Changes in Drinking Water use 2014-2019

Feb. 3rd, 2021

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Introduction
Access to safe drinking water is not only essential for human life but also an internationally recognized basic human right.

Access to safe drinking water is a priority for the United Nations and Myanmar’s government.

- **SDG 6.1.1/NIF 5.3.4**: Proportion of population using safely managed drinking water services

There is a range of household-level drinking water services including the one from safely managed drinking water.

Note: Safely managed drinking water will be referenced as “safe drinking water” in the rest of this Analytical Brief.
Introduction

➢ Measurement of Myanmar households’ access to safe drinking water has been undertaken on a large scale for the first time in the 2019 Intercensal Survey.

➢ This MIMU Analytical Brief provides a unique perspective by comparing, for the first time, households’ use of drinking water services between 2014 and 2019.

- 2014 Population and Housing Census,
- 2015-16 Myanmar Demographic and Health Survey,
- 2017 Myanmar Living Conditions Survey and
- 2019 Intercensus Survey.
All results presented are from the **four national level surveys/census** exercises conducted between 2014 and 2019 which **used different calculation methodologies**.

MIMU has adjusted these using the **calculation methodology of the 2019 Intercensal Survey** to enable the **measurements to be compared**.

The software used for this Analytical Brief:
- **Excel** for the Data Analysis and
- **Tableau** for the Data Visualisations.

**Note:** All values presented are based on the enumerated population and may not fully reflect non-enumerated groups or certain areas, particularly Rakhine State.
## Introduction

- **2019 Intercensal Survey's methodology close to the global one.**
- **We look at the *Households' use of drinking water by service*.**

### Table: Drinking Water Access

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Improved</strong></td>
<td>Low contamination risk</td>
</tr>
<tr>
<td>Safely Managed</td>
<td>Drinking water from an improved source which is located inside the user's dwelling, plot or yard, available when needed and free of faecal &amp; priority chemical contamination, such as arsenic &amp; fluoride. Only faecal coliforms test was conducted in the Intercensal Survey 2019.</td>
</tr>
<tr>
<td>≤30 Basic</td>
<td>Drinking water from an improved source and collection time is not more than 30 minutes for a roundtrip including queuing.</td>
</tr>
<tr>
<td>30+ Limited</td>
<td>Drinking water from an improved source and collection time is over 30 minutes for a roundtrip including queuing.</td>
</tr>
<tr>
<td><strong>Unimproved</strong></td>
<td>High contamination risk</td>
</tr>
<tr>
<td>Unimproved</td>
<td>Drinking water from unprotected dug wells or unprotected springs or any other source where water is not protected from the outside.</td>
</tr>
<tr>
<td>Surface</td>
<td>Drinking water from a river, dam, lake, pond, stream, canal or irrigation channel/ditches.</td>
</tr>
</tbody>
</table>
I. Approach Used
## I.A. Different types of drinking water sources

The different **types of drinking water sources** that households use:

<table>
<thead>
<tr>
<th>Drinking Water Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piped</td>
<td>Piped into dwelling; piped into compound, yard or plot; piped to neighbour; public tap/standpipe</td>
</tr>
<tr>
<td>Tubewell /borehole</td>
<td>Tubewell; borehole</td>
</tr>
<tr>
<td>Protected dug well/spring</td>
<td>Protected well; protected spring</td>
</tr>
<tr>
<td>Rain</td>
<td>Rainwater collection, waterfall</td>
</tr>
<tr>
<td>Bottled</td>
<td>Bottled water/water from vending machine; home water purifier/filter</td>
</tr>
<tr>
<td>Unprotected well/spring</td>
<td>Unprotected well; unprotected spring</td>
</tr>
<tr>
<td>Tanker/small cart</td>
<td>Tanker/truck; cart with small tank/drum</td>
</tr>
<tr>
<td>Surface</td>
<td>Lake; pond; dam; river; stream; irrigation channel</td>
</tr>
</tbody>
</table>
I.B. Different types of drinking water services

Improved drinking water sources are those that have the potential to deliver safe water by nature of their design and construction, and include:

- Piped,
- Tubewell/borehole,
- Protected dug well/spring,
- Rain, and
- Bottled.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Piped</td>
<td>Tap water/Piped</td>
<td>Piped into dwelling</td>
<td>Water pipe into dwelling</td>
<td>Piped into dwelling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Piped to yard/plot</td>
<td>Water pipe inside compound</td>
<td>Piped into compound, yard or</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>plot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N/A</td>
<td>Water pipe outside compound</td>
<td>Piped to neighbour</td>
</tr>
<tr>
<td>Tubewell/borehole</td>
<td>Tube well, borehole</td>
<td>Tube well or borehole</td>
<td>Tube well, borehole</td>
<td>Borehole or tubewell</td>
</tr>
<tr>
<td>Protected well/spring</td>
<td>Protected well/Spring</td>
<td>Protected well</td>
<td>Protected well/spring</td>
<td>Protected well</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Protected spring</td>
<td>Protected spring</td>
<td>Protected spring</td>
</tr>
<tr>
<td>Rain</td>
<td>Waterfall/Rain water</td>
<td>Rainwater</td>
<td>Rainwater collection/tank</td>
<td>Rainwater collection</td>
</tr>
<tr>
<td>Bottled</td>
<td>Bottled water/water from</td>
<td>Bottled water</td>
<td>Bottled water</td>
<td>Home water purifier/filter/Bottled water</td>
</tr>
</tbody>
</table>
Unimproved drinking water sources are those that do not have the potential to deliver safe water by nature of their design and construction, and include:

- Unprotected well/spring,
- Tanker/small cart,
- Surface, and
- Other.

