

Self-supply of water in Asia and the Pacific

Country Profiles

December 2022

Overview

To increase awareness and understanding of self-supply of water in Asia and the Pacific, the UTS Institute for Sustainable Futures has partnered with UNICEF EAPRO and UNICEF ROSA to develop 21 country profiles.

The following country profiles present the prevalence of self-supply, spatial and temporal trends, service levels including water quality and availability, equity dimensions, and policy aspects of self-supply in each country.

Countries

Afghanistan	Myanmar
Bangladesh	Nepal
Cambodia	Pakistan
Federated States of Micronesia	Philippines
Fiji	Papua New Guinea
India	Solomon Islands
Indonesia	Sri Lanka
Kiribati	Timor-Leste
Lao People's Democratic Republic	Vanuatu
Maldives	Viet Nam
Mongolia	

Acknowledgements

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Citation

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Self-supply of water in Asia and the Pacific

AFGHANISTAN

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Afghanistan and its contribution to Sustainable Development Goal 6.



Prevalence

More than a quarter of all households rely on self-supply for drinking water

In 2015, 30% of the population of Afghanistan relied on self-supply for drinking (Fig. 1), equivalent to ~10.3 million people. Dependence was higher in urban than in rural areas (47% vs 24%). Boreholes and protected wells were the dominant form of self-supply. Around 73% of self-supply systems were 'improved' sources. Self-supply accounted for 66% of all on-premises water sources.

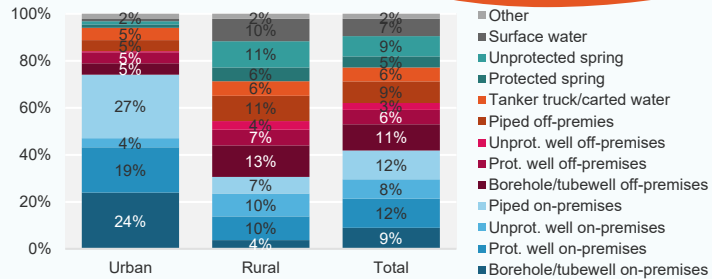


Fig. 1 – Main drinking water source, 2015

Geographical distribution

Self-supply was most common in the provinces of Urozgan, Logar and Farah, where more than 60% of people relied on on-premises groundwater sources (Fig. 2)

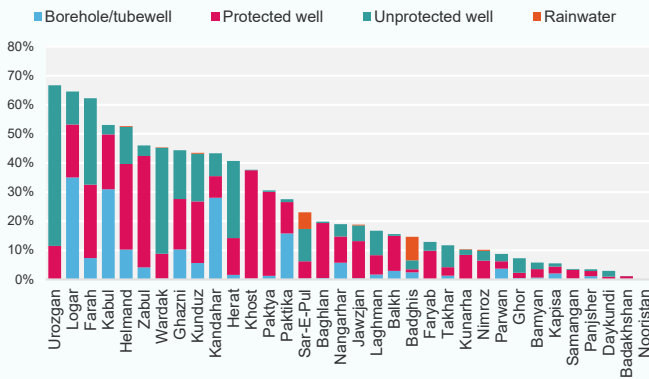


Fig. 2 – % of HH using self-supply as main drinking water source by province, 2015

Data sources

DHS 2015

For more information

Visit <https://waterforwomen.uts.edu.au/water-services/>
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Service levels

A lack of data means the extent to which self-supply provides a safely managed service is unknown.

Equity of access

Self-supply was most prevalent amongst the wealthiest households (Fig. 3), especially improved form of self-supply.

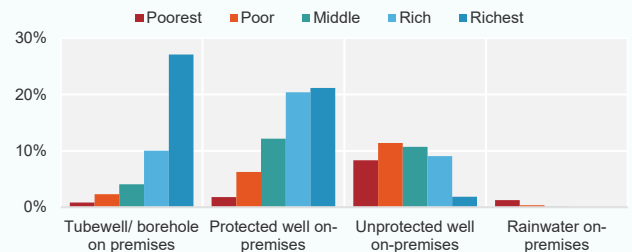


Fig. 3 – % of HHs using self-supply water sources by wealth quintile

National policy context

Recognition	Is self-supply mentioned in policy documents?	<input type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Self-supply of water in Asia and the Pacific

BANGLADESH

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Bangladesh and its contribution to Sustainable Development Goal 6.



Prevalence

More than a quarter of all households rely on self-supply for drinking water

In 2019, 71% of the population of Bangladesh relied on self-supply for drinking (Fig. 1), equivalent to ~114 million people. Dependence was higher in rural areas than in urban areas (77% vs 49%). Tubewells were the dominant form of self-supply (used by 70% of the population). Around 99.8% of self-supply systems were considered to be 'improved' sources. Self-supply accounted for 86% of all on-premises water sources.

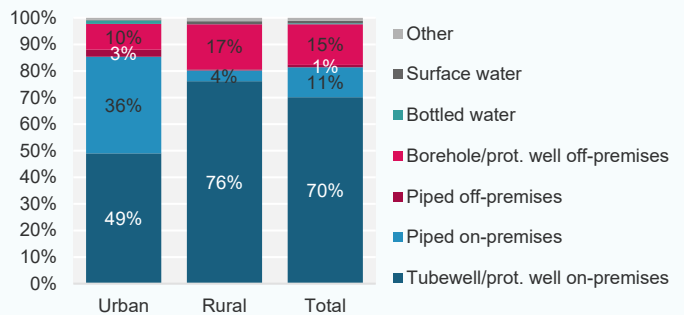


Fig. 1 – Main drinking water source (2019)

Geographical distribution

Self-supply was common across all divisions of Bangladesh. More than 90% of households in Rangpur Division, and more than 80% in Mymensingh and Rajshahi Divisions relied on self-supply as their main source of drinking water (Fig. 2). Reliance on self-supply was also common in the rest of the country (ranging from 43-68% in other divisions), with tubewells as the most common form of self-supply in every division.

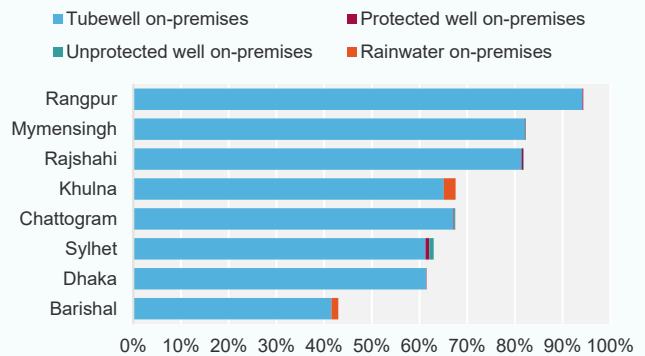


Fig. 2 – % of households using self-supply as main source of drinking water by division

Temporal trends

Between 1994 and 2019, dependence on self-supply in Bangladesh increased by 10% (Fig. 3). This trend was largely driven by a 13% growth of self-supply in rural areas. In urban areas, on the other hand, the proportion of households using self-supply slightly decreased over the 25-year period (-4%).

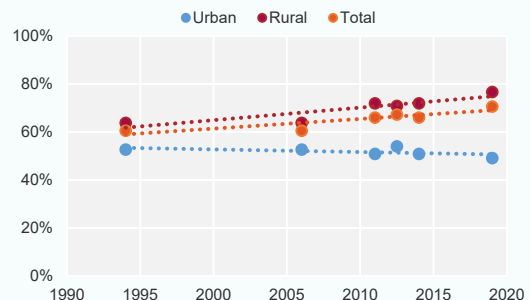


Fig. 3 – % of households using self-supply as main source of drinking water (1994-2019)

Self-supply of water in Asia and the Pacific

BANGLADESH

Country Profile

Service levels

Private tubewells provided a comparable service to piped systems in terms of availability (Fig. 4a). Additionally, related to quality, private tubewells outperformed piped services in terms of water free from *E. coli* (Fig. 4b). However, tubewells were more likely to contain elevated levels of arsenic (Fig. 4c).

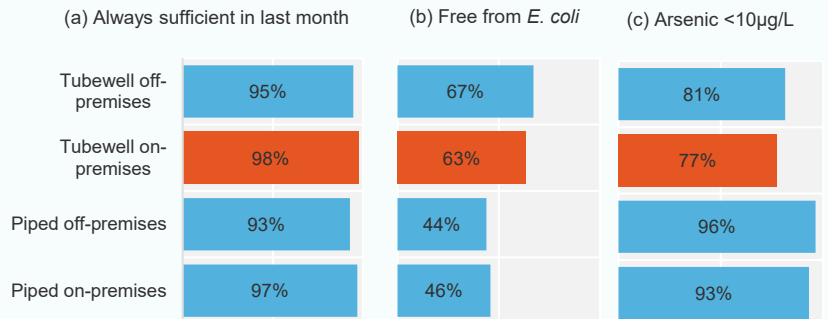


Fig. 4 – % of households with water (a) always available, (b) free from *E. coli*, (c) arsenic 10µg/L

Equity

Self-supply was more common among households in the middle three wealth quintiles, and least common among the richest households (Fig. 5a). Self-supplying households experienced high levels of water availability across the wealth spectrum (Fig. 5b), and the proportion of self-supplying households that had access to water free from microbial contamination was comparable across the different wealth quintiles (Fig. 5c). Presence of arsenic in self-supplied water sources was most common amongst poorest households (Fig. 5d).



Fig. 5a – % of households using on-premises tubewell for drinking, by wealth quintile
 Fig. 5b – % of on-premises tubewell users with water always available, by wealth quintile
 Fig. 5c – % of on-premises tubewell users with water free from *E. coli*, by wealth quintile
 Fig. 5d – % of on-premises tubewell users with water free from Arsenic, by wealth quintile

National policy context

There does not appear to be recognition, support, or standards for self-supply systems in Bangladesh.

Recognition	Is self-supply mentioned in policy documents?	✘
Support	Is there a policy or plan to support self-supply?	✘
Water quality standards	Are there water quality standards for self-supply?	✘
Construction standards	Are there construction standards or guidelines for self-supply systems?	✘

Data sources

MICS 2006
 DHS 2011
 MICS 2012-13
 DHS 2014
 MICS 2019

For more information

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Self-supply of water in Asia and the Pacific

CAMBODIA

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Cambodia and its contribution to Sustainable Development Goal 6.



Prevalence

1 in 4 households self-supply their drinking water

In 2019, 26% of the population in Cambodia relied on self-supply as their main source of drinking water (Fig 1). This was equivalent to ~4.2 million people. Dependence was higher in rural than in urban areas (33% vs 12%). Groundwater sources were the dominant form of self-supply, though rainwater collection becomes more prominent in the wet season. Around 85% of self-supply systems were considered to be 'improved' sources, though this varies by season. Self-supply accounted for 42% of all on-premises drinking water sources (excluding bottled water).

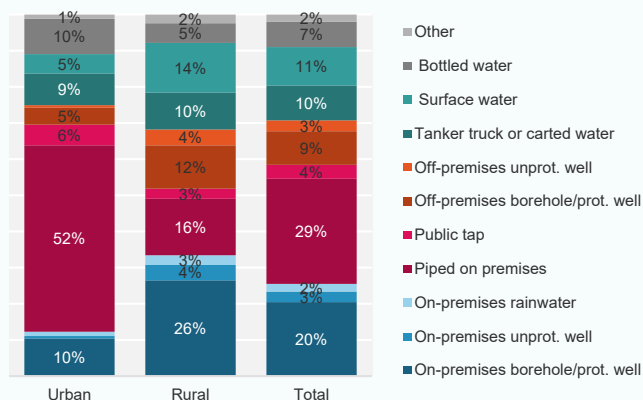


Fig. 1 – Main drinking water source (2019)

Geographical distribution

Dependence on self-supply varied by province and season. In 2014, Svay Rieng province had the highest proportion of households using self-supply in the dry season (82%). In the wet season, the proportion increased to 88% of the population in Svay Rieng, as well as in Kampot & Kep (Fig. 2).

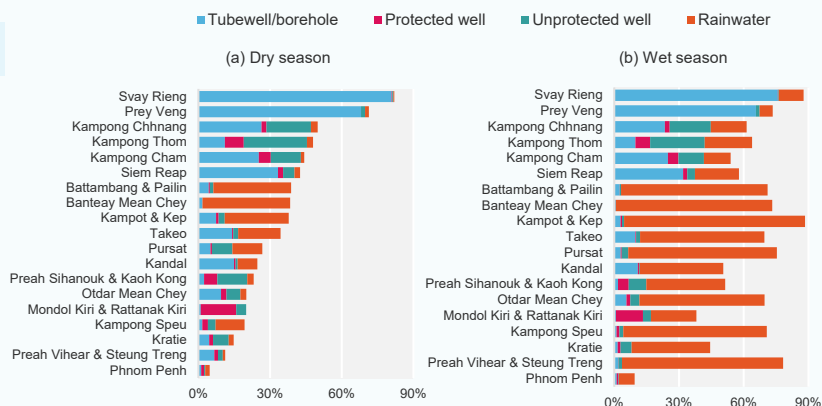


Fig. 2 – % HHs using self-supply as main source of drinking water in (a) the dry and (b) wet season (2014)

Temporal trends

In the period of 2000-2014, dependence on self-supply followed the same trends in dry and wet seasons, with an overall increase, entirely driven by rural areas (Fig. 3). In urban areas, use of self-supply decreased in this period.

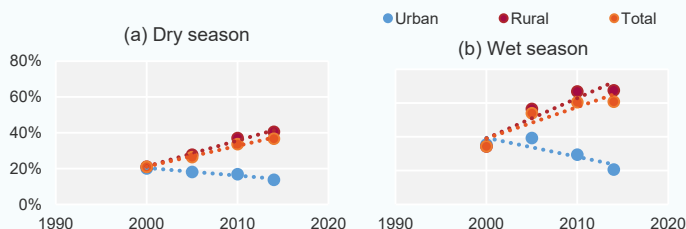


Fig. 3 – % of households using self-supply as main drinking water source in (a) the dry and (b) wet seasons, 2000-2014

Self-supply of water in Asia and the Pacific

CAMBODIA

Country Profile

Service levels

Data limitations prevent any conclusion on the extent to which self-supply provides a safely managed water service in Cambodia. In terms of availability, private hand pumps in one district were more likely to be functional than community hand pumps (Fig. 4). In terms of quality, public tubewells in six provinces were more likely to have elevated levels of arsenic than private tubewells (Fig. 5).

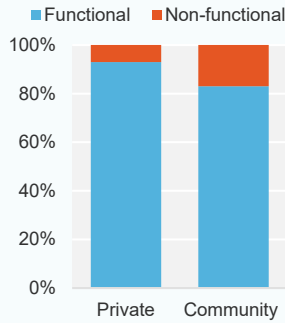


Fig. 4 – Functionality of hand pumps in Chum Kiri District

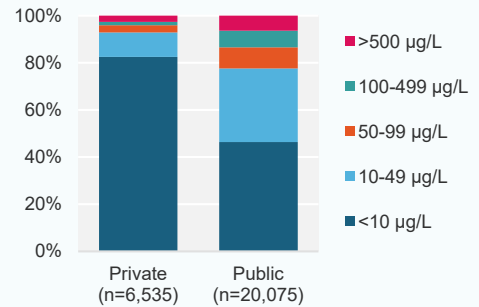


Fig. 5 – Arsenic in tubewells in six provinces

Equity of access

Households in the middle three wealth quintiles were most likely to self-supply their drinking water through protected wells and rainwater (Fig. 6). Households in the poorest quintile were also more likely to self-supply their drinking water than the households in the wealthiest quintile. Self-supply through unprotected wells was low, but it was most likely to be used among households in the poorest quintile.

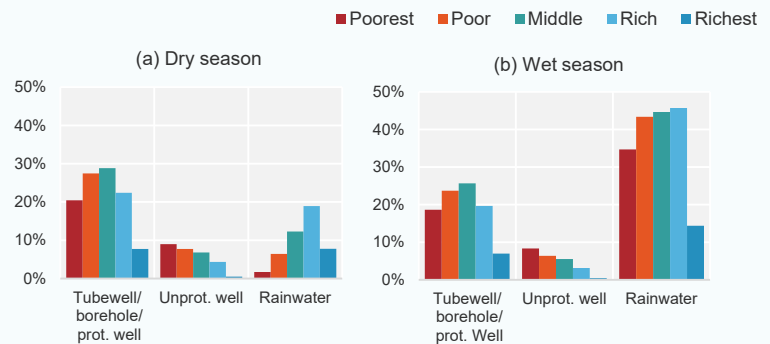


Fig. 6 – % of HHs using self-supply in (a) the dry and (b) wet seasons, by wealth quintile (2014)

National policy context

The National Action Plan for Rural Water Supply, Sanitation and Hygiene (2019–2023) implicitly supports self-supply improvements by including an indicator of “number of household rainwater harvesting systems in compliance with the Ministry of Rural Development’s rural water supply technical design and construction supervision manual”.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input checked="" type="checkbox"/>

Data sources

DHS 2000	Census 2019
DHS 2005	Cambodia WellMap
DHS 2010	SNV Waterpoint Data
DHS 2014	

For more information

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Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

FEDERATED STATES OF MICRONESIA

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in the Federated States of Micronesia (FSM) and its contribution to Sustainable Development Goal 6.



