

7 The Law of the Seabed 40 years after UNCLOS

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1 Introduction

The United Nations Convention on the Law of the Sea (UNCLOS) set out a significantly different approach on how Humankind oversees the global ocean.¹ It addresses a wide range of crucial matters pertaining to marine activities, particularly those that were prominent on the international agenda during the Third United Nations Conference on the Law of the Sea (UNCLOS III). One highly debated issue during UNCLOS III was the management of seafloor resources, and the Convention dedicates two significant sections to address how these valuable global resources can be owned, shared, and managed (Part VI and Part XI, covering the Continental Shelf and the Area, respectively). Moreover, the Convention introduced an innovative concept of resource sovereignty, delineating a functional ownership of the seafloor and its resources into two distinct legal categories. Today, amidst ongoing global challenges such as global warming and its far-reaching implications, there is a distinct shift in perspective towards the oceans. Environmental concerns are rapidly ascending to the forefront of the international agenda, fueled by the urgency to avert a potential collapse of the Earth's system. With time swiftly running out, attention is increasingly focused on the oceans as critical players in addressing these pressing global issues. The economic growth model imposed over the last few decades has propelled us to a critical juncture in terms of oceanic sustainability. Initiatives like the Alliance of Countries for a Deep-Sea Mining Moratorium, primarily championed by small and developing island nations, are reshaping the lens through which we view the oceans and their seabed resources.

Despite these concerns, the ongoing endeavour to delineate the boundaries of ownership of seabed resources remains a focal point in contemporary international politics. To date, the Commission on the Limits of the Continental Shelf (CLCS) has received 93 submissions seeking international recognition of proposed limits for the extended continental shelf. This process may represent the final opportunity for coastal states to assert exclusive sovereignty rights over

1 General Assembly United Nations, 'United Nations Convention on the Law of the Sea', *UN-OLA, DOALOS*, 1982, 16 March 2024, available at: www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

their natural resources through peaceful means, an importance that these states undoubtedly acknowledge.

To better understand these claiming processes, it is essential to trace back several decades and examine the origins of seabed resource ownership, as well as understand why the extension of the continental shelf beyond the 200 nautical mile limit, as outlined in Article 76 of UNCLOS, is of paramount importance for coastal states.

2 The background of the continental shelf

The term *continental shelf* is relatively recent in comparison to the timeline of our civilisation. Its first known reference dates back to 1887, when it was coined by Hugh Robert Mill in his work titled “The realm of nature – an outline of physiography”.² Subsequently, Hugh Mill published a comprehensive reference book on the physiography of the world titled *The international geography*.³ This remarkable work integrates contemporary concepts and terminology proposed not only by Mill but also by Professor Hermann Wagner, who consolidated both the emerged and submerged parts of what was previously referred to as the *continental plateau* into a single littoral component. This description, to some extent, encompasses the concept of the natural extension of land territory, which would enable coastal states to assert sovereignty rights over resources in the continental shelf at a later stage. According to Wagner, the continental shelf gently slopes from the coast down to approximately 100 fathoms or 200 metres (600 or 660 feet). Furthermore, Mill’s reference, primarily focused on physiography, describes the continental shelf as the natural extension of the emerged territory of a coastal state into the sea. It characterises the shelf with a very gentle slope (ranging from approximately 0.1° to 0.3°), extending to a depth of 200 metres where it experiences an abrupt change in slope. These values, with some exceptions, were predominant in defining the continental shelf for the appropriation of coastal resources until the current definition outlined in Article 76 of UNCLOS. In summary, the continental shelf, along with the continental slope and continental rise, delineate the physiographic continental margin, which constitutes a fundamental aspect of the current methodology for delimiting the continental shelf, as outlined in Article 76 of UNCLOS.

It took about one decade for this new terminology to become part of the current legal lexicon. In fact, the first legal reference employing the concept of the continental shelf dates back to 1910, during the early years of the First Portuguese Republic. This reference prohibited trawling by steamships within the confines of the physiographic continental shelf. In this instance, the isobathymetric of 100

2 Mouton, Martinus Willem, ‘Attempt to Define the Continental Shelf’, in: *The Continental Shelf* (Springer, 1952), 6–45.

