



RISING SEAS AND RISING RISKS

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CAUSES OF SEA LEVEL RISE

- Global warming is melting ice caps and ice bergs which causes a rise in the sea level.
- Thermal expansion of water due to global warming.
- Sea Level Rise is a climate-induced and human-driven phenomenon.



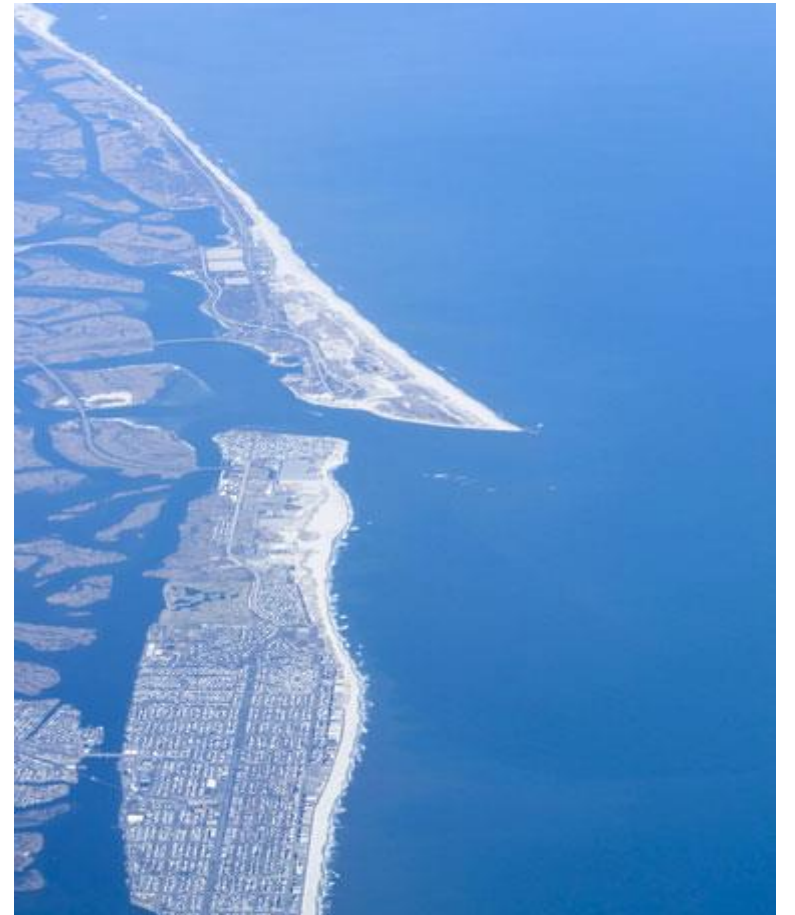
VISIBLE CONCERNS OF SEA LEVEL RISE

- Melting Glaciers
- Loss of Greenland and Antarctica's ice sheets



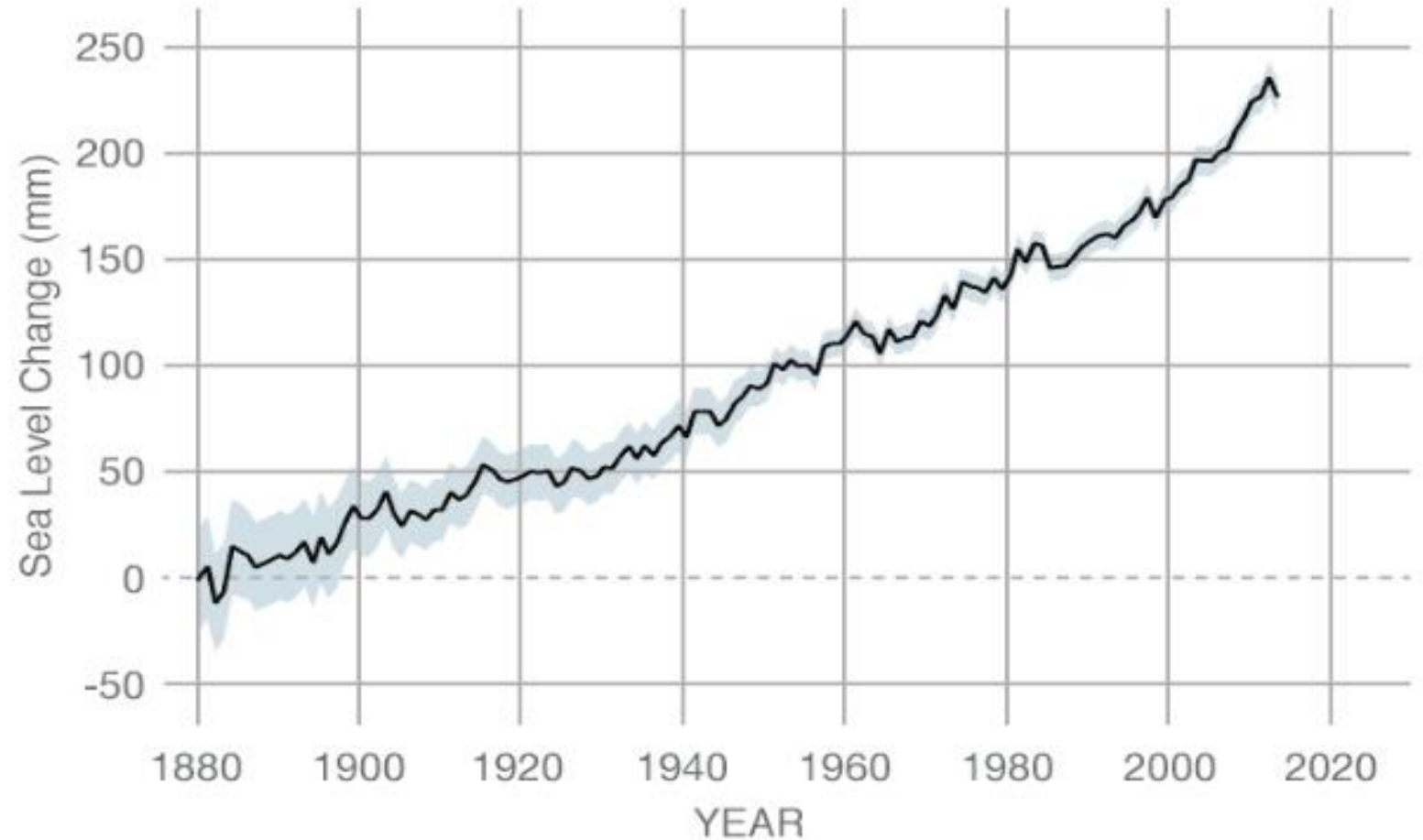
SEAL LEVEL RISE: FACTSHEET

