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# UNCLOS and climate-induced maritime challenges: Strategic implications for the Indian Ocean Region

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## ABSTRACT

Climate change is one of the greatest challenges of the 21<sup>st</sup> Century. Climate change-induced challenges are intrinsically linked to the oceans because they are a critical part of the global climate system. Increasing anthropogenic greenhouse gas (GHG) emissions have resulted in sea level rise, which acts as a threat multiplier in the maritime domain. Sea level rise will also affect established baselines of certain countries, especially archipelagic states and island nations; which in turn, will certainly impinge on states' maritime zones and related rights under the United Nations Convention on the Law of the Sea (UNCLOS). The scenario is also likely to exacerbate geopolitical tensions in the Indian Ocean Region (IOR), which is emerging as the focal point of great power rivalry. From a strategic point of view, these climate-induced maritime challenges present a compelling opportunity for India to work collaboratively with the IOR countries to improve upon the regional human and environmental security, in accordance with India's maritime security strategy. If the Indian initiatives concurrently, manage to balance the overarching Chinese objective of leveraging their increased presence in the IOR to influence non-traditional security dynamics in the region to their benefit, so much the better.

## KEYWORDS

Climate change; global warming; GHG emissions; sea level rise; baselines; IPCC; UNCLOS; Indian Ocean; Indian Navy

## Introduction

Climate change, as one of the greatest concerns of the twenty-first century, has brought immense challenges to the maritime domain and international law governing the use of oceans and seas, as reflected in the 1982 United Nations Convention on the Law of the Sea (UNCLOS).<sup>1</sup> Sea level rise resulting from climate change has the potential to impact legal entitlement to maritime space and boundaries of a coastal state under the UNCLOS, which, in turn, will have significant political, economic, environmental, and security implications.

The 1992 United Nations Framework Convention on Climate Change (UNFCCC) provides the legal basis for international cooperation on climate change.<sup>2</sup> It is supplemented by the 2016 Paris Agreement to strengthen the global response to the threat of climate change.<sup>3</sup> The Ocean and Climate Change Dialogue, under the

UNFCCC, and the Paris Agreement together deal with integrated action on ocean and climate change adaptation and mitigation measures.

The climate change, by definition, refers to “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere; and which is in addition to natural climate variability observed over comparable time periods.”<sup>4</sup> The latest assessment report of the Intergovernmental Panel on Climate Change (IPCC) unequivocally states that greenhouse gas (GHG) emissions from human activities have warmed the atmosphere, oceans, and the adjoining landmass.<sup>5</sup> It states that emissions of GHGs from human activities are responsible for approximately 1.1° C of global warming in the 1850–1900 time period. It is also posited that there is a strong interrelation between scientific, economic, and political dimensions related to the climate change.<sup>6</sup> It would, therefore, not be wrong to aver that climate change affects everything from human security to geo-economics to geopolitics.

This article provides an overview of climate change-induced maritime challenges in general, with particular focus on the effect of accelerating sea level rise on maritime zones and related rights of states under the 1982 UNCLOS. Thereafter, its strategic implications for the Indian Ocean Region (IOR), and India in particular, are assessed. Finally, India’s policy options to collaborate with the IOR countries on human and environmental security – with a view to ensure that opportunistic extra-regional third parties do not derive unfair geopolitical advantages by leveraging climate-induced sea level vulnerabilities of IOR littorals – are suggested.

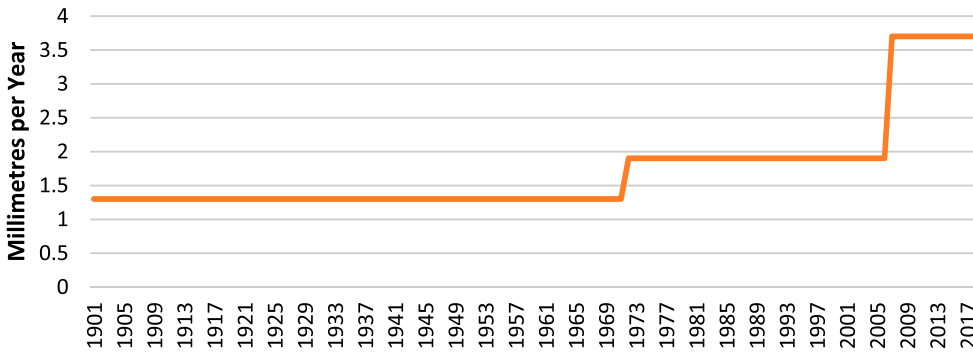
## **Oceans and climate change**

The oceans underpin the Earth’s climate system and are a critical element in the planet’s natural response mechanism to rising GHG levels in the Anthropocene.<sup>7</sup> They are instrumental in capturing about one-third of anthropogenic carbon emissions emitted into the atmosphere, and also absorb about 90 per cent of the heat. A portion of this absorbed heat is stored in the deep sea, which helps to buffer against global warming.<sup>8</sup> While the Earth has warmed by 1°C (about 2°F) since 1880, the oceans’ surface temperature has risen by about 1.5°F in this time period.<sup>9</sup>

