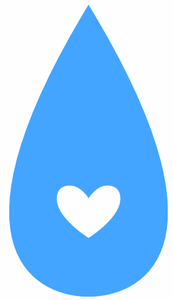
Daydream Team

Batam State Polytechnic, Indonesia

ASEAN DATA SCIENCE EXPLORERS

polibatam

Impact of Climate Change on the Availability of Clean Water



Water is critical to sustaining all aspects of life and is central to our need to better understand and address the impacts of climate change


?
Why Should
We Be Aware?

“Climate change is already affecting water access for people around the world, causing more severe droughts and floods. Increasing global temperatures are one of the main contributors to this problem. Climate change impacts the water cycle by influencing when, where, and how much precipitation falls. It also leads to more severe weather events over time. Increasing global temperatures causes water to evaporate in larger amounts, which will lead to higher levels of atmospheric water vapor and more frequent, heavy, and intense rains in the coming years.”

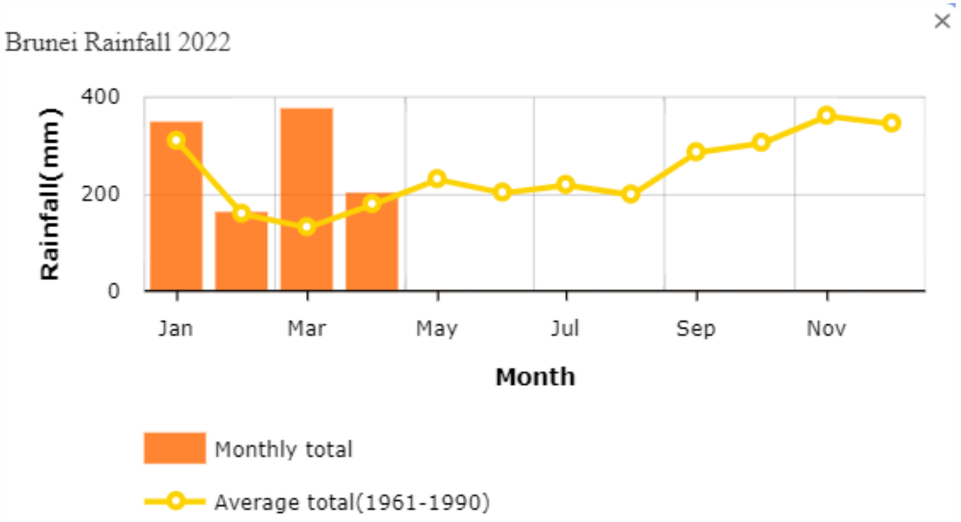


Water scarcity affects more than 40 percent of people, an alarming number that is projected to increase with temperature. Although 2.1 billion people have improved water sanitation since 1990, diminishing drinking water supplies are affecting every continent.

More and more countries are experiencing water stress, and increasing droughts and desertification have exacerbated this trend. By 2050, it is projected that at least one in four people will experience recurrent water shortages. Safe and affordable drinking water for all by 2030 requires that we invest in adequate infrastructure, provide sanitation facilities, and promote hygiene. Protecting and restoring water-related ecosystems is critical .

The latest Intergovernmental Panel on Climate Change (IPCC) report reveals that climate change is widespread, rapid and intensive. According to the “2030 Agenda for Sustainable Development”, water availability is considered an implicit but important linking factor for achieving the different “Sustainable Development Goals” (SDGs) under normal circumstances. Therefore, the inability to adapt to climate change will not only threaten the achievement of SDG6 (“Water Goals”) but also jeopardize the achievement of most other sustainable development goals. With continuous emission of greenhouse gases, the quality of source water will be affected.

