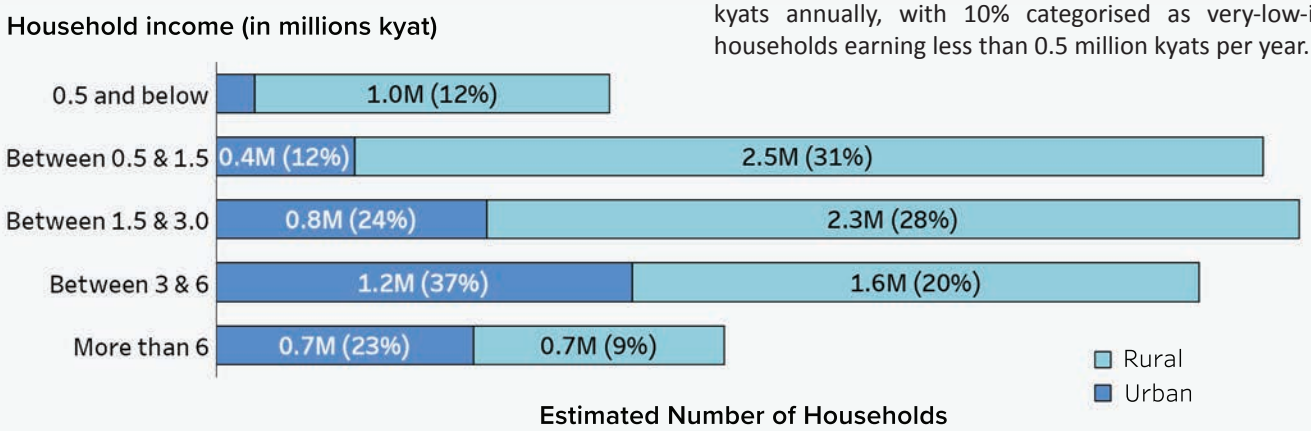


Figure 1: *Urban and rural households' annual average income (Kyats), 2019 (estimated number of households and %)*

[1] *Karlsson, O. et al. 2020. The relationship of household assets and amenities with child health outcomes: An exploratory cross-sectional study in India 2015–2016. SSM - Population Health, Volume 10, April 2020.*

[2] *Department of Population, Ministry of Labour, Immigration and Population (2014). The 2014 Population and Housing Census. Redatam website: http://www.dopredatam.gov.mm*

[3] *Department of Population. Ministry of Labour, Immigration and Population. (2020). Intercensal Survey 2019. Accessed on December 30, 2020.*

[4] *A person was considered as employed if he/she had engaged in any activity even for only one hour to produce goods or provide services for pay or profit during the reference period. The 2019 Intercensal survey: The Union Report. https://www.dop.gov.mm/sites/dop.gov.mm/files/publication_docs/ics_report_eng_7012021.pdf*

[5] *International Labour Organisation 2020. National Assessment of Women's Entrepreneurship Development in Myanmar.*

[6] *Only the 2019 Intercensal Survey mentions the annual household income*

[7] *Converted and rounded to nearest USD using xe.com exchange rate as of July 1st 2019, 1 USD = 1513.44 MMK.*

Chin and Kayah States have the highest proportion of very low-income households earning less than 0.5 million kyats per year (26% and 25% respectively). In 9 out of 15 states/regions, most households earn lower mid-level income between 0.5 and 1.5 million kyats per year. Only in the most populated Yangon and Mandalay regions does a higher portion of households (42% and 31% respectively) enjoy an upper mid-level annual average income between 3 and 6 million kyats.

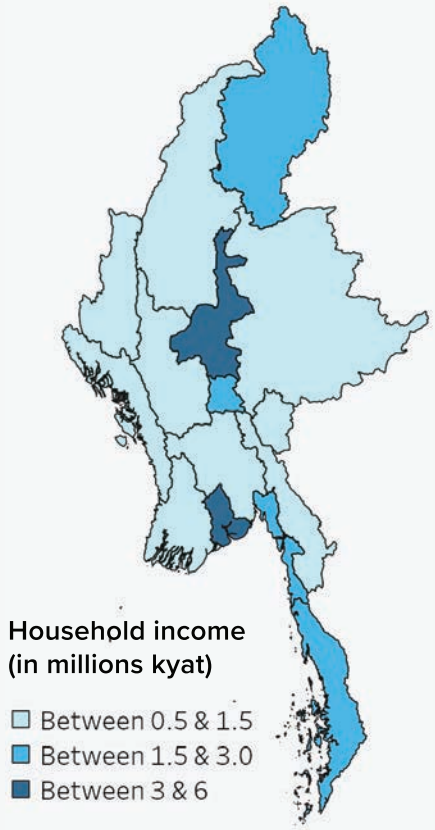


Figure 2: *Households' annual average income (Kyats) by state/region level, 2019 (%)*

Household Ownership

The vast majority of Myanmar households owned their homes in 2019 (90%), while a further 7% were renting their housing units. This marks a 5% increase in home-ownership since 2014, with the greatest increase in urban areas (9% compared to a rural increase of 3%). Nevertheless, rural households continued to be more likely to own their homes (97% or an estimated 7.7 million households), compared to 75% for urban households (an estimated 2.3 million households).

Home-ownership grew to 90% and above in all states and regions other than Yangon Region (70%) and Nay Pyi Taw (85%) by 2019. The increase was highest in Tanintharyi Region (14% increase) between 2014 and 2019. Some districts saw a slight decrease in the percentage of households owning their homes, namely Mindat (Chin State), Puta-O (Kachin State), Yamethin (Mandalay Region), Tachileik (Shan State) and Hkamti (Sagaing Region). This reflects an increase in the overall number of households in all of these areas other than Mindat district, with an increase in other tenure types such as renters and provision of accommodation by government and private companies.

Yangon Region, which is rich in business and employment opportunities, had the highest use of rental accommodation (26% of housing units in 2019). Use of rental accommodation was particularly high in Yangon (North District) and Yangon (East District) where close to a third of all households were living in rented housing units (an estimated 0.4 million households or 1.7 million people[8]). At the township level in 2014, Hlaingtharya Township in Yangon (North District) and Dawbon Township in Yangon (East District) had the highest percentage of tenants countrywide. Other districts in Yangon had less than 25% of households renting their accommodation.

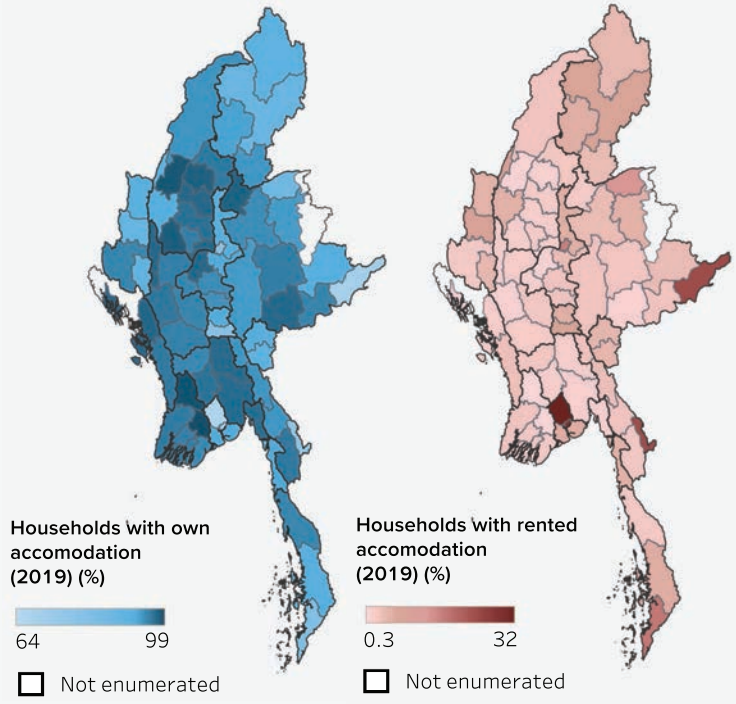


Figure 4: *Households owning and renting their accommodations, by district, 2019 (%)*

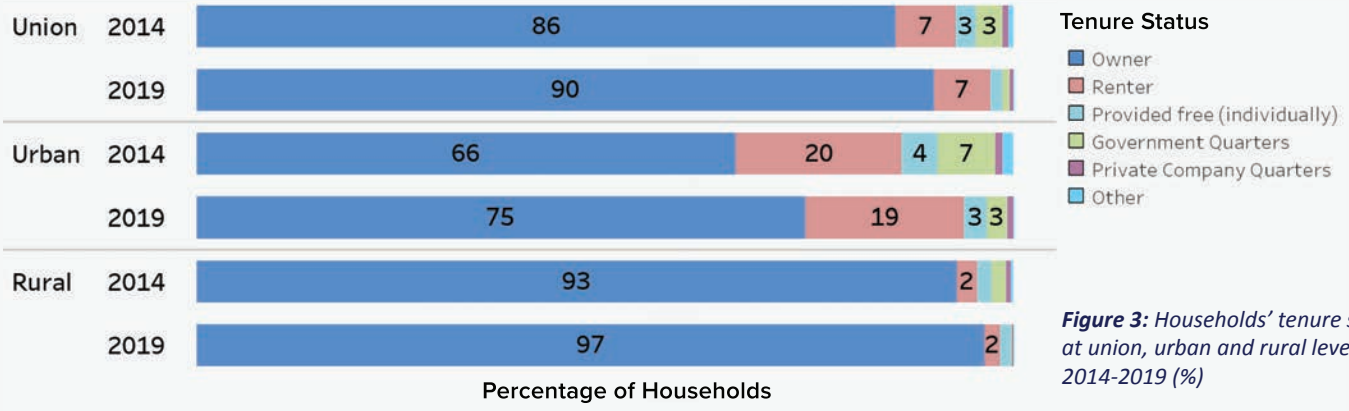


Figure 3: *Households' tenure status at union, urban and rural levels, 2014-2019 (%)*

[8] *The number of people was calculated based on the population figures provided in the 2014 Population and Housing Census for the years 2014, 2015-16 and 2017, and the 2019 Intercensal Survey for the year 2019.*

Shelter and Housing

The quality of housing families can afford is particularly important in hazard-prone Myanmar, and an important indicator of their vulnerability. Myanmar was ranked as the second most affected country on the Global Climate Risk Index[9] for 2000-2019, and as many as 100,000 houses were reportedly lost due to natural disasters in the decade from 2008-2018.[10] Floods are the most frequently occurring hazard with the highest contribution to average annual loss, particularly in Ayeyarwady, Bago, and Rakhine. Climate change is expected to increase the frequency and magnitude of flood events. An analysis of Myanmar's major flood events over the past 100 years highlighted poverty, dependency on agriculture, poor access to healthcare and poor road networks as factors increasing vulnerability to major flood events.[11] Cyclones, storm surges and tsunamis affect coastal areas of Rakhine State, Ayeyarwady and Yangon Regions - stronger building materials can provide safety for those living in these areas. The risk of earthquakes by contrast is highest in Sagaing Region, Central Myanmar and parts of Shan State, with possible direct damage to buildings as well as secondary damage through landslides and fires.

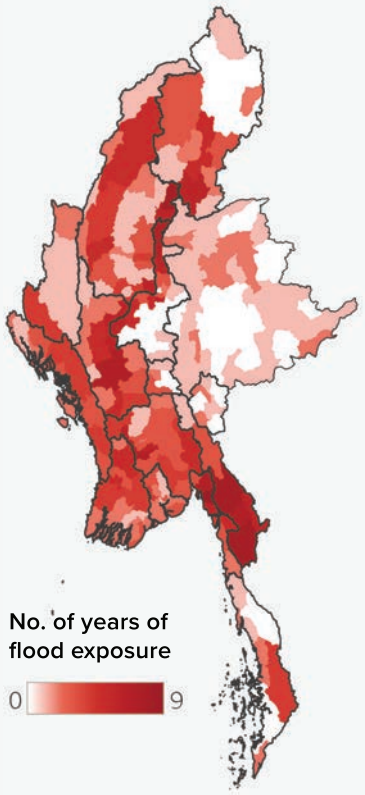


Figure 5: *Flood affected townships 2008-2021 (compiled by MIMU)*

The 5 years to 2019 saw improvements in shelter quality for many Myanmar households. The number of households living in more durable semi-pucca and bungalow/brick houses, condominiums/apartments and flats increased by 12%, with a 12% drop in those living in wooden houses and bamboo houses. Nevertheless, significant numbers of households countrywide continued to live in wooden and bamboo housing (40% wooden and 27% bamboo houses in 2019). Fewer households were living in less durable huts in 2019[12] (an estimated 0.4 million households), and most huts were of the better quality, lasting 2 to 3 years rather than those requiring replacement after a year.