### ***Impact of climate change in maritime domain***

Climate change has inevitably caused thermal expansion of ocean water and melting of the polar ice, thereby resulting in global mean sea level (MSL) rise. The IPCC special report places this phenomenon in perspective by mentioning that while the sea level registered an annual average rise of 1.3 ml (mm) over 70 years from 1901 to 1971, the rate of rise in the shorter time frame of 1971–2006 (25 years) was 1.9 mm annually. The rise in further compressed time period of just 12 years (2006–18) amounted to an even higher rate of 3.7 mm per annum, with the report averring that human influence was the most likely driver for this huge uptick.<sup>10</sup> *Figure 1* enables better appreciation of these statistics.

In addition, the IPCC report states that the global MSL increased by 0.20 m (m) between 1901 and 2018.<sup>11</sup> The global sea level rise will continue to accelerate even if the world at large is successfully able to reduce GHG emissions to the levels “concurrent



**Figure 1.** Annual Sea Level Rise from 1901–2018 (118 years). Source: Data from IPCC, AR6; graph by authors.

to” in the Paris Climate Agreement of 2015.<sup>12</sup> It has been projected that the sea level rise of 1 m will wipe out about 46 per cent of the world’s coastal wetlands.<sup>13</sup> In fact, one such scenario predicts that at this level of sea rise, substantial landmass of Maldives would go under water in next 20 years, with the whole country being submerged by 2085.<sup>14</sup> The Maldivian government decided to bring home this disastrous fate awaiting the country in a dramatically poignant fashion by holding a cabinet meeting underwater in 2009.<sup>15</sup>

### **Climate-induced maritime challenges and relevance of UNCLOS**

The threat of climate change goes beyond environmental concerns – climate change is increasingly recognised as a threat multiplier. In the maritime domain, two important concerns relate to GHG emissions from ships and potential implications of sea level rise on the coastal states’ maritime boundaries. The sea level rise also brings in new maritime challenges, especially for low-lying coastal states and islands. Their coastlines may shift landwards or submerge as a result of sea level rise. This scenario will have serious legal implications for coastal states’ maritime entitlement and boundaries under the law of the sea. UNCLOS, as the overarching international law framework guiding many issues related to maritime order at sea, should naturally be the most suitable instrument for addressing climate-induced maritime challenges also. It, therefore, calls for a revisit of those existing provisions of UNCLOS which provide certain pointers in this direction.

#### ***UNCLOS as the constitution for ocean governance***

The UNCLOS, being considered ipso facto as the “constitution for ocean governance”, sets out the international legal framework for veritable uses of oceans and their resources, establishes maritime zones, and enunciates the rights and duties of states within these zones.<sup>16</sup> These include various aspects, such as the freedom of high seas, extent of maritime zones – territorial sea, contiguous zone, exclusive economic zone (EEZ), and the continental shelf – delimitation of maritime boundary, marine environment, marine resources, and settlement of maritime disputes. It also provides legal authority for establishment of three institutions, namely, the International Tribunal for the Law of the Sea

(ITLOS), the International Seabed Authority (ISA), and the Commission on the Limits of the Continental Shelf (CLCS).<sup>17</sup>

### **UNCLOS and GHG emissions**

From an environmental perspective, UNLOS is also the most comprehensive international law framework for protection of ocean and marine environment. Article 1(4) of UNLOS defines “marine environment pollution” thus:

“[P]ollution of marine environment” means introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate use of the sea, impairment of quality for use of sea water and reduction of amenities.

Article 192 of UNCLOS stipulates that “States have general obligations to protect and preserve the marine environment.” This general obligation is supplemented with specific provisions to combat marine environment pollution from all sources, including land-based sources (Article 207), pollution by dumping (Article 210), and pollution from vessels (Article 211). Article 212 of the UNCLOS, in particular, obligates states to adopt laws and regulations and take other necessary measures “to prevent, reduce and control pollution of the marine environment from or through the atmosphere”. These obligations are sufficiently broad to accommodate measures to mitigate climate change issues also.<sup>18</sup>

The maritime means of transportation emit around 1076 million tonnes of GHGs annually, and are also responsible for about 2.9 per cent of global anthropogenic emissions.<sup>19</sup> Though UNCLOS makes no explicit reference to climate change and GHG emissions, Part XII therein, relating to “protection and preservation of the marine environment”, appears quite relevant towards implied redressal of environmental challenges of climate change and its impact, in an indirect manner.