Climate & Rainfall in ASEAN Countries

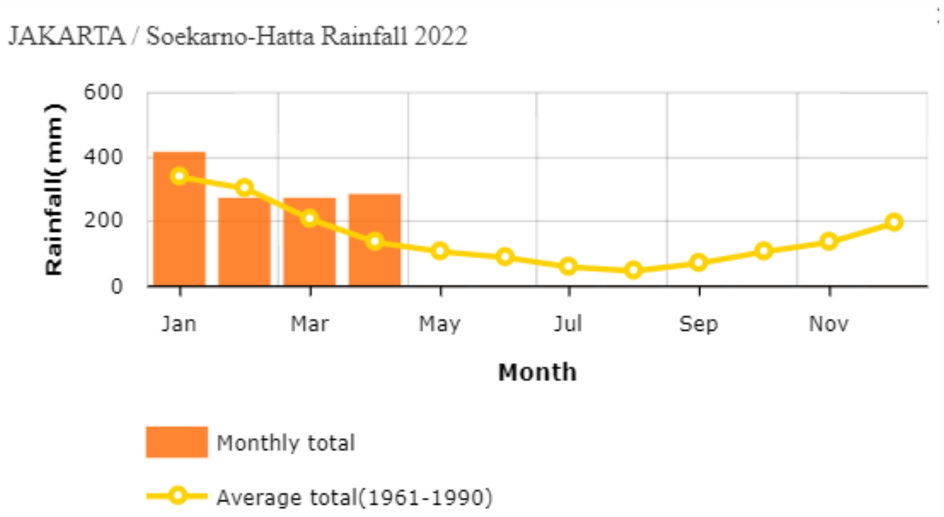


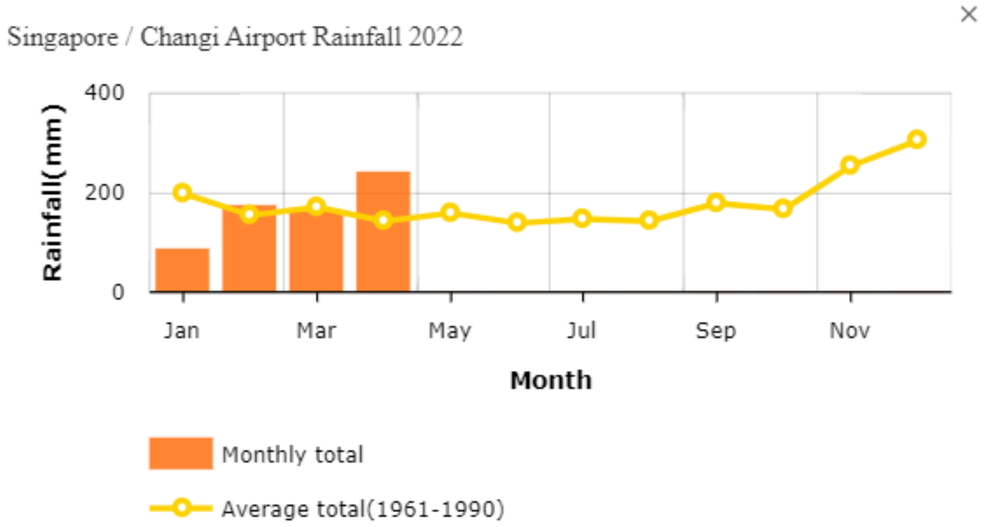
❑ Brunei

Tropical in Climate, with considerable air humidity

❑ Indonesia

Tropical climate, influenced by the muson climate, which consist of rainy and dry season