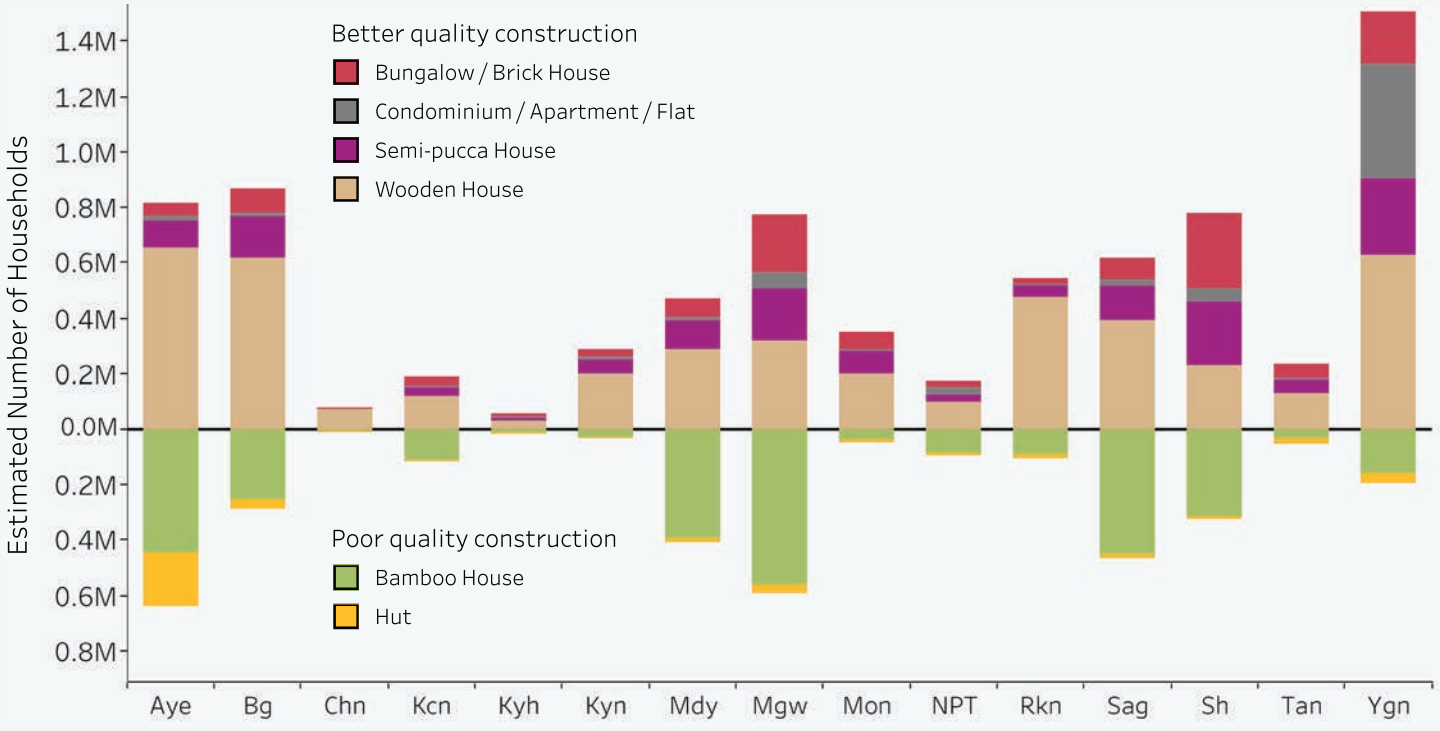


Figure 6: *Housing construction at state/region level, 2019 (estimated number of households)*

[9] *Eckstein, d, et al. 2021. Global Climate Risk Index 2021. GermanWatch.*
[10] *Ministry of Construction/UN Habitat.2018. The Republic of the Union of Myanmar National Housing Policy & Strategy*
[11] *Hnin Wuit Yee Kyaw and Alexandra Dudley, 2021. A risk assessment for major river flooding in Myanmar incorporating hazard, exposure, and vulnerability. United Nations University.*
[12] *Huts are categorized based on their expected usable time as lasting up to a year or 2 to 3 years. ICS 2019.*

Wooden and bamboo houses remained the most common type of housing in 93% of districts, countrywide, in 2019. The Dry Zone area (Magway, Sagaing, Mandalay Regions) and Shan State have a higher number of bamboo houses while wooden houses were more common in the remaining states and regions. Huts – the poorest quality accommodation – were found particularly in Ayeyarwady Region where an estimated 0.2 million households were living in huts that were built to last 2 to 3 years in 2019 (13% of the households in Ayeyarwady). This is almost double the number of households living in huts in 2014. The 2014 Census found the in Cocokyun Township in Yangon (South) district, Bogale, Pyapon and Mawlamyinegyun Townships in Labutta and Pyapon districts and these districts continue to have higher use of huts than others.

The number of bungalow/ brick houses, Condominium/ Apartment/Flat and semi-pucca houses increased in all states and regions, though they are mainly found in only 4 districts (Yangon (West); Langkho, Tachileik and Muse districts in Shan State). Langkho and Muse districts in particular saw improvements in housing between 2014 and 2019 with semi-pucca and bungalow/brick houses becoming more common than bamboo houses.

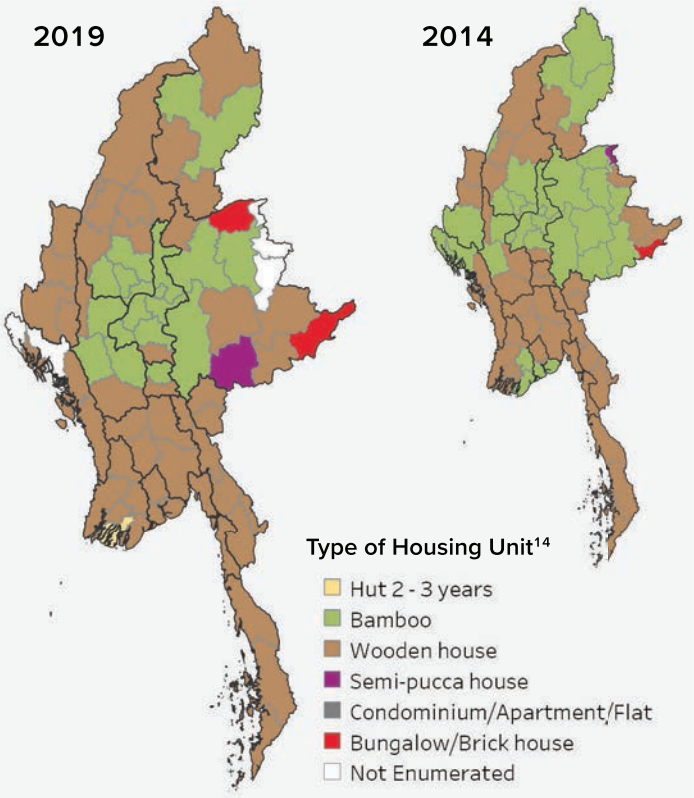


Figure 7: *Most common types[14] of housing units by district, 2014 and 2019 (%)*

In terms of construction, tile/brick/concrete and corrugated sheet are considered the best materials, followed by wood. Wood and bamboo are locally available materials used in traditional building techniques, although wooden houses may last 25 years or more while bamboo houses require replacement as often as every 2 to 5 years.[13] Both wooden and bamboo constructions are particularly vulnerable to fire – a common hazard given widely used cooking techniques – as well as wind and flood which affect hazard-prone areas of Myanmar. The geographic location also plays a role, however – wood buildings tend to perform well in earthquakes whereas masonry and concrete buildings have performed poorly in past earthquakes when not constructed with particular consideration of this risk.[15]

Roofing Materials

A significant number of households moved to more sturdy roofing materials between 2014 and 2019, particularly in rural areas. The quality of roofing is important given Myanmar's prolonged period of heavy rainfall as well as risk of wind damage in some areas. By 2019, 84% of households countrywide had corrugated sheet roofing, indicating a 23% increase since 2014. The change was greatest in rural areas where 28% more households were using corrugated sheet roofing alongside a 25% decrease in the use of less protective dhani/theke/in leaf roofing. The greatest improvements were in Ayeyarwady Region and Rakhine State where higher numbers of households moved from dhani/theke/in leaf to corrugated sheet roofing. Dhani/theke/in leaf continued to be widely used for roofing in some districts of Ayeyarwady region (Labutta and Pyapon), Rakhine State (Thandwe) and Tanintharyi Region (Myeik) with more than 50% of households - almost 0.5 million people - still living under dhani/theke/in leaf roofing.

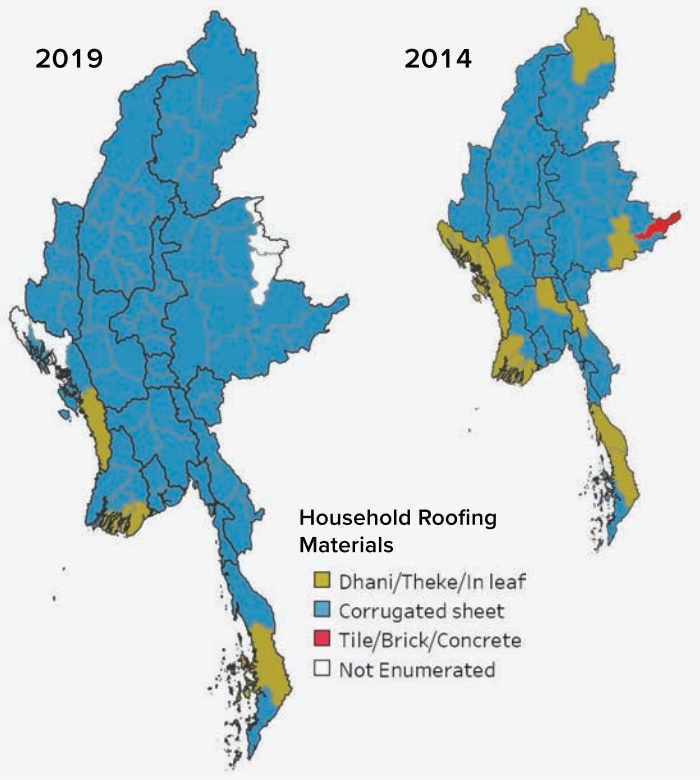


Figure 8: *Most common household roofing material by district, 2014 and 2019 (%)*

[13] *Huts lasting 1 year were not among the more common types of housing units.*
[14] *UN-Habitat. 2011. Guidelines on Retrofitting of Rural Houses in Myanmar.*
[15] *World Bank, YCDC et al. 2020. Review of disaster risks and structural vulnerability assessments in Myanmar. Volume 1 – Overview of Yangon's disaster risk profile.*

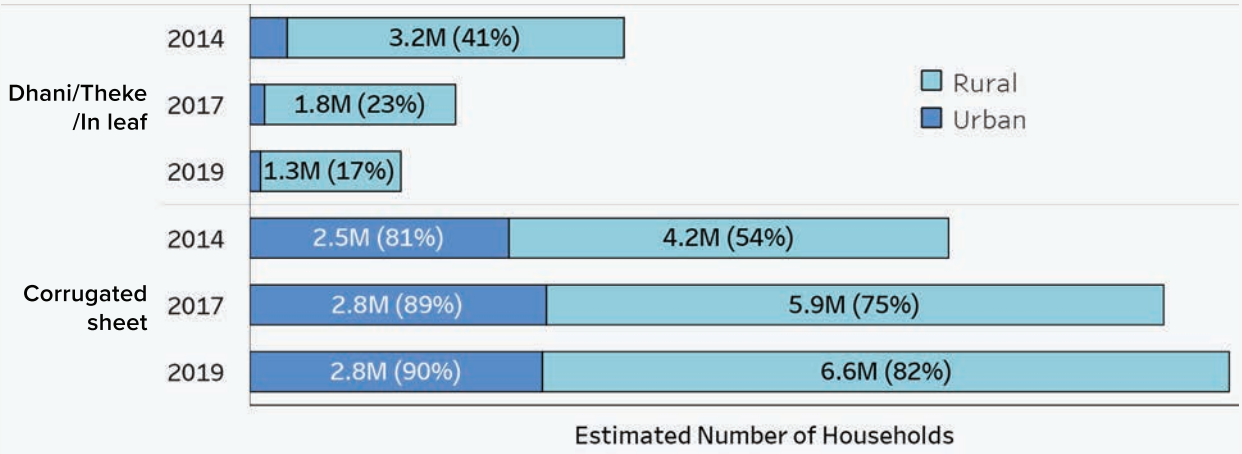


Figure 9: *Households using corrugated sheet and dhani/theke/in leaf roofing in urban and rural levels, 2014-2019 (estimated number of households and %)*

Wall Materials

The use of tile/brick/concrete house walls grew by 12% between 2014 and 2019, reflecting developments in both urban and rural areas. 15% of urban households moved to tile/brick/concrete walls, alongside 11% of rural households. Almost half of the urban households (49%) had tile/brick/concrete walls, while bamboo and wooden walls continued to be the most prevalent materials in rural households (44% bamboo walls and 25% wood walls).