### Table: Drinking Water Source Services

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unprotected well/spring</td>
<td>Unprotected well/Spring</td>
<td>Unprotected well</td>
<td>Unprotected well/spring</td>
<td>Unprotected well</td>
</tr>
<tr>
<td>Tanker/small cart</td>
<td>Tanker/Truck</td>
<td>Tanker truck</td>
<td>Tanker/Truck</td>
<td>Tanker-truck</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>Cart with small tank/drum</td>
<td>N/A</td>
<td>Cart with small tank / drum</td>
</tr>
<tr>
<td>Surface</td>
<td>Pool/Pond/Lake</td>
<td>Surface water (river/dam/lake/pond/stream/canal/irrigation channel)</td>
<td>Pool/pond/lake/dam/stagnant water</td>
<td>Surface water (river, stream, dam, lake, pond, canal, irrigation channel)</td>
</tr>
<tr>
<td></td>
<td>River/Stream/Canal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Other</td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>
I.B. Different types of drinking water services

Safe drinking water is drinking water from an improved source which is located inside the user’s dwelling, plot or yard, available when needed and free of faecal and priority chemical contaminants (such as arsenic and fluoride). It includes:

- Piped,
- Tubewell /borehole,
- Protected dug well/spring,
- Rain,
- Bottled,
- Located on premises,
- Available when needed, and
- Free from faecal and priority chemical contaminants.

Note: The indicator of Households’ use of safe drinking water *in the 2019 ICS does not test chemical contaminants.*
I.B. Different types of drinking water services

➢ Drinking water from **basic** services is drinking water from an **improved source** and collection time is **not more than 30 minutes** for a roundtrip including queuing. It includes:

- Piped,
- Tubewell /borehole,
- Protected dug well/spring,
- Rain,
- Bottled, and
- **Not more than 30 minutes for a roundtrip including queuing.**

➢ Drinking water from **limited** services is drinking water from an **improved source** and collection time is **over 30 minutes** for a roundtrip including queuing. It includes:

- Piped,
- Tubewell /borehole,
- Protected dug well/spring,
- Rain,
- Bottled, and
- **Exceeds 30 minutes for a roundtrip including queuing.**
Drinking water from **unimproved** sources (**well/spring**) is drinking water from **unprotected dug wells** or **unprotected springs** or any other source where water is not protected from the outside. It includes:

- Unprotected well/spring,
- Tanker/small cart, and
- Other.

**Note:** This indicator is different from the one of drinking water from unimproved sources. This latter contains both:

- Drinking water from unimproved sources (**well/spring**) and
- Surface.

**Surface** water is drinking water from a river, dam, lake, pond, stream, canal or irrigation, channel/ditches.
I.C. Calculation of drinking water services by survey/census

2014 Population and Housing Census

➢ **Source:** Redatam website: [http://www.dopredatam.gov.mm](http://www.dopredatam.gov.mm).

➢ **Calculation methodology:** built the indicators using the different types of drinking water sources indicators (bottled, piped, rain, etc.).

➢ **Levels:**
   • Countrywide, State/Region, District and Township levels and
   • Union, Urban and Rural levels.

• **Indicators:**
  • *Households’ use of drinking water from* improved sources,
  • *Households’ use of drinking water from* unimproved sources,
  • *Households’ use of drinking water from* unimproved sources (well/spring) and
  • *Households’ use of* surface water.
I.C. Calculation of drinking water services by survey/census

2015-16 Myanmar Demographic and Health Survey

➢ **Source:** UNICEF’s dataset.

➢ **Calculation methodology:** built the indicators using the different types of drinking water sources indicators (bottled, piped, rain, etc.).

➢ **Levels:**
  • Countrywide and State/Region levels and
  • Union, Urban and Rural levels.

➢ **Indicators:**
  • *Households’ use of drinking water from improved sources*,
  • *Households’ use of drinking water from unimproved sources*,
  • *Households’ use of drinking water from basic services*,
  • *Households’ use of drinking water from limited services*,
  • *Households’ use of drinking water from unimproved sources (well/spring)* and
  • *Households’ use of surface water*. 
I.C. Calculation of drinking water services by survey/census

2017 Myanmar Living Conditions Survey

➢ **Source:** Key Indicators Report of 2017 MLCS Report.

➢ **Calculation methodology:** built the indicators using the different drinking water services indicators publicly available in the report.

