MARITIME ZONES AND BASELINES UNDER SEA-LEVEL RISE: DOCTRINAL OPTIONS, STATE PRACTICE, AND IMPLICATIONS FOR COASTAL STATES

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ABSTRACT

Sea, level rise is altering the law of the sea essentially by making the coastal baselines from which maritime zones are measured an ever more unstable factor. The article examines how the framework of the baseline under the United Nations Convention on the Law of the Sea (UNCLOS): normal, straight, and archipelagic baseline methods, together with publication and deposit obligations interact with measurable shoreline retreat and episodic coastal change. By means of doctrinal interpretation, targeted case, law review, and a survey of emerging State practice (notably preservation, oriented declarations and coordinate, based legislation), the article delineates the main legal options from fully ambulatory baselines to freezing baselines, freezing outer limits, and reading UNCLOS as not imposing a continuing duty to update duly established charts and coordinates. The study reveals that strictly ambulatory baselines literally follow the low, water line, but at the same time, they entail heavy administrative burdens, disincentivize investments, reduce enforcement predictability, and result in distributive inequities when climate impacts reduce entitlements. Stability, oriented approaches draw support not only from UNCLOS publicity/deposit mechanisms but also from institutional outputs, which emphasize certainty and the finality of agreed or adjudicated boundaries, while also raising navigation and new internal waters issues if the baselines themselves are fixed. In the case of India, some of the shoreline, change and erosion datasets indicate that baseline stress is not only restricted to the islands but that the highly dynamic deltaic and cyclone, exposed coasts also make predictable jurisdiction in the Bay of Bengal and Arabian Sea a strategic and economic requirement. It is argued in the paper that a rational preservation strategy which is very much supportive of legal coherence and at the same time meeting climate era governance requirements, and which also allows licensing, patrol planning, and resilient coastal adaptation is based on clearly

deposited coordinate limits, consistent multilateral advocacy, and regionally cooperative dispute prevention.

Keywords: UNCLOS, Sea-level rise, Baselines, Maritime entitlements, India.

1.1 INTRODUCTION

Sea-level rise puts more and more pressure on the architecture of the law of the sea as the spatial extent of coastal State rights is determined from baselines that are naturally changing.[1] The major doctrinal dilemma is between the ambulatory baseline idea[2] on the one hand and the stability needed for administration, investment, and regional security on the other. This article reviews doctrinal options, charts the evolution of State practice, and outlines the India-related implications for maritime entitlements and coastal governance.[3]

The United Nations Convention on the Law of the Sea (UNCLOS)[4] links the breadth of the territorial sea, contiguous zone, exclusive economic zone (EEZ), and certain continental shelf constraints to baselines drawn from coastal geography.[5] Sea-level rise is now measurable and accelerating,[6] which makes the baseline problem operational rather than speculative for many coastlines.[7] This shift matters for India because its maritime economy and security planning are built on predictable jurisdictional limits in the Bay of Bengal and Arabian Sea.[8]

The legal issue here is not whether the sea level is going up or not, but how international law should deal with coastal changes when the baseline is the legal "starting point" for maritime zones.[9] One way of looking at it is to consider ambulatory baselines as the default consequence

[1] United Nations Convention on the Law of the Sea, 1833 UNTS 3 (adopted 10 December 1982, entered into force 16 November 1994).
[2] David Caron, "When Law Makes Climate Change Worse: Rethinking the Law of Baselines in Light of a Rising Sea Level", 17 *Ecology Law Quarterly* 621 (1990).
[3] Government of India, "Parliament Question: Vulnerability of Coastal Region to Flood and Sea Level Rise" (Ministry of Earth Sciences, 10 December, 2025).
[4] *Supra* note 1.
[5] United Nations Office for Ocean Affairs and the Law of the Sea, *The Law of the Sea: Baselines, an Examination of the Relevant Provisions of the United Nations Convention on the Law of the Sea* 58 (1989).
[6] Benjamin Hamlington, Ashley Bellas-Manley, et.al., "The Rate of Global Sea Level Rise Doubled During the Past Three Decades", 5 *Communications Earth & Environment* 601 (2024).
[7] Sea Level Rise Is Accelerating, *available at:* https://science.nasa.gov/earth/earth-observatory/sea-level-rise-isaccelerating-91746/ (last visited on February 20, 2026).
[8] Economic Advisory Council to the Prime Minister, "India's Blue Economy: A Draft Policy Framework" (September, 2020).
[9] Clive Schofield, I Made Andi Arsana, "Imaginary Islands? Options to Preserve Maritime Jurisdictional Entitlements and Provide Stable Maritime Limits in the Face of Coastal Instability" (October, 2010).

of the low-water line rule,[10] whereas the other aims at preserving the existing boundaries through fixed coordinates or non-updating obligations.[11] The doctrinal discussion is currently influenced by the outputs and practices of various institutions, including UN processes,[12] work by the International Law Commission (ILC),[13] and climate-related advisory jurisprudence.[14]

This article is organized in five parts. Firstly, it summarizes the scientific and cartographic bases of baselines and relative sea level.[15] Next, it describes baseline types, deposit practices, and case law in coastal geography and delimitation.[16] Subsequently, It discusses doctrinal options for stabilizing rights and reviews State practice concerning the preservation of maritime zones.[17] Last, it draws implications for India, based on the shoreline change and coastline datasets that help in visualization and policy analysis.[18]

1.2 SEA-LEVEL RISE AND THE CARTOGRAPHIC PROBLEM OF BASELINES

Sea-level increase alters the legal map as the standard baseline is connected to the low-water line figured on the officially recognized charts.[19] The environmental sign is sufficiently potent to even surpass the majority of updating chart cycles and coastal management plans.[20] The main legal risk is thus not just the inland flooding but also loss of seaward jurisdiction if baselines are moving landward.[21] This section links the sea-level change science and measurement to the technical act of drawing baselines.[22]