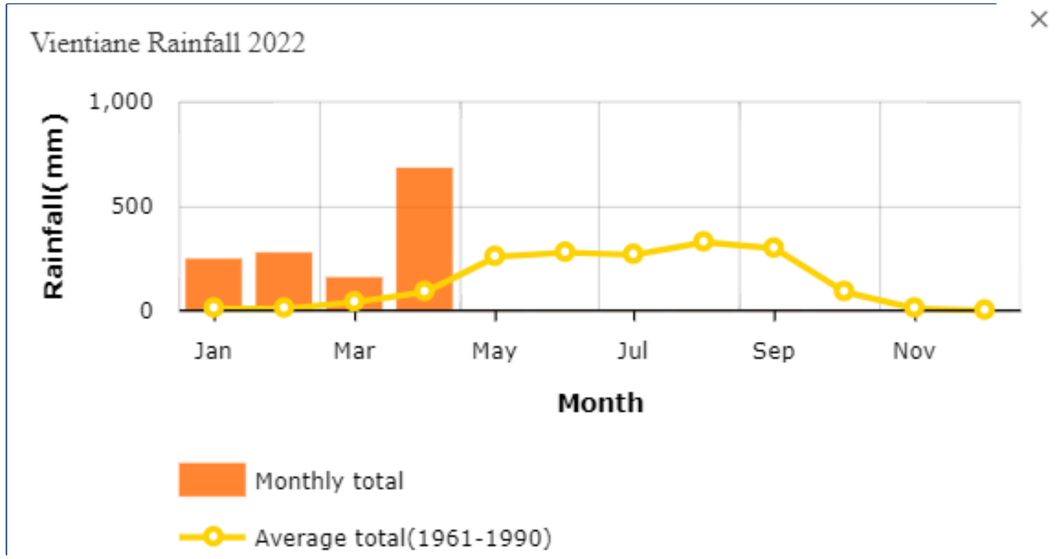


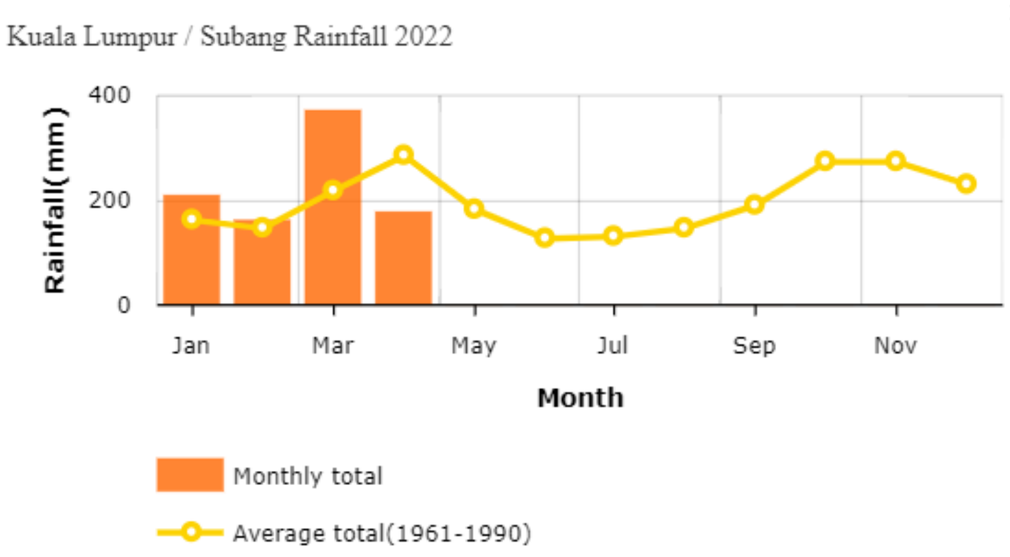
❑ Singapore

Tropical in Climate, humid, and moderately rainfall

❑ Laos

Tropical climate with three seasons: hot summer, mild droughts, and dry summer



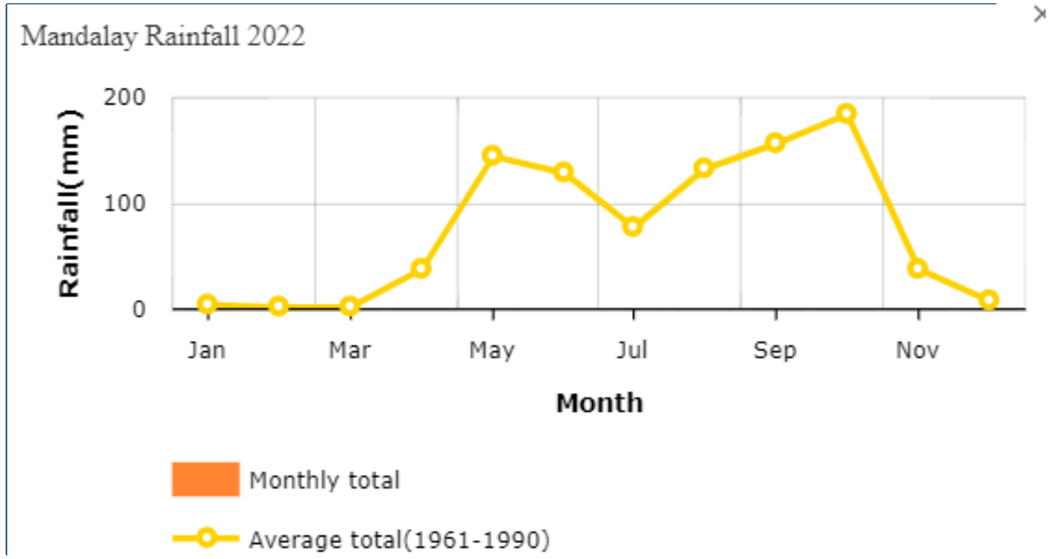


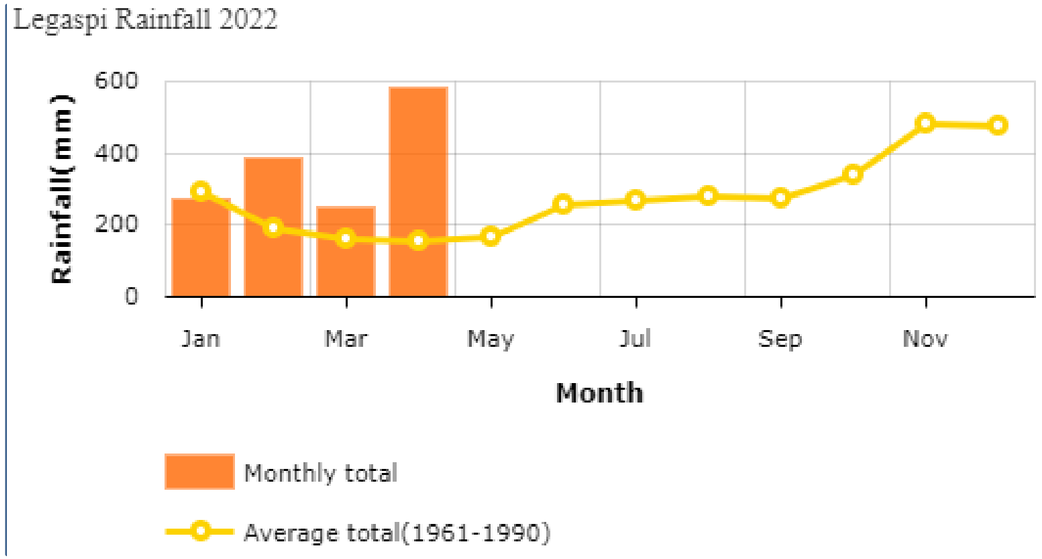
❑ Malaysia

Tropical climate that characterized by heavy rainfall, influenced by the muson winds