Further, Article 212(3) makes reference to the role of “competent international organisations” – the International Maritime Organisation (IMO), for instance – in enabling the states to establish global rules to combat marine pollution from or through the atmosphere.<sup>20</sup> In pursuance of this mandate, the IMO amended the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL Convention), wherein it added Annex VI, titled “Regulations for the Prevention of Air Pollution from Ships”.<sup>21</sup>

Thus, even though GHG emissions are not specifically mentioned in the UNCLOS as a source of marine environment pollution, it appears quite reasonable to interpret Part XII to include this type of pollution. However, since climate change, in recent years, has emerged as an issue which has gained its own sustainable traction, its governing modalities certainly beg consideration for inclusion as a separate set of articles under Part XII of the UNCLOS. It will ensure that the envisioned balance in the package deal of UNCLOS is maintained, while the Convention concurrently continues to adapt to new challenges of climate change, as has been done through implementation agreements, such as the 1995 UN Fish Stock Agreement. The forthcoming instrument for the conservation and sustainable use of “Marine Biological Diversity of Areas beyond National Jurisdiction” (BBNJ instrument) is yet another example.

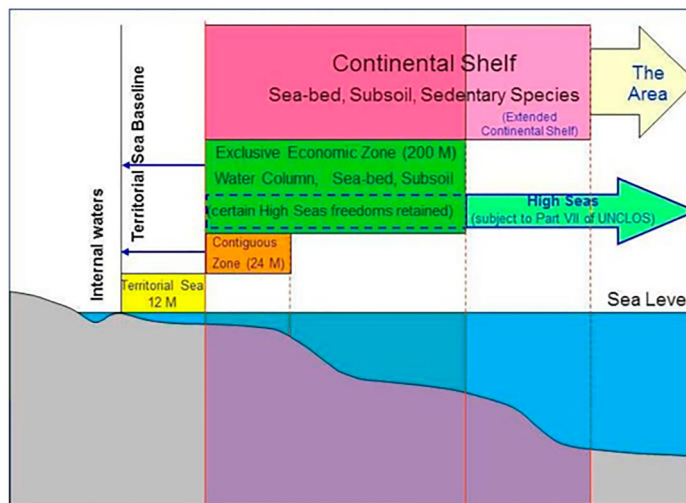
### **UNCLOS and the legal consequences of sea level rise**

The UNCLOS, inter alia, establishes the legal framework of baselines to determine outer limits of maritime zones and delineation of maritime boundaries.<sup>22</sup> The provisions that specifically rule on the extent of maritime zones are as follows:<sup>23</sup>

1. *Article 3* (territorial sea): “Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this Convention.”
2. *Article 33(2)* (contiguous zone): “The contiguous zone may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured.”
3. *Article 57* (EEZ): “The exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured.”
4. *Article 76(1)* (continental shelf): The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin; or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, where the outer edge of the continental margin does not extend up to that distance.

The diagrammatic representation of these maritime zones with respect to the territorial sea baseline is shown in [Figure 2](#).

It is clear from the aforesaid UNCLOS provisions that a coastal state measures all its maritime zones from baselines. It may be noted that the baselines are generally considered to be ambulatory, that is, they change position as natural processes change



**Figure 2.** Diagram to Illustrate Maritime Zones of a Coastal State. Source: International Hydrographic Organisation, *A Manual on Technical Aspects of The United Nations Convention on The Law Of The Sea – 1982 (TALOS)*, C-51, 6th Edition, 2019. Accessed June 22, 2022. [https://iho.int/uploads/user/pubs/cb/c-51/C\\_51\\_Ed600\\_052020.pdf](https://iho.int/uploads/user/pubs/cb/c-51/C_51_Ed600_052020.pdf).

coastlines.<sup>24</sup> It is, thus, obvious that when the low-water line moves back or landwards because of rise in MSL, the normal baselines or straight baselines will also shift inwards.

### ***Impact of sea level rise on maritime zones***

According to UNCLOS, all maritime zones are measured from the baselines – also called normal baselines – which are located along the low-water line; and refer to the lowest water line when the seas are receding.<sup>25</sup> Consequent to sea level rise, the low-water line, as also normal baselines, would shift. This changing scenario would, in principle, lead to inward shifting of the outer limits of maritime zones also, in line with the UNCLOS provisions, namely, Articles 3, 33(2), 57, and 76(1), for establishing various maritime zones by distance criteria measured from baselines.