3 Mill, Hugh Robert, *The International Geography* (G. Newnes Limited, 1899), 47.

fathoms was defined as the criterion set for the outer limit of the continental shelf.⁴⁵ Notably, Portuguese legislation at the time used the term *continental plateau* interchangeably with *continental shelf*, reflecting a concept established by Wagner. This legislative act marked the official incorporation of the continental shelf into state practice.

It was not until 1942 that the first treaty between two states was signed: the United Kingdom, acting as the administering power of Trinidad and Tobago, and Venezuela. This treaty, known as the Treaty of Paria due to its geographic location, was drafted under the auspices of the League of Nations. Its purpose was to regulate the exploitation of resources on the continental shelf shared by these two states, extending beyond their respective territorial seas.⁶ During this period, sea-floor exploration was primarily focused on oil resources, driven by technological advancements that enabled deeper-water searches. However, the Treaty of Paria marked a significant turning point, laying the groundwork for what would become one of the most transformative moments in this process – the Truman Proclamation. In 1945, as World War II came to an end, then-US President Harry Truman issued two proclamations regarding North American maritime policy. One proclamation addressed fishing activities on the high seas, while the other focused on the natural resources within the soil and subsoil of the continental shelf. Both proclamations emphasised the preservation of freedom of navigation and shipping rights, even as claims were made on resources within the water column and the continental shelf.⁷

In response to the unilateral claim made by the Truman Proclamation, a global discussion on this matter ensued. Several initiatives emerged, with property rights over resources becoming a central issue. Many South American states asserted their rights to resources, both living and non-living, within their contiguous waters up to a distance of 200 nautical miles. This approach differed significantly from the geologic concept of the continental shelf underlying the Truman Proclamation. Consequently, there arose a need to find a common denominator capable of reconciling the noticeable disparities between the regimes adopted by states.⁸

The First United Nations Conference on the Law of the Sea, held in Geneva in 1958, aimed to address various maritime issues causing disputes worldwide. This

4 Cosford, Edwin J., 'The Continental Shelf 1910–1945', *McGill Law Journal*, Vol.4, HeinOnline (1957), 245, 16 March 2024, available at: https://heinonline.org/HOL/Page?handle=hein.journals/mcgil4&div=23&g_sent=1&casa_token=ivjWtiue8dEAAAAA:HrHYObvBBra6bgaikjFfABJUpl6yF-DGV6L18WGaTqGxpCGmc_YRhlBvdt46QR4qeFzIo_&collection=journals.

5 Ministério da Marinha e Colónias, 'Decreto Regulamentar Para Pesca Com Navios a Vapor', *Diário do Governo no 31 de 10 de novembro de 1910. Publicado em Legislação Régia – Livro 1910–2* (1910), 76–77, 16 March 2024, available at: <http://legislacaoregia.parlamento.pt/V/1/5/10/p92>.

6 Coelho, Paulo Neves, 'O Artigo 76º da Convenção das Nações Unidas Sobre o Direito Do Mar – A Problemática da Aplicação Técnica de Conceitos Jurídicos Pela (in)Controversa Comissão de Limites Da Plataforma Continental', Doctoral dissertation (Universidade do Porto, 2018), 50–51.

7 Andersen, Håkon With, 'A Short Human History of the Ocean Floor', in: *The Law of the Seabed*, ed. Catherine Banet (Brill/Nijhoff, 2020), 75.

8 Coelho, O Artigo 76º, 2018 (n.7), 60–65.

conference resulted in the creation of four distinct conventions: the Convention on the Territorial Sea and the Contiguous Zone, the Convention on the High Seas, the Convention on the Fisheries and Conservation of Biological Resources of the High Seas and the Continental Shelf Convention.⁹ The Continental Shelf Convention, in particular, sought to establish a common formula for delineating the outer limits of the continental shelf, reflecting the practices of developing states and customary international law on this matter.