❑ Myanmar

Tropical climate with three seasons: hot summer, mild droughts, and dry summer



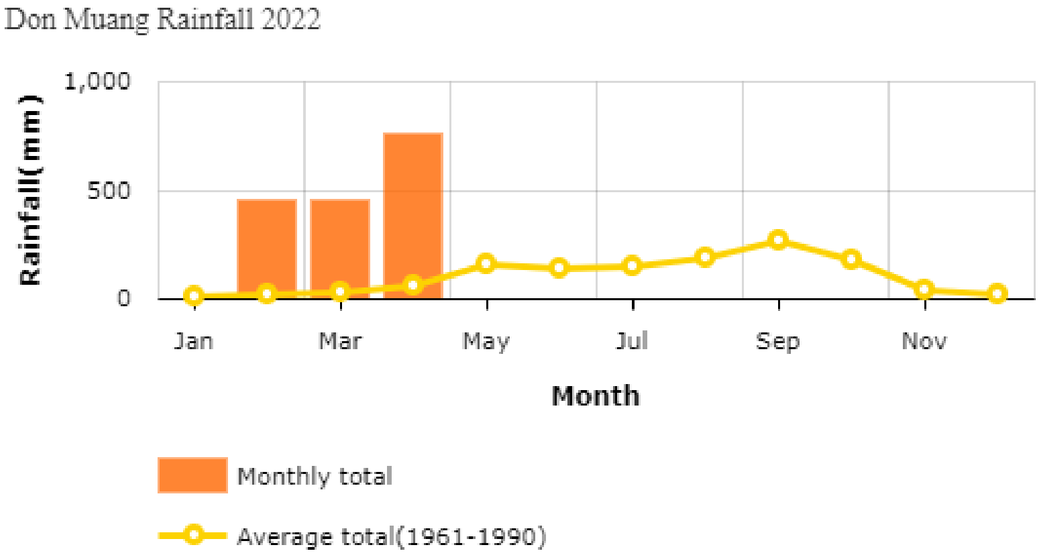


❑ Philiphines

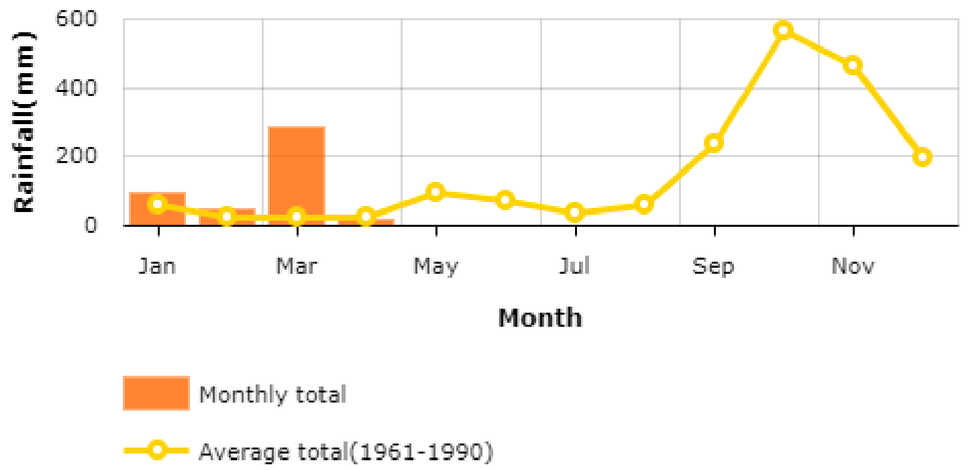
Generally a tropical climate of wet and moderate rainfall per year

❑ Thailand

Tropical climate with the rainy season takes place around January and Dry season around July



