

# Access to Water

## 1. Executive Summary:

### Objective:

To analyze global access to safe drinking water over time, focusing on identifying key trends, Top-performing countries, and those with the least access to clean water.

## 2. Steps:

- The dataset was cleaned by handling missing values, outliers, and duplicates to ensure accuracy and reliability for analysis.

- **Frist Measure Improvement Rate:**

For each country, the improvement rate was calculated to track how much they improved (or declined) over the years. This rate helps identify countries that need more attention to improve access to safe drinking water.

**Formula:** Improvement Rate =

$$\frac{\text{Max drinking Water access} - \text{Min drinking Water access}}{\text{Count of Years}}$$

- **Clustering of Countries:**

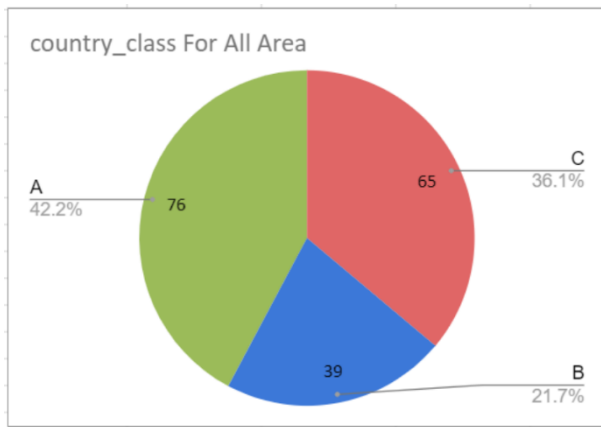
Countries are grouped into 3 Classes A, B, and C based on their access to safe drinking water. This allows for better comparison and understanding of how different nations perform:

- **Class A:** Countries with strong access (90%-100%).
- **Class B:** Moderate access (70%-90%).
- **Class C:** Low access (less than 70%).

## 3. Key Findings:

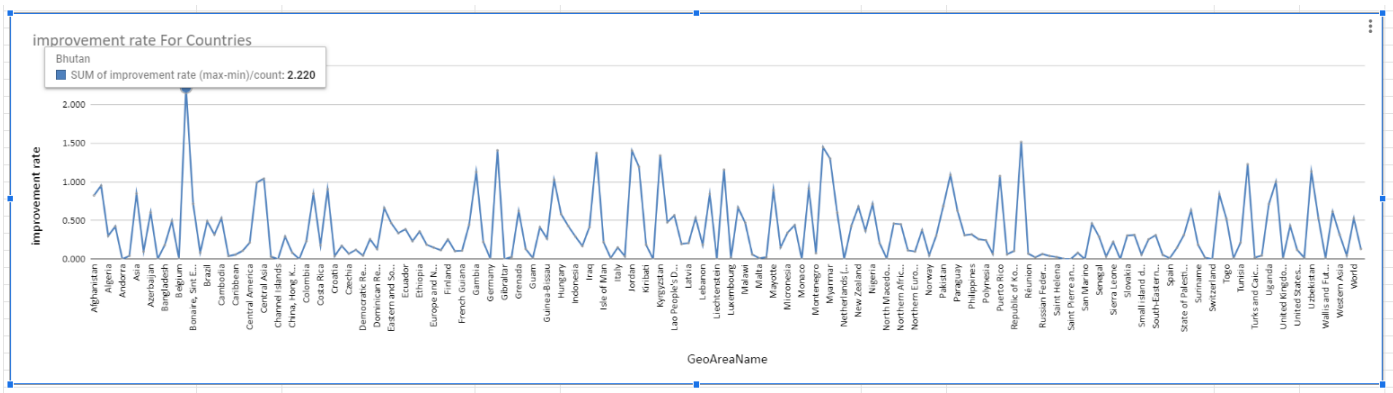
- More than half of the world's countries have less than one-third of their population with access to safe drinking water.
- **Bhutan** is the country that has achieved the most progress in ensuring access to safe water for all its residents.
- **Ukraine** is the country that has achieved the most progress in ensuring access to safe water for ruler.
- **Ghana** is the country that has achieved the most progress in ensuring access to safe water for urben.
- **The Democratic Republic of the Congo** had the lowest access to safe drinking water in 2022.
- The countries with the lowest overall access to safe water are Ghana, Togo, Uganda, and the United Republic of Tanzania.