Prevalence

More than half of all households self-supply their drinking water

In 2010, 52% of the population of the FSM relied on self-supply for drinking water (Fig. 1), equivalent to ~53,700 people. Household rainwater tanks (RWTs) were the most common form of self-supply (43%), followed by protected wells (7.1%) and unprotected wells (2%). Almost all self-supply sources (96%) were considered to be improved

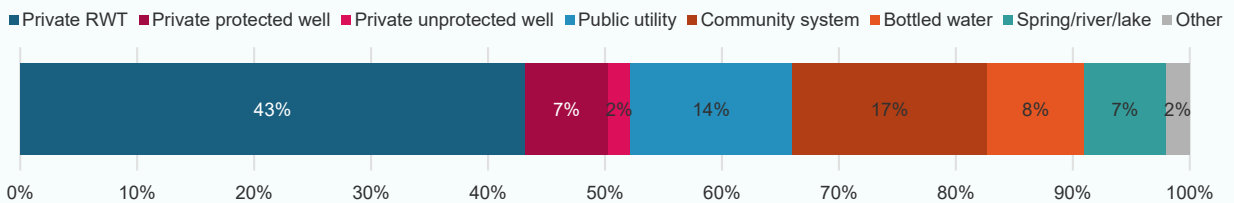


Fig. 1 – Main drinking water source, 2010

Geographical distribution

Of the four states in FSM, Chuuk State had the largest proportion of households using self-supply, and Pohnpei State the least (Fig. 2). In all States, except for Pohnpei State, rainwater was the most common source of self-supply. Private protected wells were most common in Pohnpei State.

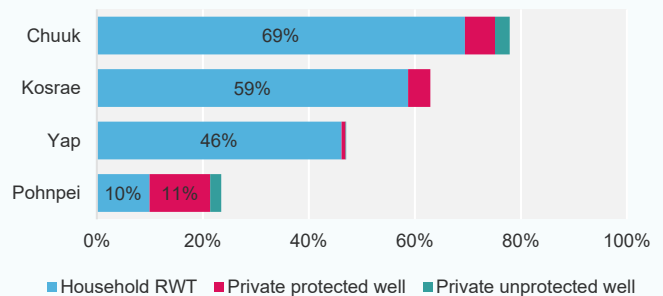


Fig. 2 – % HHs using self-supply as main source of drinking water by state, 2010

Temporal trends

Between 1980 and 2010, dependence on self-supply in FSM remained relatively stable (Fig. 3). In this period, reliance on private RWTs as the main source of drinking water increased steadily until 2000, but a more recently decline is evident. Reliance on private wells has shown a slight negative trend over a thirty-year period.

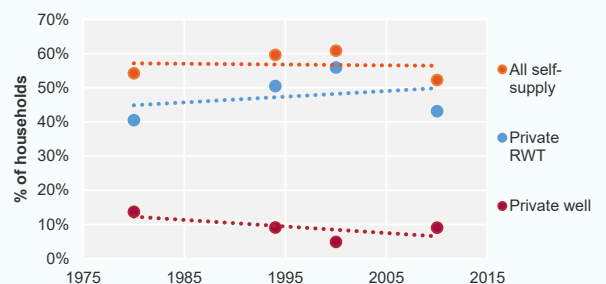


Fig. 3 – % HHs using self-supply as main source of drinking water, 1980-2010

Service levels

Data on availability and quality of self-supplied water services are lacking. Hence the extent to which self-supply provides a safely managed water service in FSM is unknown.

Other domestic uses

The extent to which water was self-supplied for other non-drinking purposes such as washing varied by source. Water from private RWTs was mostly used for drinking, while water from private wells (both protected and unprotected) was more commonly used for washing (Fig. 4). This suggests that the proportion of households self-supplying their water for drinking or other purposes in 2010 was around 69%.

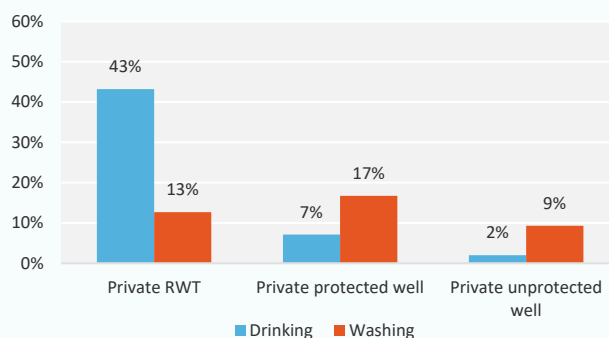


Fig. 4 – % HHs using self-supply sources for drinking vs washing, 2010

National policy context

The role of self-supply in FSM is acknowledged by the country's Framework National Water and Sanitation Policy, which notes that "[o]n the outer islands, there are no piped water systems and the residents rely exclusively on individual rainwater catchments and dug wells. The standard of construction and maintenance of these facilities varies considerably..." . There does not appear to be any clear policy or strategy to support self-supply, or specific construction standards or guidelines for self-supply systems.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Data sources

2010 Census of Housing and Population
 2000 Census of Housing and Population
 1994 Census of Housing and Population
 1980 Census of Housing and Population

For more information

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Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

FIJI

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Fiji and its contribution to Sustainable Development Goal 6.



Prevalence

Around 4% of households rely on private rainwater tanks for drinking water

In 2017, 3.6% of the population of Fiji relied on private rainwater tanks for drinking water, equivalent to ~32,400 people. Dependence was higher in rural areas than in urban areas (7.8% vs 0.4%, Fig. 1). While 5.6% of the population sourced their drinking water from a dug well or borehole, it is unclear what proportion constituted self-supply.

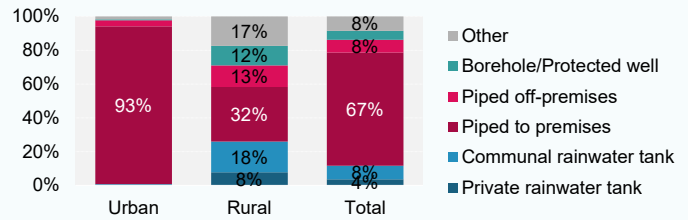


Fig. 1 – Main drinking water source, 2017

Geographical distribution

In 2017, self-supply was most common in Macuata province, where 13% of households (and 45% of rural households) sourced drinking water from their own rainwater tank (Fig. 2).

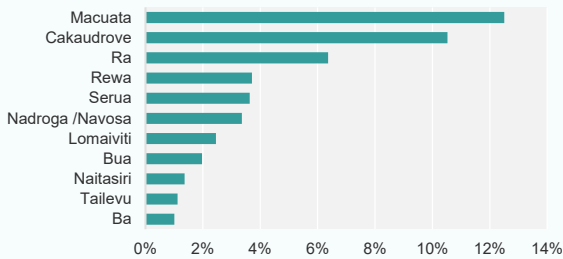


Fig. 2 – % HHs using private RWTs as main source of drinking water, 2017

Other domestic uses

Private rainwater tanks also supply water for other domestic purposes (e.g., cooking and personal hygiene), though a small proportion of households reserve this water just for drinking (Fig. 3).

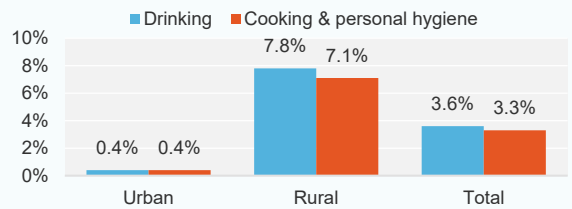


Fig. 3 – % HHs using private RWTs for drinking vs cooking & hygiene, 2017

National policy context

Since 2016, the Government of Fiji has funded a subsidy scheme for households to obtain a private rainwater tank. The scheme is administered by the Water Authority of Fiji. The Water Carting and Rainwater Harvesting Guidelines outline how the subsidy scheme is to be administered, including application process and construction standards.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input checked="" type="checkbox"/>

Data sources

2017 Population and Housing Census

For more information

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Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

INDIA

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in India and its contribution to Sustainable Development Goal 6.



Prevalence

More than a quarter of all households self-supply their drinking water

In 2019-2021, 29% of the population of India relied on self-supply for drinking water (Fig. 1), equivalent to ~403 million people. Dependence on self-supply in rural areas was double that of urban areas (35% vs 17%). Tubewells were the dominant form of self-supply (used by 25% of the population). Around 96% of self-supply systems were considered to be 'improved' sources.

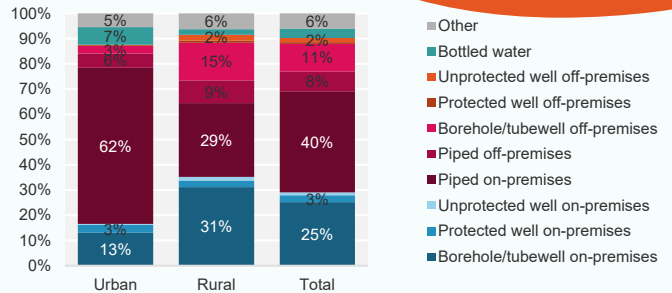


Fig. 1 – Main drinking water source (2019-21)

Geographical distribution

Self-supply was most prevalent in the states of Bihar, Assam, Lakshadweep, Uttar Pradesh and Kerala, where more than half the population self-supplied their drinking water (Fig. 2). In the majority of states, tubewells were the most common source of self-supply, though notable exceptions were Lakshadweep and Kerala, where protected wells were more common.

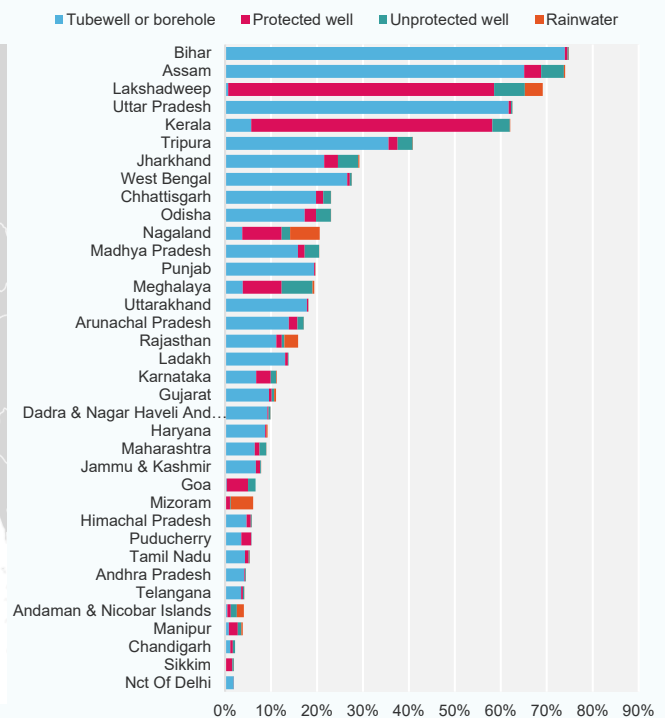
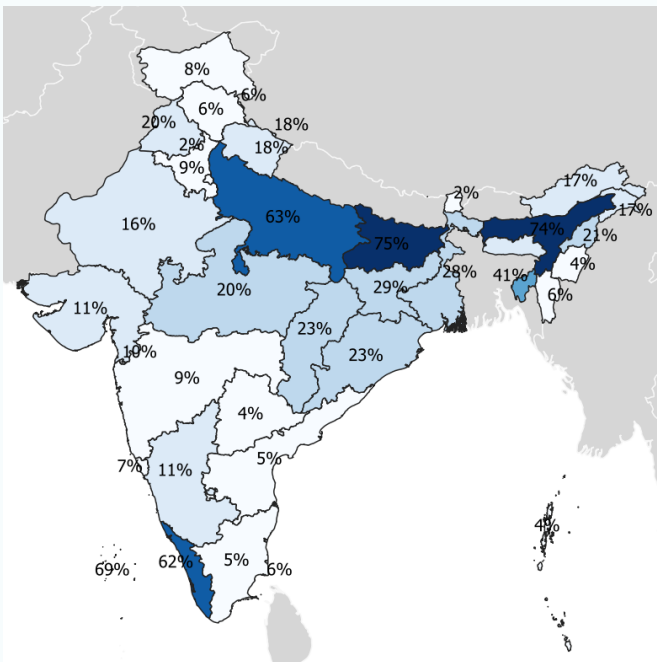


Fig. 2 – % HHs using self-supply as main drinking water source by state (2019-21)

Self-supply of water in Asia and the Pacific

INDIA

Country Profile

Temporal trends

Between 1992 and 2015, there was a steady increase in reliance on self-supply for drinking water from 21% to 29%. Much of this was driven by the growth of self-supply in rural areas (from 23% to 33%), with self-supply in urban areas remaining relatively static (Fig. 3).

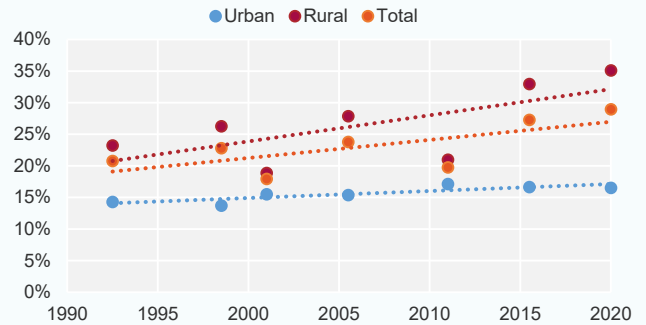


Fig. 3 – % of households using self-supply for drinking water 1992-2020

Service levels

Data on availability and quality of self-supplied water services are lacking. Hence the extent to which self-supply provides a safely managed water service in India is unknown.

Equity of access

In India, reliance on different sources for self-supply varied by level of wealth (Fig. 4). Tubewells and boreholes were most common among the households in the poorest wealth quintiles. Use of protected wells was relatively low, however users were more likely to be households in the richest wealth quintile. Use of unprotected wells was rare, and the users were more likely to be households in the lowest wealth quintiles.

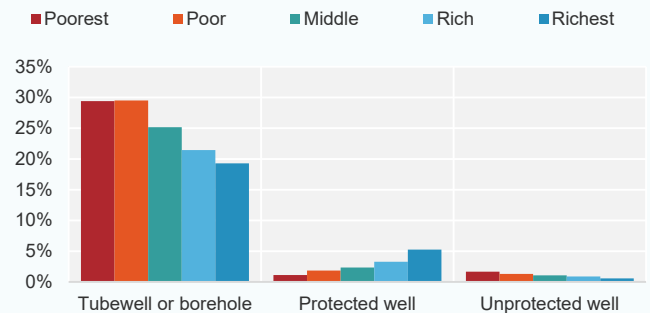


Fig. 4 – % of HHs using different types of self-supply water sources by wealth quintile

National policy context

There appears to be no recognition, support, or standards for self-supply systems in India.

Recognition	Is self-supply mentioned in policy documents?	✘
Support	Is there a policy or plan to support self-supply?	✘
Water quality standards	Are there water quality standards for self-supply?	✘
Construction standards	Are there construction standards or guidelines for self-supply systems?	✘

Data sources

Census 2001
DHS 2005-06
Census 2011
DHS 2015-16
DHS 2019-21

For more information

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Self-supply of water in Asia and the Pacific

INDONESIA

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Indonesia and its contribution to Sustainable Development Goal 6.



Prevalence

A third of households self-supply their drinking water

In 2017, 33% of the population of Indonesia relied on self-supply for drinking water (Fig. 1), equivalent to ~86.6 million people. Dependence was higher in rural areas than in urban areas (37% vs 28%). Around 83% of self-supply is in the form of boreholes and protected dug wells, and 90% of self-supply systems are 'improved' sources. Self-supply accounts for 68% of all on-premises water sources.