1.2.1 Observed Acceleration and Planning-Relevant Magnitudes

The satellite era observations show that the global mean sea level has increased by

[10] *Supra* note 5.
[11] International Court of Justice, "Obligations of States in Respect of Climate Change (Request for Advisory Opinion) Advisory Opinion" (23 July, 2025).
[12] United Nations General Assembly, "Oceans and the Law of the Sea, UN Doc A/RES/79/144" (2024).
[13] International Law Commission, "Report of the International Law Commission: Seventy-Sixth Session, UN Doc A/80/10" (May, 2025).
[14] International Tribunal for the Law of the Sea, "Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law Advisory Opinion" (21 May, 2024).
[15] Intergovernmental Panel on Climate Change, "AR6 Working Group I Summary for Policymakers" (2021).
[16] International Court of Justice, "Fisheries Case (United Kingdom v Norway) Judgment" 116 (December, 1951).
[17] Declaration on Preserving Maritime Zones in the Face of Climate Change-Related Sea-Level Rise, *available at:* https://forumsec.org/publications/declaration-preserving-maritime-zones-face-climate-change-related-sealevel-rise (last visited on February 19, 2026).
[18] *Supra* note 3.
[19] *Supra* note 1.
[20] *Supra* note 6.
[21] *Supra* note 2.
[22] *Supra* note 5.

approximately 111 mm since 1993, with the rate going up from around 2.1 mm per year in 1993 to about 4.5 mm per year by 2023.[23] This acceleration is very important from a legal point of view because a moving baseline approach essentially changes physical change into changes in legal entitlements over time.[24] Even when local relative sea level is different from global averages because of subsidence or uplift,[25] the baseline definition is given in coastal terms, so it is local change what turns into jurisdictional change.[26]

Figure 1 compiles globally reported rates and cumulative rise figures that can be converted into bar charts showing acceleration across time slices.[27]

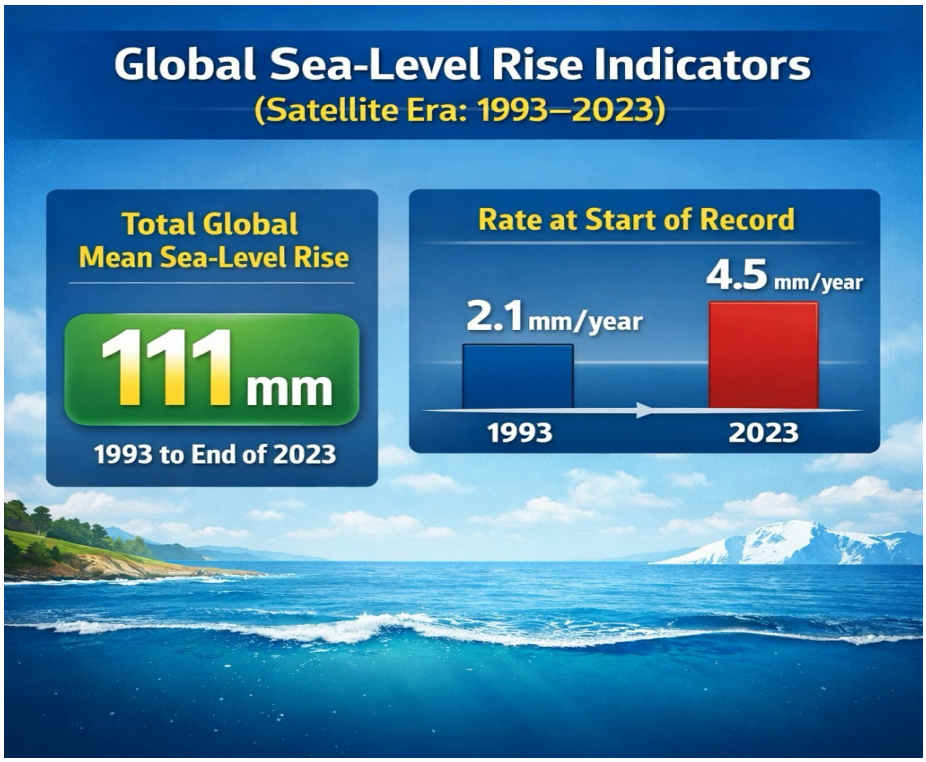

Figure 1: Global sea-level rise indicators (satellite era)

These values are quite significant from a policy standpoint since the management of maritime boundaries, the granting of offshore licenses, and the planning of patrols are based on the assumption of stable jurisdictional areas.[28] In the case of a fully mobile model, it would be

[23] *Supra* note 6.
[24] *Supra* note 2.
[25] *Supra* note 15.
[26] *Supra* note 5.
[27] *Supra* note 6.
[28] *Supra* note 8.

necessary to carry out a legally valid and ongoing recalculation of the coastline, which in reality is not feasible for most States.[29] As a result, there is a doctrinal tension of finding a way to keep law and order while the physical environment is constantly changing without turning the straight baselines (UNCLOS) into a mere fiction.[30]

1.2.2 Projections and the "Deep Uncertainty" Challenge

Percentages of emissions rise across all pathways, with higher scenarios significantly increasing the range at the end of the century.[31] for baseline law, what matters most is not the median projection but the plausible range that is highly relevant to the risk-averse planning of the jurisdictions, especially those situated in low-lying deltas and coral atolls.[32] The European Environment Agency's summaries of the IPCC-consistent scenario ranges can be converted into comparative charts showing the difference between the low and high scenarios.[33]