Quy Nhon Rainfall 2022

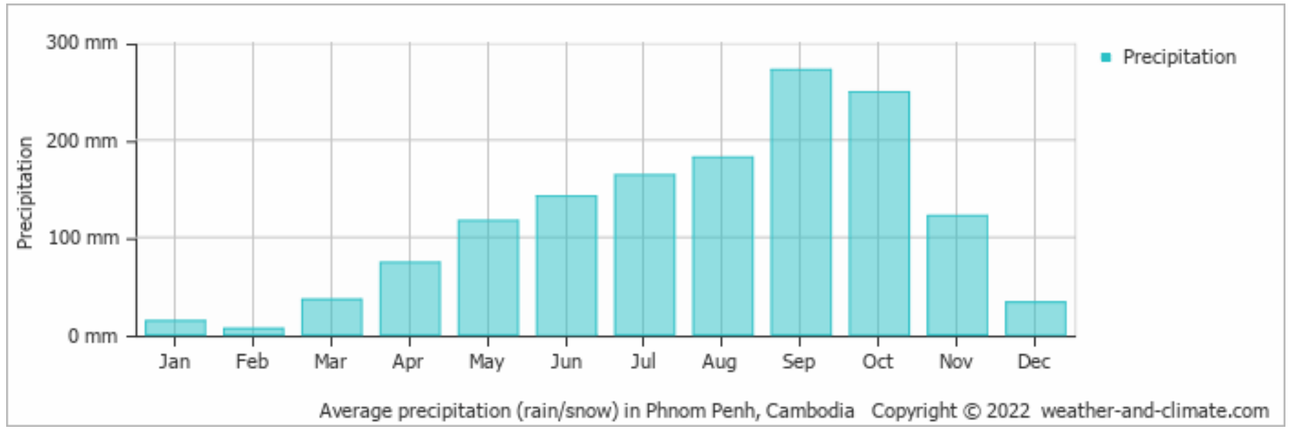


❑ Vietnam

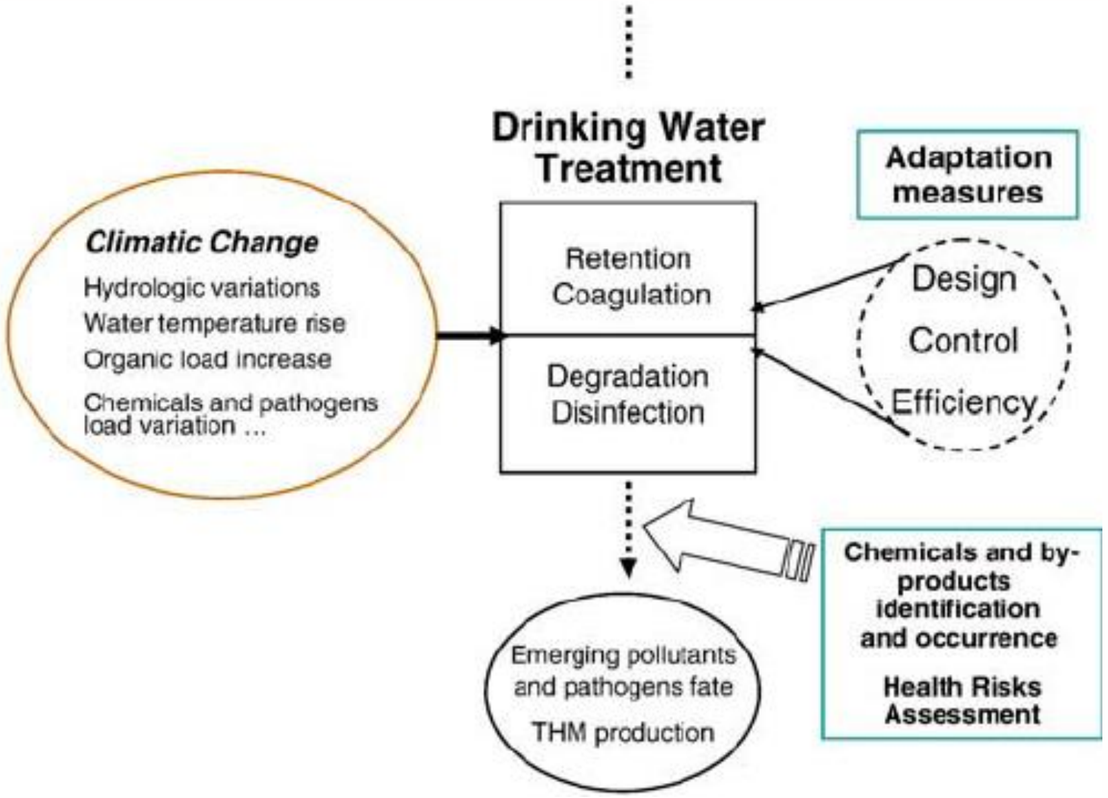
Northern: temperate,
Southern: tropical to heat