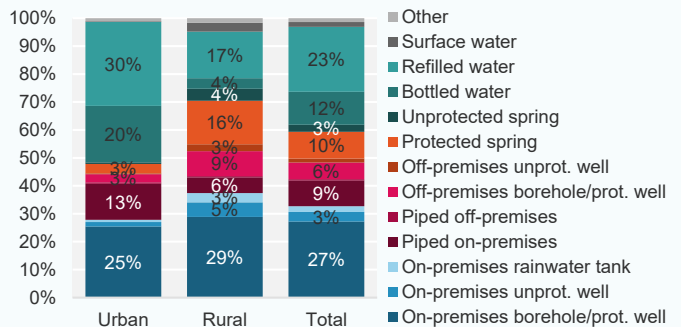


Fig. 1 – Main drinking water source (2017)

Geographical distribution

Reliance on self-supply is highest in the provinces of Lampung, Yogyakarta, Jambi, and Bengkulu, all of which have more than half of their population self-supplying their drinking water. Self-supply in most provinces is dominated by groundwater sources, with the notable exceptions of Papua, West Kalimantan and North Kalimantan, where rainwater collection is the most common form of self-supply (Fig. 2).

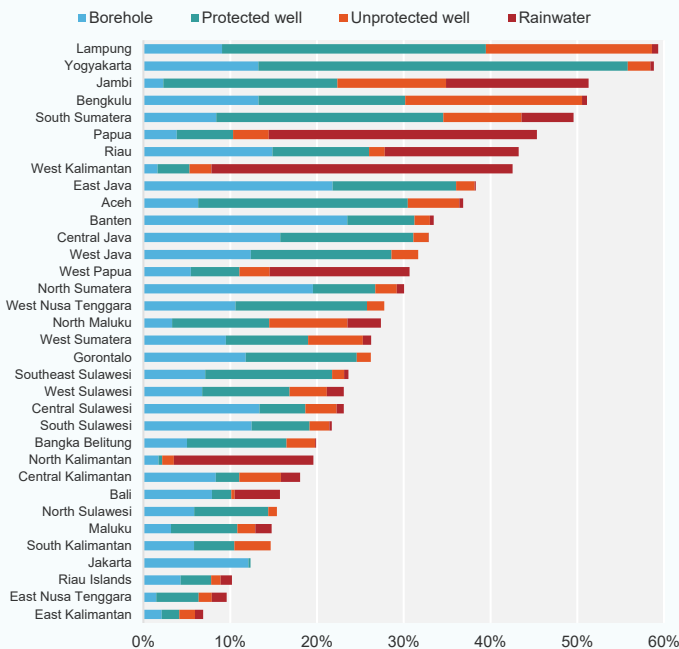
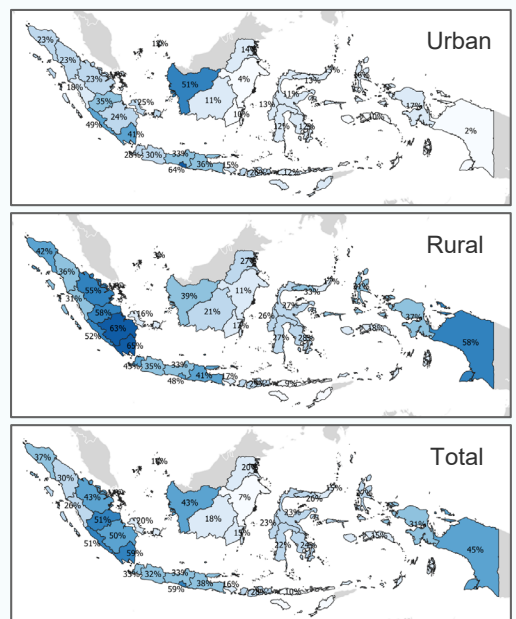


Fig. 2 – % HHs using self-supply as main drinking water source by province (2017)



Self-supply of water in Asia and the Pacific

INDONESIA

Country Profile

Temporal trends

Dependence on self-supply in both urban and rural areas peaked in around 2002 with 50% of households in both settings self-supplying their drinking water (Fig. 3). The period between 2012 and 2017 saw a marked decrease in both urban and rural settings.

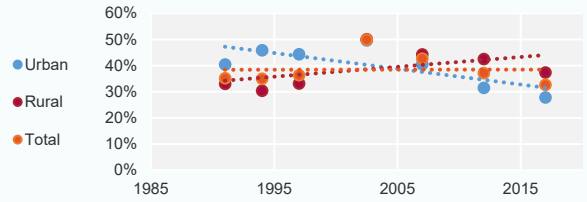


Fig. 3 – % of households using self-supply for drinking water (1991-2017)

Service levels

Data limitations prevent any conclusion on the extent to which self-supply provides a safely managed water service in Indonesia. In terms of availability, private boreholes provided a more reliable service than piped services (Fig. 4). More than half of all private wells and boreholes were located within 10 metres of a septic tank (Fig. 5).

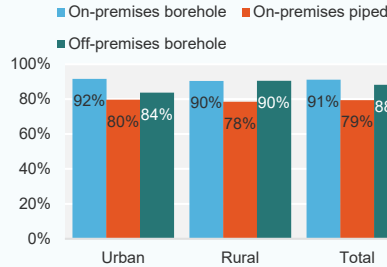


Fig. 4 – % of HHs water always available in the last 2 weeks (2017)

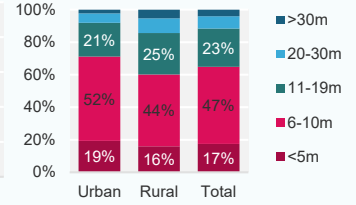


Fig. 5 – Distance between groundwater self-supply and nearest septic tank (2017)

Equity

Use of different self-supply sources varied by level of wealth (Fig. 6). Unprotected wells and rainwater were more likely to be used by the poorest households. Boreholes were more likely to be used by the middle and wealthier quintiles, while protected wells were more likely to be used by the middle and poorer quintiles.

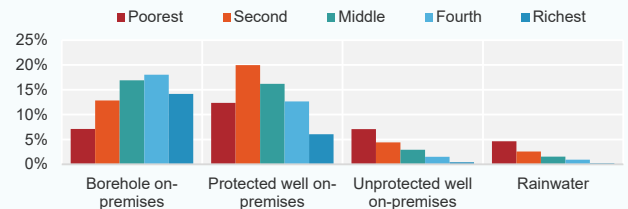


Fig. 6 – % of HHs using self-supply sources by wealth quintile (2017)

Other domestic uses

When considering households that self-supply water for other domestic purposes but use packaged water for drinking (e.g., bottled, refill), the percentage of self-supplying households increases to 53%. The increase is largest in urban areas, with the number of self-supplying households roughly doubling to 57% (Fig. 7).

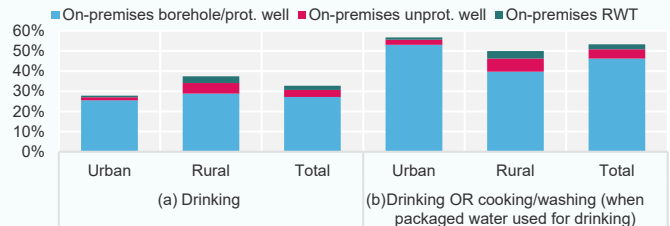


Fig. 7 – % of HHs using self-supply for (a) drinking, and (b) drinking or cooking/washing when bottled water used for drinking (2017)

National policy context

Recognition	Is self-supply mentioned in policy documents?	✘
Support	Is there a policy or plan to support self-supply?	✘
Water quality standards	Are there water quality standards for self-supply?	✘
Construction standards	Are there construction standards or guidelines for self-supply systems?	✔

Data sources

DHS 1991 DHS 1997 DHS 2007 DHS 2017
DHS 1994 DHS 2003-04 DHS 2012

For more information

Visit <https://waterforwomen.uts.edu.au/water-services/>
Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

KIRIBATI

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Kiribati and its contribution to Sustainable Development Goal 6.



Prevalence

2 in 5 households self-supply their drinking water

In 2018-19, 42% of the population of Kiribati relied on self-supply for drinking water (Fig. 1), equivalent to ~48,600 people. Dependence was higher in rural than in urban areas (39% vs 33%). The majority of households self-supplying their drinking water depended on groundwater sources: 23%, compared with 18% using private rainwater tanks (RWT). Two-thirds of self-supply systems are considered improved sources. Self-supply accounts for 60% of all on-premises water sources. In 2010, 1.7% of households owned a solar water pump; 11.9% owned a manual water pump, 5.8% owned an electric pump, and in 2020, 41.1% owned at least one water storage tank.

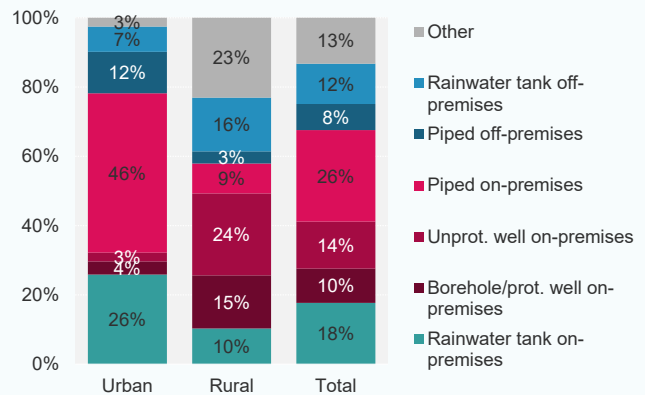


Fig. 1 – Main drinking water source (2018-2019)

Geographical distribution

The Northern Gilbert Islands and the Line and Phoenix Group had the largest proportion of households using self-supply, and South Tarawa the least (Fig. 2). Rainwater collection was the most common form of self-supply in South Tarawa, while in the rest of the country unprotected dug wells were the most common.

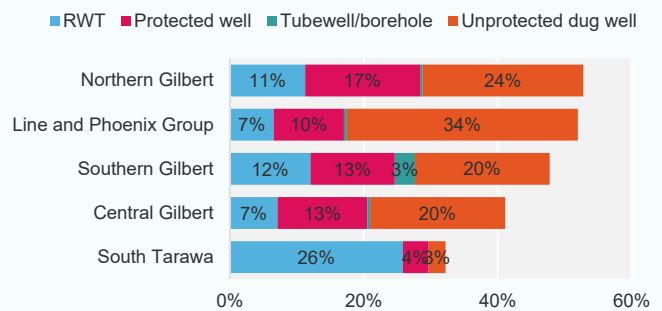


Fig. 2 – % HHs using self-supply as main source of drinking water by district/island group (2018-2019)

Temporal trends

Dependence on self-supply through on-premises wells appears to have increased between 2006 and 2018, while dependence through on-premises RWTs appears to have decreased between 2018 and 2020 (Fig. 3). This is despite an increase in tank ownership between 2015-2020.

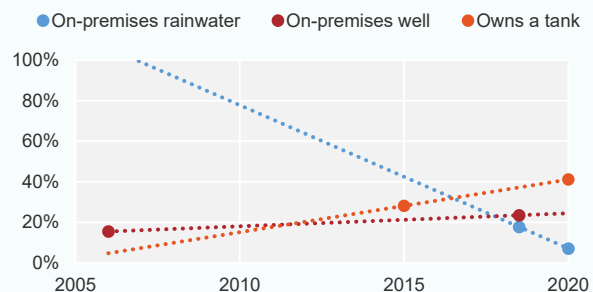


Fig. 3 – % HHs using using on-premises RWTs and wells as the main drinking water source, and % HHs that own a tank (2006-2020)

Self-supply of water in Asia and the Pacific

KIRIBATI

Country Profile

Service levels

Improved self-supply sources were less likely to provide safely managed water than water piped to the premises (5% vs 7%). In terms of water availability, self-supply outperformed other source types (Fig. 4a), and private rainwater tanks also outperformed piped supplies. Conversely, water quality from self-supply sources is poor, with only 4-5% of sources being free from E. coli (Fig. 4b).

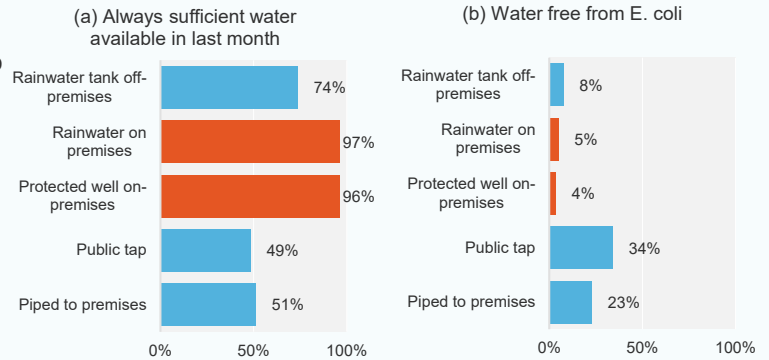


Fig. 4 – % of households with water that is (a) always available, and (b) free from E. coli (2018-19)

Equity

Private rainwater tanks were more likely to be used by wealthier households, with more than half of those in the top wealth quintile using this form of self-supply for drinking (Fig. 5a). Conversely, self-supplied groundwater tends to be used more by poorer households. There is no clear relationships between wealth status and availability of water from a self-supply source (Fig. 5b).

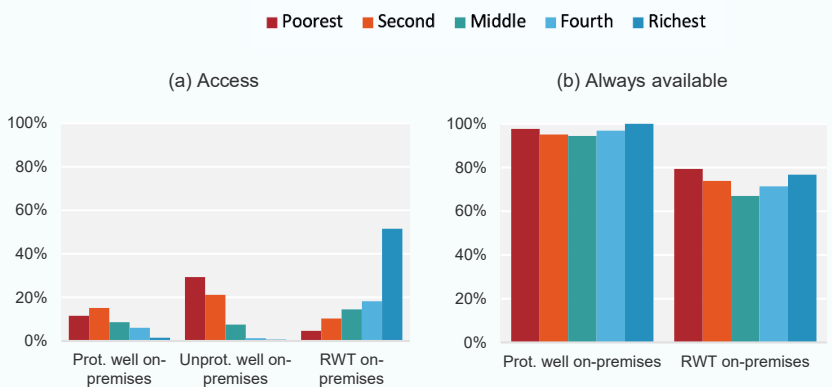


Fig. 5a – % of HHs using self-supply for drinking water, by wealth quintile

Fig. 5b – % of self-supplying households with water always available, by wealth quintile

National policy context

Kiribati's National Water Resources Implementation Plan acknowledges the role and risks of self-supply. The plan outlines the need for "mechanisms to assist in the development of household rainwater tanks" and recognises that "domestic water wells are widely used to supplement water supplies. The safety of these wells needs to be examined in some areas."

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Data sources

2006 Household Income and Expenditure Survey
 2015 Population and Housing Census
 2018-2019 MICS – Social Development Indicators Survey
 2020 Population and Housing Census

For more information

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 Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

LAO PDR

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Lao PDR and its contribution to Sustainable Development Goal 6.



Prevalence

1 in 6 households self-supply their drinking water

In 2017, 15.8% of the population of Lao PDR relied on self-supply for drinking water (Fig. 1), equivalent to ~1.1 million people. Dependence was higher in rural areas than in urban areas (20.4% vs 5.9%). Self-supply was most commonly in the form of groundwater sources (11.5% vs 4.3% using on-premises rainwater tanks). Around 84% of self-supply systems were improved sources. Self-supply accounted for 64% of all on-premises water sources.

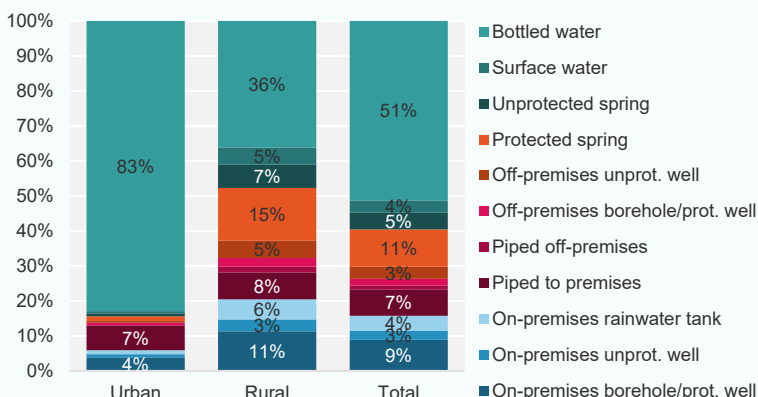


Fig. 1 – Main drinking water source, 2017

Geographical distribution

Saravane Province had the highest proportion of households relying on self-supply (47%), followed by Attapeu and Champasack with 38% and 34% respectively (Fig. 2). In 12 of the provinces and in the prefecture of Vientiane, less than 20% of households relied on self-supply. Households in all of the provinces used a diversity of sources for self-supply.