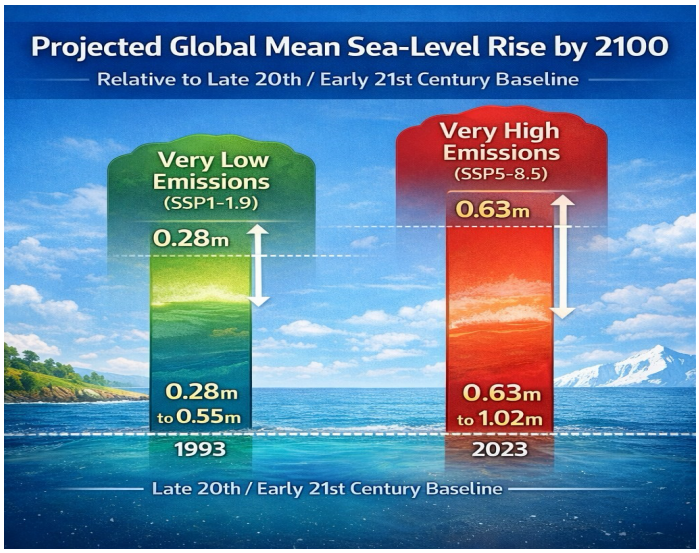

Figure 2: end-of-century global mean sea-level rise ranges (scenario comparison)

These ranges are important for the legal classification of coastal features as the existence of islands and low-tide elevations over time can be decisive factors in a feature being a base for an EEZ or only for a territorial sea, or even not at all. On the ground, States can either correct

[29] *Supra* note 9.
[30] *Supra* note 13.
[31] *Supra* note 15.
[32] Rosemary Rayfuse, "Sea Level Rise and Maritime Zones: Preserving the Maritime Entitlements of 'Disappearing' States" 167 (2013).
[33] Sea Level Rise, *available at:* https://www.eea.europa.eu/en/analysis/indicators/global-and-european-sealevel-rise (last visited on February 18, 2026).

their mapping to show the new low-water lines or keep the previously established coordinates for reasons of stability and fairness. It is, therefore, the law's duty to be capable of dealing with the two situations of gradual change and sudden coastline changes caused by storms and erosion.

1.2.3 India's Coastal Dynamics as a Baseline Stress Test

India has a long and geomorphologically diverse coastline, with mainland coasts as well as major island systems, which increases the baseline complexity.[34] Government datasets have separated coastline measurement exercises showing different methods of measuring coastline length, including revised national coastline length estimates which can be visualized by State and island territories.[35] To track the erosion dynamics, the Ministry of Earth Sciences' report points out that a considerable part of the coast of several States is being eroded, thus it is a basis for vulnerability and adaptation planning.[36]

Figure 3 presents revised coastline lengths that are suitable for pie charts of coastline share by State or for bar charts comparing mainland States and island territories.[37]

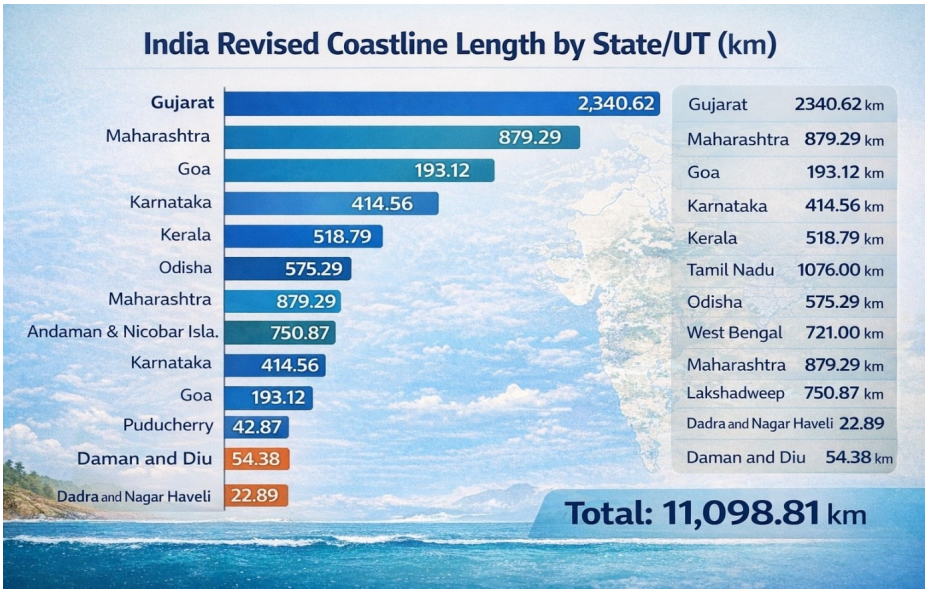

Figure 3: Revised coastline length of India (State and island territories)

[34] Government of India, "Updated Coastline Length of India (Revised)" (Ministry of Ports, Shipping and Waterways, 29 April, 2025).
[35] *Ibid.*
[36] Supra note 3.
[37] Supra note 34.

The legal significance is that the matter of baseline drawing might feature most prominently in disputes or be a source of heavy administrative burden just at the areas of the fastest physical changes such as deltas, barrier coasts, low-lying islands.[38] India's island territories, on the other hand, bring up feature-classification issues that can be compounded by sea-level rise, reclamation, and charting approach.[39] Therefore, India's interests are in line with doctrinal approaches which on the one hand uphold jurisdictional predictability and on the other remain compliant with UNCLOS interpretation rules.[40]

1.3 BASELINES AND MARITIME ZONES UNDER UNCLOS

UNCLOS sets out different maritime zones by referring to baselines. It also obliges the coastal States to publish and deposit the relevant charts or coordinates for legal clarity.[41] The baseline system is not just one rule but a structured set of options, including normal baselines, straight baselines, and archipelagic baselines.[42] The doctrinal issue under sea-level rise is which elements of this system are inherently ambulatory and which can be stabilized through interpretation, practice, or institutional development.[43] This part describes the baseline framework and points out case law that has influenced baseline reasoning.[44]