The interpretation of legal baselines, under Article 5, UNCLOS, has evoked the ongoing debate on what has to be done to provide stability and certainty to baselines for measuring maritime zones of a coastal state. This, in turn, would have significant implications on the extent of a coastal states' legal entitlement to maritime zones and their economic, resource, and national security interests, particularly for low-lying coastal states. As a result of receding maritime zones, the coastal state's national interests are likely to be severally affected by loss of maritime rights and jurisdiction. For example, under the ambulatory baselines concept, the outer limits of EEZ would per force move inwards, resulting in a portion of the previously claimed EEZ becoming part of high seas regime. In this scenario, there would be confusion and possible conflict with respect to a vessel navigating there over the applicability of EEZ or the high seas regime.

### ***Implications for maritime features – Islands***

Article 121(1), UNCLOS, defines an island as “a naturally formed area of land, surrounded by water, which remain above water at high tide”. An island is entitled to all maritime zones, that is, territorial sea, EEZ, and continental shelf, under Article 121(2) of UNCLOS. Sea level rise could not only lead to inundation of maritime features such as islands, but deprive inhabitable islands of their legal foundation to claim maritime zones under the Article 121, UNCLOS. While inhabitable islands may retain maritime entitlement to 12 M territorial sea as per Article 121(3) (“rock”), the now submerged islands would lose the legal basis for claiming any maritime zone entitlement whatsoever, under the UNCLOS. In this regard, Article 13(2), UNCLOS, mentions that “low-tide elevation” (LTE) – area of land above water at low tide but submerged at high tide – has no territorial sea of its own.

According to UNCLOS, if an “island”, as defined by Article 121(1), lies beyond the 12 M territorial sea limit from the coast and becomes inundated at the high tide as a result of sea level rise, then it will become LTE under Article 13. This kind of LTE may not be entitled to even territorial sea under Article 121(3) “rock” criteria; nor it could be used as a basepoint. However, if the Article 121(1) “island” is located within 12 M territorial sea and subsequently becomes LTE, then it may still be used as a basepoint for measuring maritime zones.

### **Impact on existing maritime boundaries**

The possibility of inundation of low-lying island states and landward movement of the low-water line will tend to reduce their entitled extent of maritime zones, as explained earlier.<sup>26</sup> Such shifting of existing, promulgated, and broadly accepted baselines will certainly affect bilateral treaties on maritime boundaries, which are only binding on the parties to the agreement under UNCLOS and international law in general. In a scenario where ambulatory baselines regime is in force, the countries having signed bilateral agreements on maritime boundaries would purport to exercise the coastal states' rights till the erstwhile 200 M limit. In this situation, while the existing boundaries may still be binding on the parties to the treaties, they cannot be enforced on a third party. This is because Article 89 of the UNCLOS provides that “no State may validly purport to subject any part of the high seas to its sovereignty”.

This situation-based interpretation could virtually open a Pandora's box of acrimonious claim and counter-claim cycles, with states endeavouring to maximise their own benefits and national interests. The complexity will further exacerbate, in particular, when states are located adjacent to each other or do not have the full extent of entitled maritime zones between them.

As regards existing maritime boundaries established under bilateral treaties, the 1969 Vienna Convention on the “Law of the Treaties” stipulates that the fundamental change of circumstances principle (*rebus sic substantibus*) does not apply to boundary treaties (Article 62(2)(a)).<sup>27</sup> For instance, the Vienna Convention may apply to India–Indonesia bilateral continental shelf treaty. In that case, the previously agreed to maritime boundary may still exist. However, the Vienna Convention does not specifically mention about the nature of boundary – whether land or maritime.

### **International response to legal implications of sea level rise**

The climate change-induced anomalies will have a detrimental impact on the legal basis of a coastal state's existing sovereign rights and potential claims over adjoining maritime space under the UNCLOS. This issue has spawned great debate about whether baselines should be ambulatory or fixed.<sup>28</sup> Yet another question that begs solution is whether the promulgated and legally accepted baselines as on a cut-off date can be treated as fixed or not? In this regard, International Law Association (ILA) has published a report, *International Law and Sea Level Rise*, post its Sydney Conference in 2018; wherein it has proposed a twin approach for coastal states<sup>29</sup>:

1. maintain (or freeze) their existing baselines; and
2. maintain their existing defined outer limits of maritime zones.