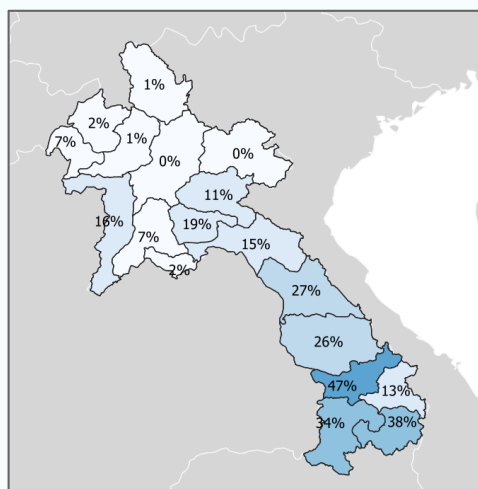
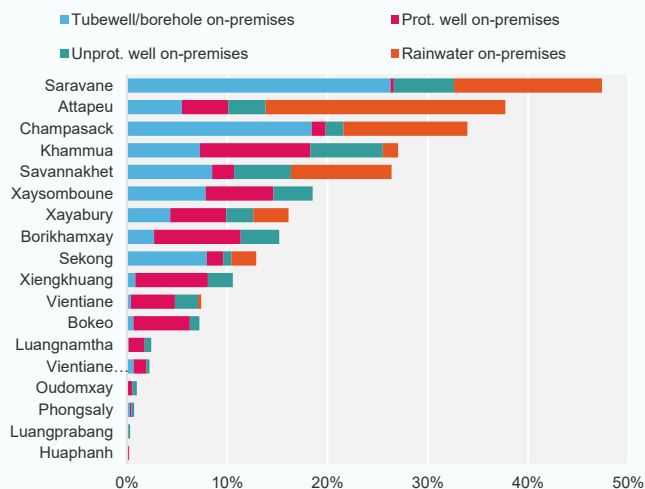


Fig. 2 – % HHs using self-supply as main drinking water source by province, 2017

Self-supply of water in Asia and the Pacific

LAO PDR

Country Profile

Temporal trends

In the period between 2000-2017, dependence on self-supply for drinking water increased, mainly driven by a steep increase in rural areas (Fig. 3). Conversely, in urban areas dependence on self-supply decreased during this period.

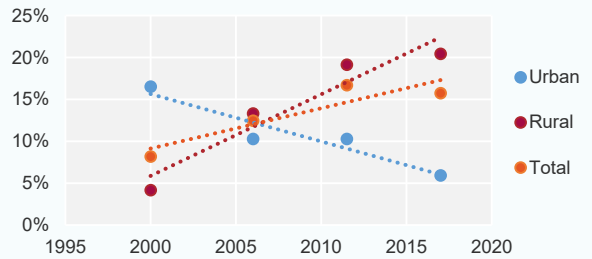


Fig. 3 – % of households using self-supply for drinking water, 2000-2017

Service levels

Improved self-supply sources were less likely to provide safely managed water than water piped to the premises in Lao PDR (11-14% vs 31%). While self-supply outperformed piped supply in terms of availability (98-99% vs 91%), E. coli was more likely to be present in self-supplied water than in piped water.

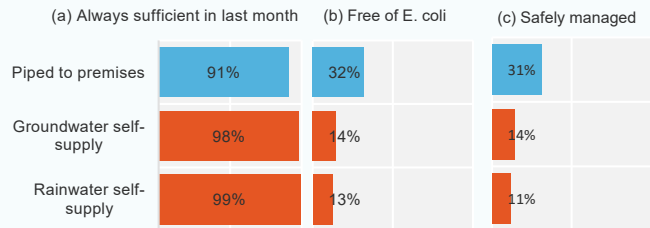


Fig. 4 – % of HHs with water that is (a) always available, (b) free from E. coli, and (c) safely managed (free from e. coli and safely managed), 2017

Equity

The wealthiest households were the least likely to rely on self-supply from any source (Fig. 5). Tubewells, rainwater, and protected wells were more likely to be used by households in the second and middle wealth quintiles, while unprotected wells were more likely to be used by the households in the poorest and second wealth quintiles.

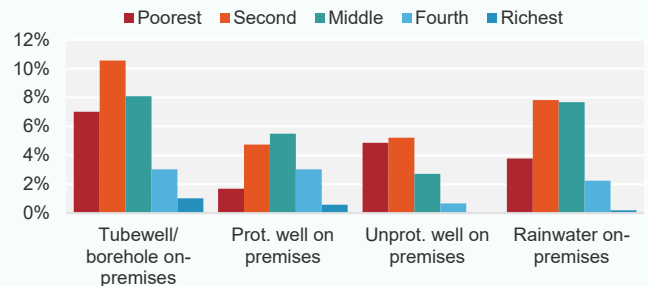


Fig. 5 – % of HHs using self-supply sources by wealth quintile, 2017

Other domestic uses

When considering households using bottled water for drinking but self-supply for other domestic uses, the percentage of households using self-supply increases from 16% to 39% (Fig. 6).

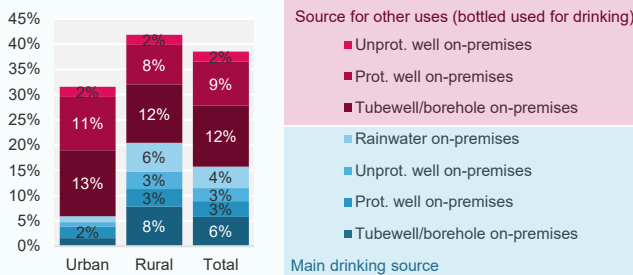


Fig. 6 – % of HHs using self-supply for drinking and other uses, 2017

Data sources

MICS 2000
MICS 2006

MICS 2011-2012
MICS 2017

For more information

Visit <https://waterforwomen.uts.edu.au/water-services/>

Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

MALDIVES

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in the Maldives and its contribution to Sustainable Development Goal 6.



Prevalence

Almost half of all households self-supply their drinking water

In 2016-17, 45% of the population of the Maldives relied on self-supply for drinking water (Fig. 1), equivalent to ~213,000 people. Use of self-supply was almost exclusively in rural areas (73% in rural areas vs 0% in urban areas). Almost all self-supply was in the form of rainwater collection systems. Self-supply accounted for 52% of all on-premises water sources.

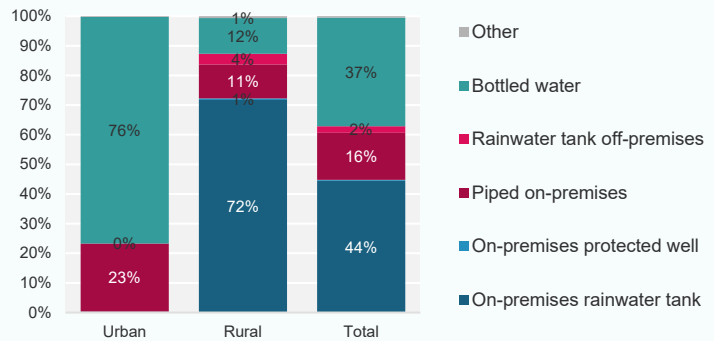


Fig. 1 – Main drinking water source (2016-17)

Geographical distribution

Except for Malé, self-supply was common in all the regions of the Maldives (Fig. 2). Reliance on self-supply ranged from 81% in the North region, to 62% in the South region, while in Malé self-supply was negligible. Across all the regions, rainwater was the predominant form of self-supply, with only 1% of protected wells present only in the North and South regions.

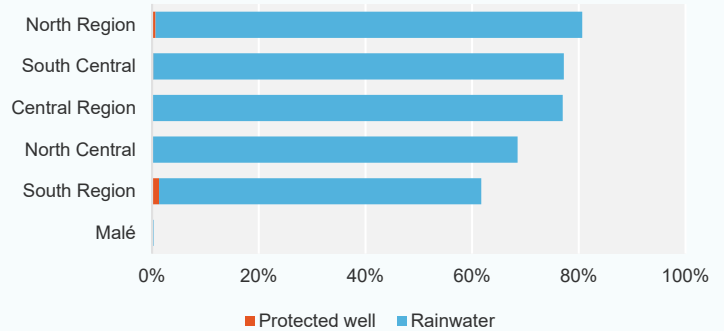


Fig. 2 – % HHs using self-supply as main source of drinking water by region

Temporal trends

In the period between 2001 and 2017, overall dependence on self-supply for drinking water declined slightly, mainly driven by a sharp decline in urban areas (Fig. 3). The use of self-supply seems to have peaked around 2009, driven by a spike in rural areas.

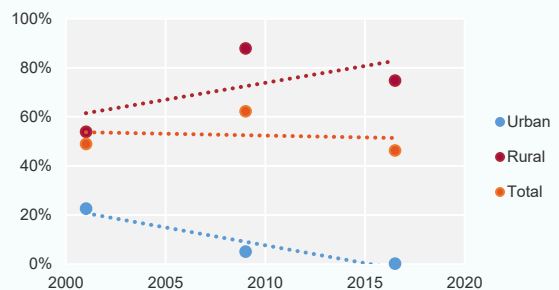


Fig. 3 – % of households using self-supply as main drinking water source

Self-supply of water in Asia and the Pacific

MALDIVES

Country Profile

Service levels

Data on availability and quality of self-supplied water services are lacking. Hence the extent to which self-supply provides a safely managed water service in the Maldives is unknown.

Equity of access

The wealthiest households were the least likely to rely on self-supply (Fig. 4). Rainwater tanks on-premises were more likely to be used by households in the poorest wealth quintiles, and the likelihood declined as wealth increases.

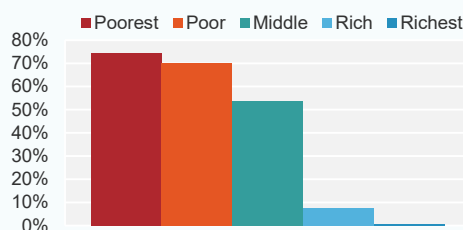


Fig. 4 – % of HHs using self-supply (rainwater), by wealth quintile

Other domestic uses

When considering households using bottled water for drinking but self-supply for other domestic uses, the percentage of households using self-supply increases from 75% to 83% in rural areas, but there is only a 1% increase in urban areas (Fig. 5).

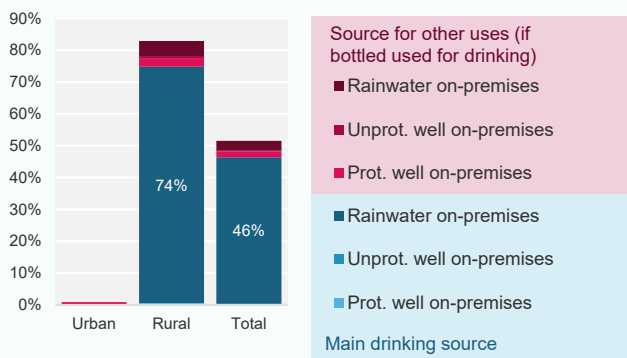


Fig. 5 – % of HHs using self-supply for drinking and other uses

Data sources

DHS 2001
DHS 2009
DHS 2016-17
DHS 2016-17
DHS 2016-17

For more information

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Contact Tim.Foster@uts.edu.au

National policy context

The National Water and Sewerage Strategic Plan (2020-2025) included recognition that “*Many communities in the outer islands of the Maldives heavily rely on rooftop harvested rainwater for potable needs.*” This recognition of self-supply is also reflected in the National Water and Sewerage Policy, which states that “*enhancing rainwater harvesting and storage capacity is regarded as a key element to ensure island self-sufficiency to achieve water security.*”

The preponderance of self-supply in the Maldives can probably be traced back to the response to the 2004 tsunami, where every household was provided with a 2500L high-density polyethylene rainwater tank.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Self-supply of water in Asia and the Pacific

MONGOLIA

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Mongolia and its contribution to Sustainable Development Goal 6.



Prevalence

Only 4% of households self-supply their drinking water

In 2018, only 3.9% of the population of Mongolia relied on self-supply for drinking water (Fig. 1), equivalent to approximately 122,000 people. Dependence was higher in rural areas than in urban areas (6.9% vs 2.4%). Around 89% of households self-supplying their drinking water depended on boreholes and protected dug wells, with 90% of self-supply systems considered to be 'improved' sources. Self-supply accounted for 12% of all on-premises water sources.

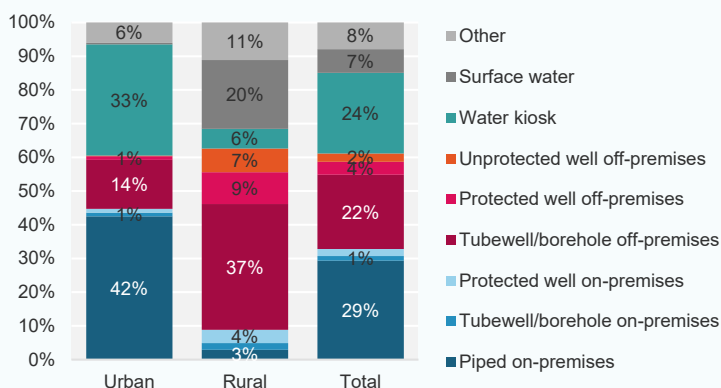


Fig. 1 – Main drinking water source (2018)

Geographical distribution

The Western region of Mongolia had the highest proportion of households relying on self-supply for drinking water (14%), followed by the Central region (7%, Fig. 2). Self-supply was uncommon in the Eastern region (4%), the Khangai (3%), and in the capital Ulaanbaatar (1%).

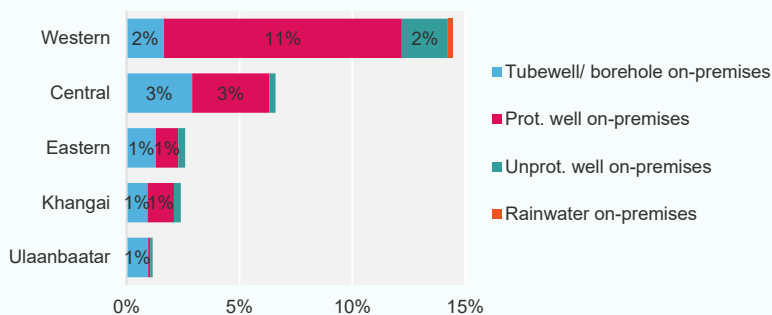


Fig. 2 – % HHs using self-supply as main source of drinking water by region, 2018

Temporal trends

Although reliance on self-supply for drinking water is relatively low in Mongolia, in the period between 2000 and 2018 there was an increase in households using self-supply as the main drinking water source (Fig. 3). This increase occurred in both rural and urban areas, though it was more marked in rural areas.

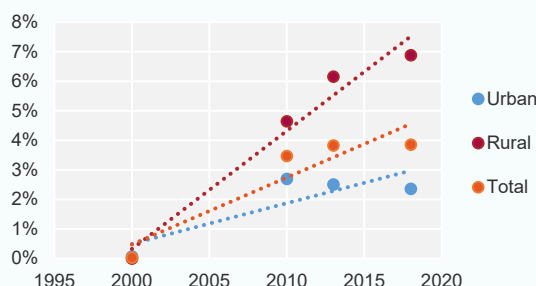


Fig. 3 – % of households using self-supply as main drinking water source

Self-supply of water in Asia and the Pacific

MONGOLIA

Country Profile

Service levels

In terms of availability, protected wells that are on-premises outperformed all other water sources including piped water (Fig. 4a). Related to water quality, while water quality from self-supply sources was not as good as water from kiosks or water piped to premises, it was better than off-premises groundwater (Fig. 4b).

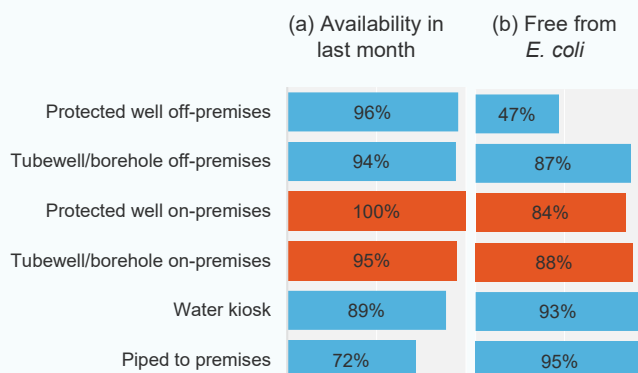


Fig. 4 – % of households with water that is (a) always available, and (b) free from *E. coli* (2018)

Equity of access

Self-supply is almost non-existent among the richest households in Mongolia (Fig. 5). Tubewells/boreholes are more likely to be used by the middle three quintiles, while protected wells are more likely to be used by the middle and second lowest quintiles. Although less common, unprotected wells are more likely to be used by the poorest households.