With the widespread implementation of the resulting formula, disparities among coastal states began to surface. Briefly, this formulation was grounded either on a depth criterion, limiting the continental shelf in a geoscientific sense by setting a maximum depth of 200 meters, or on an exploitability criterion, restricting the distance where the depth of adjacent waters would permit the exploitation of natural resources. It was through this latter approach that developed and geographically advantaged states stood to gain more than developing states.¹⁰ This evident imbalance, amidst global socioeconomic shifts, prompted a quest for a more equitable and universally accepted formula for sharing seabed resources. Thus, the stage was set for the Third United Nations Conference on the Law of the Sea.

3 The continental shelf under the United Nations Convention on the Law of the Sea

In tracing the origins of the Third United Nations Conference on the Law of the Sea, it is crucial to underscore the pivotal role played by Arvid Pardo, the Permanent Representative of Malta to the United Nations, whose extensive speech served as the catalyst for initiating a fresh round of negotiations aimed at reforming ocean governance. This momentous event occurred in 1967, against the backdrop of a world fraught with heightened geopolitical tensions, the looming spectre of nuclear conflict, and the impending conclusion of an era defined by abundant, inexpensive oil. Commencing in 1973, the conference unfolded amidst the backdrop of two significant oil crises. The first, occurring in 1973, was precipitated by the reaction of the Organization of Petroleum Exporting Countries to the Yom Kippur War, while the second, in 1979, coincided with the political upheaval in Iran and the subsequent ousting of Shah Reza Pahlavi. These disruptions in the global oil supply heralded a paradigm shift in international relations, as nations grappled with the escalating costs of this vital energy resource. Given the mounting pressure on conference delegates to safeguard their respective national interests, it is unsurprising that the resulting agreements reflected a delicate balance of competing priorities. Notably, there was considerable contention surrounding the establishment of universal parameters for delineating the outer limits of the continental shelf. Arvid

9 Treves, Tullio, *The 1958 Geneva Conventions on the Law of the Sea* (United Nations Audiovisual Library of International Law, 1984), 5, 16 March 2024, available at: https://legal.un.org/avl/pdf/ha/gclos/gclos_e.pdf.

10 Coelho, Paulo Neves, 'A Convenção Das Nações Unidas Sobre o Direito Do Mar de 1982', *Relações internacionais*, Vol.66 'O Futuro Do Oceano Global' (2020), 11–35.

Pardo's enduring legacy lies in his advocacy for a restricted extension of the continental shelf, thereby preserving the remaining seabed as the common heritage of humankind.

After 11 working sessions spanning nine years, the Convention was finally ready for signature on 10 December 1982.¹¹ Although the formulation to delineate the outer limit of the continental shelf had initially garnered consensus in the early sessions, it faced challenges from the newly elected Reagan administration. As the Conference neared its conclusion, US delegates sought to mitigate the perceived adverse impacts of this new approach, particularly on North American private sectors such as mining and oil industries.^{12,13} With newly devised formulas for defining the limits of the continental shelf and guided by the principles articulated in Pardo's speech, a new maritime paradigm emerged. This paradigm divided the seabed into two distinct domains: national sovereignty and international common heritage. The fact that coastal states now had a finite continental shelf signaled hope that resources within the marine seabed could be shared among all humankind.

Coastal states devote considerable effort in preparing their national submissions, as specified in Article 76 of the Convention, for consideration by the Commission on the Limits of the Continental Shelf. The goal is to obtain international recognition for their outermost limits. It's crucial to recognise that the collective outer limits of all continental shelves, once established, will ultimately define the outermost limit of the Area, acknowledged as the common heritage of humankind.

4 Setting the outer limits of the continental shelf under Article 76 of the UNCLOS

In essence, the wording proposed in the Convention is structured around two sequential stages. Initially, the outer edge of the continental margin is established by applying the Hedberg formulae, which entail measuring a distance of 60 nautical miles from a reference point at the transition from the slope to the continental slope, known as the foot of the continental slope. Subsequently, the second criterion for delineating the continental margin focuses on the sedimentary thickness at the base of the margin. Specifically, the sediments should have a thickness of at least 1% of the distance from another reference point, the closest foot of the slope point (refer to Figure 7.1).