1.3.1 Normal Baselines and the Low-Water Line Rule

The usual base line is the low-water line along the shore as it is shown on large-scale charts that are officially recognized by the coastal State.[45] The reference in the text to a low-water line on the chart provisionally makes the rule both law and technical, since the coast is made into law through the hydrographic representation.[46] In common law, the implication is that if the low-water line shifts, the base line shifts, which is the heart of the ambulatory doctrine.[47]

However, with the help of the chart reference, the doctrinal space is also made available

[38] *Supra* note 2.
[39] Permanent Court of Arbitration, "The South China Sea Arbitration (The Republic of the Philippines v The People's Republic of China) Award, PCA Case No 2013-19" (12 July, 2016).
[40] Vienna Convention on the Law of Treaties, 1155 UNTS 331 (adopted 23 May 1969, entered into force 27 January 1980).
[41] *Supra* note 1.
[42] *Supra* note 5.
[43] *Supra* note 13.
[44] *Supra* note 16.
[45] *Supra* note 1.
[46] *Supra* note 5.
[47] *Supra* note 2.

because the charts are only updated at discrete intervals and are 'officially recognized' by the coastal State rather than being automatically updated by physics alone.[48] This bureaucratic layer becomes significant in the context of sea-level rise as it poses the question whether a State is obligated to update the charted baseline in order to follow the physical changes.[49] The developing stance that there might not be an obligation to continuously update once the baselines and limits have been properly set makes stability-oriented approaches more plausible.[50]

1.3.2 Straight Baselines and Geographic Constraints

Straight baselines may be used in places where the coast is very deeply indented and cut into, or where there is a chain of islands along the coast, subject to rules that exclude excessive claims of the sea. The leading judicial articulation emphasized that straight baselines must respect the general direction of the coast and that waters enclosed must be sufficiently closely linked to the land domain. This jurisprudence is still relevant as the rise in sea-level can change the facts that were used to justify straight baselines such as the shape of fringing islands and coastal indentations.

The doctrinal difficulty here is that straight baselines are not only a legal method but also a factual claim about geography.[51] If rising sea-level alters the geography, a walking approach would imply that the legal basis may become less strong over time, whereas a stability approach would consider the established straight baselines as saved in order to avoid changing the jurisdictional boundaries.[52] The problem is particularly severe in cases where straight baselines have been drawn near low-lying coasts that may recede drastically in the next few decades.[53]

1.3.3 Archipelagic Baselines and Island Systems

Archipelagic baselines enable archipelagic States to connect the outermost points of islands with a baseline, following the constraints of ratio and length.[54] Since India is not an

[48] *Supra* note 5.
[49] *Supra* note 11.
[50] *Ibid.*
[51] *Supra* note 5.
[52] *Supra* note 13.
[53] *Supra* note 2.
[54] *Supra* note 1.

archipelagic State as per UNCLOS definitions,[55] India's island territories are practical analogues because sea-level rise can potentially change the legal status and habitability of small insular features that serve as basepoints.[56] The central doctrinal question in a sea-level rise context is whether the disappearance of land above water affects basepoint eligibility and thus the generation of maritime entitlements.[57]

Feature-status conflicts have already become a major element in law of the sea arbitration, demonstrated by tribunals which have elucidated the legal consequences of various categories of maritime features.[58] The threat of sea level rising makes these classification matters even more crucial since the existence of a physical entity may become disputable, particularly in the case of low-lying reefs and sand cays.[59] For a country having scattered islands, a stable baseline approach may be considered as the safeguarding of the States old entitlements against the climate-caused loss which the State is innocent of.[60]

1.3.4 Depositing Charts and Coordinates as a Stability Mechanism

UNCLOS requires coastal States to publish charts or lists of geographical coordinates for certain baselines and outer limits publicly and to deposit them with the UN SecretaryGeneral.[61] The UN Division for Ocean Affairs and the Law of the Sea (DOALOS) has issued some guidelines on the deposit practice highlighting the function of the published coordinates as a tool of legal clarity.[62] In the context of sea-level rise, deposit practices exceed merely being an administrative compliance as they could be argued to 'lock in' a legal line in a way that is opposable to third States through publicity and reliance.[63]

Where international institutions and their advisory jurisprudence point out that States have no obligation to keep updating their charts or lists of co-ordinates after their maritime zones have been established in accordance with UNCLOS, the stability argument is thus considerably reinforced.[64] Such a method does not alter the text of UNCLOS but considers the acts of

[55] *Ibid.*
[56] *Supra* note 32.
[57] *Supra* note 39.
[58] *Ibid.*
[59] *Supra* note 9.
[60] *Supra* note 14.
[61] *Supra* note 1.
[62] United Nations, "Deposit of Charts and/or Lists of Geographical Coordinates: Guidelines for Coastal States" (Division for Ocean Affairs and the Law of the Sea, 2017).
[63] *Supra* note 13.
[64] *Supra* note 11.

establishment, publicity, and deposit as legally significant ones that can last even though there is a subsequent physical change.[65] The only doctrinal issue left is whether such endurance is a treaty interpretation, a customary development, or a policy decision requiring express consent.[66]

1.3.5 Delimitation Versus Entitlement: Why Boundaries Are Different

Even if baselines were considered ambulatory, maritime boundaries that have been established by agreement or adjudication are normally regarded as stable since they are intended to be the final settlement and basis for peaceful relations.[67]Judiciary and tribunals have come up with delimitation methods that depend on basepoints but target equitable outcomes rather than mere coastline tracking over time.[68] This differentiation is significant for India since main boundaries in the Bay of Bengal have been judicially determined, thus the danger that later baseline retreat might lead to reopening disputed boundary lines is diminished.[69]

In the Bay of Bengal, the tribunal as well as the International Tribunal for the Law of the Sea (ITLOS) used delimitation principles to determine the precise boundaries of the Exclusive Economic Zones (EEZs) and continental shelf rights between neighboring states. Doctrinally, it can be argued that sea-level rise will impact the outer limits of unilateral entitlements more than boundaries that have been fixed by dispute resolutions or treaties. This distinction matters in terms of policy as it indicates that "preservation" strategies will perhaps have to be primarily implemented in the situations where boundaries have not yet been delimited or where there are still limits to be deposited.