- Average sea levels have swelled over 8 inches since 1880. (National Geographic)
- There was a rise in the sea level by 3 inches over the past 25 years. (National Geographic)
- Every year, the sea rises another 1.3 inches. (National Geographic)
- Scientists predict that major breakup of the Greenland and West Antarctic ice sheets can easily raise it up to 276 inches, creating a doomsday scenario.



SEAL LEVEL RISE: FACTSHEET

- According to NASA, there has been a sea level change of over 7.87 inches.



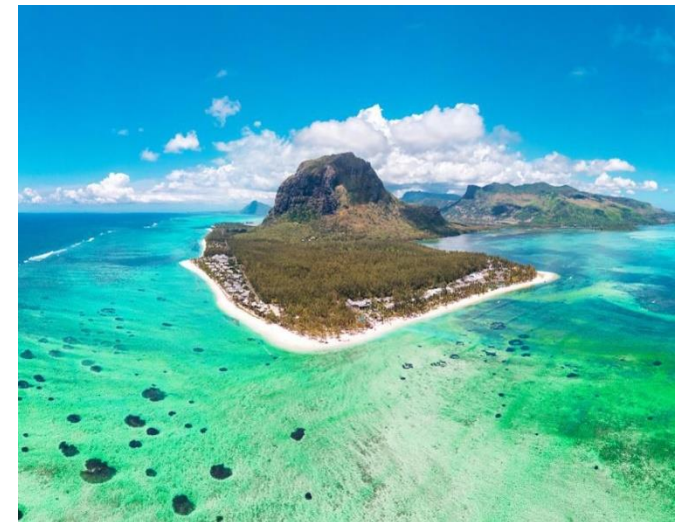
SEAL LEVEL RISE: FACTS AND POSSIBILITIES