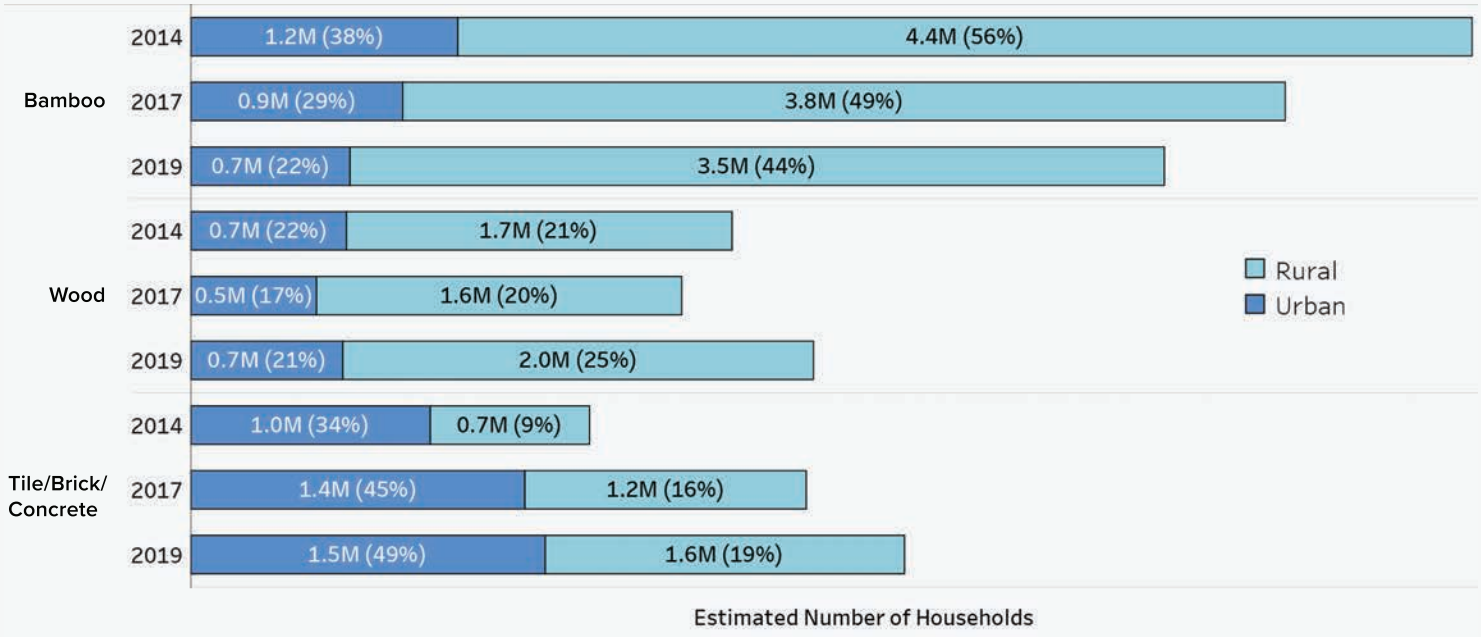


Figure 10: *Households using bamboo, wood and tile/brick/concrete walls at urban and rural levels, 2014-2019 (estimated number of households and %)*

Nevertheless, wood and bamboo remained the most commonly used wall materials across the country in 2019. The most significant changes since 2014 were in Shan and Rakhine States where bamboo walls were being replaced by tile/brick/concrete (Shan State) and with wooden walls (Rakhine State). Even then the improvements were not uniform – Muse, Kyaukme, Lashio, Monghsat, Taunggyi, Langkho and Loilen districts in Shan saw the greatest improvements, along with Kyaukpyu district in central Rakhine Statve. Tile/brick/concrete walls replaced bamboo as the most frequently used wall material in Yangon (North) district. In Ayeyarwady Region however, most households continued to use dhani/theke/in leaf as the primary wall material, especially in Labutta, Myaungmya, Maubin and Pyapon districts.

The confluence of climate risk and the longer-term impact of major disasters is a particular issue for Ayeyarwady. In this area, populations are exposed to massive climate risks, including rising sea levels, salinisation and extreme weather events such as cyclones and intense rainfall. Under these districts, Labutta, Bogale, Pyapon, Mawlamyinegyun, Myaungmya, Dedaye, Wakema and Kyaiklat townships which are included in the most affected by cyclone Nargis, all remain extremely vulnerable to hydro-meteorological hazards.[16]

[16] *MIMU and HARP-F. 2018. Vulnerability in Myanmar: A Secondary Data Review of Needs, Coverage and Gaps.*

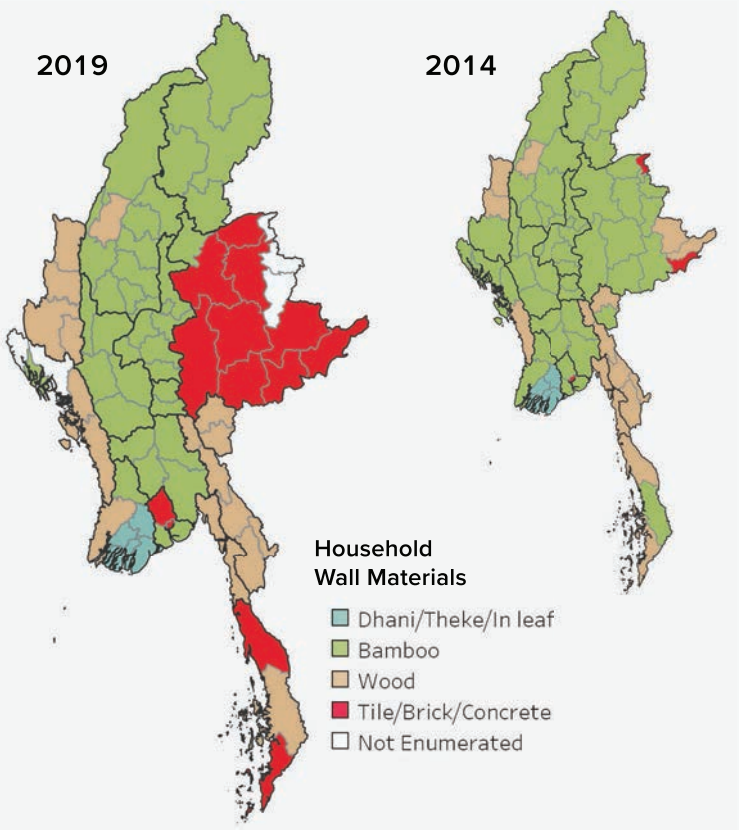


Figure 11: *Most common household wall material by district, 2014 and 2019 (%)*

Floor Materials

The quality of floor material is a typical indicator of poverty. Poor-quality flooring indicates a lack of physical resilience and, frequently, the lack of other major assets supporting livelihoods. Dirt/earth floors are the least safe due to the higher risk of contaminants which may cause diarrhoea, skin, and respiratory diseases, contributing in turn to malnutrition. Dirt/earth flooring also requires more of the householders' time to maintain it in clean and good condition. Replacing dirt floors with concrete has been shown to decrease bouts of diarrhoea and medical expenditures and to free up female household members, reducing the time cleaning floors from 6 hours a week to one hour.[17] Wooden and tile/brick/concrete floors on the other hand are more costly to install but easier and less time-consuming to clean and maintain, while also limiting some of the health risks founds with dirt/earth floors.

There are major differences in the types of flooring used in urban and rural areas. As of 2019, more than half of Myanmar's urban households had tile/brick/concrete flooring, while more than half of rural areas were using wood flooring. Rural areas had similar use of tile/brick/concrete and bamboo flooring (18% and 17%), while 9% of rural households had earth floors.

Overall, wood remained the most commonly used flooring material, used by half of Myanmar's households in 2019 (51%, an estimated 26 million people). Whereas the percentage was similar to 2014, there were an additional 0.1 million households using wooden floors by 2019. There were improvements in some districts, most notably in Sittwe district (Rakhine state) and Puta-O district (Kachin state) where wooden floors replaced bamboo as the most commonly used floor material. Tile/brick/concrete flooring was used in just over a quarter of households (27%) with a 12% increase in its usage from 2014 to 2019, particularly in urban areas of Yangon and Shan (49%), and Mandalay (39%). The transition was particularly striking in Shan State where tile/brick/concrete replaced bamboo as the most frequently used flooring material between 2014 and 2019, although this was mainly in Monghsat and Loilen districts. Myitkyina District in Kachin State and Pyin Oo Lwin and Meiktila Districts in Mandalay Region upgraded their most prevalent flooring type from wood flooring to tile / brick / concrete. Significant improvement was in Kyaukse District in Mandalay Region, where the use of bamboo flooring had been replaced by tile / brick / concrete flooring.

The use of bamboo flooring in Myanmar households decreased by around 12% (an estimated 1.2 million households) between 2014 and 2019, but dirt/earth use remained unchanged. Dirt/earth flooring continued to be found particularly in Myingyan District in Mandalay Region, and in Monywa and Sagaing districts in Sagaing Region from 2014 to 2019, while Magway Region continued to have a high level of use of bamboo flooring. A significant setback was in Pakokku District in Magway Region; whereas the use of Tile/Brick/Concrete flooring grew by 17% between 2014 and 2019 (an estimated 0.03 million households), the use of Earth flooring increased 9% (an estimated 0.01 million households). This may be related to the fact that bamboo is not locally available and transportation and repair costs were seen as unaffordable[18], as well as flood-related displacement[19] or in-migration in the 2014-2019 period.

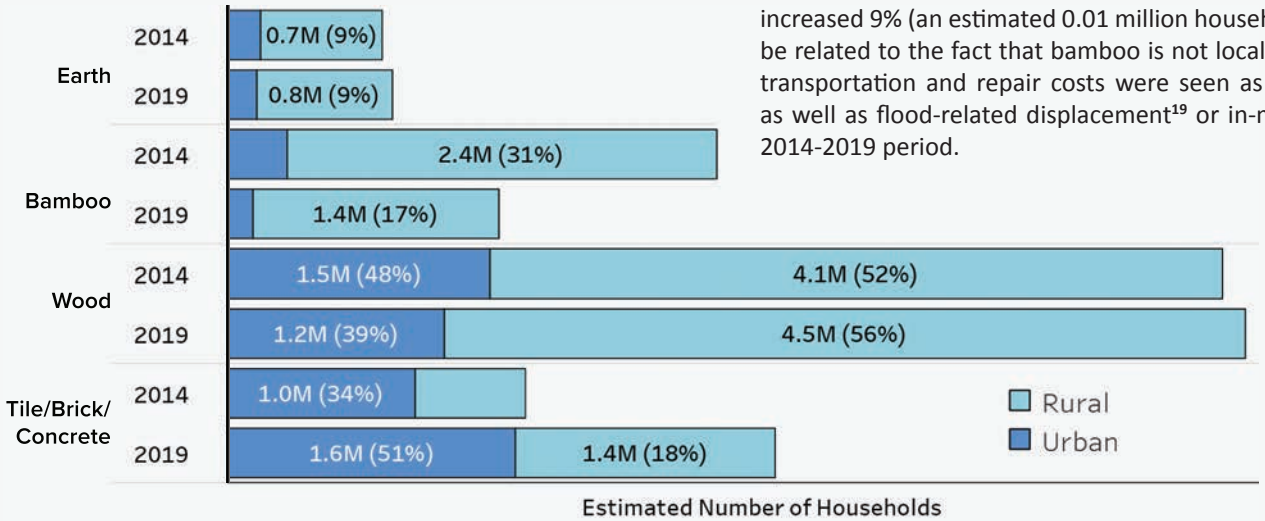


Figure 12: *Most common household floor materials at urban and rural levels, 2014-2019 (%)*

[17] *MIMU and HARP-F. 2018. Vulnerability in Myanmar: A Secondary Data Review of Needs, Coverage and Gaps.*
[18] *Communication from LIFT.*
[19] *Pakkoku, Yesagyo and Yenanchaung townships in Magway were severely affected with over 92,000 people reported to have been temporarily displaced across 12 townships during flooding in 2017.* https://reliefweb.int/report/myanmar/myanmar-humanitarian-update-no-2-monsoon-season-floods-27-july-2017

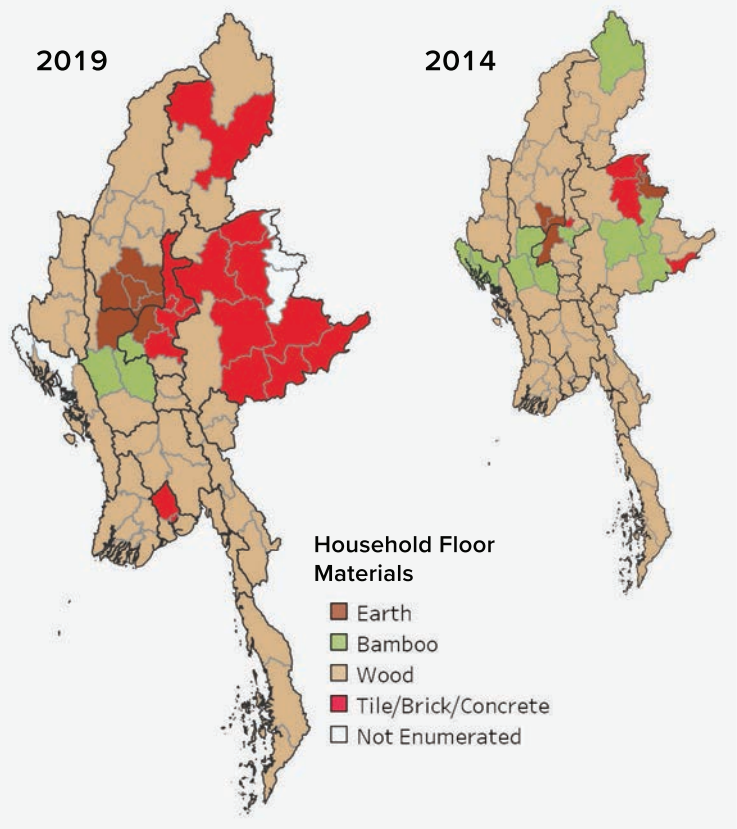


Figure 13: *Most common household floor material by district, 2014 and 2019 (%)*

Household Assets

Communication Devices

Household ownership of mobile phones and home internet grew massively between 2014 and 2019 (53% and 50% increase respectively), with mobile phones reaching 86% of households countrywide. With improving living standards and more affordable and accessible communications options, the use of landline phones and radios declined significantly. The growth of ICT and telecommunication usage over this period can be attributed to increased mobile coverage, the significant reduction in the cost of SIM cards that could be bought for as low as 1500 Kyats, and better internet access using 3G/4G networks.