1.3.6 Case Law Notes Relevant to Baselines and Coastal Geography

The hallmark straight baselines ruling expressed limitations of baseline methods and emphasized that baseline delineation must be linked to the physical geography of the coast and not the strategic creation of lines only.[70] Subsequent rulings have reaffirmed that small features

[65] *Supra* note 13.
[66] *Supra* note 40.
[67] International Court of Justice, "North Sea Continental Shelf (Federal Republic of Germany v Denmark; Federal Republic of Germany v Netherlands) Judgment" 3 (20 February, 1969).
[68] International Court of Justice, "Territorial and Maritime Dispute Between Nicaragua and Honduras in the Caribbean Sea (Nicaragua v Honduras) Judgment" 659 (8 October, 2007).
[69] International Tribunal for the Law of the Sea, "Dispute Concerning Delimitation of the Maritime Boundary Between Bangladesh and Myanmar in the Bay of Bengal Judgment" (14 March, 2012).
[70] *Supra* note 16.

and low-tide elevations may have little or no effect on the generation of entitlements and delimitation, depending on their legal status and geographic context.[71] Besides, arbitral jurisprudence has clarified that certain maritime features cannot generate large zones, which becomes a vital issue under sea-level rise if features are periodically submerged.[72]

One of the ways the court tries to limit the scope of the issue is by using methods that are well-structured so as to be less arbitrary and more predictable, usually by first establishing a temporary equidistance line and then adjusting it for the consideration of relevant circumstances.[73] This case law is applicable to the situation of sea-level rise as it shows that, even if basepoints are taken into account, judges in a dispute prefer stability and equity rather than merely following the coastline.[74] The practice of awarding also reveals that after the boundaries are fixed, they serve as a final settlement of the dispute instead of being opened for change with the future physical changes.[75]

1.4 DOCTRINAL OPTIONS UNDER SEA-LEVEL RISE

Various doctrinal options are available: one is to permit the continuous ambulatory change while the others are to revert to the initial baselines or to the outermost limits by employing legal techniques.[76] The main law-related challenge is to ensure that any stabilizing approach is consistent with the UNCLOS text, rules of treaty interpretation, and the general systemic interest in certainty.[77] Recent advisory jurisprudence and ILC work have made non-updating models more believable without the need of instant treaty amendment.[78] This section is devoted to assessing the major options and their implications for coastal States, such as India.[79]

1.4.1 Option A: Maintain an Ambulatory Baseline Approach

The ambulatory approach considers baselines to move along with the low-water line; thus, maritime limits determined from those baselines change with time. This method is

[71] International Court of Justice, "Maritime Delimitation and Territorial Questions Between Qatar and Bahrain (Qatar v Bahrain) Judgment" 40 (16 March, 2001).
[72] note 39.
[73] note 69.
[74] *Supra* note 68.
[75] United Nations, "Award in the Arbitration Regarding the Delimitation of the Maritime Boundary Between Guyana and Suriname" 1 (17 September, 2007).
[76] *Supra* note 2.
[77] *Supra* note 40.
[78] *Supra* note 13.
[79] *Supra* note 3.

conceptually simple and accounts for the literal interpretation of the normal baseline rule linked to the lowwater line. It additionally generates distributive effects, which under climate change, may seem unfair or arbitrary because States losing land also lose maritime space, irrespective of their share in emissions.

Strictly sticking to an ambulatory approach on the ground means that there would be a pressing and regular need for hydrographic updates, and there could be disagreements over which is the real coastline at present, especially in cases of erosion occurring in bursts and where vertical land motion makes relative sea level changes difficult to interpret. Moreover, it may also weaken the stability of offshore licensing, maritime law enforcement, and the investment climate, as boundary lines for jurisdiction would be like moving targets. The model would lead to excessive burdens for administrations of States prone to erosion and for those in the lowlying deltaic regions of India where the shoreline changes radically.

1.4.2 Option B: Freeze Baselines at Existing Coordinates

Freezing baselines means that the legal baseline is fixed based on coordinates, thus preserving the seaward measured starting line even if the actual coastline recedes.[80] In a way, this method can be considered a climate-justice response since it stops the loss of entitlement caused by the effects of the rising sea levels rather than the deliberate changing of the coast.[81] It is also consistent with the deposit and publicity principle, which converts the geographical representation into a legal line that can be relied upon.[82]

The main doctrinal objection is that UNCLOS does not clearly grant the right to all States and types of baselines for permanent baselines, hence the legal basis has to be derived from interpretation, subsequent practice, or agreement.[83] A model that freezes can also result in increased internal waters in places where the sea indents landward of the fixed baseline, thus causing issues of navigation and access.[84] Such issues may be resolved by giving the right of navigation in a way that is specifically adapted to the situation or by only allowing the freeze of the outer limits instead of the baseline itself.[85]

[80] *Supra* note 9.
[81] *Supra* note 32.
[82] *Supra* note 62.
[83] *Supra* note 40.
[84] *Supra* note 2.
[85] *Supra* note 13.