With the continental margin legally defined as outlined in the provisions of Article 76, one can now establish a physical limit to that margin. Hence, the

11 Treves, Tullio, 'United Nations Convention on the Law of the Sea', *United Nations Audiovisual Library of International Law* (2008), 6, 16 March 2024, available at: <http://legal.un.org/avl/ha/uncls/uncls.html>.

12 Sanger, Clyde, *Ordering the Oceans: The Making of the Law of the Sea* (University of Toronto Press, 1987), 49.

13 Weiss, Malcolm E., *One Sea, One Law? The Fight for a Law of the Sea. First Edit* (Harcourt Brace Jovanovich, 1982), 107.

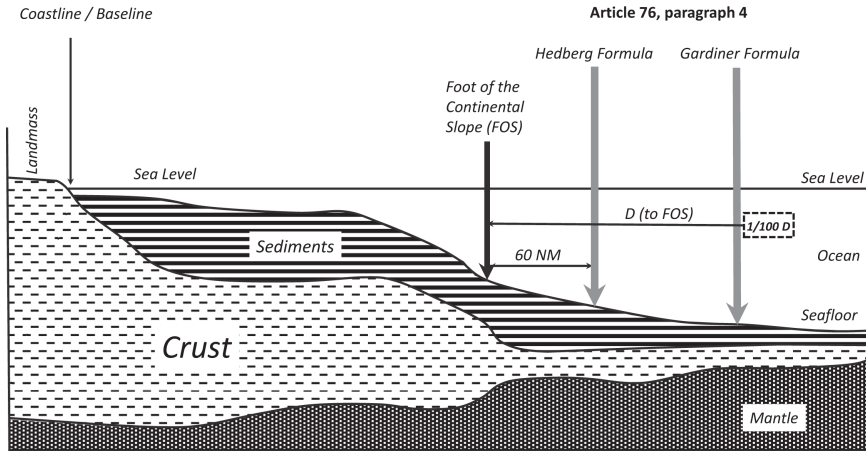


Figure 7.1 Formulae for establishing the outer edge of the continental margin, according to Article 76, paragraph 4, of UNCLOS

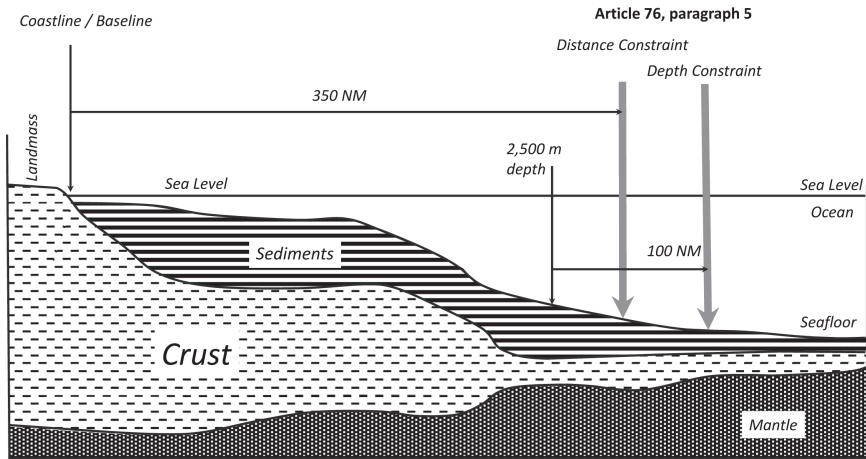


Figure 7.2 Distance and depth constraints applied to the previously defined continental margin, according to Article 76, paragraph 5, of UNCLOS

second phase involves applying a cut-off line over the margin derived earlier (see Figure 7.2)

350 nautical miles measured from the baselines

100 nautical miles measured from the 2,500-meter depth isobath

Similarly, two types of cut-off lines should be considered, providing the coastal state with the flexibility to choose the most suitable option for their circumstances.