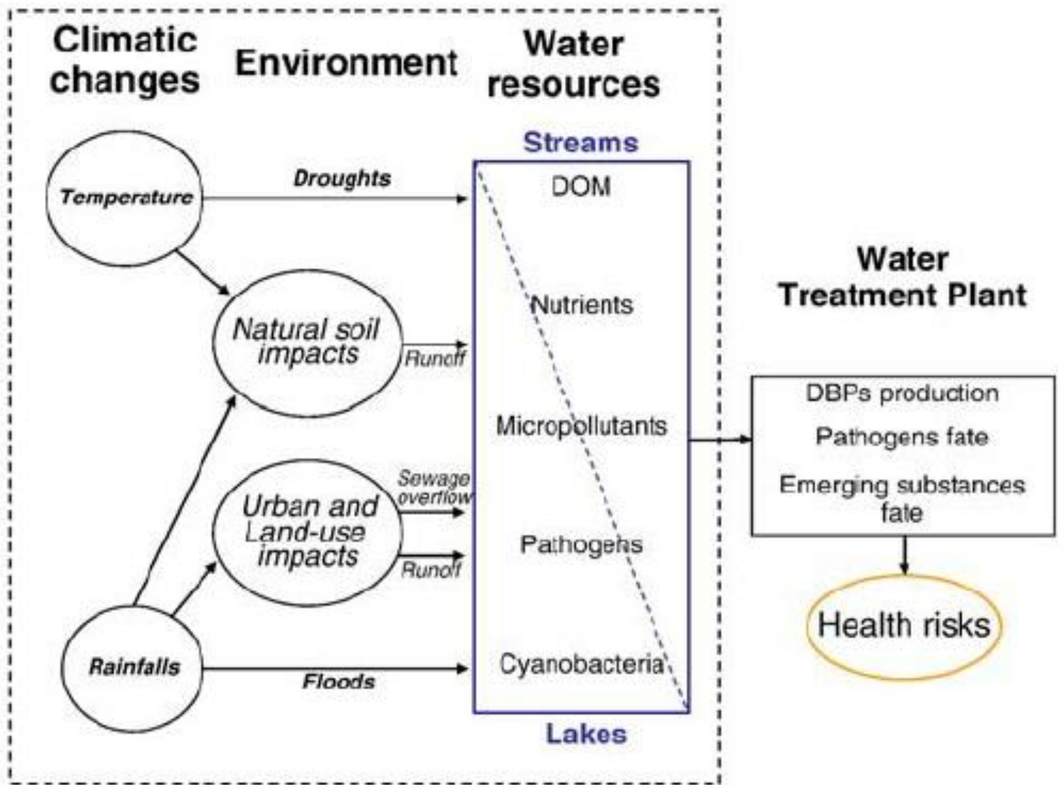
❑ Cambodia

The tropical climate of muson, which affects the northeast climate of muson

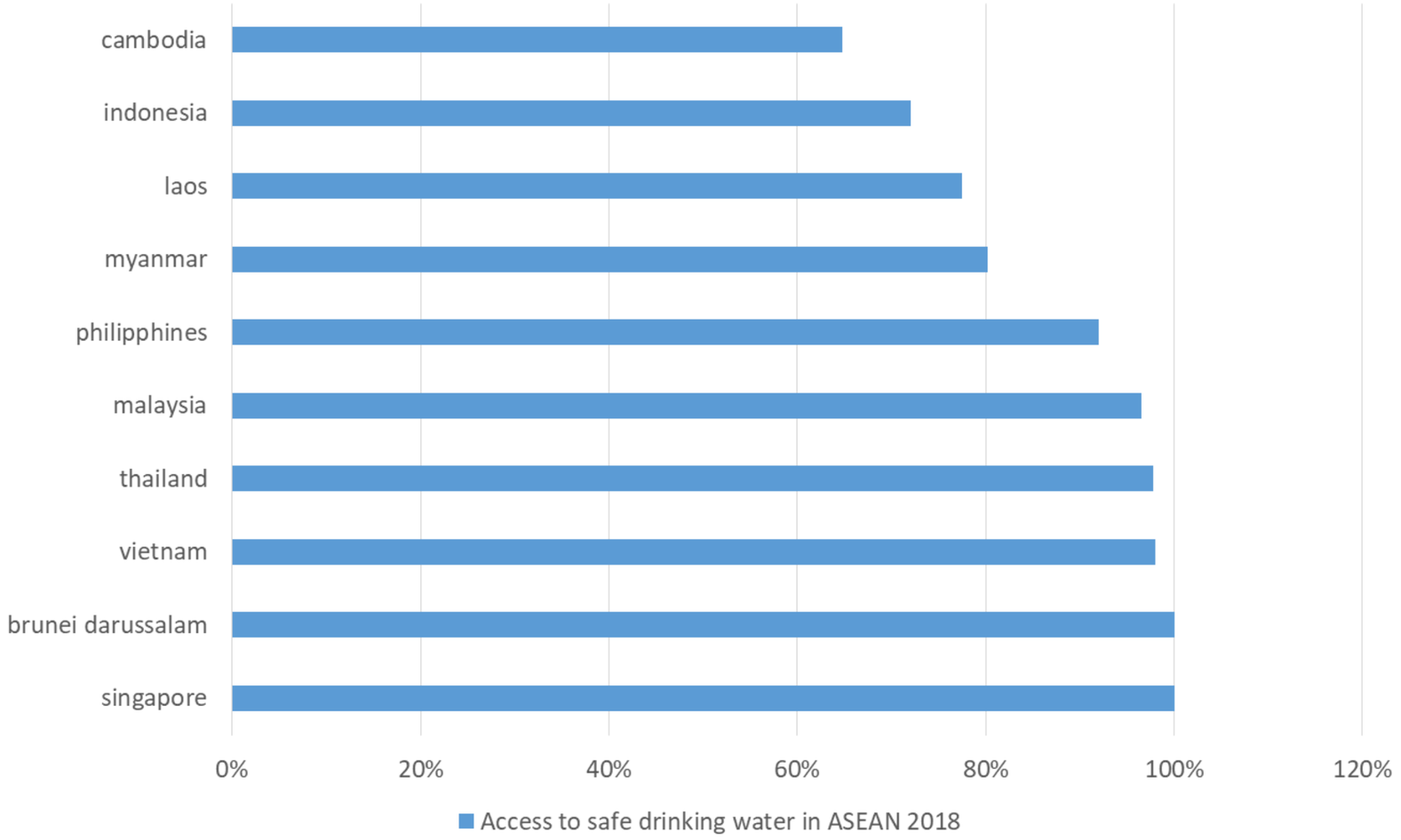


How Climate Change Can Impact on the Availability of Clean Water.