While the use of ICT and other communication technologies grew countrywide, rural areas saw the greatest increase. Ownership of mobile phones grew by 61% in rural areas in the 2014-2019 period, compared to 31% growth in urban areas. Radios, previously a key means of obtaining information, were found in significantly less households, dropping from 36% to 19% of households countrywide though usage continued to be higher in rural areas (21% compared to 14% in urban areas). Computer ownership remained more limited; despite being used in many urban businesses, only about 15% of urban households had their own computers in 2019 (0.5 million households), and they were almost non-existent in rural households (1.7% or 0.1 million households).

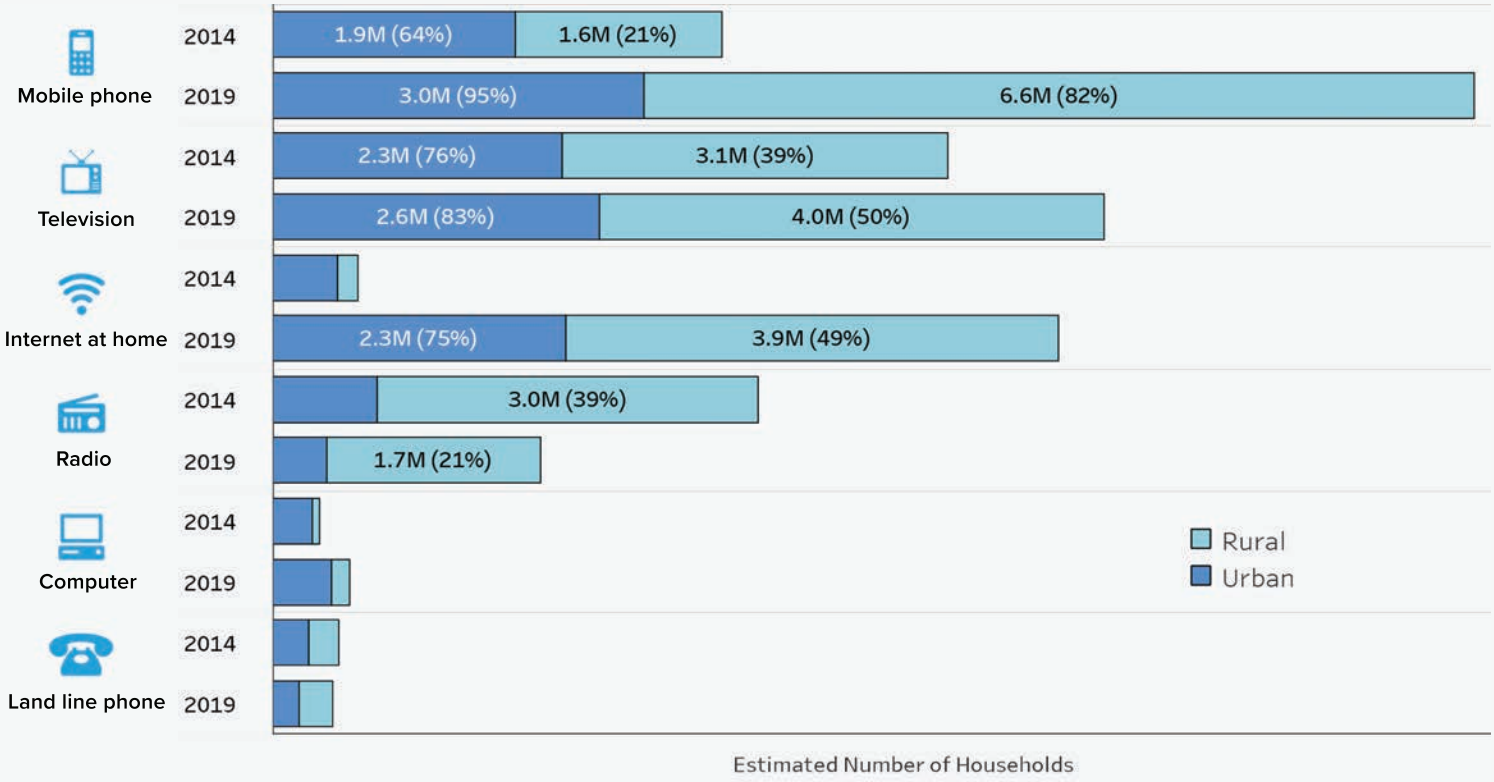


Figure 14: *Urban and rural household ownership of communication devices, 2014-2019 (%)*

A million households however owned no communications devices at all in late 2019 (9% of total households). This was mostly in rural areas (12%) compared to 2.6% among urban populations. Matupi district in Chin State had the highest rate of households with no communications devices at all (30%, or 5,617 households). Coming into the onset of the COVID-19 pandemic in Myanmar in early 2020, these households had no immediate access to the widely disseminated online prevention and education materials (1.0 million in rural and 0.08 million in urban areas). By contrast, a small number of households reported having all the devices listed (around 33,488 households or 0.3%). These were predominantly in Yangon (West district) (2.7% or 5,216 households as well as in other districts in lower numbers (below 1%).

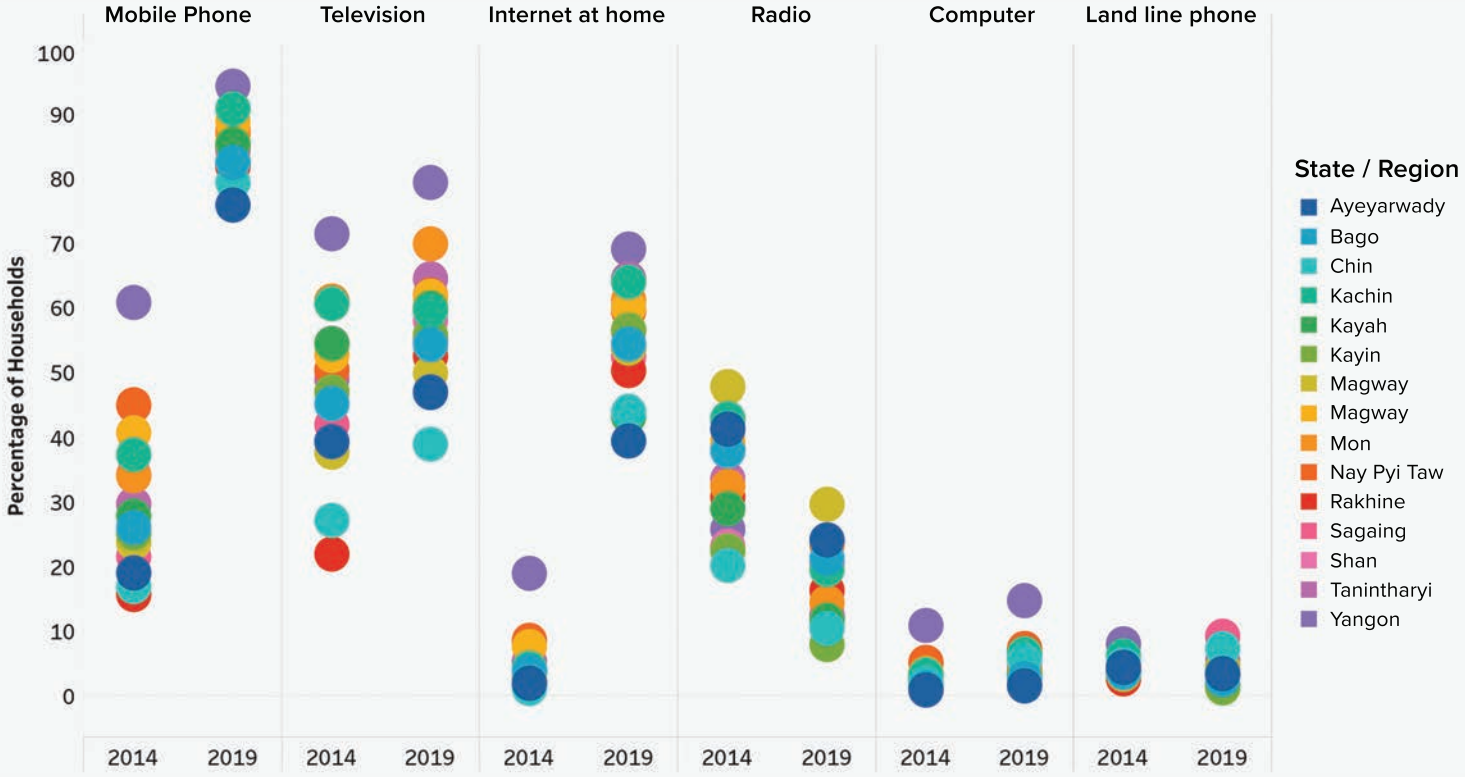


Figure 15: *Households' information and communication devices by state/region level, 2014-2019 (%)*

By late 2019, 86% of households countrywide had a mobile phone with ownership reaching over 60% in all districts. The 5-year period to 2019 saw a massive 53% increase in household ownership of mobile phones with a 61% growth in rural areas alongside 31% urban. By the end of 2019, 82% of rural households and 95% of urban households owned a mobile phone. This compares to 2014 when just 33% of households owned mobile phones (21% rural and 64% urban households) with high levels only in Yangon (61%) and 16-45% ownership in other states and regions. Even with this remarkable improvement, urban households were still more likely to own a mobile phone than rural households. Yangon East and West districts and Mandalay districts accounted for highest mobile phone ownership of above 70% in 2014 and 95% in 2019. The lowest level of phone ownership in 2019 was in Shan (Langkho), Kachin (Puta-O) and Chin (Matupi) districts.

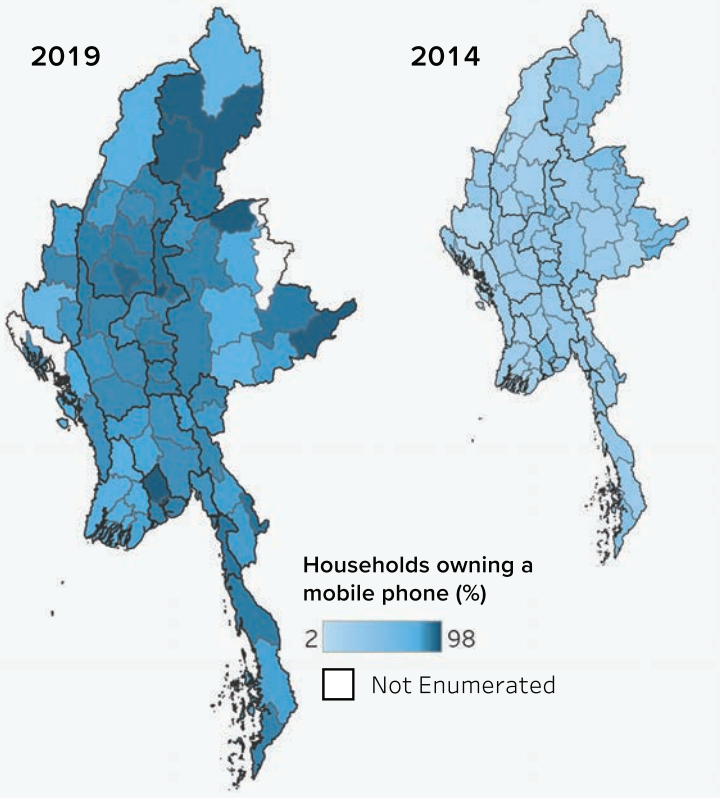


Figure 16: *Households owning a mobile phone by district, 2014- 2019 (%)*

The other significant area of growth in communications assets was the availability of internet at home via landline or mobile connection. In 2019, 40% of households had access to the internet at home in all except nine districts countrywide. The highest levels of access were in Shan (Tachileik district), Yangon (East district) and Mandalay (Mandalay district) where over 80% of households had internet access at home. This compares to 2014 when access was less than 25% in all but one district (Yangon West – 43% of households). The lowest access to internet at home was found in Chin (Matupi and Hakha districts), Shan (Kengtung district), Yangon (South district), Kayah (Bawlake district), Ayeyarwady (Myaungmya, Labutta and Pathein districts) and Kachin (Puta-O district) with as less than 38% of households having access to internet at home.