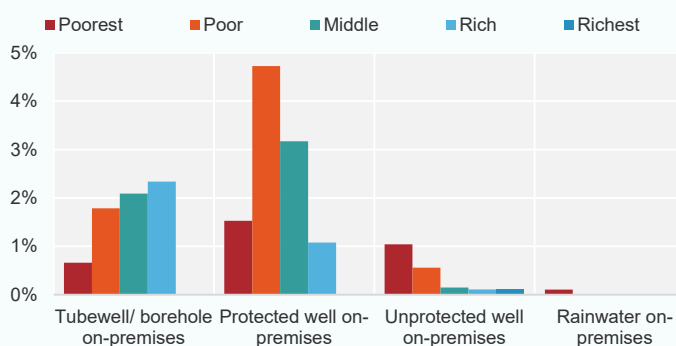


Fig. 5 – % of HHs using self-supply, by wealth quintile, 2018

National policy context

In Mongolia, there does not appear to be recognition of self-supply as a water delivery model in national policy documents, nor do there appear to be any construction or water quality standards.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input checked="" type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input checked="" type="checkbox"/>

Data sources

MICS 2018
MICS 2013

MICS 2010
MICS 20 00

For more information

Visit <https://waterforwomen.uts.edu.au/water-services/>
Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

MYANMAR

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Myanmar and its contribution to Sustainable Development Goal 6.



UNICEF

Prevalence

More than a quarter of all households rely on self-supply for drinking water

In 2019, 31% of the population of Myanmar relied on self-supply for drinking (Fig. 1), equivalent to ~16.7 million people. Dependence was higher in rural than in urban areas (36% vs 18%). Tubewells were the dominant form of self-supply (used by 20% of the population). Around 95% of self-supply systems were improved sources.

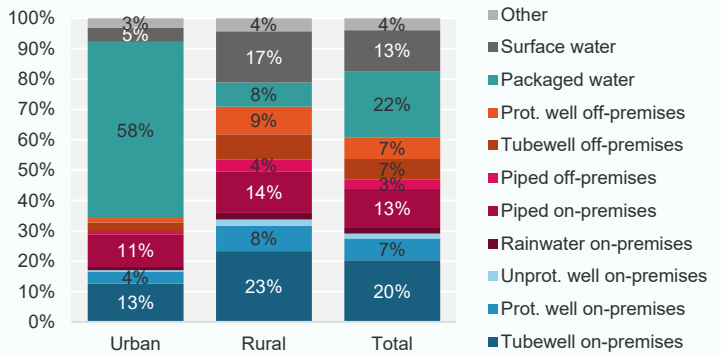


Fig. 1 – Main drinking water source, 2019

Geographical distribution

Mon, Kayin, and Kachin States had the highest proportion of households relying on self-supply for drinking water, with over 40%, while Rakhine and Chin States had the lowest, with less than 10% (Fig. 2). Protected wells were most common in Mon, Kayin, Kayah, and Taninthayi States, while tubewells were most common in Magway, Bago, Sagaing, Mandalay, and NayPyitaw.

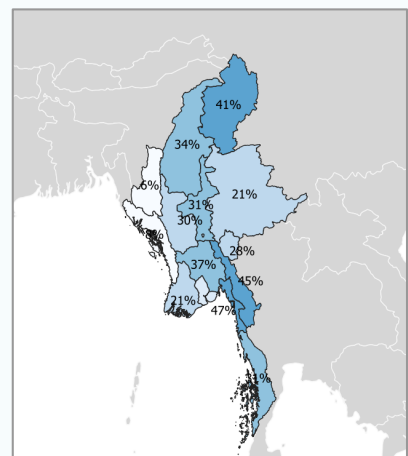
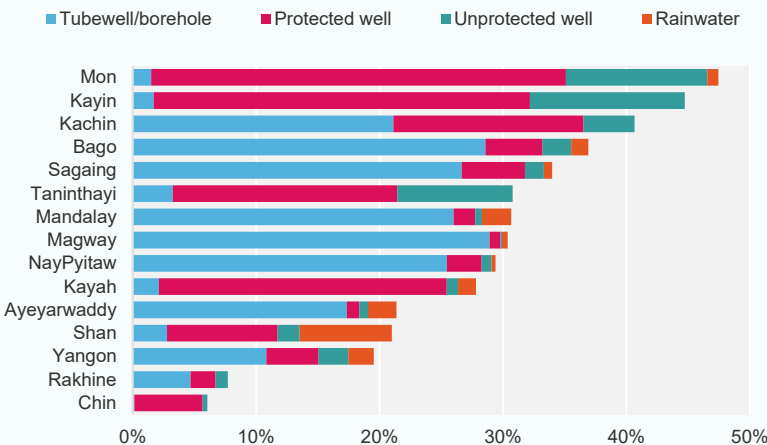


Fig. 2 – % HHs using self-supply as main drinking water source by State, 2015-16

Self-supply of water in Asia and the Pacific

MYANMAR

Country Profile

Temporal trends

In the period between 2000-2019, dependence on self-supply for drinking water increased, mainly driven by a rise in self-supply in rural areas (Fig. 3). Over the same time period, self-supply decreased among the urban population.

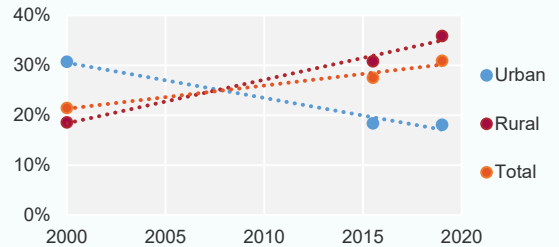


Fig. 3 – % of households using self-supply, 2000-2019

Service levels

Households with an on-premises tubewell were more likely to receive a safely managed water service (available when needed and free from *E. coli*) than households with water piped to the premises (Fig. 4). Conversely, households with on-premises rainwater tanks were less likely to receive a safely managed water service (available when needed and free from *E. coli*) compared with households with water piped to the premises.

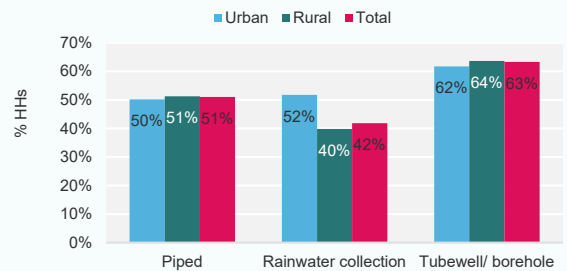


Fig. 4 – % of HHs with on-premises water sources that are free from *E. coli* and available when needed, 2019

Equity

Households in the middle and fourth wealth quintiles were most likely to self-supply their drinking water through tubewells and protected wells (Fig. 5). Self-supply through unprotected wells was low, and was more common among the lowest wealth quintiles. Self-supply through rainwater was also low, and more common among the higher wealth quintiles.

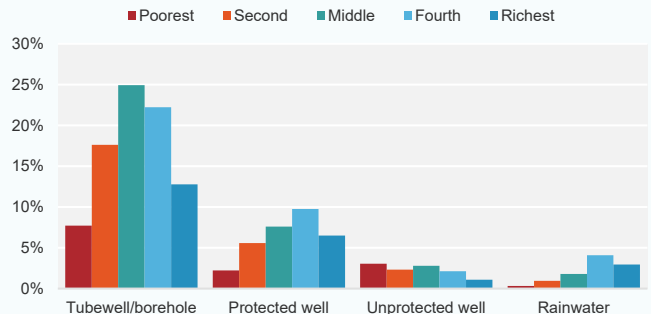


Fig. 5 – % of HHs using self-supply sources by wealth quintile, 2015-16

National policy context

Recognition	Is self-supply mentioned in policy documents?	✘
Support	Is there a policy or plan to support self-supply?	✘
Water quality standards	Are there water quality standards for self-supply?	✘
Construction standards	Are there construction standards or guidelines for self-supply systems?	✘

Data sources

MICS 2000
DHS 2015-2016
Inter-Censal Survey 2019

For more information

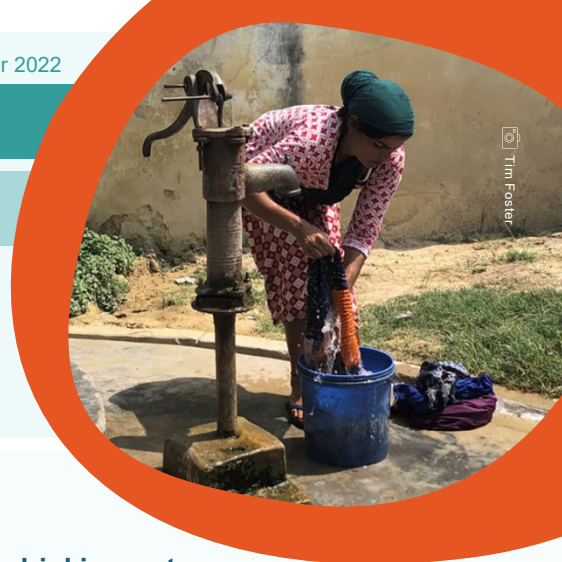
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Self-supply of water in Asia and the Pacific

NEPAL

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Nepal and its contribution to Sustainable Development Goal 6.



Prevalence

More than a quarter of households in Nepal self-supply their drinking water

In 2019, 29.4% of the population of Nepal relied on self-supply for drinking (equivalent to ~8.4 million people). Dependence was higher in urban areas than in rural areas (31.2% vs 25.7%). Tubewells were the dominant form of self-supply, used by 28.1% of the population. Around 98.8% of self-supply systems can be considered 'improved' sources. Self-supply accounts for 40.3% of all on-premises water sources (Fig. 1).

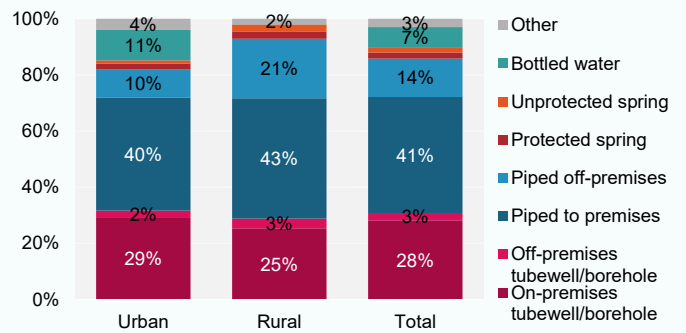


Fig. 1 – Main drinking water source, 2019

Geographical distribution

Self-supply was most common in the Terai region. More than 70% of households in Madhesh Province relied on self-supply as the main source of drinking water. Reliance on self-supply was also common in Lumbini Province, Province No. 1 and urban areas of Sudoorpaschim Province. Use of self-supply was rare in Bagmati, Gandaki, and Karnali Provinces (Fig. 2).

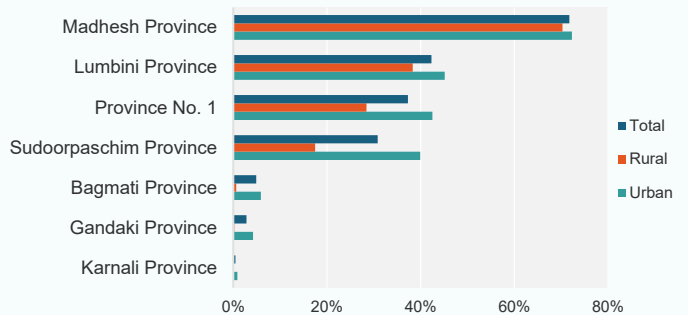


Fig. 2 – % of households using self-supply as main source of drinking water, 2019

Temporal trends

Dependence on self-supply has been increasing over recent decades. This trend has been driven by growth of self-supply in rural areas, as the proportion of households using self-supply in urban areas has remained static. However, reliance on self-supply may have peaked around 2014, with indications of a recent decline (Fig. 3).

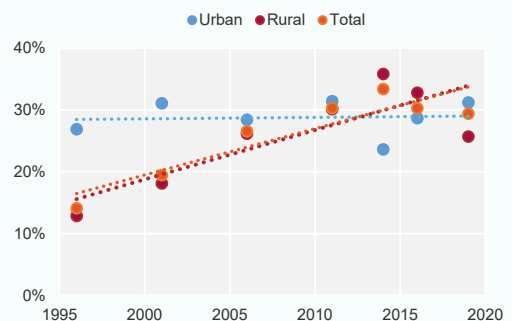


Fig. 3 – % of households using self-supply as main source of drinking water, 1995-2019

Self-supply of water in Asia and the Pacific

NEPAL

Country Profile

Service levels

In 2019, 98% of private tubewells had sufficient water available in the previous month, as opposed to 79% for piped on-premises (Fig. 4a), and 40% were free from *E. coli*, as opposed to 16% for piped on-premises (Fig. 4b) (Fig. 4). However, private tubewells were more likely to supply water with elevated arsenic ($\geq 10 \mu\text{g/L}$) compared with water piped to the premises (18% vs 2%, Fig. 4c). Compared with water piped to the premises, private tubewells were 2.8 times more likely to provide water that was both free from contamination and available when needed (33% vs 12%, Fig. 4d).

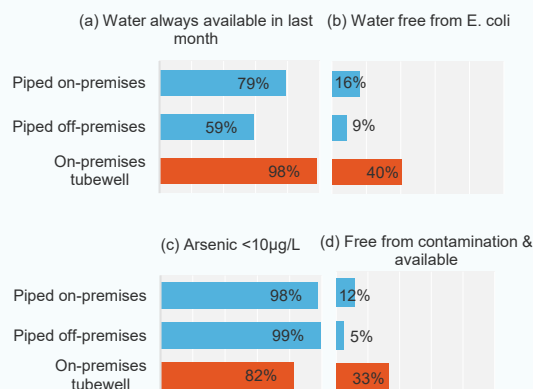


Fig. 4 – % of households with water (a) always available, (b) free from *E. coli*, (c) free from arsenic, and (d) free from contamination (no *E. coli* and Arsenic <10µg/L) and available when needed

Equity

Self-supply was most common among households in the middle income quintiles (Fig. 5a). Self-supplying households experienced high levels of water availability across the wealth spectrum (Fig. 5b), but poorer households were more likely to rely on self-supply with microbial contamination (Fig. 5c). There did not appear to be an association between wealth and elevated arsenic among self-supplying households (Fig. 5d).

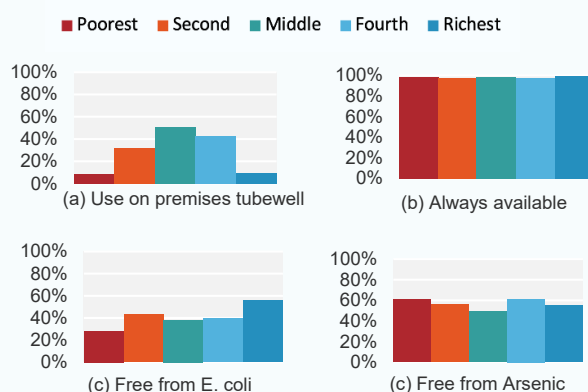


Fig. 5a – % of households using on-premises tubewell for drinking, by wealth quintile
 Fig. 5b – % of on-premises tubewell users with water always available, by wealth quintile
 Fig. 5c – % of on-premises tubewell users with water free from *E. coli*, by wealth quintile
 Fig. 5d – % of on-premises tubewell users with water free from arsenic, by wealth quintile

National policy context

There does not appear to be recognition, support, or standards for self-supply systems in Nepal.

Recognition	Is self-supply mentioned in policy documents?	✘
Support	Is there a policy or plan to support self-supply?	✘
Water quality standards	Are there water quality standards for self-supply?	✘
Construction standards	Are there construction standards or guidelines for self-supply systems?	✘

Data sources

DHS 1996	MICS 2014
DHS 2001	DHS 2016
DHS 2006	MICS 2019
DHS 2011	

For more information

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 Contact Tim.Foster@uts.edu.au

Self-supply of water in Asia and the Pacific

PAKISTAN

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Pakistan and its contribution to Sustainable Development Goal 6.



Prevalence

More than a third of all households self-supply their drinking water

In 2017-18, 42% of the population of Pakistan relied on self-supply for drinking (Fig. 1), equivalent to ~88 million people. Dependence was higher in rural areas than in urban areas (53% vs 25%). Tubewells were the dominant form of self-supply (used by 40% of the population). Around 99% of self-supply systems were 'improved' sources. Self-supply accounted for 58% of all on-premises water sources.