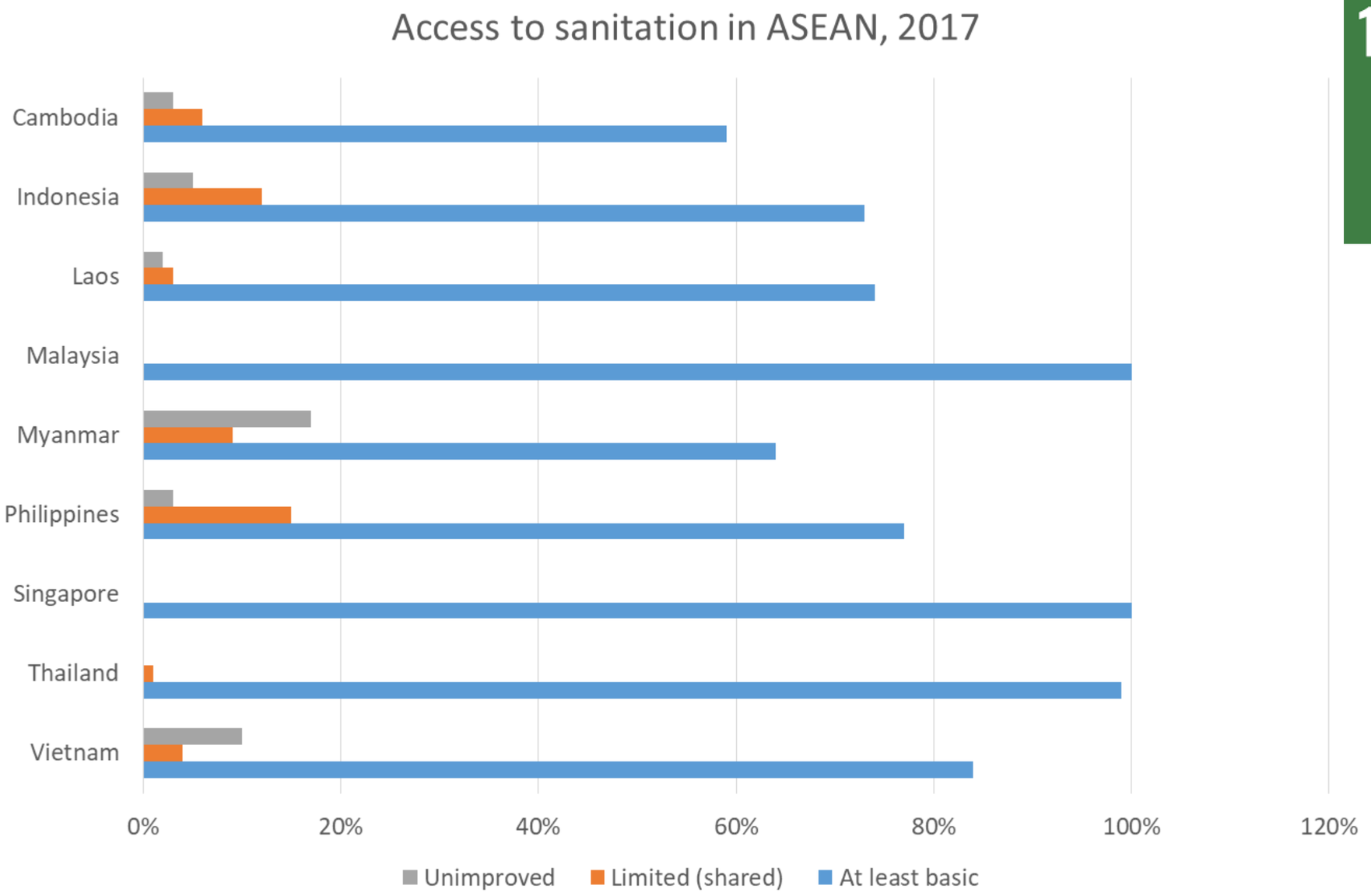


Access to safe drinking water in ASEAN



Access to safe drinking water in ASEAN, 2018

Daydream Team



13 CLIMATE ACTION

Access to sanitation in ASEAN, 2017

Daydream Team

What Can Be Done?

1. Water Safety Plans

The water safety plan concept embedded in the WHO drinking water quality guidelines advocates a proactive effort to prevent water contamination in drinking water systems to reduce health risks. Emphasis has shifted to promoting a holistic framework for safe drinking water, which encompasses flexible and locally relevant health-based targets, a system of integrated risk assessment and incremental risk management in the chain of events from catchment to tap, and independent monitoring and surveillance.

2. Household water treatment and safe storage In places where safety of water is not certain, it can be made safe by treating it at home.

The technologies available include boiling, filtering, solar disinfection of water (SODIS), use of bleaching powder, chlorine tablets etc. Water treatment also needs to be accompanied by safe storage. This can be accomplished by using containers with secure covers and a dispensing device such as a tap or spigot to protect collected water against recontamination. These measures are particularly important because the microbial quality of drinking water frequently declines after collection. A high percentage of people could therefore benefit from effective household water treatment and safe storage practices. Such household level interventions can be very effective in preventing disease if they are used correctly and consistently

What Can Be Done?

3. Improved operation and maintenance of water supply systems.