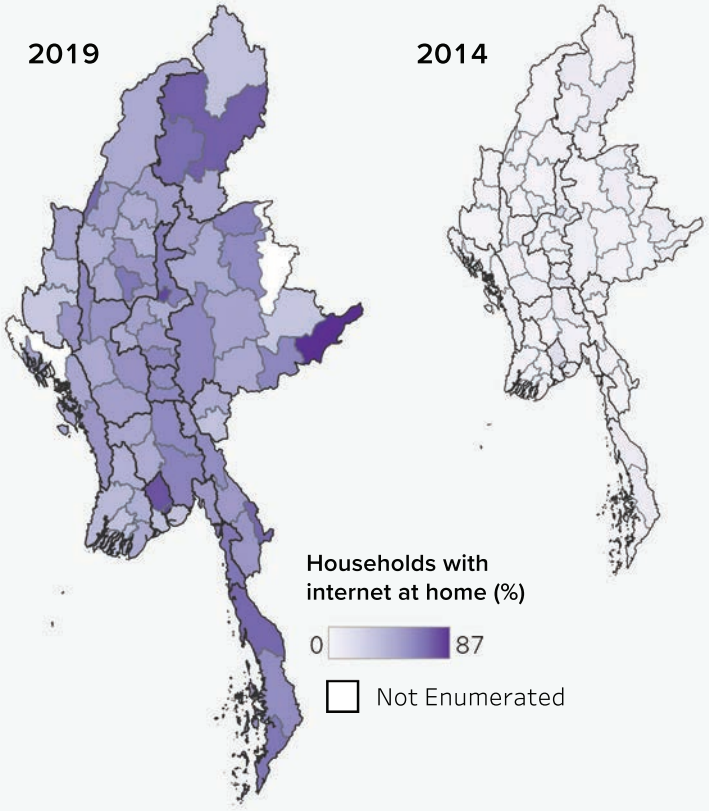


Figure 17: *Households access to the internet by district, 2014-2019 (%)*

Computer ownership remained low in 2019, exceeding 10% in just eight districts countrywide. The highest levels were in Yangon (West) where 39% of households owned at least one computer, followed by 21% in Yangon (East) and 16% in Mandalay District. Kengtung District in Shan State and Hakha District in Chin State improved from having less than 5% of households with computers to more than 10% over this five-year period. Ayeyarwady had the least access to this communications resource with 2% or less households owning computers across all 6 districts.

Transportation Resources

More than half of Myanmar households owned a motorcycle / moped / tuk tuk by late 2019 (59%). While rates of ownership were similar in urban and rural areas (58% and 60% respectively), because of the sheer number of rural households, many more rural households were found to be using this mode of transport (4.8 million households) compared to those in urban areas (1.8 million). These numbers have increased 21% countrywide since 2014, particularly in rural areas (1.9 million more households). Seven districts had particularly significant improvement over the 2014-2019 period, moving from bullock carts to motorcycles/moped/tuk tuks as the most commonly owned household vehicle, namely Puta-O District in Kachin State, Gangaw, Magway and Thayet Districts in Magway Region, Yamethin District in Mandalay Region, Kyaukpyu District in Rakhine State and Mawlaik District in Sagaing Region.

Bicycles were the second most common type of vehicle owned by households, particularly in Yangon and Ayeyarwady Regions. This is in contrast to the other 13 states/regions where motorcycles / moped / tuk tuk were the most common. In these two densely populated and highly populous regions, it was estimated that 47% of households in Yangon Region (0.8 million households) and 43% of households in Ayeyarwady Region (0.6 million households) used bicycles as a mode of transport. This was particularly the case in Yangon's most populous two districts, Yangon (East and North), and all districts in Ayeyarwady Region with the exception of Pathein District.

By contrast, very few households owned a car/pickup/truck/van (8%), with many of them in Yangon Region. Kayin and Shan States had the highest percentages of households owning this type of transport State (16% and 15% respectively), followed by Yangon Region (14%). In absolute terms however, Yangon Region had by far the greatest number of households owning a car/pickup/truck/van (0.23 million households), followed by Shan State (0.17 million households) and Kayin State (0.05 million). Ownership of these vehicles was higher in urban than rural areas (17% and 5% respectively).

Canoes/boats and motorboats were most commonly owned by households in Ayeyarwady Region with its abundant rivers and lakes. Households from Labutta, Maubin and Pyapon districts had the highest number of canoes / boats and motorboats among all districts, countrywide.

Magway and Sagaing Regions continued to have the highest number of households owning bullock carts (38% and 35% respectively). Kanbalu and Mawlaik Districts in Sagaing Region and Thayet District in Magway Region had the highest number of households owning bullock carts. Both Magway Region and Rakhine State saw significant improvement however, with households' most commonly owned vehicle changing from bullock carts in 2014 to motorcycles/moped/tuk tuks in 2019.

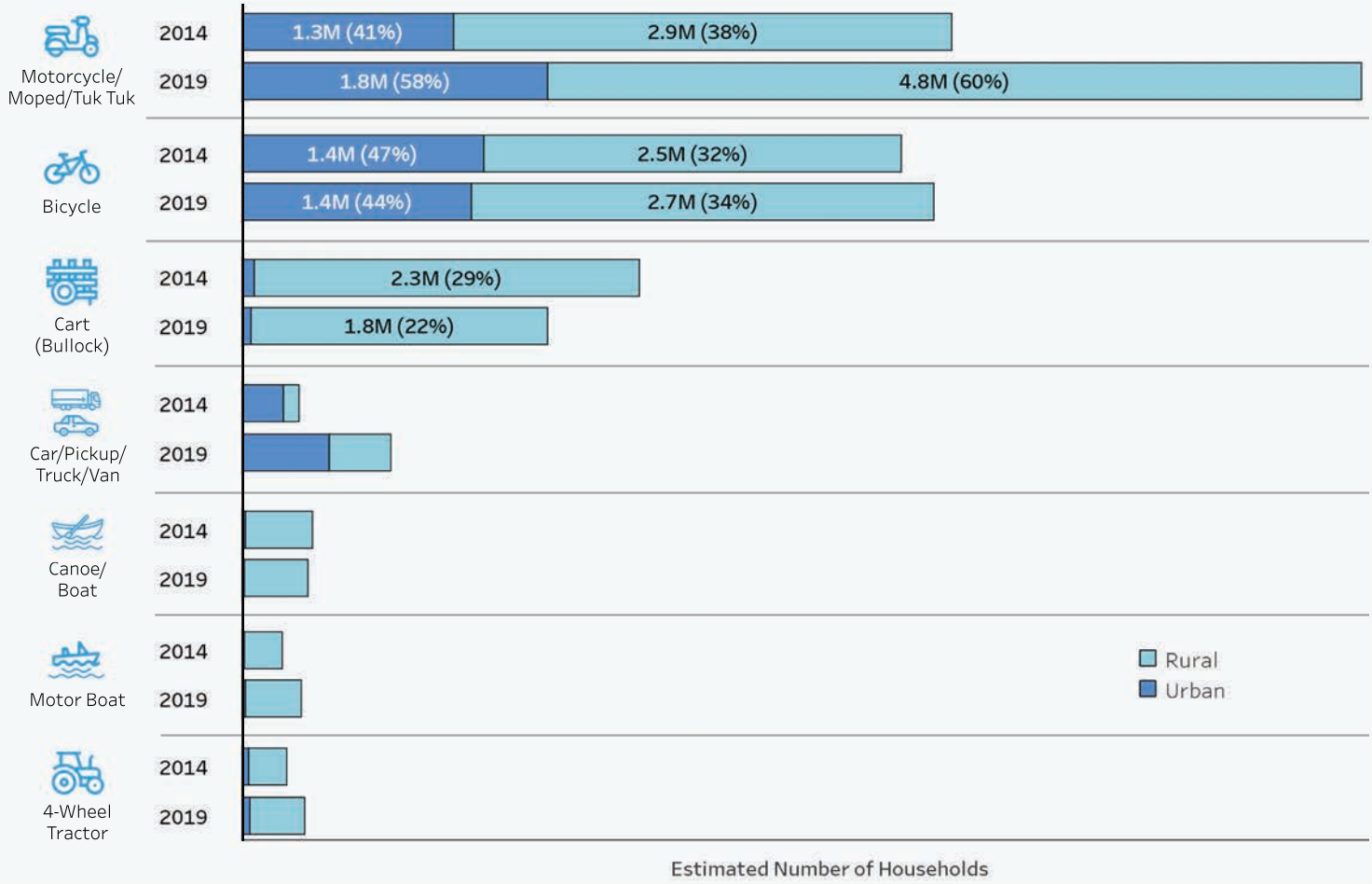


Figure 18: *Urban and rural households' transportation amenities, 2014-2019 (%)*

Source of Lighting and Cooking Fuel

Lighting

Myanmar had the lowest electrification rate in South East Asia in 2019.[20] Access to electricity is crucial for poverty reduction, impacting health, education, wellbeing, livelihoods and economic development. Efficient lighting facilitates children's studies and increases safety in communities, while a robust power source supports connectivity and access to information which in turn supports livelihoods in a multitude of ways. Access to electricity can also decrease the burden of disease in a number of ways, including facilitating access to safer drinking water and reducing harmful indoor kerosene smoke. Solar energy and solar mini-grids are the cleanest sources with few costs following the initial outlay although inappropriate disposal of batteries can have an adverse environmental impact. Batteries, generators, kerosene and candles all consume household income, and fossil fuel energy sources contribute to climate change by emitting greenhouse gases and pollutants. Candles and kerosene are commonly used by energy-poor households and have the disadvantage of providing worse quality light with a higher fire risk. Over time, the cost of kerosene may be higher than the cost of electricity,[21] with 7-9% of fuel from kerosene lamps converting to black carbon, a substance which substantially increases the contribution to climate change.[22]

As many as 30 million people in Myanmar - 58% of the population - were not connected to the main power grid in early 2019.[23] Among these 6.5 million households, around 4 million had no electricity at all and were using kerosene, oil and solid fuels as energy sources for lighting, cooking and other domestic uses. The remaining 2.5 million off-grid households had some access to electricity through diesel generators, solar home systems or other on-site power generation devices, however these off-grid solutions were unreliable and expensive.[24]

Nevertheless, the 5-year period to 2019 brought significant improvements in access to electricity. Residential electricity use grew from 32% of households in 2014 to over half in 2019 (53%). Solar panel usage also increased, becoming the second main source of lighting in 29% of Myanmar's households in 2019. These improvements were reflected by the significant reduction in use of candles as the main source of lighting (down from 21% in 2014 to 4% in 2019) as well as the use of kerosene (from 8% in 2014 to 1% in 2019).

The use of electricity and solar panels increased in both urban and rural areas. 91% of households in urban areas were using electricity as their main lighting source in 2019, compared to less than 38% in rural areas. This disparity accounted for the higher use of solar panels in rural households (39% compared to just 3% in urban areas).

[20] *Access to electricity in South East Asia. Retrieved 05 February 2022 from https://www.theglobaleconomy.com/rankings/access_to_electricity/South-East-Asia/*
[21] *FAQ: coal and energy poverty. ODI. Retrieved February 2022. https://odi.org/en/about/our-work/faqs-on-coal-and-poverty/*
[22] *Lam, N. et al. 2012. Household Light Makes Global Heat: High Black Carbon Emissions from Kerosene Wick Lamps. Environmental Science & Technology 46.*
[23] *SmartPower. 2019. Decentralized Energy Market Assessment in Myanmar.*
[24] *Ibid.*

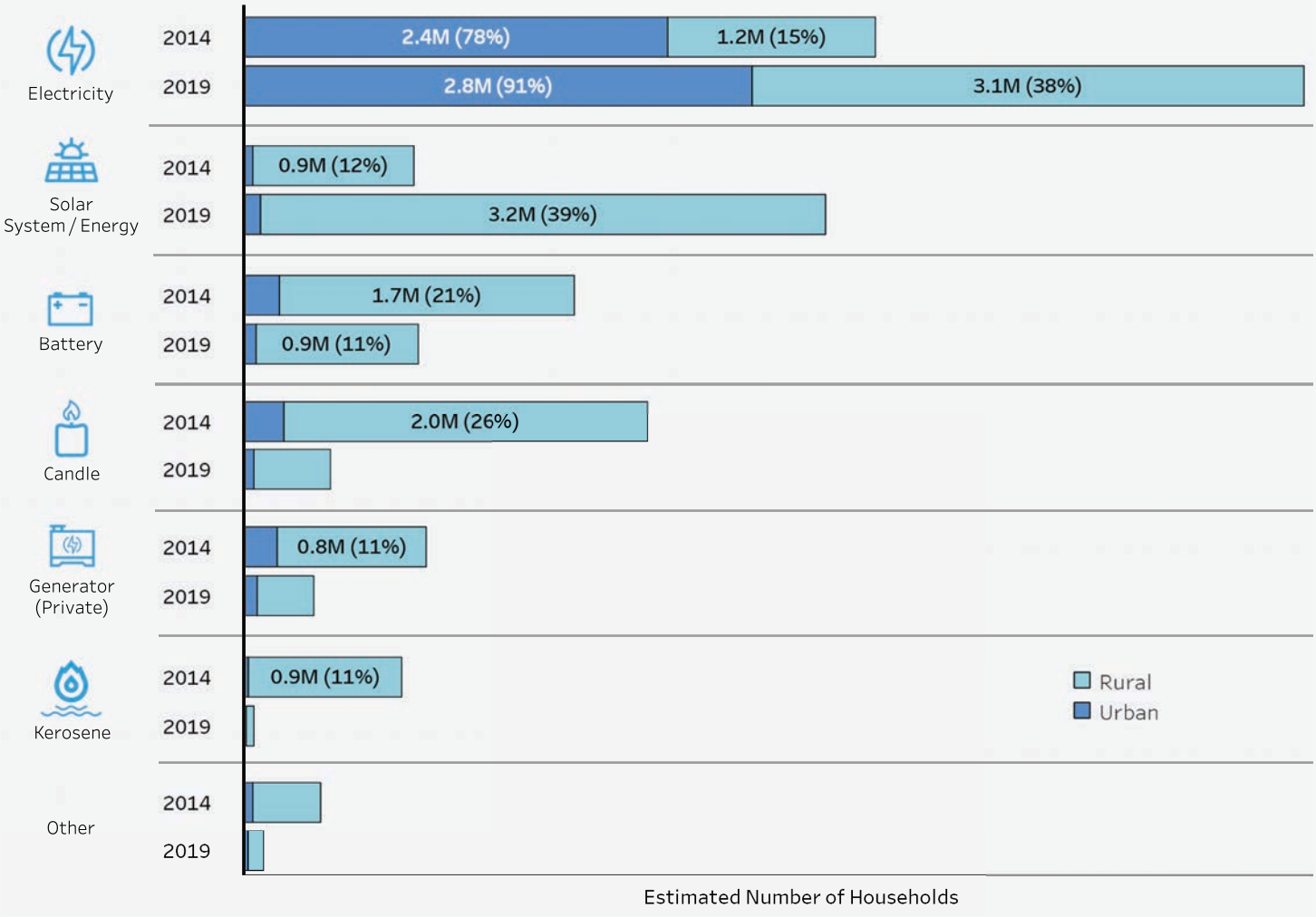


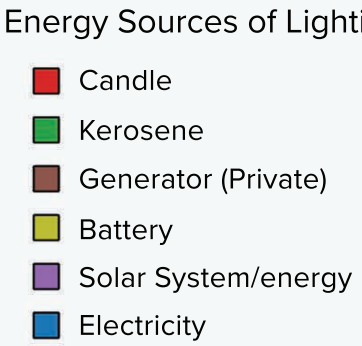
Figure 19: *Urban and rural households' energy sources for lighting, 2014-2019 (%)*