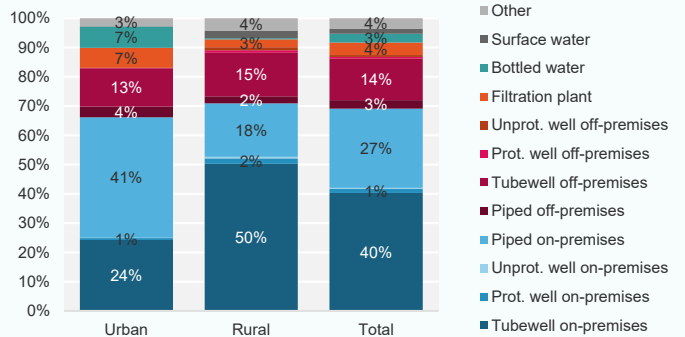


Fig. 1 – Main drinking water source, 2017-18

Geographical distribution

Self-supply was common across all provinces in Pakistan (Fig. 2). It was most common in Punjab Province, where the majority of the population used tubewells located on the premises. Even in Balochistan, where self-supply was least common, one in five households had a dug well or tubewell on the premises.

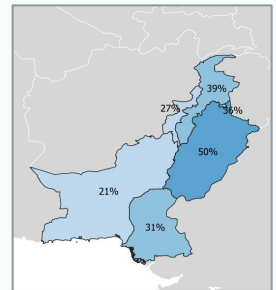
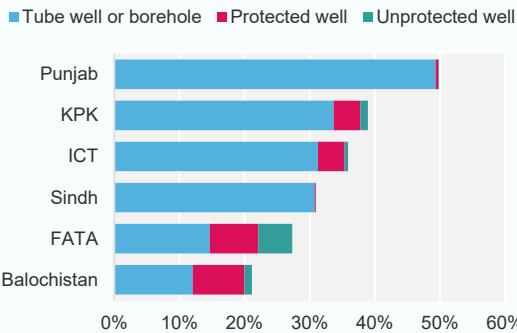


Fig. 2 – % of HHs using self-supply as main source of drinking water by administrative division

Temporal trends

Prevalence of self-supply in Pakistan has increased in both urban and rural areas since the 1990s. However, little change in rural areas is evident since 2006.

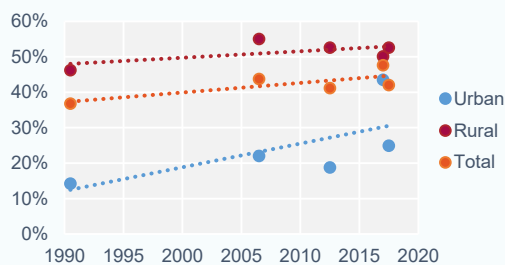


Fig. 3 – % of households using self-supply as main source of drinking water, 1990-2017

Self-supply of water in Asia and the Pacific

PAKISTAN

Country Profile

Service levels

Data from 2017-18 suggest self-supply was more likely to provide a safely managed service than piped systems or communal wells (Fig. 5). Compared with piped systems, self-supply was more likely to provide water that is free from *E. coli* in all four states where water quality data were available (Fig. 6).

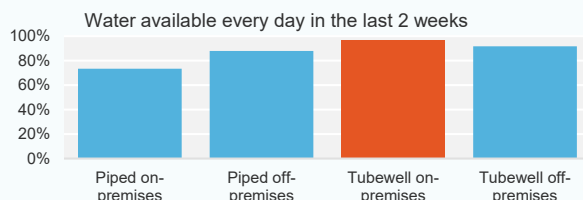


Fig. 5 – % of HHs in Pakistan with water always available every day in the last two weeks (2017-18)

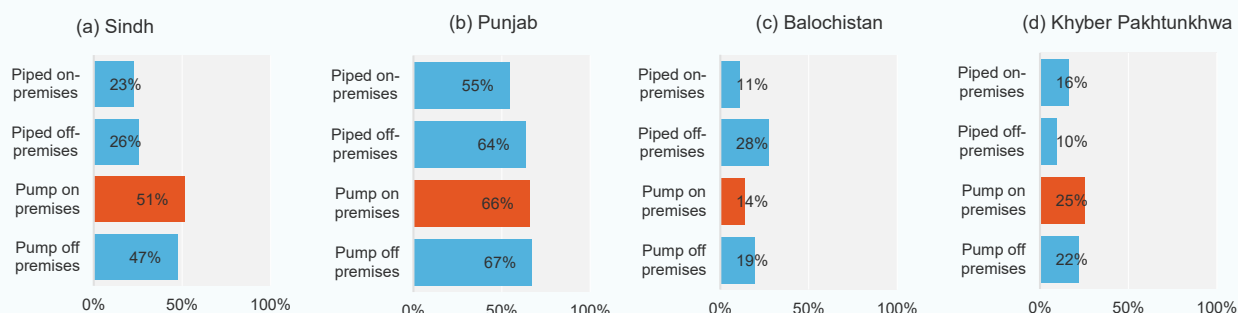


Fig. 6 – % of households with water that is free from *E. coli* in (a) Sindh, (b) Punjab, (c) Balochistan, and (d) Khyber Pakhtunkhwa

Equity of access

Use self-supply was most common amongst households in the poorest three wealth quintiles (Fig. 7). Households in the poorest quintile were twice as likely to use self-supply as households in the wealthiest quintile.

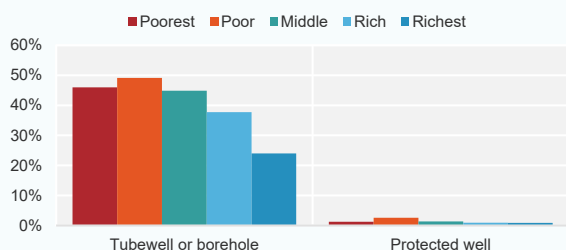


Fig. 7 – % of HHs using different types of self-supply water sources by wealth quintile, 20z17

National policy context

According to the The National Drinking Water Policy, “rainwater harvesting at household and local levels will be promoted to augment municipal water supplies”. The Policy also mentions an intention to establish water quality monitoring guidelines to ensure all public and private water supplies conform to the the required standards.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Data sources

DHS 1990-1
DHS 2006-7
DHS 2012-13
DHS 2017-18

Census 2017
MICS Sindh 2017-18
MICS Punjab 2017-18

For more information

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Self-supply of water in Asia and the Pacific

PHILIPPINES

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in the Philippines and its contribution to Sustainable Development Goal 6.



Prevalence

One in every 11 households self-supply their drinking water

In 2017, 8.5% of the population of the Philippines relied on self-supply for drinking water (Fig. 1), equivalent to approximately 8.9 million people. Dependence was higher in urban areas than in rural areas (14% vs 2%). Around 79% of households self-supplying their drinking water depended on tubewells, boreholes and dug wells, with 93% of self-supply systems considered to be 'improved' sources. Self-supply accounted for 18% of all on-premises water sources.

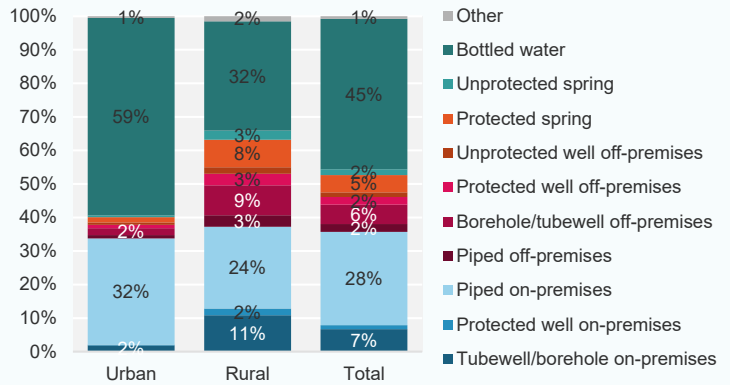


Fig. 1 – Main drinking water source, 2017

Geographical distribution

Self-supply was most common in the Cagayan Valley, Central Luzon, Ilocos, and Western Visayas regions, where more than 20% of households used self-supply as the main drinking water source (Fig. 2). Tubewells/boreholes on-premises were the most common source of self-supplied water across all the regions of the Philippines, while on-premises unprotected wells and rainwater were relatively uncommon across the country.

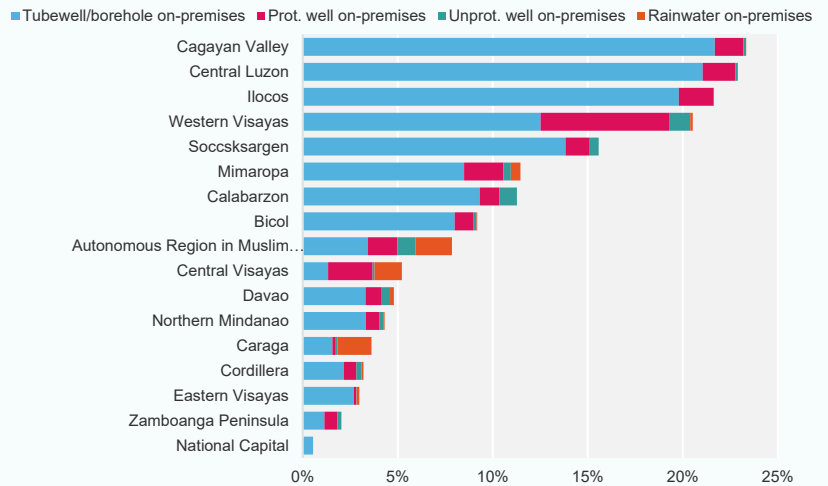


Fig. 2 – % HHs using self-supply as main source of drinking water by region

Temporal trends

In the period between 1993-2017, overall dependence on self-supply in the Philippines remained stable (Fig. 3). In urban areas, reliance on self-supply decreased, while in rural areas it increased in the 24-year period. Reliance on self-supply for drinking water may have peaked around 2008 in both urban and rural areas.

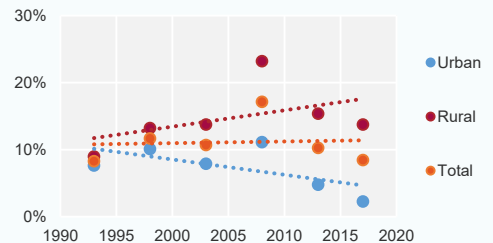


Fig. 3 – % of households using self-supply as main drinking water source

Self-supply of water in Asia and the Pacific

PHILIPPINES

Country Profile

Service levels

Data limitations prevent any conclusion on the extent to which self-supply provides a safely managed water service in the Philippines. In terms of availability, self-supply (from boreholes/tubewells on-premises) outperformed other water sources, including piped water (Fig. 4).

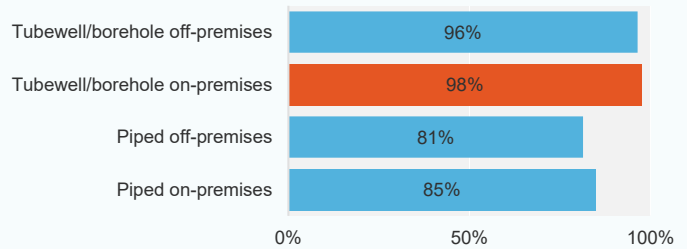


Fig. 4 – % of households with sufficient water available in the last two weeks, by type of water source, 2017

Equity of access

In the Philippines, reliance on self-supply for drinking water was most common among households in the second lowest wealth quintile (14%, Fig. 5). Self-supply was also common among the poorest households (11%) and was very rare among the richest households (only 1%).

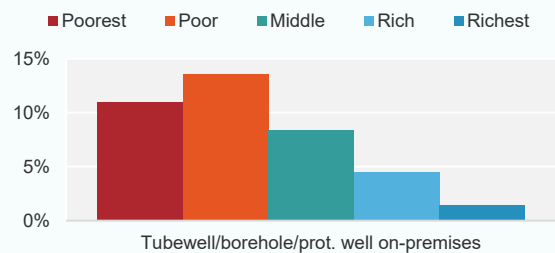


Fig. 5 – % of HHs using self-supply, by wealth quintile, 2017

Other domestic uses

When considering households using bottled water for drinking but self-supply for other domestic uses, the percentage of households using self-supply increased from 9% to 14% overall, and from 13% to 21% in rural areas (Fig. 6).

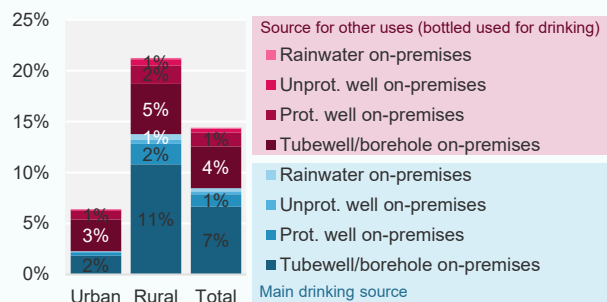


Fig. 6 – % of HHs using self-supply for drinking and other uses, 2017

National policy context

According to the Water Code of the Philippines, self-supplying households are required to register their source with the National Water Resources Board, and this might require payment of a fee. Water quality standards apply to 'Level I' supplies, a category which self-supply appears to fall into.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input checked="" type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Data sources

DHS 1993 DHS 2008
 DHS 1998 DHS 2013
 DHS 2003 DHS 2017

For more information

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Self-supply of water in Asia and the Pacific

PAPUA NEW GUINEA Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Papua New Guinea (PNG) and its contribution to Sustainable Development Goal 6.



Prevalence

1 in 7 households self-supply their drinking water

In 2016-18, 14.1% of the population of PNG relied on self-supply for drinking water (Fig. 1), equivalent to ~1.2 million people. Dependence was higher in urban areas than in rural areas (20.9% vs 13.4%). Self-supply was most commonly in the form of rainwater collection (11.1% vs 3.1% using on-premises wells). Around 86% of the self-supply systems can be considered improved sources. Self-supply accounted for 40% of all on-premises water sources.

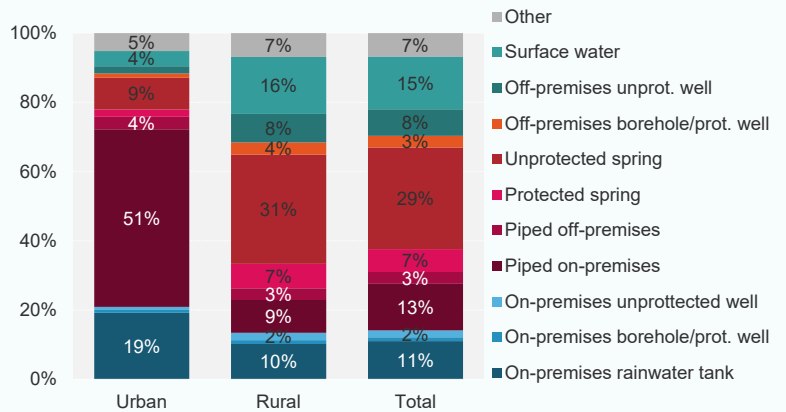


Fig. 1 – Main drinking water source, 2016-2018

Geographical distribution

Of the four regions of PNG, the Islands region had the largest proportion of households using self-supply, mostly through rainwater (Fig. 2). Rainwater was the most common source of self-supply in all the regions, ranging from 26% in the Islands region, to 8% in the Highlands. Other self-supply sources in use were tubewells/boreholes and wells.

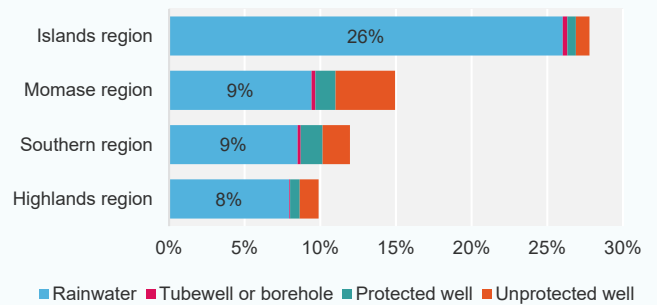


Fig. 2– % HHs using self-supply as main source of drinking water, 2016-2018

Temporal trends

Between 2006 and 2017, dependence on self-supply in PNG increased by an average of ~0.4 percentage points per year. This positive trend was observed in both urban and rural areas, though it was more prominent in urban areas (Fig. 3).

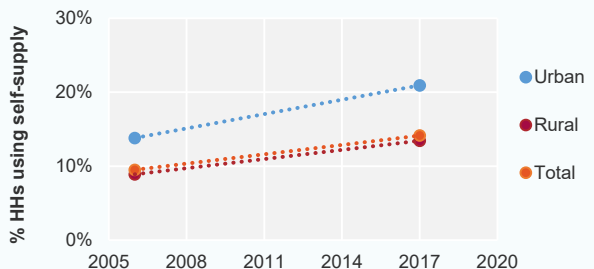


Fig. 3– % HHs using self-supply

Self-supply of water in Asia and the Pacific

PAPUA NEW GUINEA Country Profile

Service levels

Self-supply from boreholes provided a more reliable water service than piped water in 2016-18 (61% vs 56%, Fig. 4). No data on water quality from self-supply systems were available, and hence the extent to which self-supply provides a safely managed service is not known.