Water loss and water contamination occur in piped water systems as well as other point sources if the system is not well maintained. The water treatment plants should be operated as per standard operating procedures. The operation and maintenance would be improved with the use of water safety plans through risk assessment and management.

4. Arsenic and fluoride mitigation Groundwater sources that are contaminated with arsenic (above the national standard value) should not be used for drinking.

Alternative water sources such as surface water or rainwater have to be sought. The West Bengal Government, India has provided arsenic-free potable drinking water by various short-, medium- and long-term measures. Over the years it has reached a consensus that surface water–based water supply schemes are the only long-term solution. To this effect, the state government has already implemented three large surface water–based piped water supply schemes in the districts of Malda, South 24 Parganas and North Parganas, which aims to cover nearly one-third of the population at risk. The government has also implemented other short-term and medium-term measures such as provision of tubewells at deeper aquifers and arsenic treatment units with existing hand pumps.

References

https://www.nationalgeographic.org/article/how-climate-change-impacts-water-access/

https://www1.undp.org/content/seoul_policy_center/en/home/sustainable-development-goals/goal-6-clean-water-and-sanitation.html

https://pubs.acs.org/doi/10.1021/acsestwater.2c00004

https://www.detik.com/edu/detikpedia/d-5737381/negara-negara-di-asean-secara-umum-beriklim-apa

http://asmc.asean.org/asmc-haze-regional-weather-station-rainfall#Regional_Weather

https://weather-and-climate.com/average-monthly-precipitation-Rainfall,Phnom-Penh,Cambodja

https://www.researchgate.net/figure/Impacts-of-climate-change-on-water-resources-and-drinking-water-quality_fig1_222400386

https://www.iucn.org/resources/issues-briefs/water-and-climate-change

https://apps.who.int/iris/handle/10665/204999