## 1- Classification Country according to access



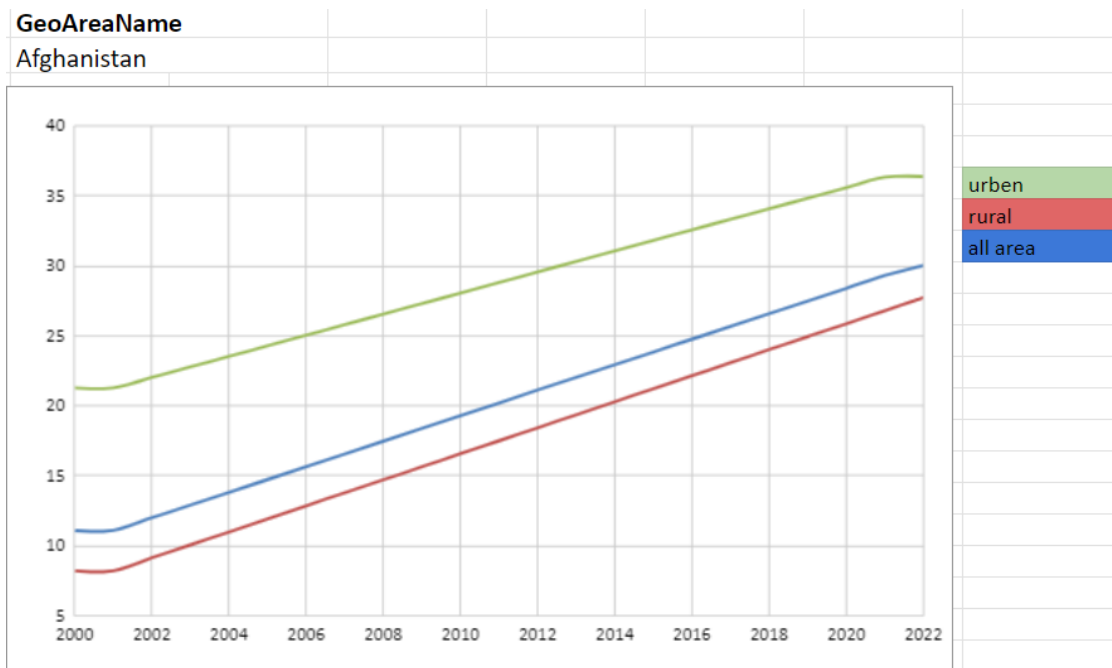
## 2- Improvement Rate

Bhutan has Maximum Improvement rate (2.20).



## 3- Improment rate For All Location Per Country

Ex. Afghanistan.



4-Min Countries have access to water for 22 years (2000: 2022) For All Area of Country.

min
Ghana
Togo
Uganda
United Republic of Tanzania

5- Max Countries have access to water for 22 years (2000: 2022) For All Area of Country.

max
Bonaire, Sint Eustatius and Saba
China, Macao Special Administrative Region
France
Gibraltar
Hungary
Iceland
Kuwait
Liechtenstein
Luxembourg
Malta
Monaco
Saint Barthélemy
San Marino
Singapore
United Kingdom of Great Britain and Northern Ireland

6- Min Country has access to water for (2022) For All Area of Country.

min 2022
Democratic Republic of the Congo

7- Max Country has access to water For (2022) For All Area of Country.

max 2022
Bonaire, Sint Eustatius and Saba
China, Hong Kong Special Administrative Region
France
Gibraltar
Hungary
Iceland
Kuwait
Liechtenstein
Monaco
New Zealand
Saint Barthélemy
San Marino
Singapore