Hence, they can opt for either the distance constraint, where the line is measured 350 nautical miles from the baselines, or the depth constraint, where the line is measured 100 miles from the isobathymetric line of 2,500 meters depth.¹⁴

This process is undeniably complex, time-consuming and financially demanding. Additionally, coastal states can only achieve international acknowledgment of their spatial domain after a specific independent commission, the CLCS, conducts a meticulous analysis of the data and information supporting their claim.

5 The commission on the limits of the continental shelf

The Commission on the Limits of the Continental Shelf is a United Nations body established under UNCLOS. Its primary mandate is to review all the data and information provided by coastal states in their submissions, aiming to define the outer limits of their respective continental shelves. By analysing the scientific data provided, the Commission verifies the accuracy of the proposed submissions and issues recommendations in accordance with the provisions outlined in Article 76 of UNCLOS.

The nature of the data and information submitted underscores the necessity for Commission members to possess a scientific background. As outlined in Annex II to the Convention, members must be hydrographers, geologists, or geophysicists. This requirement ensures the integrity of the evaluation process. Despite being nominated by states parties to the Convention, Commission members perform their duties based on their individual expertise, thereby safeguarding the impartiality and fairness of the submissions' consideration.

The Commission is one of three bodies established by the Convention, alongside the International Tribunal for the Law of the Sea and the International Seabed Authority. Its mandate is expected to be temporary, lasting only as long as necessary to review all submissions from coastal states seeking to extend their continental shelves beyond the 200-nautical-mile limit. However, a challenge arises from the disparity between the current time frame for completing this process and the originally anticipated duration during the drafting of the Convention. During the Third Conference, delegates developed a formulation for defining the outer limit of the continental shelf based on the scientific knowledge available at that time. This formulation restricted how continental margins were established worldwide, resulting in an anticipated workload of processing approximately 30 submissions for the Commission. Consequently, the Commission's temporary status was justified, with an initial expectation of taking about a decade to conclude all processes.¹⁵ One of the most significant consequences of this miscalculation is now evident in the Commission's workload, which will be discussed further later on.

14 Cook, Peter J. and Chris M. Carleton, *Continental Shelf Limits: The Scientific and Legal Interface* (Oxford University Press, 2000), 257.

15 Pardo, Arvid, 'An Opportunity Lost', in: *Law of the Sea. U.S. Policy Dilemma*, eds. B. Oxman et al. (San Francisco, ICS Press, 1983), 13–25.

6 The challenges for the commission and its implication on the law of the seabed

The current level of knowledge regarding seabed mapping, characterised by its high level of detail resulting from advancements in maritime technologies, presents several challenges for coastal states, the Commission on the Limits of the Continental Shelf, and the international community.

Coastal states face the challenge of preparing their national submissions to extend their continental shelf while ensuring the maximum possible extension beyond 200 nautical miles. However, this extension is constrained by the formulas and limitations outlined in Article 76. The quality of the data plays a crucial role in the development of these submissions, as it allows for the exploration of better solutions. For instance, some States provide new and more detailed datasets to strengthen their submissions, even during the consideration process, in order to maximise their initial expectations. Although this process incurs costs for the coastal state, which can sometimes be significant, the potential returns in terms of sovereignty rights and access to existing resources often outweigh the initial investment.

Likewise, this situation significantly affects the Commission, as the introduction of new, more multifaceted, and sophisticated data to support the outer limit entails a more complex review process. This demands a higher level of expertise and time from the Commission members to thoroughly consider all the new information submitted, resulting in delays in the review of states' submissions.

These delays are evident in the time taken by the Commission to issue recommendations, with no significant increases observed over an extended period. The anticipated performance improvement over time, attributed to the accumulated experience of the Commission, is outweighed by the inherent complexity of newer submissions (see Figure 7.3). It is worth noting that until the conclusion of the third term in 2012, the Commission only convened, in average, for 8 weeks annually, a period that was subsequently extended to 21 weeks per year at the commencement of the fourth term. However, as depicted in the following graph (Figure 7.3), despite the increased time allocated to the Commission for reviewing submissions, there has been no actual increment in the overall number of recommendations issued.¹⁶

Indeed, more working sessions are now dedicated to each submission individually, unlike in earlier sessions, owing to the growing complexity of the proposals and the determination of each coastal state to safeguard its interests. As demonstrated in Table 7.1, the later submissions under consideration are consuming more working days compared to those reviewed during the first two or three mandates of the Commission.