1.4.3 Option C: Freeze Outer Limits of Zones, Not Baselines

A moderate stability model goes for setting the outer limits of maritime zones at the present coordinates only, whereas the baseline remains conceptually hinged to the coast.[86] Such a solution seeks to safeguard the jurisdictional areas that have been used for fisheries management, offshore resources, and security, etc. It also, however, circumvents the criticism of an internal-waters expansion that comes with freezing the baseline.[87] Moreover, it corresponds to the actual practice that a good number of States make their outer limits operational through the publication of coordinates and enforcement rather than through constantly recalculating from laying the coastline changing.[88]

The doctrinaire point at issue is if setting boundaries only, without settling baselines first, can logically accord with the measurement logic of UNCLOS.[89] Advocates reason however that UNCLOS publicity and deposit provisions allow for once established outer limit lines concept, especially States that have complied with formal publication and deposit practices.[90] In Indias view, the delimitation of limits could turn out to be an extremely useful exercise in the management of the respective EEZ and maritime domain awareness as it retains the lines of law enforcement stable even though coastlines may ever-changing due to natural erosion.[91]

1.4.4 Option D: Interpret UNCLOS as Imposing No Duty to Update, Once Duly Established

A major new claim is that it is absurd that UNCLOS requires States to update their charts or coordinate lists of baselines and outer limit lines after these boundaries have been properly established in accordance with the Convention.[92] This method does not need a formal amendment since it considers the establishment and deposit of the legal act as the final stages, after which updating is at the discretion of the parties.[93] The point is that UNCLOS is meant to enhance legal certainty and the peaceful uses of the seas which would be jeopardized by

[86] *Ibid.*
[87] *Supra* note 9.
[88] *Supra* note 62.
[89] *Supra* note 1.
[90] *Supra* note 11.
[91] *Supra* note 8.
[92] *Supra* note 11.
[93] *Supra* note 13.

frequent changes in jurisdiction.[94]

This interpretation should still be in line with the Vienna Convention on the Law of Treaties (VCLT) methodology to treaty interpretation, which includes text, context, and object and purpose, as well as subsequent practice in application.[95] If a large number of States use a non-updating practice and express it as being legally grounded, the interpretive claim is strengthened according to VCLT logic.[96] In the case of India, taking up and consistently presenting a position at UN forums may help to influence the following practice and at the same time protect the interests of long-term maritime planning.[97]

1.4.5 Option E: Treaty Amendment or Implementing Agreements

It is legally possible, but politically very difficult, to formally amend UNCLOS and moreover, it may risk reopening the whole range of compromises which had been made in the issue of baselines.[98] It may be more realistic for example, to come to some implementing agreements or to have regional arrangements, particularly if their focus is very restricted to the preservation of the present limits and the legal effect of the deposited coordinates.[99] Those kinds of arrangements could also be made to clarify even more the third-State opposability and the options for dispute settlement, which is very relevant if the fisheries and seabed resources are at stake.[100]

The main disadvantage is the creation of fragmentation if various areas implement different models, thereby possibly leading to conflicting expectations for navigation and enforcement.[101] For India, regional strategies in the Indian Ocean might be helpful if there is a coordination with neighbors to prevent disputes arising from jurisdictional shifts in the Bay of Bengal and the Arabian Sea.[102] One realistic way is to integrate a unilateral deposit practice with clear regional agreements that consider deposited limits as fixed for certain uses.[103]

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[94] *Supra* note 12.
[95] *Supra* note 40.
[96] *Ibid.*
[97] *Supra* note 13.
[98] *Supra* note 1.
[99] *Supra* note 17.
[100] *Supra* note 75.
[101] *Supra* note 12.
[102] *Supra* note 69.
[103] *Supra* note 62.

1.4.6 Option F: Physical Coastal Protection and Reclamation as Entitlement Preservation

Some States might try to keep baselines physically by coast engineering, reclamation, or nature-based solutions.[104] Such measures can go a long way to protect land and livelihoods, however, their effect on international legal entitlements is doubtful because UNCLOS distinguishes natural islands from artificial islands and does not generally allow artificial installations to generate maritime zones.[105] The risk is that costly engineering is done to preserve maritime rights, but it may yield disputed legal returns if the status of the feature is challenged.[106]

India has addressed its coastal protection issue mainly as a domestic adaptation necessity, which is evident from the coastal regulation and hazard line planning. However, the preservation of entitlements ought to be considered as an independent legal strategy instead of being presumed as a consequence of engineering. It is advisable to keep a definite separation between domestic shoreline management and international baseline law. This way, the risk that entitlement arguments are weakened by claims of artificiality or opportunism is minimized. The better doctrinal way is to consider physical adaptation as a measure of protection for people and their property, whereas legal stability can be achieved through deposit, interpretation, and practice.

1.5 STATE PRACTICE AND IMPLICATIONS FOR INDIA AND OTHER COASTAL STATES

State practice has gradually leaned towards the notion of preserving maritime entitlements in the face of sea-level rise caused by climate change, especially among small island States.[107] It comprises declarations, legislation, and a set of diplomatic strategies aimed at baselines or limits fixed through coordinate points stabilizing them.[108] Moreover, the internal outputs of the institutions also give weight to this trend by emphasizing not only non-updating obligations but also the stability function of the established maritime boundaries.[109] This part reviews the

[104] *Supra* note 3.
[105] *Supra* note 1.
[106] *Supra* note 39.
[107] *Supra* note 17.
[108] The Constitution of Tuvalu Act, 2023.
[109] *Supra* note 11.

practice and then concentrates on the legal and policy aspects of India using the shoreline and coastline data.[110]

1.5.1 Pacific-led Preservation Initiatives and Coordinated Declarations

A major practice signal is a Pacific Islands Forum Declaration on Preserving Maritime Zones in the Face of Climate Change-Related Sea-Level Rise, which describes preservation as necessary for stability, fairness, and the continued effectiveness of the law of the sea.[111] The Declaration backs the notion that once maritime zones are set up and notification has been given, they should not be diminished because of sea-level rise.[112] This is very important for general international law as it transforms a climate vulnerability argument into a direct claim about the legal effect of existing baselines and outer limits.[113]

Legislative measures strengthen the practice signal by directly laying down the coordinates of fixed maritime zones in domestic legal instruments, even though constitutional or statutory entrenchment in some States. Such measures aim at reinforcing the assertion that maritime zones are legal facts derived from State act and international notification, and not just geographically current features of the earth. At a later stage, if there are no challenges, this practice may lead to a customary or interpretative shift that supports the stability-oriented doctrines.