- The sea level rise can be more than approximately 157 inches in the worst possible case. (US Environment)
- The new IPCC projects global mean sea level is rising, with acceleration in recent decades due to increasing rates of ice loss from the Greenland and Antarctic ice sheets.
- Without cuts in carbon emissions, the ocean is expected to rise between 24 inches and 43.3 inches, about 3.93 inches more than the earlier estimate. (The Guardian)



SEA LEVEL RISE: FACTS AND POSSIBILITIES

- Ocean heating is expected to increase by at least 20 times by 2100. (The Guardian)
- Across the ocean, heat, acidification and lower oxygen is set to cut fisheries by a quarter and all marine life by 15% if emissions are not slashed. (The Guardian)
- The Arctic Sea ice in 2019 shrank to its second lowest extent in the 41-year satellite record. (National Oceanic and Atmospheric Administration)



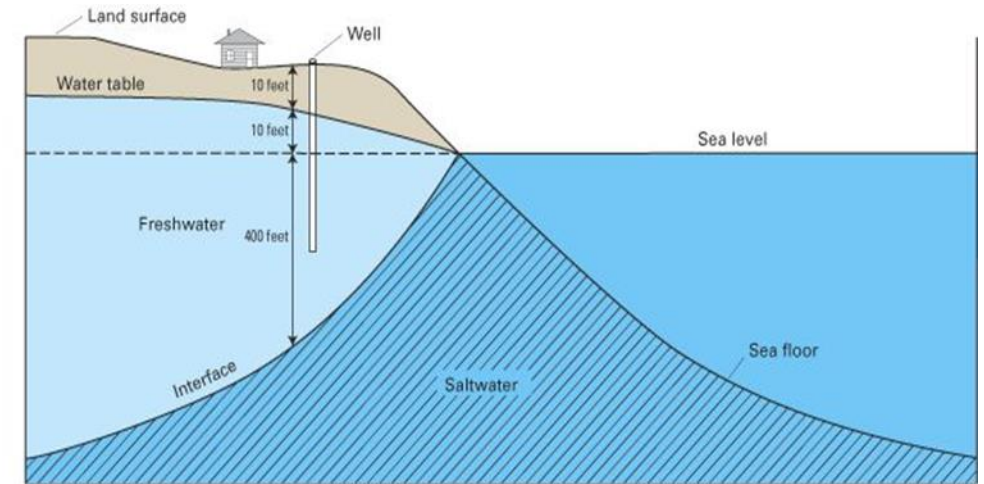
IMPACTS OF SEA LEVEL RISE-TERRITORIALITY AND MIGRATION

- The impact of sea level rise will cause several trillion dollars of damage per year.
- It will cause mass migration of millions.
- A rise in sea level by 3.93 inches will expose 10 million people to flooding. (The Guardian)
- Low-lying regions around the world will suffer the most, as countries like Bangladesh, East Timor, Maldives, Sri Lanka, U.S., will face either partial or complete inundation.
- Opening up of new Arctic Routes



IMPACTS OF SEA LEVEL RISE-FOOD AND WATER SECURITY

- Food security will be hampered to a great extent due to loss of agricultural land.
- Quality of the remaining agricultural land will degrade due to increased salinity.
- Case of Mekong and Red River
- Hyper-salination and water security
- Excessive pumping of ground water might insert unwanted chemicals like arsenic in absence of drinkable water.



IMPACTS OF SEA LEVEL RISE-ENERGY SECURITY AND HABITAT

- Energy infrastructures are highly vulnerable to the sea-level rise.
- Increased water level will affect the functionality of the nuclear reactors built along coastal regions.
- The Fukushima case
- Sea-level rise can contaminate water used for drinking and irrigation.
- It can also threaten coastal plant and animal life.