By 2019, electricity was the most commonly used source of lighting in 12 states and regions. This growth was most marked in 9 of Myanmar's 71 districts where electricity replaced candles as the most frequently used source between 2014-2019, notably in Bawlake (Kayah State), Thaton (Mon), Sittwe, Thandwe and Kyaukphyu districts (Rakhine), Hpa-An (Kayin), Bhamo (Kachin), Minbu (Magway) and Thayarwady district (Bago). In Magway Region, which has some of Myanmar's biggest renewable energy projects, the use of solar panels overtook the increase in electricity use.

Solar panel use has been steadily increasing to become the most used source of lighting in Chin and Rakhine States and Sagaing Region, especially since 2017. As of 2017, 51% of households were using solar lighting in Chin State, 48% in Rakhine State and 44% in Sagaing Region. With less access to the main electricity grid, rural areas have been a focus for off-grid solar/renewable energy projects contributing to the increase in the use of solar power in rural areas (28% households). Katha District in Sagaing Region had relatively high use of solar power in 2014 particularly in rural households (urban – 2%, rural – 24%).

By contrast, Kawthaung and Myeik districts in Tanintharyi Region continued to use private generators for lighting in 2019. In addition, (rechargeable) battery systems were also most prevalent in districts such as Hinthada, Myaungmya and Maubin districts in Ayeyarwady Region as very few households 21% in Myaungmya and 20% in Maubin districts had access to electricity, and they upgraded from mostly using kerosene back in 2014.

Perhaps the most significant change is the reduced use of candles as the main lighting source. Back in 2014, candles were the most commonly used source of lighting in 5 states and regions, while electricity was the most used in six others. With the growing availability of electricity and solar options, the use of candles has decreased but not disappeared. Usage of candles was over 10% in some districts in 2019, notably Kawkareik and Hpa-an districts in Kayin State, Thaton District of Mon State and Kyaukpyu and Thandwe Districts of Rakhine State.



State/Region Name	2014	2017	2019
Ayeyarwady	31	35	34
Bago	29	37	44
Chin	29	51	45
Kachin	31	49	60
Kayah	49	74	84
Kayin	45	40	46
Magway	27	41	42
Mandalay	39	65	66
Mon	36	70	65
Nay Pyi Taw	43	55	64
Rakhine	59	48	52
Sagaing	25	44	46
Shan	33	51	56
Tanintharyi	47	41	41
Yangon	69	80	83

Figure 20: *Households' source of lighting at state/region levels, 2014-2019 (%)*

Cooking Fuel and Cooking Facility

The use of firewood and charcoal cooking stoves has many negative impacts which predominantly affect women and children. These include health and safety risks, productivity losses (due to the significant time spent collecting wood) and localised deforestation, which can cause habitat loss, increase soil erosion and contribute to global climate change if firewood is unsustainably harvested. Women and children are the main groups affected by these negative impacts.[25] According to the World Health Organisation, as many as 3.8 million people globally die prematurely each year due to illness resulting from household air pollution generated by the inefficient use of solid fuels and kerosene for cooking. Solid fuel use (especially fuelwood) may be responsible for 800 000 to 2.4 million premature deaths globally each year.[26]

With increasing access to electricity, more than one-third of households (38%) were using it as a cooking fuel source. As of 2019, electricity was the main cooking fuel in almost three-quarters of urban households in Myanmar (73%) compared to just one in four rural households (24%). Solid fuels are the most commonly used by households in rural areas (74%). An estimated 2.4 million households gained access to electricity compared to 2014 (21% increase).

60% of Myanmar's households were using solid fuels including firewood for cooking fuel in 2019. The highest concentration of households using firewood was in Chin State (Matupi district) and Sagaing Region (Mawlaik and Hkamti districts) where over 90% of households were dependent on this fuel source. Charcoal/Coal/Lignite was found to be widely used in many districts, and the most commonly used source in Kawthoung and Myeik districts in Tanintharyi Region, and Myawaddy District in Kayin State.

Yangon Region continued to have the highest and growing usage of electricity for cooking, from 47% in 2014 to 72% in 2019. The most significant improvement was found in 10 districts around the country where the most common cooking fuel changed from firewood to electricity. These districts are in Nay Pyi Taw (Det Khi Na and Oke Ta Ra districts), Mandalay Region (Pyinoolwin district), Sagaing Region (Sagaing and Monywa districts), Kayah State (Loikaw and Bawlake districts), Mon State (Thaton district), Shan State (Muse district) and Rakhine State (Sittwe district). By contrast, only a relatively small proportion of households were using LPG/natural gas/biogas as their main cooking fuel (2%, an estimated 0.2 million households) and this mainly in Tanintharyi Region (0.03 million households), followed by Yangon Region (0.07 million households).

The location of the cooking facilities has important impacts on health as most households had them indoors (69%). High numbers of households have indoor kitchens in both urban and rural areas (80% and 64% respectively) however; the high dependence of rural households on solid fuels (74%) significantly increases the risks to women and young children who spend more of their time near the cooking facilities. The use of solid fuels indoors increases family members' exposure to high levels of household air pollution, and especially to small soot particles that penetrate deep into the lungs leading to serious health consequences. Levels of these fine particles may be 100 times higher than acceptable levels in poorly ventilated dwellings. Inhalation of soot particles from household air pollution causes close to half of the deaths due to pneumonia among children under 5 years of age.[27] Globally, an estimated 3.8 million people a year die prematurely from illness attributable to the household air pollution caused by the inefficient use of solid fuels and kerosene for cooking.[28]

[25] *Spectrum. 2019. Elements of a National Clean Cooking Strategy for Myanmar, Energy Briefing Paper.*
[26] *World Health Organisation. 2021. Fact Sheet - Household air pollution and health.*
[27] *Ibid.*
[28] *Central Statistical Organization, Ministry of Planning and Finance of the Republic of the Union of Myanmar, UNDP, World Bank. 2018. Myanmar Living Conditions Survey 2017: Key Indicators Report.*

Cooking facilities were located mainly inside houses in 83% of districts while others used separate buildings for cooking. The highest percentage of households with separate buildings for cooking was in Pakokku district (Magway), Nyaung-U district (Mandalay), Yinmarbin district (Sagaing) and Myitkyina district in Kachin state.

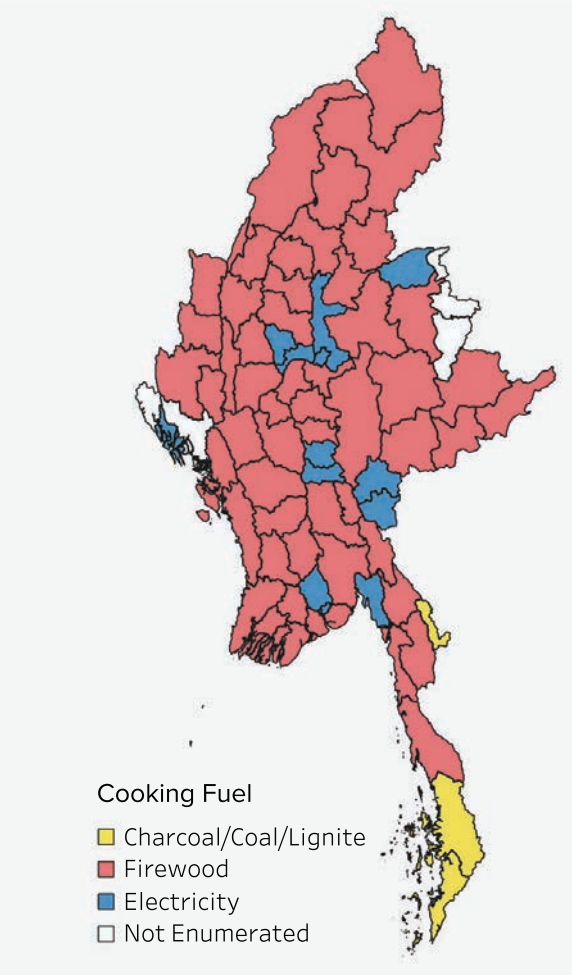


Figure 21: *Households' most commonly used cooking fuel by district, 2019 (%)*

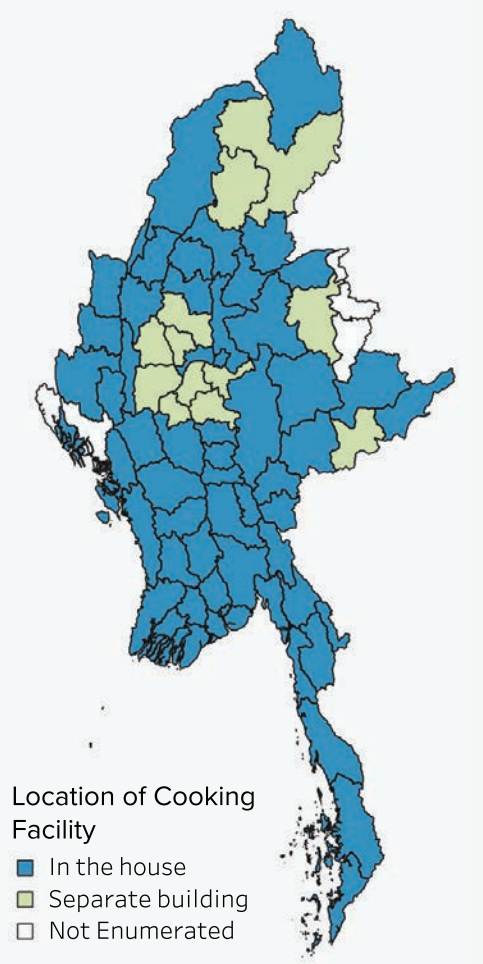


Figure 22: *Households' main cooking facility by district, 2019 (%)*

Water Resource Management and Sanitation

Drinking Water

Access to safe drinking water is not only essential for human life but also an internationally recognized basic human right. Availability and accessibility of sufficient and safe water are essential to protect people from water-borne diseases. The use of contaminated water is among the leading causes for the transmission of diseases such as diarrhoea, cholera and dysentery, contributing to undernutrition and long-term health consequences. Globally, unsafe water is responsible for an estimated 842,000 deaths caused by diarrhoea annually.[29] While improving water quality is critical to prevent disease, attention is also needed to the accessibility and availability of drinking water, particularly for women and girls who are often responsible for water collection, sometimes having to carry it over for long distances. Hence the availability of water sources such as piped water in the household can make a great difference.

Myanmar's 2019 Intercensal Survey measured households' access to safe drinking water on a countrywide scale for the first time. This helped identify areas using improved sources with a lower risk of contamination (piped water, tube wells/boreholes, protected dug wells and springs, bottled water), and unimproved sources whose high risk of contamination brings greater health risks (rivers, lakes, ponds and surface water). MIMU's Analytical Brief, Changing Sources of Drinking Water in Myanmar (2014-2019)[30], reviews the changing use of improved and unimproved water sources in-depth, providing an interactive dashboard and data to enable further analysis of available information.

[29] *World Health Organization, Protecting surface water for health (Geneva: World Health Organization, 2016), https://www.who.int/water_sanitation_health/publications/pswh/en/*

[30] *Myanmar Information Management Unit. 2021. Changing Sources of Drinking Water in Myanmar (2014 - 2019). https://www.themimu.info/drinking-water-analysis*

82% of Myanmar households were using drinking water from improved sources in 2019. This equates to around 9.2 million households and 42 million people, a significant improvement since 2014 when approximately 73% of households were using drinking water from improved sources. Rural areas saw the greatest improvement with an 11% increase in the use of improved water sources (compared to a 5% increase in urban areas). By 2019, 92% of urban households used drinking water from improved sources (estimated 14 million people), next to 78% of rural households (estimated 28 million people).