Additionally, in acknowledgement of the nuances involved and serious sovereignty and jurisdictional implications thereof, the International Law Commission (ILC) submitted a report to the United Nations (UN) General Assembly on the legal effects of the sea level rise on UNCLOS framework in 2021.<sup>30</sup> As a follow-up of this study group's report, the ILC now aims to undertake further in-depth analysis of various principles and rules of international law and state practice and *opinio juris* on the subject.

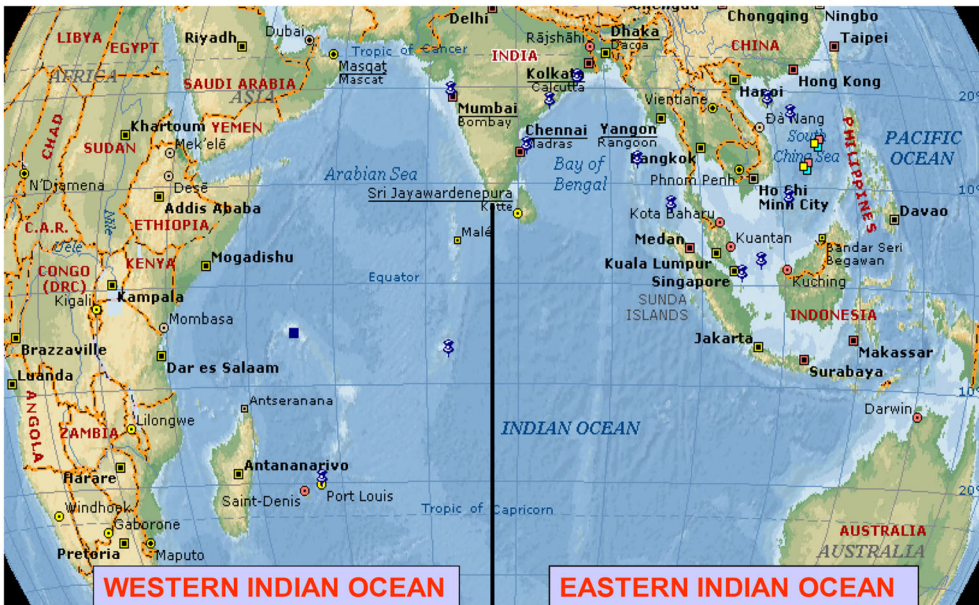
Though the ILC study group is currently examining the possible legal effects or implications of sea level rise, the mandate is limited to outlining some key issues only. It cannot propose modifications to existing international law, in particular the UNCLOS. Therefore, it will be more appropriate for the UN Secretary-General, under Article 319 (2)(e), to refer the matter to the state parties to UNCLOS to examine the legal issues arising from climate-induced sea level rise. This is critical for addressing the legal uncertainties – and minimising the scope of consequently varying interpretations of states to suit their positions – over the impact of sea level rise on baselines, and associated breadth of the maritime zones, under the existing UNCLOS regime.

### Implications for the IOR

The IOR consists of 28 littoral states<sup>31</sup> and extends over 68 million square kilometre (km).<sup>32</sup> In all, 25 Indian Ocean states, except Cambodia, Iran, and the United Arab Emirates [UAE], have ratified the UNCLOS. The Asian continent runs along its northern border, with India forming a wide peninsula that divides the northern Indian Ocean into eastern and western parts.<sup>33</sup> The geographic centrality of India in the Indian Ocean can very well be gauged from Figure 3.

### Regional security implication of climate change in the IOR

The IOR is one of the most highly impacted regions due to climate change phenomenon; and the IOR littoral countries, consequently, count amongst those most vulnerable to coastal environmental risks.<sup>34</sup> The sea surface temperature (SST) of tropical Indian



**Figure 3.** The Indian Ocean and Geographical Centrality of India. *Source:* Background map by Microsoft Encarta; markings by the authors.

Ocean has risen by 1°C on average during 1951–2015 time period, which is comparatively higher than the global average SST rise over the same period.<sup>35</sup> Moreover, the tropical Indian Ocean has shown continued increase in SST triggered by the El Niño events during 2002–2012.<sup>36</sup>

While the sea level rise in the north Indian Ocean occurred at a rate of only 1.06–1.75 mm per year during 1874–2004 (130 years), it has accelerated to 3.3 mm per year in the 25 year period between 1993–2017.<sup>37</sup> A 2021 report by the United States (US) National Intelligence Council (NIC) has, in fact, specifically identified 11 countries of concern which are highly vulnerable to climate change effects. Virtually, the whole of the Indian subcontinent comprising India, Pakistan, Afghanistan, and Myanmar figures therein, with Haiti, Columbia, Guatemala, Honduras, Nicaragua, Iraq, and North Korea being the other seven.<sup>38</sup> The projected impact of climate change-induced sea level rise on the Indian Ocean littorals will especially threaten the region's growing maritime infrastructure.<sup>39</sup>