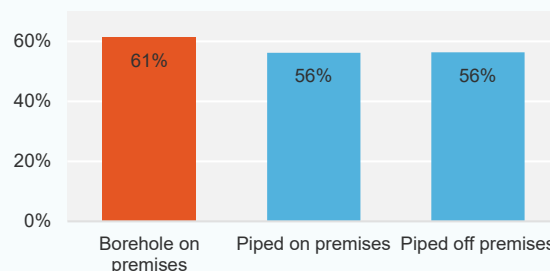


Fig. 4 – % of HHs with water available every day in the last two weeks, by type of water source

Equity

Household rainwater tanks were most common among the wealthiest households, with 29% of households in the wealthiest quintile using an on-premises rainwater tank, compared with 0.1% of households in the poorest quintile (Fig. 5). Use of unprotected wells on the premises was more concentrated amongst the poorer households, while on-premises boreholes and protected wells tended to be used by households in the middle income brackets.

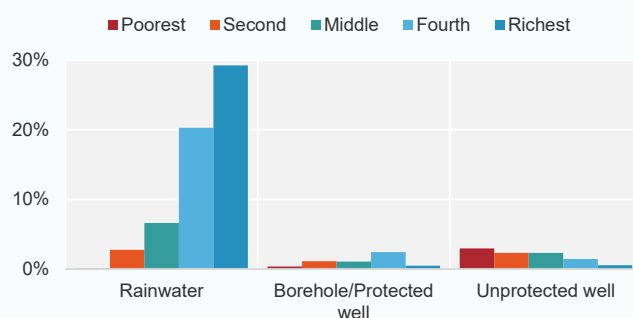


Fig. 5 – % of HHs using different types of self-supply water sources by wealth quintile

National policy context

There does not appear to be recognition of self-supply as a water delivery model in national policies, strategies, or implementation plans in PNG. Likewise, there do not appear to be any construction or water quality standards for self-supply systems.

Recognition	Is self-supply mentioned in policy documents?	<input type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Data sources

Demographic and Health Survey 2006
Demographic and Health Survey 2016-18

For more information

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Self-supply of water in Asia and the Pacific

SOLOMON ISLANDS Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Solomon Islands and its contribution to Sustainable Development Goal 6.



Prevalence

Around 1 in 7 households self-supply their drinking water

In 2012-13, 13.7% of the population of Solomon Islands relied on self-supply for drinking water (Fig. 1), equivalent to ~84,600 people. Dependence on self-supply was higher in urban areas than rural areas (17.6% vs 12.9%). The vast majority of households self-supplying their drinking water depended on rainwater tanks (13.4%, compared with 0.3% using private wells).

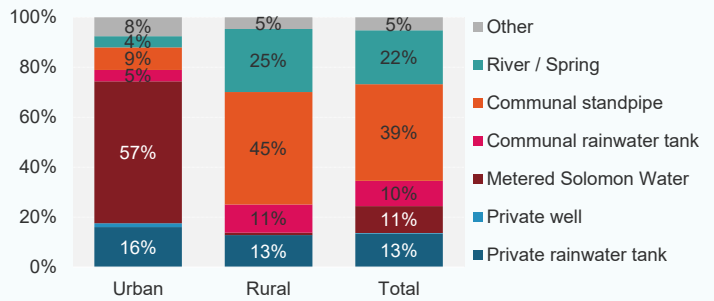


Fig. 1 – Main drinking water source, 2012-13

Geographical distribution

Self-supply was most common in Rennell and Bellona province, with around 80% of households using a private rainwater tank in 2009. This was followed by Western Province with 33% and Choiseul with 24% (Fig. 2 & 3).

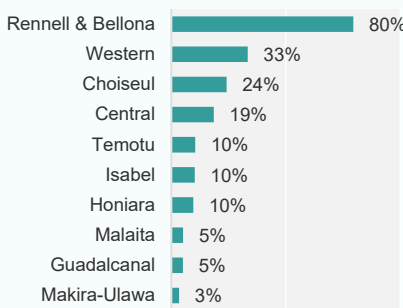


Fig. 2 – % households using private RWTs by province, 2009

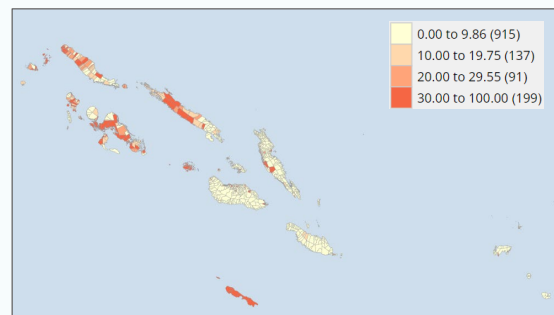


Fig. 3 – % households using private RWTs by enumeration area, 2009

Temporal trends

Between 2009 and 2016, there was no clear trend in dependence on self-supply through private rainwater tanks (Fig. 4). Reliance on private rainwater tanks in rural areas remained relatively stable, but a lack of recent data makes it difficult to characterise trends in urban areas.

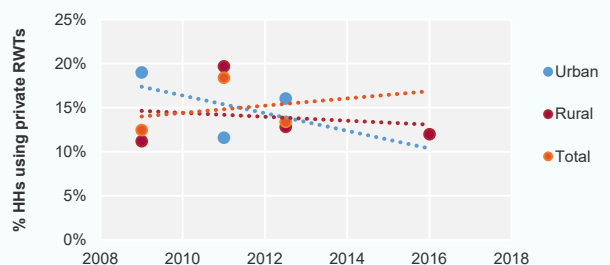


Fig. 4 – % of households using private rainwater tanks 2009-2016

Service levels

Data limitations prevent any conclusion on the extent to which self-supply provides a safely managed water service in Solomon Islands. In terms of water availability, in rural areas self-supply from private wells outperformed all other types of water sources, whilst private RWTs were the least reliable source (Fig. 5a). Conversely, 95% of private RWT users in rural areas perceived their water to be of acceptable quality (higher than all other sources), whilst households with private wells perceived their water to be of relatively poor quality (Fig. 5b).

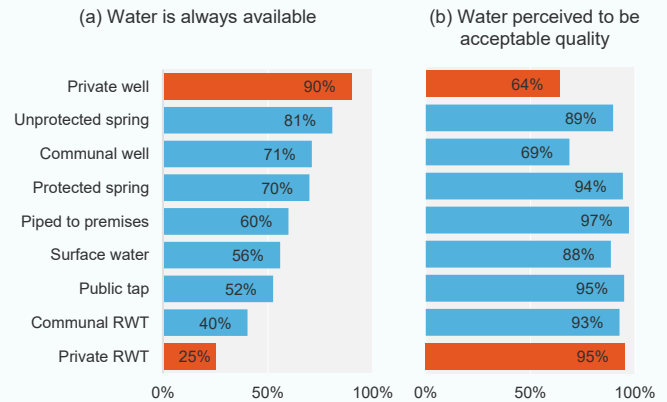


Fig. 5 – % of rural households with water that is perceived to be (a) always available, and (b) of acceptable quality (2016)

National policy context

The Solomon Islands National Water Resources and Sanitation Policy includes an objective to increase household rainwater harvesting. While the Solomon Islands National Water and Sanitation Implementation Plan 2017 – 2033 notes that at the time there were no incentive schemes for encouraging household rainwater, it proposes a revolving loan fund established for households to purchase rainwater harvesting and storage equipment.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Other domestic uses

Use of self-supply water sources for other non-drinking purposes, such as washing, was relatively uncommon among private rainwater tank owners (Fig. 6), indicating that rainwater is mostly preserved for drinking.

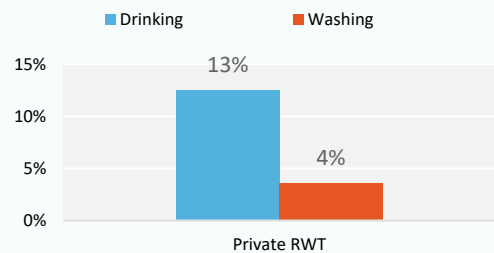


Fig. 6 – % of HHs using private RWTs by use, 2012-13

Data sources

Solomon Islands Census 2009
Solomon Islands PS 2011
Solomon Islands HIES 2012-13
RWASH Baseline Survey 2016

For more information

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Self-supply of water in Asia and the Pacific

SRI LANKA

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Sri Lanka and its contribution to Sustainable Development Goal 6.



Prevalence

More than one in four households self-supply their drinking water

In 2012, 31% of the population of Sri Lanka relied on protected wells on the premises for drinking water (Fig. 1), equivalent to ~6.4 million people. Dependence was higher in rural areas than in urban areas (34% vs 18%).

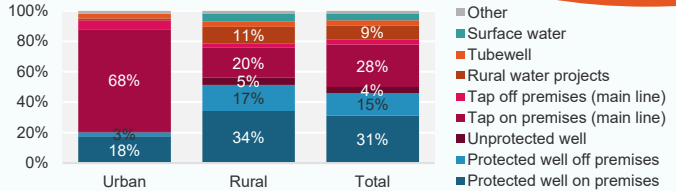


Fig. 1 – Main drinking water source, 2012

Geographical distribution

Reliance of self-supply varied between districts (Fig. 2). Self-supply was most common in the districts of Batticaloa (57%), Gampaha (53%) and Kurunegala (52%), where the majority of the population used wells located on the premises. In contrast, fewer than 15% of the population used on-premises wells in the districts of Kandy (14%), Badulla (14%), Hambantota (12%) and Nuwara-Eliya (5%).

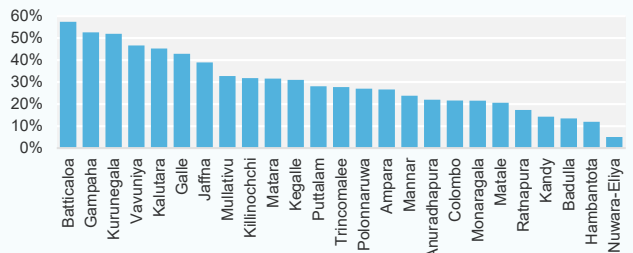


Fig. 2 – % of HH using self-supply as drinking water source by district, 2012

Temporal trends

Use of self-supply increased by 0.4 percentage points per year between 2000 and 2012, with an upward trend evident in both urban and rural areas (Fig. 3).

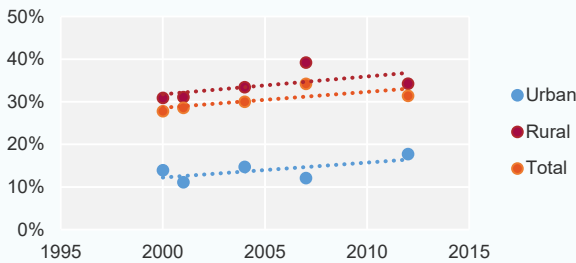


Fig. 3 – % of households using self-supply for drinking water, 2000-12

National policy context

The *Plan of Action for the Implementation of Water Quality Surveillance System* places responsibility for self-supply water quality surveillance on the household, though sanitary inspections of private wells and promotion of water safety plans are the responsibility of the Public Health Inspector (PHI). The PHI Manual also contains designs and guidelines for private wells.

Recognition	Is self-supply mentioned in policy documents?	<input type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

For more information

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 Contact Tim.Foster@uts.edu.au

Data sources

DHS 2000 CRI 2004 Census 2012
 Census 2001 HIES 2007

Self-supply of water in Asia and the Pacific

TIMOR-LESTE

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Timor-Leste and its contribution to Sustainable Development Goal 6.



Prevalence

1 in 10 households rely on self-supply for drinking water

In 2016, 9.3% of the population of Timor-Leste relied on self-supply for drinking water (Fig. 1), equivalent to ~113,400 people. Dependence was higher in urban areas than in rural areas (16.5% vs 7.0%). Almost all households self-supplying their drinking water depended on groundwater sources. Around 76% of self-supply systems can be considered improved sources. Self-supply accounted for 14% of all on-premises water sources.

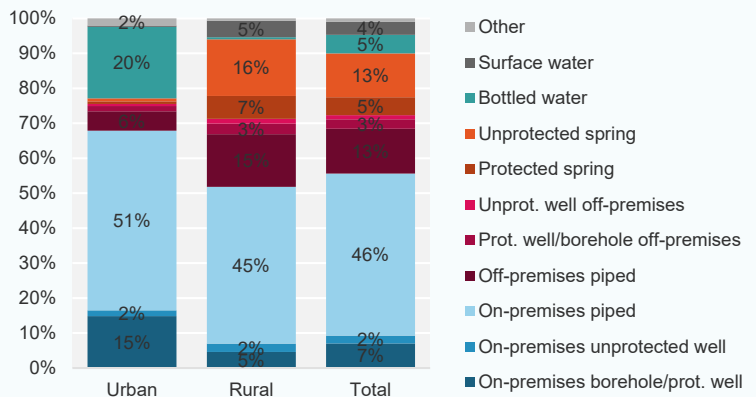


Fig. 1 – Main drinking water source, 2016

Geographical distribution

Although self-supply was used by households across the country, the municipality of Dili had by far the highest proportion of households using self-supply sources for drinking, with 53% of households (Fig. 2). Protected wells were used all throughout the country, with 24% of households in Dili and 20% in Oecussi relying on them as their main drinking water source. Boreholes were most likely to be found in Dili.

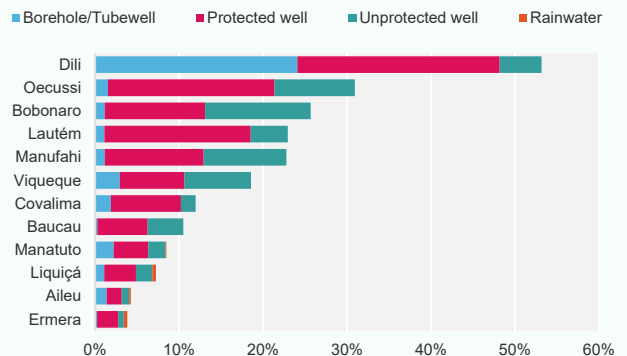
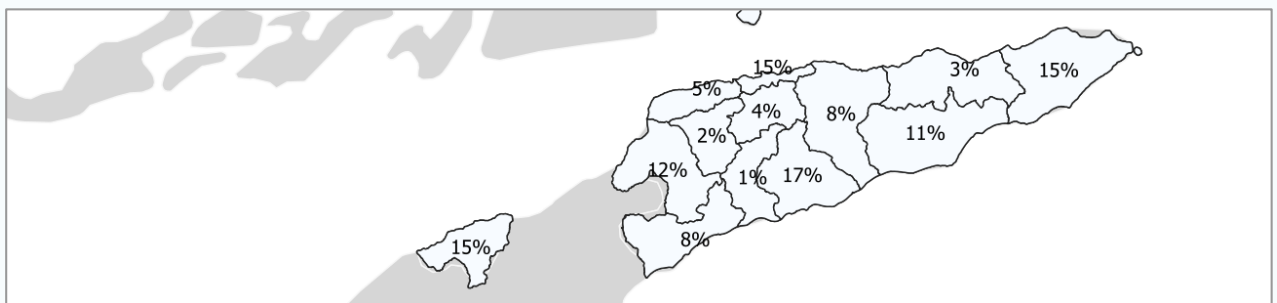


Fig. 2 – % HHs using self-supply as main drinking water source by municipality, 2016



Self-supply of water in Asia and the Pacific

TIMOR-LESTE

Country Profile

Temporal trends

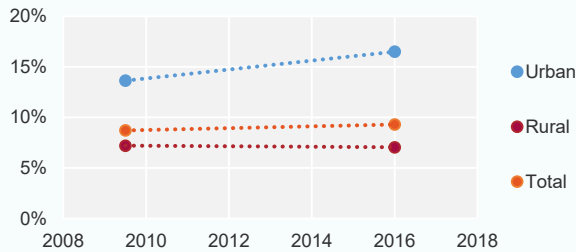


Fig. 3 – % of HHs with self-supply as main drinking water source, 2009-16

Non-drinking uses

Use of self-supply for non-drinking purposes in conjunction with bottled water for drinking was relatively uncommon, with only 1% total households adopting this practise (Fig. 4).