IMPACTS OF SEA LEVEL RISE-FLOODING AND LOSS OF HABITAT

- Recent expert analysis concluded that 93 inches of sea level rise remains possible by 2100. (The Guardian)
- Sea level is expected to rise by a huge magnitude of 157 inches by 2300. (The Intergovernmental Panel on Climate Change)
- Damage will be done to many coastal ecosystem including deltas, port facilities, coastal structures, coral atolls and reefs.
- Threat to Marine Life
- Flooding of many densely populated areas.
- Up to 216 million people currently live on land that will be below sea level or regular flood levels by 2100. (Mother Nature)



IMPACTS OF SEA LEVEL RISE-METROPOLITAN SCENARIO

- Around 1.9 billion people and over half of the world's megacities are all in grave danger if we don't act immediately. (The Guardian)
- Eight of ten financial cities are located at coastal regions and the inundation of these cities could lead to an economic and insurance collapse. (Intergovernmental Panel on Climate Change)
- There can be drainage problems due to a rise in sea level.
- Global flood damage for large coastal cities could cost \$1 trillion a year if cities don't take steps to adapt. (World Bank)



IMPACTS OF SEA LEVEL RISE-EROSION

- As more and more water breaks upon the shore, beaches and other areas will be slowly eroded.
- The sand and other barriers are often our first line of defense against the erosion caused by bodies of water, which are not effective.
- With sea levels rising, it's very likely these precious and delicate environments will be washed away.



POLITICO-ECONOMIC IMPACT

- Loss of Tourism Economy
- Threat to Existing Ports and Supply Chain Management
- Politico-Social Destabilisation
- Loss to Private Sector Investment

THREAT TO PACIFIC ISLANDS

- Recently at least five reef islands in the remote Solomon Islands have been lost completely to sea-level rise. (ZME Science)
- Nuatambu Island has lost more than half of its habitable area, with 11 houses washed into the sea since 2011. (ZME Science)
- Natural variations and geological movements will be superimposed on these higher rates of global average sea level rise.
- 21 islands exposed to higher wave energy, five completely disappeared and a further six islands eroded substantially. (Third World Network)



ADAPTING TO THE THREAT

- Many coastal cities are planning adaptation measures to cope with long term prospects of higher sea levels.
- Building seawalls, rethinking roads, and planting mangroves or other vegetation to absorb water are all being undertaken.
- In Jakarta, a USD 40 billion project will aim to protect the city with 80 feet (960 inches) high seawall.



ADAPTING TO THE THREAT

- Rotterdam has built barriers and innovative architectural factors such as “water square” with temporary ponds.
- Rotterdam, home to the Global Center on Adaptation, has offered a model to other cities seeking to combat flooding and land loss.



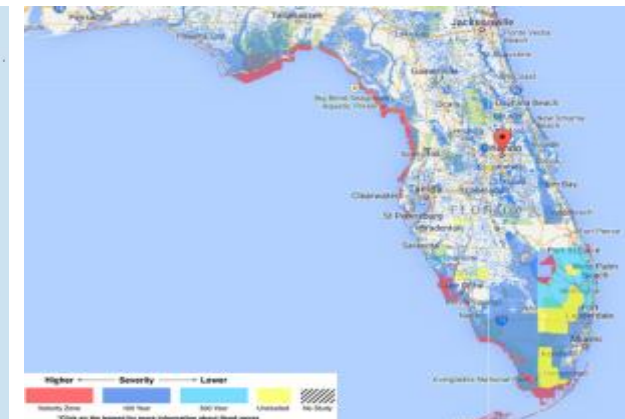
ADAPTING TO THE THREAT

- In Miami, it is common for sidewalks and even personal driveways to be raised by adding several feet of concrete to them.
- California introduced its first policy guide for sea level rise in 2015, which includes rebuilding and replenishing the natural beaches, dunes, wetlands, and other areas.



THE FUTURE

- Latest report from Intergovernmental Panel on Climate Change states the oceans can rise between 10 and 30 inches by 2100.
- NASA and European data predicts a rise of 26 inches by the end of this century if the current trajectory continues.
- If all the ice on Earth in glaciers and sheets melts, it would raise sea level by 2,592 inches. (National Geographic)
- Some countries and even states can disappear under the waves. Example: Florida and Papua New Guinea.



THE FUTURE

- Reversing completely the process of sea-level rise is not achievable.
- Some of the impacts of rising water level are inevitable.
- Practical course of actions will be to mitigate the impacts of the sea level rise and preventing future aggravation.





Conclusion



THANK YOU

Bangladesh Institute of Peace and Security Studies