More importantly, climate change is likely to exacerbate existing threats to regional security in the IOR, along with socio-economic challenges that will diminish resilience and increase the likelihood of conflict. The NIC report identifies cross-border water tension and conflict, cross-border migration attributed to climate impacts, and ungoverned unilateral geo-engineering being few such flashpoints.<sup>40</sup> The IOR littorals will per force have to look for greater food security, and secure access to existentially vital resources like oil and gas, while coming to terms with human challenges presented by rising seas, arid farmlands, excessive precipitation, increased migration, and population displacement. The climate-induced sea level rise will further exacerbate the geopolitical dynamics due to impending shift of maritime baselines, with consequent effect on the extent of the maritime zones and boundaries.

The islands of Maldives in the IOR are the most visible example of vulnerability to sea level rise. It has been reported that 80 per cent of the 1192 Maldivian islands have an elevation of less than 1 m above MSL.<sup>41</sup> Similarly, sea level rise threatens islands countries such as Mauritius, Seychelles, and the Comoros in the IOR. India's Sundarbans Delta in the Bay of Bengal is said to be amongst the most vulnerable coastal regions in the world. The famous New Moore – part of the now settled India–Bangladesh maritime boundary dispute – lost its existence due to sea level rise.<sup>42</sup>

There is still an element of ambiguity over legal implications of sea level rise on existing maritime boundaries, even though the states may have bilateral treaties nullifying the effect of change of circumstances – in this case, shifting of baselines landwards due to sea level rise – in future. This stems from the fact that the Vienna Convention does not distinguish between land and maritime boundaries. For instance, the Permanent Court of Arbitration, Annex VII Tribunal, in the Bay of Bengal Maritime Boundary Arbitration (*Bangladesh vs India*) case, noted in its award of 7 July 2014 that “maritime boundaries, like land boundaries, must be stable and definitive to ensure a peaceful relationship between the States concerned in the long term”. However, the Tribunal refrained from addressing the future instability of coastline due to potential effect of sea level rise in the Bay of Bengal. Also, this observation is not part of the Tribunal's *ratio decidendi* on the maritime delimitation award.<sup>43</sup>

Against this ominous backdrop, a scenario built upon China's aspirational inroads in the region – through initiatives like the Belt and Road Initiative (BRI) – may trigger significant geopolitical competition for influence, and consequent deepening of fault lines

between regional and extra-regional forces. Some security experts have, in fact, gone on to aver that climate change is the biggest threat to Indian Ocean security.<sup>44</sup>

### **Maritime security implications for India**

India has a long coastline of 7,517 km, including that of island territories, extending along a total of 73 coastal districts comprising 14.2 per cent of India's total population.<sup>45</sup> India, in fact, has been identified as one of the countries which is most vulnerable to the impact of accelerated sea level rise.<sup>46</sup> While India's average temperature – mainly on account of GHG-induced warming – rose by about 0.7°C during 1901–2018, it is projected to rise by 4.4°C by the end of the twenty-first century.<sup>47</sup> The excessive increase in heavy rain events since the 1950s, particularly over central India, has been attributed to adverse effect of GHGs and rapid warming of the equatorial Indian Ocean.<sup>48</sup>

Studies also indicate that severe cyclones are expected to increase in number and intensity on both coasts of the Indian subcontinent because of rapidly warming Indian Ocean. According to Odisha State Disaster Management Authority, the state has encountered 20 cyclones in the span of last 22 years. Further, tropical cyclones (TCs) formed in the Bay of Bengal in post-monsoon period can intensify as more potent TCs in future, with serious impact on coastal population and economy.<sup>49</sup> The rising sea levels and delta subsidence has already led to submergence of low-lying islands in Sundarbans, resulting in displacement of thousands as well as contamination of freshwater reserves.<sup>50</sup>

It is thus evident that while the Indian state will have to address many non-traditional challenges arising from climate change-related events/incidents, those in the maritime domain would mainly relate to the following:

1. Natural disasters like cyclones and the resultant coastal flooding.
2. Shift in maritime baselines due to coastal erosion and consequent change in the claimed maritime zones.
3. Damage to coastal ecology, including mangroves, corals, and coastal biodiversity.
4. Further increase in GHG levels.
5. Ocean surface and seabed pollution.