16 de Campos, Aldino Santos, 'The Challenges of the Commission on the Limits of the Continental Shelf', in: *Global Challenges and the Law of the Sea*, eds. Marta Chantal Ribeiro, Fernando Loureiro Bastos and Tore Henriksen (Springer, 2020), 191–202.

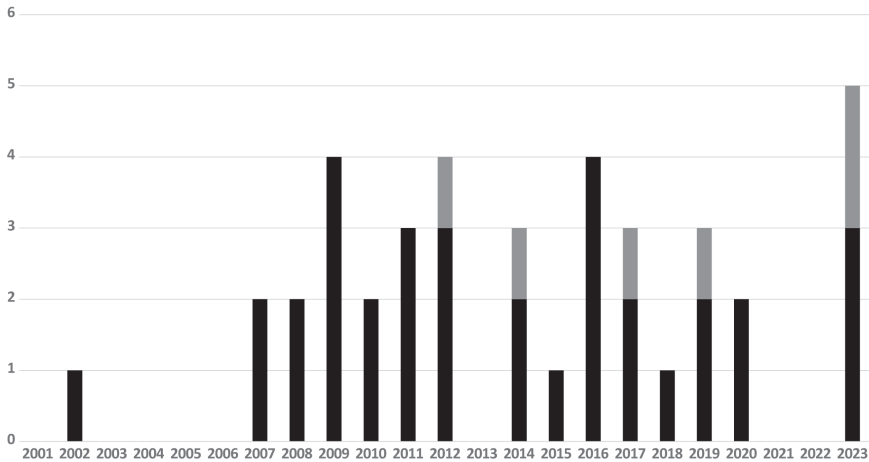


Figure 7.3 Evolution of the number of recommendations issued by the commission on the limits of the continental shelf for original submissions (black) and revised submissions (grey)

Furthermore, if the recommendations are not in line with the expectations of coastal states, they often engage in internal reassessment to identify the causes of failure. Subsequently, they may opt to resubmit their proposals to the Commission for further consideration. These revised submissions typically include new data and information aimed at bolstering their case.

This brings us to the challenges faced by the international community on a broader scale. The overall delay in the processes of extending the continental shelf can also be interpreted as delays in defining the boundary of the Area – which, as mentioned earlier, is the common heritage of humankind. This is because only after coastal states define the outer limits of their continental shelf and receive recommendations from the Commission on the Limits will the total area of this global heritage be completely defined.

Several concerns arise when discussing this general delay. In addition to the increased complexity of the processes mentioned earlier, we can also highlight the significant volume of submissions in recent years (see Figure 7.4).

As illustrated in Figure 7.4, the upward trend in the volume of submissions comprising the Commission’s workload shows no signs of abating. Since 2009, when the first significant set of submissions was presented, this number has consistently increased. When considering the additional cases from states that have signaled their intention to submit national submissions, it is anticipated that the workload volume will continue to expand in the years ahead.¹⁷

17 de Campos, Aldino Santos, ‘Governança Dos Oceanos – O Desafio Global Para o Século XXI’, Doctoral dissertation ((Universidade Nova de Lisboa, Faculdade de Ciências Sociais e