1.5.2 UN Processes and the Stabilisation Narrative

UN General Assembly oceans resolutions have increasingly acknowledged sea-level rise as a major challenge for the law of the sea. This in turn, helps in making the preservation-oriented framing more acceptable in multilateral diplomacy. Even if resolutions don't have legal force, they still offer interpretive context and can be used to demonstrate common understandings about the stability requirements of the UNCLOS framework. The ILC's work on sea-level rise is at the same time a consolidation of law-based support for stabilization, especially when it treats the normal baselines as remaining valid even though later physical changes occur.

Climate-related advisory jurisprudence continues to reinforce the normative environment

[110] *Supra* note 3.
[111] *Supra* note 17.
[112] *Ibid.*
[113] *Supra* note 32.

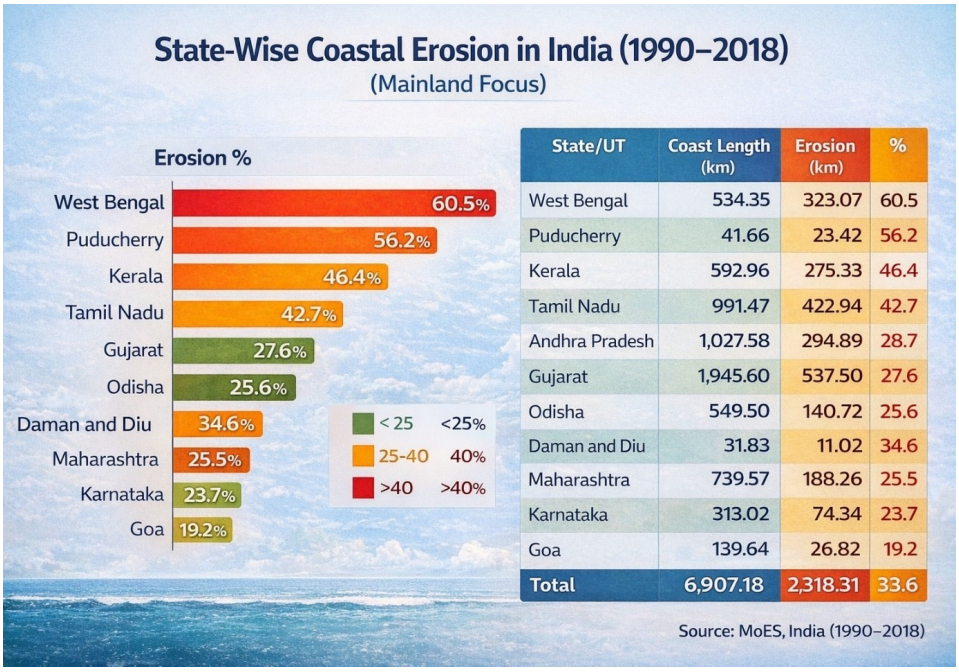
through the emphasis that climate damages, sea-level rise in particular, result in obligations under different treaty regimes instead of being limited to climate treaties only.[114] For instance, the ICJs climate advisory opinion clearly refers to the role of UNCLOS and shows that nonrevision of the baseline and limit demarcations may be in line with the Convention in the case of sea-level rise.[115] Such a coming together of climate obligations and law-of-the-sea arguments for stability makes the preservation doctrine more legally defensible than it might have seemed in previous decades.[116]

1.5.3 India's Exposure Profile Using Chart-Ready Datasets

Indias shoreline change data shows that the coastal erosion is equally severe on both west and east coast while some coastal segments have reported particularly high erosion percentages.[117] This is important for baselines as erosion and landward retreat can shift the low-water line seaward, which is the reference for the normal baseline.[118] Accordingly, the data substantiates a baseline-stability policy argument not only based on the doctrine in the abstract, but also on the grounded and measurable coastal change patterns.[119]

Figure 4 reproduces state-wise erosion data reported for 1990 to 2018, which can be converted into bar charts of erosion kilometres or pie charts of erosion share by State.[120]

[114] *Supra* note 14.
[115] *Supra* note 11.
[116] *Supra* note 9.
[117] *Supra* note 3.
[118] *Supra* note 1.
[119] *Supra* note 3.
[120] *Ibid.*



State/UT	Coast Length (km)	Erosion (km)	%
West Bengal	534.35	323.07	60.5
Puducherry	41.66	23.42	56.2
Kerala	592.96	275.33	46.4
Tamil Nadu	991.47	422.94	42.7
Andhra Pradesh	1,027.58	294.89	28.7
Gujarat	1,945.60	537.50	27.6
Odisha	549.50	140.72	25.6
Daman and Diu	31.83	11.02	34.6
Maharashtra	739.57	188.26	25.5
Karnataka	313.02	74.34	23.7
Goa	139.64	26.82	19.2
Total	6,907.18	2,318.31	33.6

Figure 4: State-wise coastal erosion (1990 to 2018) reported by MoES (mainland focus)

This dataset brings out two points related to India. To begin with, baseline stress cannot just be thought of as a feature of islands since some major mainland segments have very high shares of erosion, one instance being the east where deltaic dynamics and cyclone exposure combine.[121] Secondly, different official totals are seen in various datasets because some studies concentrate on the mainland segments while others have extensive island coastlines, hence any baseline law strategy has to clearly define the geographical scope of the baseline system and the charting method used.[122] An Indian position that is consistent would thus combine the use of hydrographic practice with legal deposit strategies so as not to have baseline claims that are inconsistent or open to challenge.[123]

1.5.4 India's Legal Toolkit: Domestic Law, Deposit Practice, and Regional Strategy

India's Maritime Zones Act pretty much spells out how the country makes claims of territorial sea, contiguous zone, EEZ, and rights over the continental shelf. This Act, therefore, sets the stage for India to take any baseline or limit stabilization policy forward.[124] Under UNCLOS, States have the right to announce and file with the Authority maps or lists of coordinates for

[121] *Ibid.*
[122] *Supra* note 34.
[123] *Supra* note 62.
[124] The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976 (Act 80 of 1976).

baselines and outer limits. Hence, technical hydrography and legal notification become the main tools of entitlement preservation.[125] DOALOS deposit guidance is consistent with the idea that a list of coordinates is the best way to express ones position clearly and to make it easier for others to refer to the same place from different perspectives. This is a practical necessity for making legal arguments that are aimed at stability.

