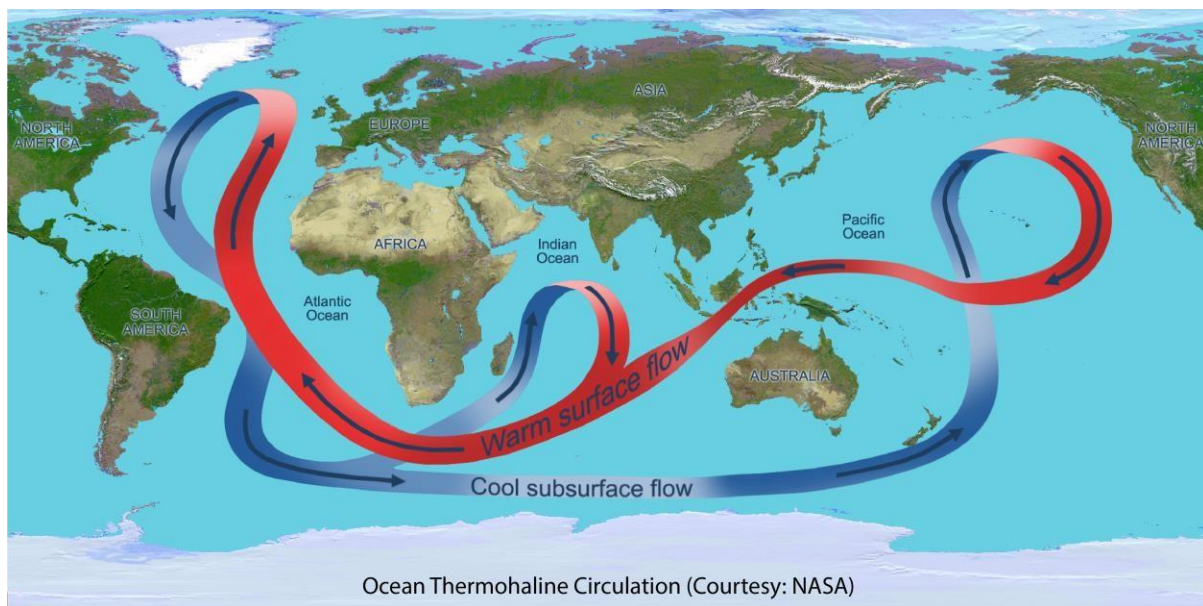


Climate Change Can Antarctica Be a Barometer and A Ratnakara for Bangladesh



“Climate experts posit that climate change impacts pose a formidable challenge to Bangladesh's development efforts, human security, and the future”. (Syed, M. 2022). Antarctica, and specifically science in Antarctica unlike many other areas of the planet has global significance, and Bangladesh is not an exception. Bangladesh is situated in the low-lying deltaic plain, becoming one of the first victims of the melting glaciers, rising temperatures, and eventually inundation from increasing sea levels. However, for most of Bangladesh's history, the Antarctic has been ignored which is a dominant actor, responsible for global climate change, and could also be a barometer.

A humble attempt is made in this article to help us understand firstly why Antarctica, essentially the science of Antarctica is important, its influence on climate change, and secondly the furtherance of the initiative the government can take to keep Antarctica at the focus when preparing to combat climate change challenges for the sustainable development of Bangladesh. Thirdly, the article aims to make BIMRAD (Bangladesh Institute of Maritime Research and Development), a Bangladesh Navy-patronized charitable research organization, a common platform to become a bridge connecting maritime scholars, stakeholders, think tank organizations, print, electronic, and social media, and most importantly our community. It's with strong conviction that together we can and will make a difference to sail safely through the vicissitudes of climate challenges that threaten the 'little speck of land we lovingly call Bangladesh'.

In recent years, ordinary citizens and researchers alike in Bangladesh, and elsewhere across the globe, have begun to recognize the different ways communities are being impacted by climate change. A few of the impacts are by now clearly visible; for instance, drought, cyclonic storms, heavy rainfall, sea-level rise, coastal erosion, etc. Some other effects remain obscured to average eyes. Though there's no crystal ball to look into the future, policymakers can best

predict, and prepare to respond in areas yet to identify or gear up already taken adaptation – mitigation - funding to potential climate change impacts through the effective use of scientific research and observations to make informed decisions. Besides, it is also significant for Bangladesh to initiate the accession process to the Antarctic treaty to benefit from the 'Ratnakara' – the Antarctic.

Why Antarctica? The effect of Antarctica's ecosystem in regulating global climate unfortunately remains a terra incognita for most of us. Thus, understanding and examining the science in Antarctica is critically important. Bangladesh and other nations vulnerable to such climate change effects may benefit from using the scientific study of Antarctica as a barometer!