### **Role of the Indian Navy in mitigating climate change-induced security challenges**

India has proactively taken on the mantle of “preferred security partner” and “first responder” in the Indian Ocean, as reiterated publicly by the President of India during the Presidential Fleet Review – 2022.<sup>51</sup> It, thus, becomes incumbent on the part of the Indian maritime security agencies – particularly the Indian Navy – as the executive instruments of the state, to take proactive measures to address the above-mentioned non-traditional challenges for the country as well as for the extended neighbourhood in the region. These measures can be planned and executed at two distinct levels as follows:<sup>52</sup>

1. Those for collective mitigation of maritime security to benefit the IOR littorals.
2. Others aimed towards building capacities and augmenting capabilities to handle non-traditional challenges specifically faced by India.

The trilateral maritime dialogue involving the National Security Advisors (NSA) of India, Sri Lanka, and Maldives – also referred to as the Colombo Security Conclave, which commenced in 2011 – is the most relevant example of collective coordinated approach to address shared maritime challenges. The latest edition of the Conclave, which was held in March 2022 and admitted Mauritius as additional member, identified maritime safety and security and humanitarian assistance and disaster relief (HADR) as two of the five key pillars to enhance cooperation and strengthen regional security.<sup>53</sup>

At the next lower level, the mandated objectives, missions, and tasks of the Indian Navy in benign role, to respond to climate change-related natural disasters/incidents, are laid down in the *Indian Maritime Doctrine* of 2009.<sup>54</sup> These include HADR, aid to civil authorities, provision of relief materials, medical assistance, and diving support, among others. At the internal organisational level, an Indian Navy Environment Conservation Roadmap (INECR) was adopted in June 2019, which comprises action plans to reduce energy consumption and diversify the sources of energy towards environmental sustainability and reduction in carbon footprint. The roadmap is spread across various functional domains of the Indian Navy, including its operations, maintenance, administration, and infrastructure development.<sup>55</sup>

One of the major initiatives of the Indian Navy to reduce carbon footprint and GHG emissions has been the introduction of new high-flash high-speed diesel – in collaboration with the state-owned Indian Oil Company – for its ships from January 2020 onwards. The fuel, with revised nomenclature of “HFHSD-IN512”, reportedly meets the stringent International Organisation for Standardisation, MARPOL Convention, and North Atlantic Treaty Organisation specifications with respect to critical parameters, like cetane number, flashpoint, sulphur and sediment content, oxidation stability, and cold filter plugging point.<sup>56</sup>

### **Indian Navy as first responders – HADR and search and rescue (SAR)**

Notwithstanding the various conceptual and prescriptive measures mentioned here, the most visible and people-friendly benign face of the Indian Navy has been repeatedly demonstrated in the aftermath of umpteen disasters that the region has been contending with. The post-disaster humanitarian assistance provided to the IOR littoral governments, local authorities, port and harbour establishments, and the affected populace across the entire IOR has brought unprecedented appreciation and resultant goodwill for India. These activities have spanned the entire spectrum of providing emergency relief supplies, clean drinking water, urgent medical intervention and medicines, pandemic control, diving assistance, aerial- and sea-based SAR, opening navigable channels and re-establishing navigational marks, and many more.

The Indian Navy became the first agency to respond to the urgent call for disaster relief by flood-ravaged Madagascar by launching “Operation VANILLA” in January 2020. This was preceded by extensive HADR and SAR missions carried out by warships and helicopters of the Indian Navy to help Mozambique after cyclone “IDAI” tore through the island nation in March 2019.<sup>57</sup> While these missions drew maximum visibility and received international acclaim far and wide, the Indian Navy has consistently been at the forefront of regional HADR and SAR missions throughout, thus providing

wholesome traction to the well-deserved moniker of “preferred security partner” and “first responder” in the Indian Ocean, for India.<sup>58</sup>

## Recommendations

India is getting increasingly concerned about China’s growing presence in the IOR under various pretexts: be it for deep-sea underwater research in ISA allocated site; hydrographic survey assistance; anti-piracy missions; or the BRI. It is posited that the well-earned regional goodwill and confidence generated by being the “preferred security partner” and “first responder” must be leveraged adroitly, to consolidate the Indian influence over the IOR littorals. The wholesomeness of Indian maritime “soft power”, so assiduously built, has to sustain in intensity and frequency as climate change-related extreme events in IOR increase, in order not to cede any space for Beijing to further its influence as a zero-sum game.