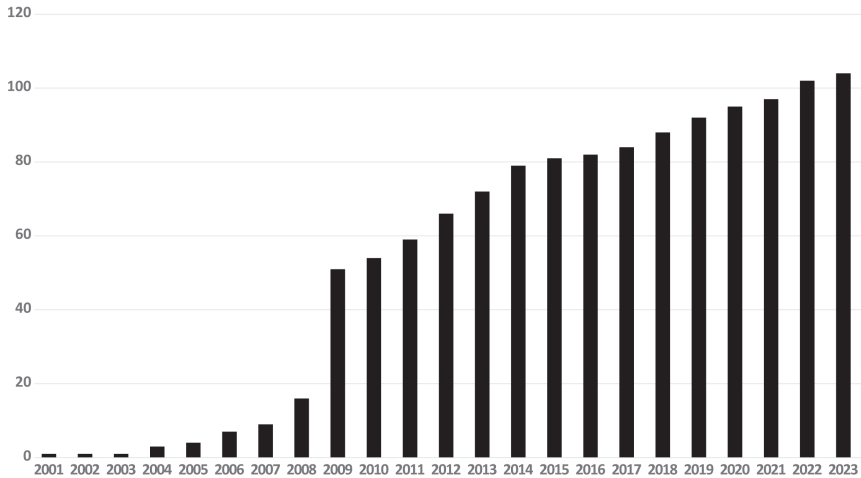


Figure 7.4 Evaluation of the cumulative submissions (new and revised, in black) and the issued recommendations (in grey) by the commission on the limits of the continental shelf

On its own, this reality sufficiently demonstrates the miscalculation made during the Third Conference on the Law of the Sea, as the estimated timeframe of ten years has long been surpassed. Indeed, the Commission has already celebrated its 26th anniversary, and it is approximately halfway through reviewing all submissions, although this benchmark is somewhat ambiguous, considering the anticipation of further submissions. Another factor complicating the projection of the conclusion of this process is the provision allowing coastal states to resubmit their submissions after receiving recommendations. For instance, the Russian Federation and Brazil were the first two states to present their submissions in 2001 and 2004, respectively. Despite several resubmissions, their submissions are still under consideration today. The significant advantage for coastal states lies in the ability to pursue additional efforts without waiting for the establishment of a new subcommission, as the original one remains responsible for analysing these resubmissions.

The drawback of this procedure is that states still awaiting the establishment of their respective subcommissions must remain in the queue until these resubmission processes are fully completed. In a context where an increasing number of countries may potentially resubmit their claims, combined with a higher number of original submissions yet to be considered, States that have recently submitted their own may face delays of several decades until their subcommissions are established.

This situation can be profoundly frustrating for coastal states that have invested significant effort in developing their submissions. It also poses a substantial challenge to international relations as it perpetuates delays in establishing definitive boundaries between states' sovereign areas and the international seabed.

7 Conclusions

Drawing on the renowned phrase from the literary work “Mending Wall” by Frost,¹⁸ “good fences make good neighbors”, and applying it to humanity’s boundary issues, it becomes evident that delineations of jurisdiction foster peace and stability at both regional and global scales. Across all regions of our planet, we continually witness territorial disputes and recurring violations of border lines. Thus, whether on land or at sea, the foremost challenge for States is to ensure that these lines are internationally recognised and respected.

One of the primary challenges confronting coastal states, as demonstrated earlier, is the delineation of the outer limit of their continental shelves. This challenge can be divided into two distinct phases. The first phase, the preparatory phase, is undertaken by the state and involves the process of preparing a submission of the limits that has been internally agreed upon, based on Article 76, often with the aim of maximising the interests of the respective state. The second phase, the review phase, entails the thorough analysis of such proposals, considering all supported sets of data and information, and subsequently validating them by the Commission on the Limits.

The sheer magnitude and complexity of this reviewing process indicate that it will undoubtedly take several decades to complete, a far cry from the initial idea drafted during the Conference. In other words, the global line that distinguishes between national and international jurisdictions will end up being a mirage in the long desert that has yet to be crossed – the conclusion of the consideration of all submissions to extend coastal states’ continental shelves.

Ultimately, there remains hope that the governance model resulting from the combination of the goodwill to follow through with this process and the need to control marine resources for one’s own benefit will prioritise a cooperative approach over a competitive one.

8 Disclaimer

The author is an elected member of the Commission on the Limits of the Continental Shelf (2017–2028), a body established under the United Nations Convention on the Law of the Sea. The views expressed in this paper are solely of the author’s and do not necessarily reflect the views of the Commission on the Limits of the Continental Shelf or any Portuguese governmental institution.

18 Frost, Robert, *Mending Wall* (North of Boston, 1914).