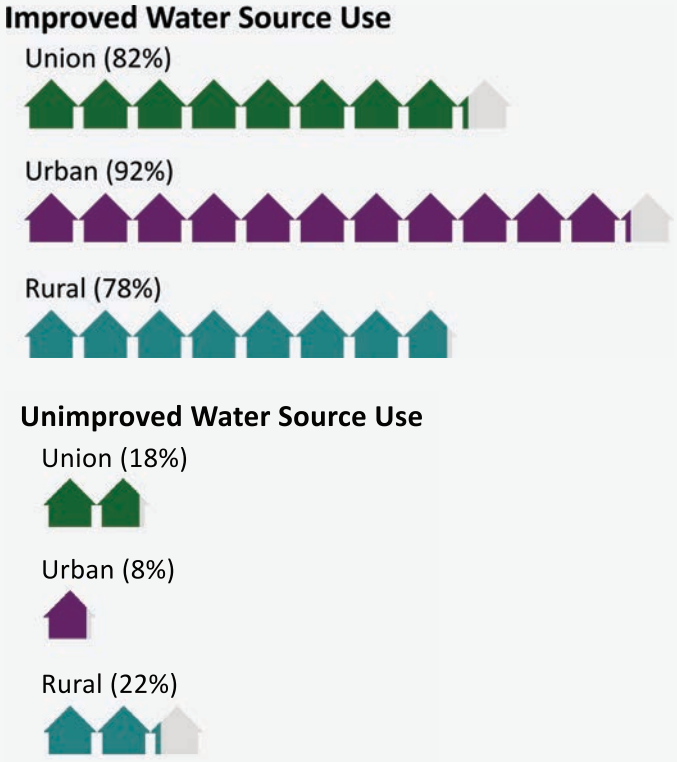


Figure 23: *Households' use of drinking water from improved and unimproved sources at the union, urban and rural level, 2019 (%)*

Water from improved sources is not necessarily safe to drink, however. 'Improved' drinking water sources are those with the potential to deliver water with a low risk of contamination due to their design and construction. This does not consider the microbial safety of the water due to water storage, unsafe delivery systems or water management practices.[31] A 2019 study of 19 brands of bottled water in Mandalay for example found 37% to be contaminated and unsafe to drink.[32] Consumption of contaminated water – whether from unimproved or other sources - is among the leading causes of diseases such as diarrhoea, cholera and dysentery, contributing to undernutrition and long-term health problems.[33]

By 2019, all states and regions except Rakhine State used mainly improved sources of drinking water. Just 3 states/regions had lower than 80% of the population using drinking water from improved sources - Chin (73%), Ayeyarwady (66%) and Rakhine (45%). The situation is most acute in Rakhine which has the highest level of use of unimproved water sources and where topography, higher levels of poverty and climate change shocks are constraints to improvements in drinking water quality. Yangon Region had the highest number of households using improved sources (1.5 million households,

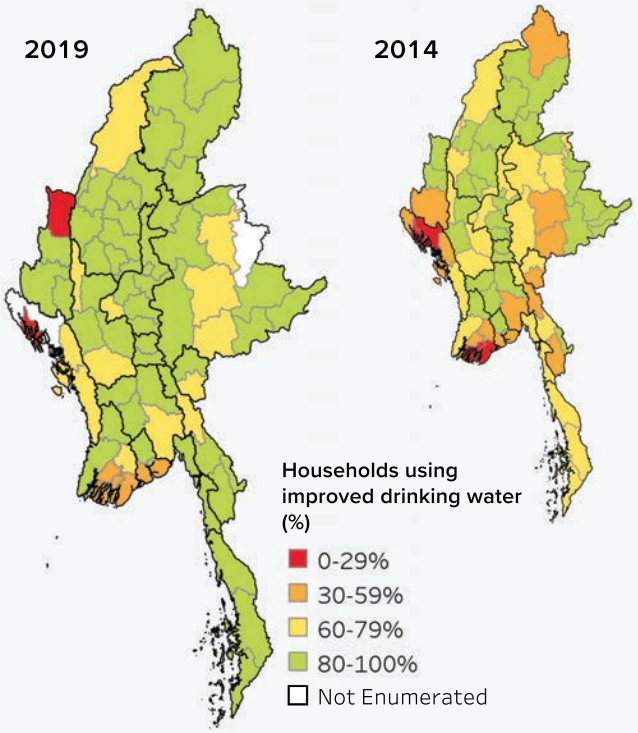


Figure 24: *Households' use of improved drinking water by district, 2014-2019 (%)*

an estimated 6.6 million people), followed by Mandalay Region at 1.3 million households (estimated 5.6 million people). Rural areas of Rakhine, Chin and Ayeyarwady had the lowest use of safe drinking water, whereas those in rural areas of Sagaing had among the highest use of safe drinking water among rural areas countrywide (44% of households).

Despite these improvements, over 2 million households (18%) were still using unimproved water sources in 2019, mainly in rural areas. Rural households in Myanmar were more likely to use unimproved water sources (22% or 1.8 million households) compared to just 8% in urban areas (0.2 million households). Water access, infrastructure and quality control are the main impediments to rural areas' access to safe and affordable water supply services.

Households in Rakhine and Ayeyarwady continue to have the highest reliance on unimproved water sources. Rakhine households' use of unimproved water sources in 2019 was the highest in the country at 55%, next to 34% in Ayeyarwady. Located in some of the most low-lying coastal lands in South East Asia, these areas are already more likely to experience saltwater infiltrating underground sources such as wells and springs, particularly as sea levels rise due to climate change. In underground sources, fresh water is lighter than salt water and tends to float on top of the saltwater layer. Consequently, as sea levels rise, extracting deeper water from those sources is problematic due to the higher likelihood of reaching salt water, leading to a reliance on ponds which tend to be wider and shallower than in other areas. These wide ponds are more likely to face evaporation, further limiting water availability and quality.[34]

[31] *Shaheed, A. et al. 2014. Why 'improved' water sources are not always safe," Bulletin of the World Health Organization, http://dx.doi.org/10.2471/BLT.13.119594.*
[32] *Seinn Sandar et al. 2019. Bacteriological Examination of Bottled Drinking Water by MPN Method. The Saudi Journal of Biological Sciences.*
[33] *Myanmar Information Management Unit. 2021. Changing Sources of Drinking Water in Myanmar (2014 - 2019).*
[34] *Ibid.*

At the district level, only four districts were still depending mainly on unimproved drinking water sources. 94% of all districts countrywide (67 districts) were primarily using improved drinking water sources – those still using mainly unimproved drinking water sources were Sittwe district in Rakhine State, Falam district in Chin State, Labutta and Pyapon districts in Ayeyarwady Region. In Falam and Sittwe districts in particular, very few households had access to drinking water from improved sources by 2019; just 7,000 households in Falam district (25% of households) and 40,000 households in Sittwe district (14%). The situation in Falam district deteriorated in this five-year period, from 90% households (26,238 households) reportedly using improved sources in 2014.

Despite significant improvements, many households in Pyapon district (63%) remained dependent on unimproved drinking water sources. The 2014 Census had identified Kayan Township in Yangon (South) district and Dedaye Township in Pyapon district, Ayeyarwady region as facing the worst situation with almost every household using unimproved water sources (99%). While the change at township level cannot be assessed with the data collected in 2019, district level information indicates improvements particularly in Yangon (South) and also in Pyapon districts (an additional 0.06 million households using improved drinking water sources in 2019). Nevertheless, 63% of households in Pyapon district remained dependent on unimproved drinking water sources by 2019 (an estimated 0.1 million households).

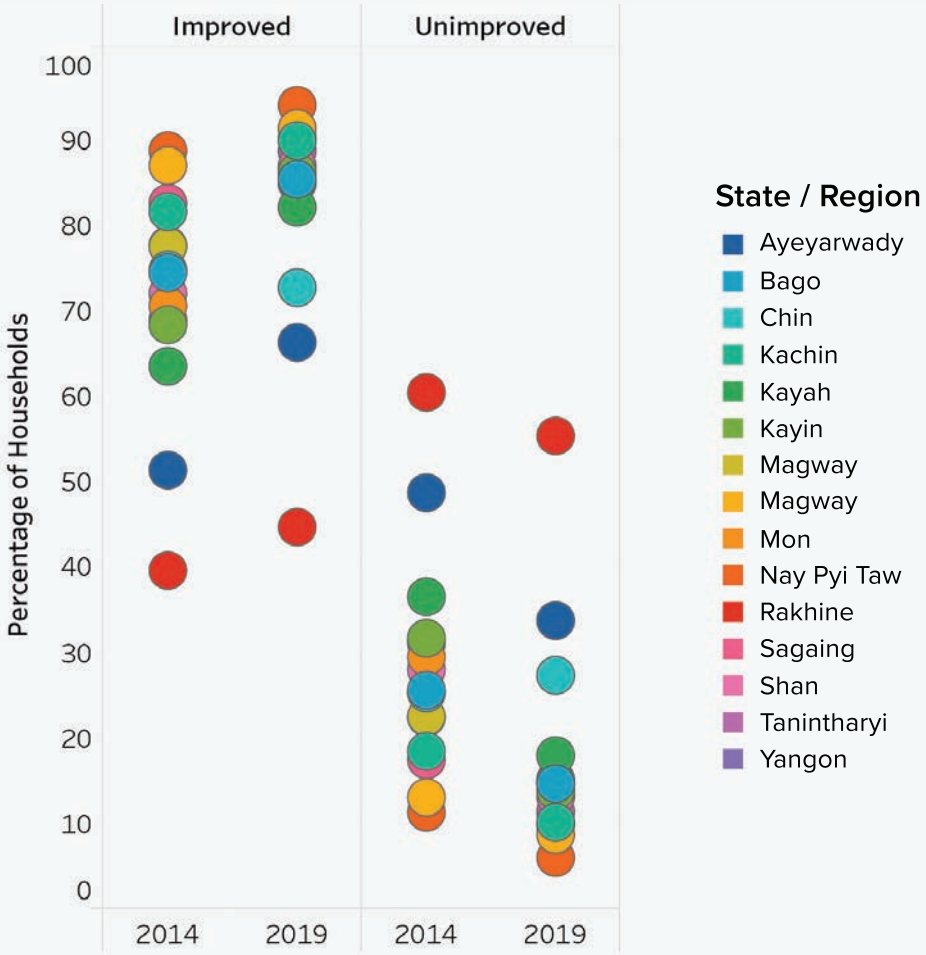


Figure 25: *Households' use of drinking water from improved and unimproved water by districts, 2014-2019 (%)*

Sanitation

The 2019 Intercensal survey used a slightly different categorization for sanitation services than the previous measurement in 2014. The 2014 Census sanitation categories included safely managed service, basic service, limited service, unimproved, and open defecation,[35] whereas the 2019 measurement combined the first two categories into "at least basic/basic service" category referring to either safely managed or basic drinking water services.[36] The definitions for each category can be found in the following table.

[35] *World Health Organization and the United Nations Children's Fund. Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines. Geneva.*
[36] *Department of Population. 2020. The 2019 Inter-censal Survey. The Union Report.*

AT LEAST BASIC SANITATION SERVICES	SAFELY MANAGED SANITATION SERVICES	Use of **improved sanitation facilities** which are not shared on premises with other households and where excreta are safely disposed in situ or transported and treated off-site or pit latrines that are sealed when they become full and new pits dug.
	BASIC SERVICE	Use of **improved sanitation facilities** which **are not shared on premises with other households**
	LIMITED SERVICE	Use of **improved sanitation facilities** which are shared with two or more households
	UNIMPROVED	Use of pit latrines without a slab or platform and pits are not covered properly to protect fly entering, hanging latrines and bucket latrines
	OPEN DEFECATION	Disposal of human faeces in fields, forest, bushes, open bodies of water, beaches or other open spaces or with solid waste

*Note: **Improved Sanitation Facilities** include flush/pour flush to: piped sewer system; septic tank; pit latrine, ventilated improved pit (VIP) Latrine, pit latrine with slab*

***Figure 26:** Definitions of Sanitation Services Categories*

By 2019, 91% of Myanmar households - around 47 million people – had access to improved sanitation facilities. Households' use of improved sanitation facilities increased by 9% in the five years to 2019 with 98% of urban households using improved facilities (around 14 million people), and 89% of rural households (over 32 million people). This is a significant improvement over 2014 when 82% of households reported access to improved sanitation facilities. At the state/region level, over 85% of households were using improved sanitation in 2019 in all states and regions other than in Rakhine State where only 61% of households had improved sanitation (2 million people).