It goes without saying that mere proactive maritime disaster response approach and outreach will not suffice in this endeavour; and will have to be well-backed by the whole-of-nation approach through Indian diplomatic, economic, and informational facets of influence building. It is, therefore, recommended that India should consider the following policy measures – the list not being exhaustive by any means – to retain its multifaceted influence in the region, with an aim to leave little room for China to manoeuvre within:

1. Provide survey support, in certain pre-decided priority, in establishing baselines to countries which lack this capability. This must be done with utmost urgency since Chinese maritime survey establishment will proactively move in to occupy any perceived vacuum in this domain.
2. Render expert legal advice on the effect of sea level rise on maritime baselines and associated maritime zones in future, along with robust dialogue – bilateral or multilateral – being conducted on interpretation of relevant provisions of UNCLOS in the prevalent circumstances and situation arising in future. This will prevent certain extra-regional forces from offering unilateral interpretations to the detriment of the Indian interests.
3. Endeavour to provide cleaner diesel fuel, as is being used by the Indian Navy warships, to other IOR countries for their sea-borne transportation, with an aim to reduce regional GHG emissions. This will further cement India’s position of selfless friendliness in the region.
4. Promote regional cooperation for human and environmental safety, especially arising from large-scale coastal inundation due to sea level rise in low-lying area of countries like Bangladesh and Maldives.
5. Proactively assist countries in immediate neighbourhood with the resources and skills to address climate-related incidents, like draughts, flooding, cyclones, and population displacement.
6. The Indian Navy, all this while, must continue to prepare to respond to a wide range of future climate-induced challenges and contingencies in the IOR.

## Conclusion

Climate change is increasingly being recognised as a threat to the stability and certainty of the maritime order, exemplified by the UNCLOS. The intrinsic relationship between

climate change and the oceans was recognised in the 2015 Paris Agreement, wherein state parties to the UNFCCC emphasised on the importance of including the oceans in the climate negotiations while formulating action strategies to address climate change. This led to the adoption of the 2021 Glasgow Climate Pact, for the inclusion of ocean-based action across all areas of work under the UNFCCC.

However, the UNCLOS, known as the constitution for the ocean, does not have specific provisions to deal with climate change. As alluded earlier, though state parties to UNCLOS are obliged to adopt laws and regulations to address “pollution from or through the atmosphere” under Article 212, it only requires states to take into account internationally agreed rules, without specifying detailed regulatory framework. From the climate change perspective, while the UNCLOS marine environmental obligations provide the legal basis for IMO to regulate GHG emissions from shipping, they cannot be the basis for ocean-related agreement within the UNFCCC framework. Thus, climate change creates new challenges for the UNCLOS regime.

In fact, UNCLOS was negotiated during the time when concerns relating to climate change were not fully appreciated the way they are understood today – as is evident from the recent IPCC reports. As a result, the existing UNCLOS maritime zones regime does not take into account the impact of changing baselines due to ensuing climate-induced sea level rise. The retreating baselines would, in turn, affect the extent of maritime zones within which sovereign rights, jurisdiction, and economic entitlements accrue to a coastal state. Some coastal countries have sought legal recognition of existing baselines as permanent, irrespective of the impact of sea level rise. These differing and sometimes unilateral interpretations of the UNCLOS stipulations will result in creation of new maritime disputes. The ensuing scenario has the potential to trigger geopolitical tensions in the maritime domain in the near future.

While climate change, by itself, does pose serious threat to maritime order around the world, the aforesaid climate-induced maritime challenges have the potential to severely affect the security of India and other Indian Ocean littoral states. From India’s strategic and national security perspective, climate-induced maritime challenges – as a “threat multiplier” – are also likely to exacerbate the existing regional security paradigms, caused mainly by China’s increasingly deepening economic and military footprints in the IOR.

India, as the resident and centrally located regional power in IOR, must take responsibility for spearheading collective awareness and education campaign to highlight the existential threats arising from climate change phenomenon. The same must be followed through by proactively rallying the IOR littorals towards a structured climate change response plan, by leveraging the “soft power” and goodwill generated through being an erstwhile “net provider of security”, and now graduating to being a “preferred security partner” and “first responder” in the IOR.

With the resultant environment being favourably disposed towards India, the Indian government could perhaps work towards building of regional consensus for suggesting amendments to existing provisions in Part XII of UNCLOS, relating to “protection and preservation of the marine environment”. It could even seek insertion of new sections specifically meant to address climate change inducing maritime pollution, like GHG emissions.

The collaborative route to be charted out will, of course, encounter various geopolitical obstacles, trials, and tribulations, as many such initiatives of the past have shown. However, this is the only viable way forward if the region hopes to synergistically rise to the challenge, to pre-empt extra-regional countries with dubious agendas from benefiting from climate-induced vulnerabilities of IOR countries towards expansion of their geopolitical influence therein.

## Notes

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