➢ **Levels:**
  - Countrywide and State/Region levels and
  - Union (Countrywide and State/Region levels), Urban and Rural level (only Countrywide level).

➢ **Indicators:**
  - *Households’ use of drinking water from improved sources*,
  - *Households’ use of drinking water from unimproved sources*,
  - *Households’ use of drinking water from basic services*,
  - *Households’ use of drinking water from limited services*,
  - *Households’ use of drinking water from unimproved sources (well/spring)* and
  - *Households’ use of surface water*. 
I.C. Calculation of drinking water services by survey/census

2019 Intercensus Survey


➢ **Calculation methodology:** from the website.

➢ **Levels:**
  - Countrywide, State/Region and District levels and
  - Union, Urban and Rural level.

➢ **Indicators:**
  - Households’ use of drinking water from *improved sources*,
  - Households’ use of drinking water from *unimproved sources*,
  - Households’ use of *safe* drinking water,
  - Households’ use of drinking water from *basic services*,
  - Households’ use of drinking water from *limited services*,
  - Households’ use of drinking water from *unimproved sources (well/spring)* and
  - Households’ use of *surface water*. 
I.D. Data Limitations

➢ Levels:

*It is not possible to have:

➢ State/Region (Urban & Rural)
  • 2017 Myanmar Living Conditions Survey

➢ District
  • 2015-16 Myanmar Demographic and Health Survey
  • 2017 Myanmar Living Conditions Survey

➢ Township
  • 2017 Myanmar Living Conditions Survey
  • 2015-16 Myanmar Demographic and Health Survey
  • 2019 Intercensus Survey

➢ Indicators:

*It is not possible to calculate:

➢ Households’ use of **safe** drinking water
  • 2014 Population and Housing Census
  • 2015-16 Myanmar Demographic and Health Survey
  • 2017 Myanmar Living Conditions Survey

➢ Households’ use of drinking water from **basic services**
  • 2014 Population and Housing Census

➢ Households’ use of drinking water from **limited services**
  • 2014 Population and Housing Census
I.D. Data Limitations

2017 Myanmar Living Conditions Survey

- Dry and wet season indicators
- Public report did not provide households' level indicators about drinking water source (piped, bottled, rain, etc.)
- Category “tanker truck” was counted as *drinking water from improved sources*.
- Category “other” was counted as *surface water*. 
II. Key Findings
In 2019, 82% of households countrywide were using drinking water from improved sources, and 12% used surface water (rivers, lakes, ponds, etc.), with significant differences between urban and rural areas.
Half of Myanmar’s townships had over 80% of households using drinking water from improved sources in 2014.

Improved drinking water sources present lower risk of contamination than surface water. However,

Drinking water from IMPROVED sources ≠ SAFE drinking water
II.A. Countrywide Situation

Households in rural areas are increasingly using improved water sources as a mean of accessing safer water.
II.B. Unprotected water supplies are being replaced by piped and bottled water

However, piped and bottled water may also be drawn from contaminated sources and be poorly treated.
II.C. Only 41% of households used safe drinking water in 2019 – the global level was 71% in 2017.

- Only Mandalay and west Yangon districts had levels of use of safe drinking water close to the global level.
II.D. Rakhine and Ayeyarwady have the highest use of contaminated drinking water.

- Households in Rakhine and Ayeyarwady had the highest reliance on surface water in 2019, and also the lowest levels of safe drinking water use countryside.

**Percentage of Households Using Surface Water**

- Rakhine (50%)
- Ayeyarwady (29%)
- Other States/Regions Average (6%)

Surface sources of drinking water pose a greater risk of contamination. Levels of contamination can only be verified by regular testing.
The quality of water in Rakhine and Ayeyarwady is affected by climate change-induced issues.

Infiltration of saltwater in underground sources and evaporation from shallow ponds used in these low-lying areas further reduce the quality and availability of drinking water.
II.E. Despite improvement, there are many unknowns, such as chemical contaminants in drinking water

- An estimated **3.4 million people** in Myanmar may be exposed to higher than recommended levels of arsenic in their drinking water supplies (2019).*

* WHO guidelines recommend arsenic levels under 10 μg/L.
Conclusion
The last five years have seen a switch by households in Myanmar toward improved water sources – such as piped and bottled water, over unprotected water supplies such as surface water with its higher risks of contamination.

The 2019 Intercensal Survey showed that 41% of households used safe drinking water countrywide which is behind global use (71% of the population).

As highlighted in this MIMU Analytical Brief, a targeted approach that considers the wide diversity of drinking water sources will be needed to allow all of Myanmar’s people access safer drinking water.
Products released
Products released

**Analytical Brief**

*Changing Sources of Drinking Water in Myanmar (2014 - 2019)*

- MIMU Analytical Brief
- January 2021

Nine-page document

**Infographic**

*Changing Sources of Drinking Water in Myanmar (2014 - 2019)*

- One A3 page infographic

**Dashboard**

- Six-tab dashboard

**Dataset**

- Table of data with various columns and rows
Thank you for your attention

Questions?

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