India may adopt a dual-track approach at the policy level. It can internationally lend its voice to the stabilization narrative by expressing the view that correctly established and accredited baselines and outer limits in no way should be updated due to sea-level rise, thus being in line with the evolving advisory and ILC basis. On the regional level, India can consider the settled boundaries in the Bay of Bengal as stable and at the same time, it can be a proponent of cooperative approaches for any residual undelimited areas, thus making sure that sea-level rise does not get transformed into a new vector of jurisdictional contestation. On the domestic front, India could persist with coastal adaptation through the hazard line integration and coastal regulation planning while not losing the conceptual distinction between the international baseline law strategy and the domestic shoreline management.

The dimension of blue economy is what really brings economic stability to be meaningful as offshore energy, fisheries governance and seabed resource planning need stable and predictable maritime jurisdictions.[126] Governments' reports also highlight the extent of the maritime resource domain in India and the importance of activities linked to the EEZ, which would be adversely affected if entitlements were considered to continuously shrink with coastal retreat.[127] Hence, stability is not just a legal preference but a development and security imperative, particularly in cases where enforcement and investment timeframes are laid out for decades ahead.[128]

1.5.5 Implications for Coastal States Beyond India

For a lot of littoral countries, their baseline question is basically whether the EEZ value, which is quite commonly the spatial basis for fisheries management, offshore energy licensing, and conservation planning, can be preserved. Over time, a gradual creeping-recession of the

[125] *Supra* note 1.
[126] *Supra* note 8.
[127] *Supra* note 9.
[128] *Ibid.*

baselines by a few meters each year, when summed over decades, may result in a loss of sovereign rights which not only foreign governments are willing to bear, but also national courts of law may find it difficult to adjudicate such disputes. In this way, stability-oriented doctrines play the role of a dispute-prevention mechanism by limiting the economic benefits that could be gained through re-litigation of maritime entitlements.

The last bit of systemic risk involves the third-State acceptance and the expectations regarding navigation, in particular, when the freezing of baselines increases the internal waters or modifies the routes of archipelagic passages.[129] Hence, the practice that will likely be the most sustainable is the one ordinance that defines the outer limits but at the same time leaves navigation regimes either protected by the explicit assurances or by keeping existing passage rights as a matter of law.[130] The advisory jurisprudence that points to climate change impacts as a trigger of UNCLOS protective obligations may also help in bringing to the fore preservation of entitlement as a part of a broader stability-and-equity response to climate harm.[131]

1.6 CONCLUSION

Sea-level rise puts pressure on law of the sea as baselines freeze coastal geography for legal purposes, thus causing a contradiction between physical reality and legal certainty. Legaltheoretical choices go from strictly ambulatory baselines to keeping fixed limits using coordinates, deposit of practice, and non-updating interpretations. The practice of States, together with the multilateral context and advisories from panels, is tending towards stability models that safeguard the rights from the loss caused by climate-driven phenomena. For India, the issue is not abstract but very immediate and policy relevant and this is evidenced in the erosion and coastline datasets.

An entirely ambulatory strategy is consistent with a literal low-water line rule but creates a continuous change of jurisdiction, government paperwork, and distributive unfairness where loss of entitlement follows climate impact rather than State behavior.[132] On the other hand, stability solutions can be based on UNCLOS publicity and deposit mechanisms and be made

[129] *Supra* note 9.
[130] *Supra* note 13.
[131] *Supra* note 14.
[132] *Supra* note 2.

more powerful by interpretive developments that recognize that there is no obligation to update established charts and coordinates.[133] The most robust stability case that is likely to be acceptable to the majority fixes the outer limits while leaving the navigational expectations intact, because it safeguards the resource jurisdiction without turning the areas that are newly flooded into the disputed internal waters.[134]

Hence, Indias strongest doctrinal position should be to consider fixed maritime boundaries crucial for governance, security, and the blue economy, and at the same time, employ hydrographic capability and deposit of practice to render its nautical boundary lines readable and internationally referenceable. On a regional scale, India gains from consolidating the finality of the Bay of Bengal delimitation agreements and at the same time, cooperating in the sharing of any residual entitlements as well as practical enforcement coordination. At the local level, hazard line planning and coastal regulation as physical adaptation measures can be instrumental in safeguarding not only the dwellers but also the infrastructures. While the international legal strategy emphasizes on maintaining jurisdictional certainty even though the physical coastline is receding.

Ultimately, the main issue will be if stabilization becomes the broadly accepted interpretive baseline of the UNCLOS system or just a patchwork of regional and unilateral measures.[135] The general trend is, however, quite clear: sea-level rise is pushing the law of the sea to develop doctrines that give priority to stability, equity, and administrative feasibility but, at the same time, not abandoning UNCLOSs baseline framework.[136] For coastal States, such as India, taking early measure through proper coordination, presenting uniform legal positions, and practicing cooperative regionalism, are likely to be much more effective than waiting until loss of entitlement after that occurrence for the purpose of litigation.[137]

[133] *Supra* note 11.
[134] *Supra* note 9.
[135] *Supra* note 40.
[136] *Supra* note 13.
[137] *Supra* note 17.

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