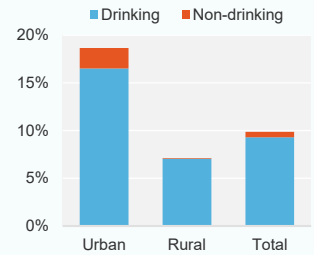


Fig. 4 – % of households using self-supply for drinking and non-drinking (when bottled water is used for drinking)

Service levels

Data limitations prevent any conclusion on the extent to which self-supply provides a safely managed water service in Timor-Leste. In terms of availability, on-premises tubewells/boreholes were more likely to provide water that was available when needed in both urban and rural settings, compared with water piped to and off-premises (Fig. 5). Piped water, both on- and off-premises appeared to be more reliable in rural than urban areas.

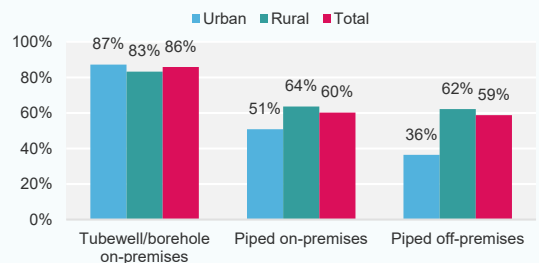


Fig. 5 – % of HHs with water always available in the last two weeks by water source

Equity

Self-supply was most common among the wealthiest households, especially through tubewells and protected wells (Fig. 6). Self-supply through unprotected wells was less common, but likely to be adopted by the middle and fourth wealth quintiles.

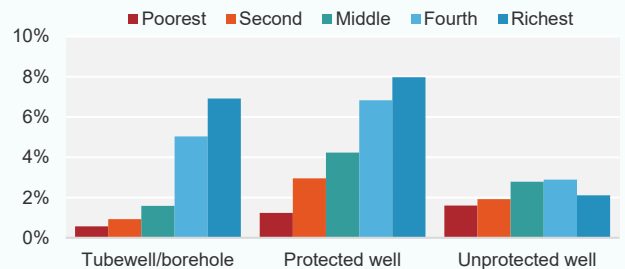


Fig. 6 – % of HHs using self-supply sources by wealth quintile

National policy context

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input checked="" type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input checked="" type="checkbox"/>

Data sources

DHS 2009-10
DHS 2016

For more information

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Self-supply of water in Asia and the Pacific

VANUATU

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Vanuatu and its contribution to Sustainable Development Goal 6.



Prevalence

1 in 6 households relies on private rainwater tanks for drinking water

In 2020, 16% of the population of Vanuatu relied on private rainwater tanks (RWTs) for drinking water (Fig. 1), equivalent to ~47,200 people. Dependence was higher in rural areas than urban areas (18% vs 7%). Around 8% of the population used groundwater in 2020, but there is no recent data on what proportion of these sources are privately owned.

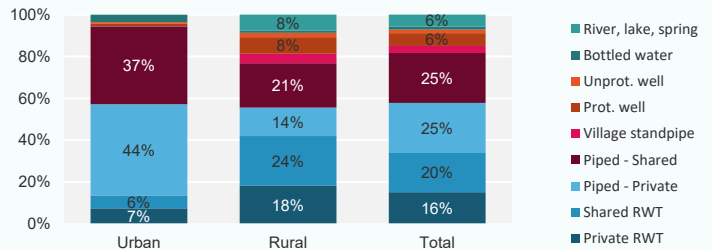


Fig. 1 – Main drinking water source, 2020

Geographical distribution

More than a quarter of households in Shefa and Sanma Provinces relied on private RWTs, with up to 50% of households reliant in certain Area Councils. Use of private RWTs was relatively rare in Tafea Province and the capital Port Vila (Fig. 2). Locations where >40% of RWTs were protected are found in Santo, Malekula, and Ambae (Fig. 3).

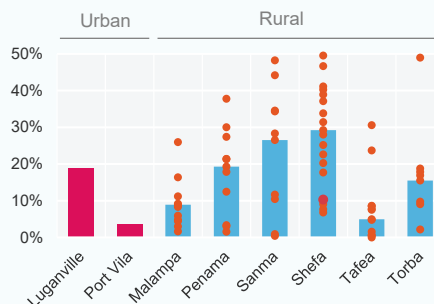


Fig. 2 – % of households using private RWTs (Province = blue column, Area Council = orange)

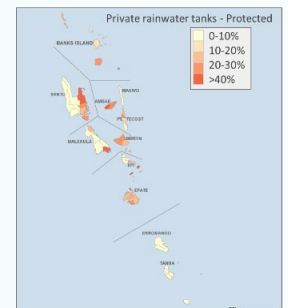


Fig. 3 – % of protected private RWTs by island

Temporal trends

Between 2006 and 2020, dependence on self-supply through RWTs increased by 0.3 percentage points per year, with an additional 900 people using private RWTs each year. This trend was largely driven by rural areas (Fig. 4). Between 2007 and 2013, less than 10% of the population relied on private groundwater sources for drinking water, and there was a downwards trend in use of private groundwater sources (Fig. 5).

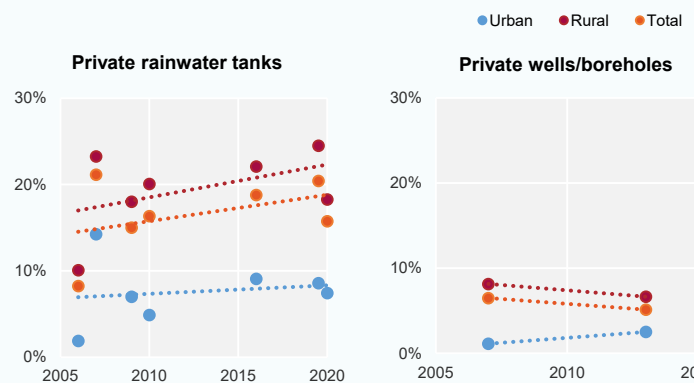


Fig. 4 – % of households using private rainwater tanks, 2006-2020

Fig. 5 – % of population using private groundwater sources, 2007-13

Self-supply of water in Asia and the Pacific

VANUATU

Country Profile

Service levels

Private RWTs were more reliable than community RWTs (Fig. 6), though only 42% provided a year-round supply. Private RWTs were in poorer sanitary condition than private RWTs (Fig. 7). Data on water quality was lacking, and hence the extent to which self-supply provides a safely managed water service in Vanuatu is unknown.

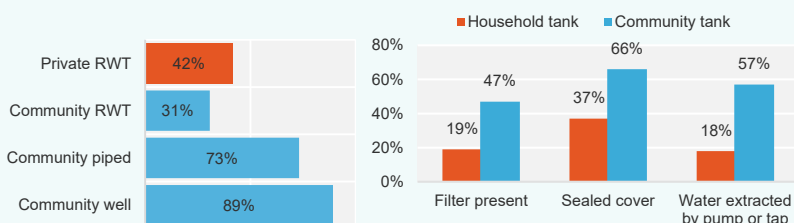


Fig. 6 – % of sources supplying water year-round, 2014-16

Fig. 7 – Sanitary conditions of rainwater tanks, 2014-16

Equity

In rural areas, household rainwater tanks were most common amongst wealthier households, while poorer households were more likely to self-supply their drinking water in urban areas (Fig. 8).

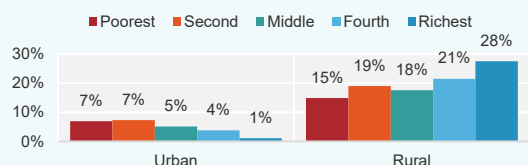


Fig. 8 – % of HHs using private RWTs by wealth quintile (2010)

Other domestic uses

Use of household rainwater tanks for other non-drinking purposes such as washing was relatively uncommon, particularly in urban areas (Fig. 9).

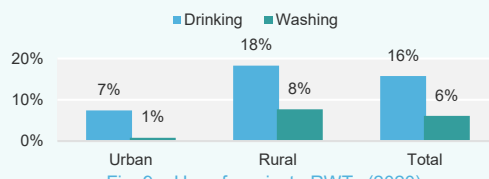


Fig. 9 – Uses for private RWTs (2020)

National policy context

The National Water Policy (2017-2030), and National Water Strategy (2018-2030) recognise households as potential asset owners and seek to improve access to finance for households to access rainwater tanks. The Public Health Act requires that household-owned rainwater tanks (a) comply with public health standards, (b) be kept clean and protected from contamination, and (c) have a sufficient cover and are properly protected or screened to prevent mosquitoes.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input checked="" type="checkbox"/>

Household investment

Data from the 2010 HIES suggested household expenditure on water tanks nationally was US\$34,000, or US\$0.14 per person per year. The growth rate of household rainwater tanks in 2018 indicated annual expenditure of US\$66,000-85,000.

Self-supply type	Rainwater collection
New systems installed per annum	190
Typical unit cost	US\$350-450
Est. annual self-supply expenditure	US\$66,400-85,400

Data sources

2020 Census	2010 HIES
2019-20 NDSP Baseline Survey	2009 Census
2016 Mini-Census	2007 MICS
2014-16 Water Resources Inventory	2006 HIES
2013 DHS	

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Self-supply of water in Asia and the Pacific

VIET NAM

Country Profile

Self-supply is a water service delivery model where individual households or families privately own and manage their source of water. This factsheet outlines the status of self-supply in Viet Nam and its contribution to Sustainable Development Goal 6.



Prevalence

Around half of all households self-supply their drinking water

In 2020-21, 34% of the population of Viet Nam relied on self-supply for drinking water (Fig. 1), equivalent to ~33.3 million people. Dependence was higher in rural areas than in urban areas (47% vs 10%). Groundwater sources were the dominant form of self-supply (used by 23% of the population). Around 98% of self-supply systems were improved sources. Self-supply accounted for 46% of all on-premises water sources.

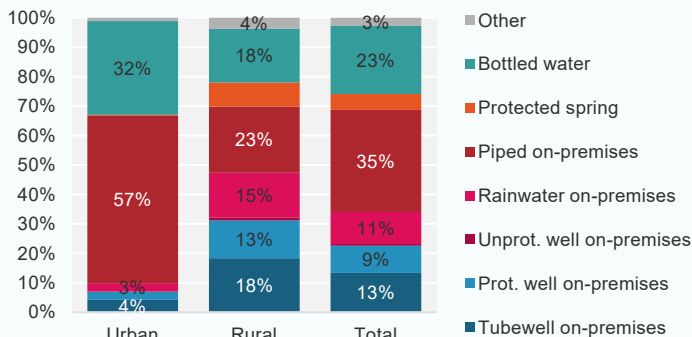


Fig. 1 – Main drinking water source, 2020-21

Geographical distribution

The regions with the highest proportion of households relying on self-supply were the Central Highlands, North Central and Central Coastal, and Northern Midlands and Mountain (Fig. 2). The South East region had the lowest proportion of households relying on self-supply, with 17%. The predominant water sources used for self-supply vary in each region, with tubewells used everywhere to varying degrees, and rainwater being the predominant source in the Mekong and Red River Deltas.

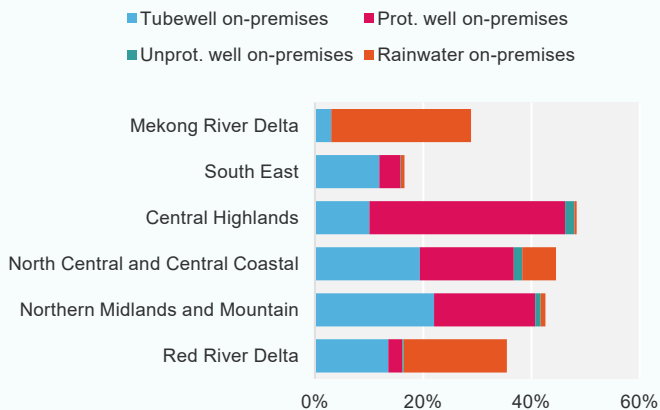


Fig. 2 – % HHs using self-supply as main drinking water source by region, 2020-21

Temporal trends

In the period between 1997-2021, prevalence of self-supply for drinking water in Viet Nam declined by almost half (61% in 1997 to 34% in 2021). The downward trend for this period was evident in both urban and rural areas (Fig. 3).

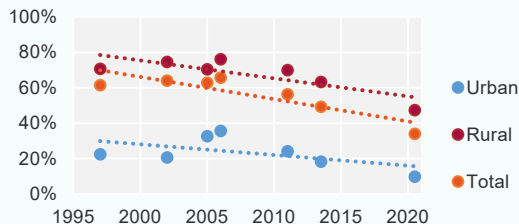


Fig. 3 – % of households using self-supply, 1997-2021

Self-supply of water in Asia and the Pacific

VIET NAM

Country Profile

Service levels

Self-supply was less likely to provide a safely managed water service than a piped connection in Viet Nam. Whilst reliability was on par with piped supply, microbial quality for self-supply is substantially worse. Groundwater self-supply also presented an increased risk of arsenic contamination.

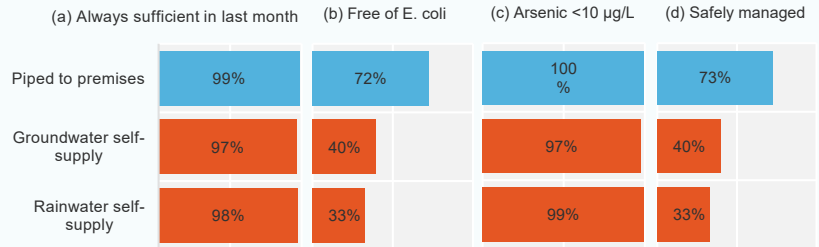


Fig. 4 – % of households with water (a) always available, (b) free of E. coli, (c) Arsenic <10 µg/L, (d) safely managed (free from contamination and available when needed)

Equity

The wealthiest households were least likely to rely on self-supply (Fig. 5a). Households in the two poorest quintiles were the most likely users of protected wells and rainwater collection. Use of tubewells was most common among households in the middle quintile. In terms of ethnic groups, use of protected wells and tubewells was most common amongst Tay/Thai/Mouong/Nung households, while on-premises rainwater collection was most common amongst Khmer households (Fig. 5b).

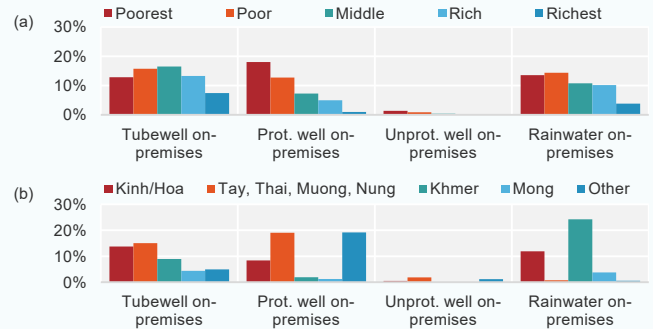


Fig. 5 – (a) % of HHs using self-supply sources by wealth quintile and (b) ethnic group (2020-21)

Other domestic uses

When considering households that self-supply water for other domestic uses but use packaged water for drinking (e.g. bottled, refill), the percentage of self-supplying households increased from 34% to 41% (Fig. 6).

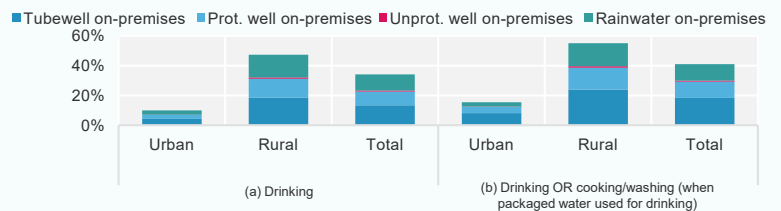


Fig. 6 – % of HHs using self-supply for (a) drinking, and (b) drinking or cooking/washing when bottled water used for drinking (2020-21)

National policy context

The National Strategy for Rural Clean Water Supply & Sanitation by 2030 with a Vision Towards 2045 (approved in 2021) mentions “household-scale solutions [...] in areas where there is no access to water supply”, including “rainwater storage tanks and other forms of water storage...” and a “[g]uide to testing and monitoring water quality at household scale”. However, Resolution 19 (2022) set a target of 80% piped water in rural areas, signalling a future decline in self-supply.

Recognition	Is self-supply mentioned in policy documents?	<input checked="" type="checkbox"/>
Support	Is there a policy or plan to support self-supply?	<input checked="" type="checkbox"/>
Water quality standards	Are there water quality standards for self-supply?	<input type="checkbox"/>
Construction standards	Are there construction standards or guidelines for self-supply systems?	<input type="checkbox"/>

Data sources

DHS 2002	MICS 2011
DHS 2005	MICS 2013-14
MICS 2006	MICS 2020-21

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