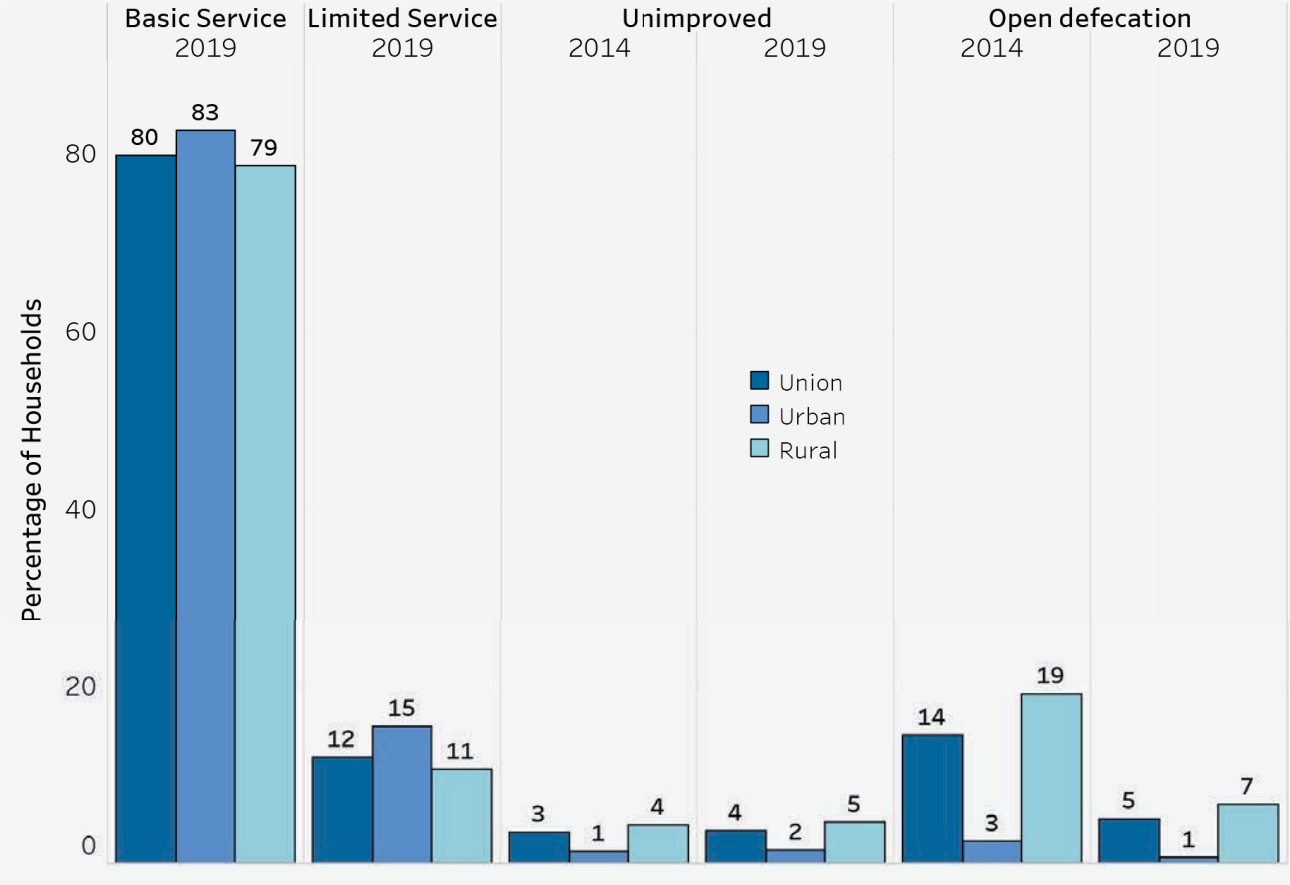


***Figure 27:** Households' use of sanitation facility at union, urban and rural levels, 2014-2019 (%)*

By 2019, most households were using basic sanitation service at the countrywide level (80%) as well as in urban (83%) and rural areas (79%). Kachin State had the highest percentage of households using basic sanitation facilities (89%, 0.3 million households) whereas Yangon Region had the largest number of households using these improved facilities (1.3 million households), followed by Ayeyarwady and Mandalay.

An estimated 2 million people countrywide were still dependent on unimproved sanitation facilities (4%), such as poorly constructed or protected pit latrines. Rural households were more likely to use unimproved sanitation facilities (5% in rural areas compared to 2% in urban areas).

A further 3 million people – or 5% of households - still practiced open defecation as their main means of sanitation in 2019. This is an improvement from 14% of households (an estimated 7.2 million people) in 2014. As noted by WHO, open defecation perpetuates a vicious cycle of disease and poverty and countries with widespread open defecation have the highest number of deaths of children aged under 5 years as well as the highest levels of malnutrition and poverty, and big disparities of wealth.[37] In addition to the risks for health, open defection represents challenges for equity, dignity and often of safety as well, particularly for women and girls. In Myanmar, rural areas accounted for a large part of the population at risk through the practice of open defecation (an estimated 0.5 million households or 2 million people).

Rakhine State continued to have the highest use of open defecation from 2014 through 2019. Less than 10% of households in all states and regions practiced open defecation as of 2019 other than Rakhine State which continued to have the highest rate at 32% (estimated 0.2 million households or 1 million people). Despite an increase of 28% in the use of improved sanitation facilities in Rakhine State, 7% of households were still using unimproved sanitation facilities (an estimated 47 thousand households or 0.2 million people). Over 30% of households in Kyaukpyu and Sittwe were practicing open defecation - in Sittwe district in particular, 4 out of 10 households practiced open defecation and 1 out of 10 households used unimproved sanitation facilities.

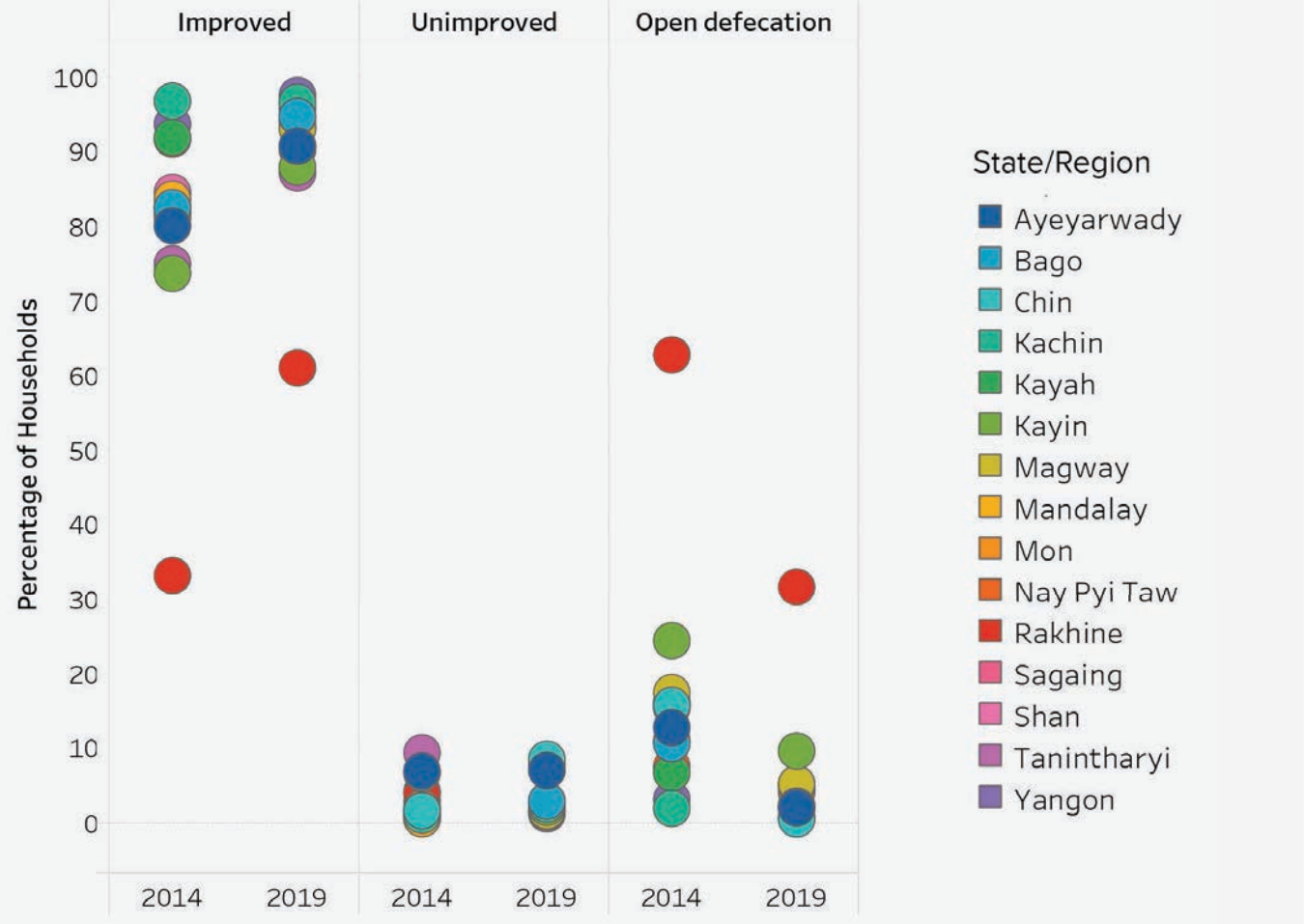


Figure 28: *Households' use of sanitation facility by state/region, 2014-2019 (%)*

[37] *World Health Organisation. 2019. Fact Sheet: Sanitation.*

Conclusion

A review of available data on household amenities from nationwide surveys reveals some important developments over the five-year period to 2019. Whereas a million more people were in paid/for profit employment nationwide by 2019, women continued to be less likely to be employed than men (51% women: 74% of men) and rural households earn significantly less than those in urban areas. Chin State and Kayah State have the highest proportion of very low-income households earning less than 0.5 million kyats per year (26% and 25% respectively).

Despite considerable shelter improvements for many Myanmar households, a third of all households in Myanmar were still living in bamboo houses or huts in 2019. Bamboo houses were particularly common in the Dry Zone area and Shan State, while over 195,000 households in Ayeyarwady Region were living in huts lasting 3 years or less. 2.4 million households countrywide had poor quality bamboo or earth flooring; dirt/earth flooring - the most unsafe of the options commonly used in Myanmar, continued to be found particularly in parts of Mandalay and Sagaing Regions. 1.4 million households were also living under the less protective Dhani/Theke/In leaf roofing, particularly in parts of Ayeyarwady region, Rakhine State and Tanintharyi Region.

Ownership of mobile phones and home internet grew massively between 2014 and 2019, alongside a decrease in use of radio and landline phones. An estimated 9.6 million households owned a mobile phone by late 2019 (86% of households), with the greatest increase in rural areas. 6.3 million households had access to the internet at home (56%). Computer ownership remained more limited and almost non-existent in rural households (1.7% of households compared to 15% in urban areas). A million households however owned no communications devices at all in late 2019 (9% of total households), with these located mainly in rural areas.

More than half of Myanmar households owned a motorcycle / moped by late 2019. This marks a 21% increase countrywide since 2014, particularly in rural areas (1.9 million more households). Bicycles were the second most commonly owned vehicle, particularly in Yangon and Ayeyarwady Regions. By contrast, very few households owned a car/truck/van (8%), many of them in Yangon Region, and canoes/boats and motorboats were more commonly found as a household transportation resource in Ayeyarwady Region.

Despite an increase in the use of residential electricity, Myanmar's electrification rate was the lowest in South East Asia with as many as 30 million people not connected to the main power grid. While over half of Myanmar's households used grid electricity in 2019 (53% compared to 32% in 2014), an estimated 58% of the population still had no access to the electrical grid in early 2019 (6.5 million households). Among these off-grid households, 4 million relied on kerosene, oil and solid fuels for lighting, cooking and other domestic uses, whereas 2.5 million had some access to electricity through home-based systems such as diesel generators and solar home systems. Solar panel usage increased, becoming the second main source of lighting in 29% of Myanmar's households in 2019, while the use of candles and kerosene dropped significantly. The use of electricity for cooking fuel also increased, in use by 38% of households by late 2019. Importantly however, around 6.7 million households were still dependent on solid cooking fuels such as firewood and charcoal. With a high prevalence of use of indoor cooking facilities (69% of households), the dependence on solid fuels is a particular health risk for women and children.

Myanmar's availability of safer drinking water increased with 82% of households were using drinking water from improved sources in 2019. This compares to 2014 when 73% of households were using drinking water from improved sources. Nevertheless, over 2 million households were still using unimproved water sources in 2019, mainly in rural areas, and households in Rakhine and Ayeyarwady continued to have the highest reliance on unimproved water sources (55% and 34% respectively).

In terms of sanitation, 91% of Myanmar households - around 47 million people – had access to improved sanitation facilities by late 2019. Yangon, Ayeyarwady and Mandalay regions had the highest number of households using improved facilities. Much is still to be done however - an estimated 2 million people countrywide (4%) were still dependent on unimproved sanitation facilities such as poorly constructed or protected pit latrines in 2019, and a further 3 million people – or 5% of households - still practiced open defecation as their main means of sanitation in 2019. Rakhine State continued to have the highest use of open defecation from 2014 through 2019. Open defecation brings risks for health, equity and dignity and often of safety as well, particularly for women and girls.

The Myanmar Information Management Unit / MIMU is a service of the United Nations provided by United Nations Development Programme (UNDP) working together with the UN Resident and Humanitarian Coordinator. It supports the information management needs, analysis and decision-making of the humanitarian, development and peace-focused actors across Myanmar.

For further information on the data and methodology used in preparation of this Analytical Brief, as well as other relevant products to support information and analysis (dataset, infographic and dashboard), please see
https://themimu.info/household-amenities-analysis

This product is based on current available information and is provided for reference purposes only. The boundaries and names shown and designations used on MIMU products do not imply any opinion or endorsement of these terms or boundaries by the United Nations.

MIMU products are not for sale and can be used free of charge with attribution as per MIMU Terms and Conditions of Use.
Please share any updates with us via info.mimu@undp.org.

Copyright © Myanmar Information Management Unit 2022.
No. 5, Kanbawza Street, Bahan Township.
Yangon, Myanmar,
P.O. Box 650
+95 9 774077762

MIMU

Funded by the European Union