The Antarctic and Southern Ocean Coalition (ASOC) believes that understanding climate change impacts on Antarctica is a matter of critical importance for the world and for the continent itself. ASOC posits that the greatest threat to the world comes particularly from the West Antarctic Ice Sheet (WAIS). According to ASOC, if melted completely, the WAIS contains "sufficient ice to raise worldwide sea level by more than 60 meters". Accordingly, notwithstanding the uncertainty, a modest disproportion between 'input and output of ice' might contribute grossly to the present-day rise in sea level by 1.5–2 mm/year. On the other hand, according to the Germanwatch's Global Climate Risk Index 2021, Bangladesh is the seventh most vulnerable country to climate change. Many researchers found that sea level rise is comparatively higher in the Bay of Bengal than in other regions of the world because of its geophysical location.

While geographically distant, Antarctica is critical with its massive ice sheets, which perform as the Earth's "freezer." They reflect sunlight into space and keep the global temperature in control. However, climate change is accelerating the rate of ice melting and bringing a twofold effect.

The increase in temperature resulted in flooding in coastal areas of the littoral of the Indian Ocean. These, in turn, accelerate global warming and influence a vicious cycle of extreme weather. The recent records of 2024, observe the burning heatwave absorbing South Asia, with Kolkata (India) recording 43 degrees Celsius (the hottest day in 70 years), Bangladesh recording 43.7 degrees Celsius (the highest in 50 years), and Thailand experiencing similar heat wave, is a terrifying symptom of climate change's escalating threat. The record-breaking heat across South Asia is a stark reminder of the need for urgent action to reduce greenhouse gas (GHG) emissions to slow the rate of Antarctic ice sheet melting and reduce the risk of more frequent, severe heatwaves such as the one currently sweeping the region.

Antarctic as a Ratnakara. The area of Antarctica is 14 million km². Ninety-eight (98%) percent of which is covered by ice containing 90% of the ice of the world. This continent is an extensive reserve of strategic mineral resources that remains unexplored. Experts have already mapped about 170 types of minerals (gold, silver, iron, natural gas, etc.), capable of serving the world economy for about 200 years. Professionals estimate that Antarctica may have a reserve of 200 billion barrels of oil, much larger than that of some countries in the Middle East, such as Kuwait and the United Arab Emirates. The exploration of these resources will be decided in

2048 when the consultative parties to the Antarctic Treaty System will meet to define the future of the continent. (Syed, M. 2022).

Genesis of the Antarctic Treaty. On 01 December 1959, during the 1957–1958 International Geophysical Year (IGY) Antarctic Treaty was signed by 12 countries in Washington D.C., which came into effect in 1961. Since then, more countries including India (consultative), Malaysia, and Pakistan (non-consultative) have acceded to it. As of now, 56 Parties have acceded to the treaty (Secretariat of the Antarctic Treaty). Unfortunately, Bangladesh is yet to accede to the treaty.

As has been briefly mentioned, sea ice is one of the main features of Antarctica that impacts the climate of the world. It acts in several ways such as:

1. Reflecting heat by the ice-albedo effect. The bright white surface of sea ice reflects the sun's light into space (albedo effect), which means less heat is absorbed into the ocean, helping to keep the planet cooler.

2. Supporting ecosystems. When formed, sea ice creates a solid structure, which facilitates the growth of algae. Algae form an important part of the food web. For example, krill, little crustaceans that support most of the ocean food web, feed on these algae. Krill populations have been declining as the sea ice has decreased. Researchers have found that ice loss is speeding up every year. The speed of ice loss in Antarctica has multiplied sixfold over the last 30 years.

3. Changing ocean currents. Sea ice is made of mostly fresh water. This process contributes to the global ocean conveyor belt which drives ocean currents around the world, carrying heat and nutrients with it. It is a massive system. Scientists estimated that a complete circuit of the conveyor belt would take almost 1,000 years. Recent research by Australian scientists suggests 40% slowdown in just three decades could alter the world's climate for centuries.

Climate experts predict that by 2050, rising sea levels will submerge about 17% of the nation's land and generate 20 million climate refugees. "Bangladesh needs to strategize future endeavors balancing between harnessing additional resources while dealing effectively with climate change". (Syed, M. 2022). On this basis, before Bangladesh's leadership counters the realities of nature against rising waters, ozone depletion, etc., due to the melting of Antarctic Icebergs - global warming – melting of Antarctic Icebergs, (the vicious cycle), it is imperative to know more about Antarctica, which remains, for many a terra incognita.

For the healthy future of planet Earth, especially to sustain the herculean development effort of Bangladesh, scientific studies in Antarctica to combat climate change and make an official arrangement to accede to the Antarctic Treaty cannot sufficiently be emphasized.

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