

# **SRI VENKATESWARA INTERNSHIP PROGRAM FOR RESEARCH IN ACADEMICS (SRI-VIPRA)**

Project Report of 2022: SVP-2022

**“Multilateralism And QUAD”**



1961 - 2021

Tirumala Tirupati Devasthanams

**Sri Venkateswara College**

(University of Delhi)

**IQAC**

**Sri Venkateswara College**

**University of Delhi**

**Dhaura Kuan**

**New Delhi -110021**



**Sri Venkateswara College**

**University of Delhi**

**SRIVIPRA-2022**

**(Sri Venkateswara College Internship Program in Research and Academics)**

This is to certify that this project on QUAD & Multilateralism was registered under SRIVIPRA and completed under the mentorship of Dr Namita Pandey and Dr Deepika Singh during the period from 21<sup>st</sup> June to 7<sup>th</sup> October 2022.

Sharda Pasricha and S. Krishnakumar

**Coordinators**



Prof. C Sheela Reddy

**Principal**






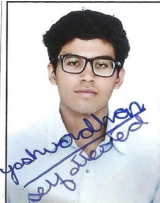
## **SRIVIPRA PROJECT 2022**

### **Title: Multilateralism And QUAD**

#### **Mentors**

<p><b>Name of Mentor:</b> Dr. Namita Pandey</p> <p><b>Name of Department:</b> Political Science</p> <p><b>Designation:</b> Associate Professor</p>	 A portrait of Dr. Namita Pandey, a woman with long black hair, wearing glasses, a yellow top, and a black sari with a gold border. She is looking directly at the camera.
<p><b>Name of Mentor:</b> Dr. Deepika Singh</p> <p><b>Name of Department:</b> Political Science</p> <p><b>Designation:</b> Assistant Professor</p>	 A portrait of Dr. Deepika Singh, a woman with long black hair, wearing a yellow and maroon top. She is looking directly at the camera.

## List of students under the SRIVIPRA Project

S.No	Name of the student	Course	Photo
1.	Akarsh	BA (Honours) IV Semester Department of Political Science	
2.	Diviniti Kothari	BA (Honours) IV Semester Department of Political Science	
3.	Sweekriti Pathak	BA (Honours) IV Semester Department of Political Science	 Sweekriti Pathak
4.	Tanya Verma	BA (Honours) IV Semester Department of Political Science	
5.	Tushar Talwar	BA (Honours) IV Semester Department of Political Science	
6.	Yashvardhan Verma	BA (Honours) IV Semester Department of Political Science	 Yashvardhan Verma

**Signature of Mentor**

*Manish*

*Deepak*

## **Abstract**

The power view of politics that prevails in realist discourse is quite dominant in the international geopolitical scenario. This power struggle or conflict is visible in the Indo-Pacific. In the last decade or so the importance of the Indo-Pacific has been very significant in the International relations. Quad as a security grouping has strengthened this vision. It becomes important to develop a comprehensive understanding of the dynamics in the Indo-Pacific. In this regard Quad has emerged as a pillar that works presently from a mini-lateral perspective. This paper outlines the features and the emerging role of Quad in the spheres of maritime security, economic dimension and in the aspect of marine ecology along with the potential challenges faced and the response of Quad. China in the region is the biggest contender for power in front of the Quad. The emergent threats from China and the challenging extent of the region provides both a challenge and an opportunity to Quad. The paper also examines Quad from a mini-lateral perspective and how it is going to be in the future. In all the discussion aims to pave a way for the future of the region that Quad deals with. This paper tries to present an enhanced understanding of the larger geopolitical importance of the Indo-Pacific from the Quad's perspective.

## **Acknowledgements**

We'd like to start by expressing our sincere thanks to the IQAC of Sri Venkateswara College, University of Delhi for curating an opportunity for students like us through SRI-VIPRA and giving us a real-time chance to indulge within research-oriented concepts. This has served as a platform that has been instrumental in stimulating our potential in analytical thinking, perseverance, and refining our writing skills by participating in this project.

We wish to take this opportunity to thank our mentors, Dr. Namita Pandey and Dr. Deepika Singh, without whom this project would not have been possible. We are grateful for their guidance, support, valuable suggestions, and encouragement during the tenure of this paper. We were incredibly fortunate to have advisors who encourage independent thinking and allow explorative ideas to blossom.

A special mention to Mr. Arvind Kumar for taking out time from his busy schedules to deliver an insightful lecture on 'QUAD: Exploring the Possibilities of Minilateralism within Multilateralism' which undoubtedly played a great role in enriching our knowledge on the subject and boosting our morale.

Last but not the least, we owe a lot to our teammates and respective families for being our pillars and compasses throughout this exciting journey. This project has taught us a lot about teamwork, cooperation and has helped us in enriching our learning experiences.

## CONTENTS

Abstract

Acknowledgements

List of Figures

Introduction

8-9

*Diviniti Kothari, Tanya Verma and Yashvardhan Verma*

<b>S.No</b>	<b>Topic</b>	<b>Page No</b>
Chapter1.	Concept of Minilateralism and Multilateralism <i>Yashvardhan Verma</i>	10-20
Chapter2.	Maritime Security & The Indo-Pacific <i>Diviniti Kothari and Sweekriti Pathak</i>	21-60
Chapter3.	Economic Prospect of QUAD <i>Akarsh and Yashvardhan Verma</i>	61-81
Chapter4.	Marine Ecology In Indo-Pacific <i>Tanya Verma and Tushar Talwar</i>	82-96
Chapter5.	Conclusion <i>Akarsh, Sweekriti Pathak and Tanya Verma</i>	97-100

*References*

## List Of Figures

Figure 1: Maritime Security Matrix by Christian Bueger.

Figure 2: Claims over South China Sea.

Figure 3: The Senkaku/Diaoyu Islands Dispute.

Figure 4: Somali Pirates.

Figure 5: Bombing of Superferry 14.

Figure 6: The PLAN Routes in Indo- Pacific.

Figure 7: An insight into Illegal, Unreported and Unregulated Fishing.

Figure 8: Analysis of ESA's Sentinel 1 SAR imagery.

Figure 9: AIS signals detected in the South China Sea in June 2018.

Figure 10: Yue Tai Yu ships movements and operations.

Figure 12: An example of Skylight detecting dark vessels.

Figure 11: Maritime Zones

Figure 13: A layout of what a collaboration between various stakeholders and skylight.

Figure 14: An example of what dark vessel detection looks like when ICEYE is used.

Figure 15: Indian Ocean Trade driven by monsoons in the 3rd century BCE.

Figure 16: China's Trade Volume with the major Indo-Pacific countries.

Figure 17: GDP of China and QUAD.

Figure 18: China's trade balance with Quad.

Figure 19: GDP of the ASEAN and GDP per capita 2000-2020.

Figure 20: Chinese economy in the Last Decade.

Figure 21: Prominent Forms of IUU Fishing.

Figure 22: Major Sources of Marine Litter.

Figure 23: Disputes In The South China Sea.

Figure 24: Coral Bleaching.

Figure 25: Giant Clam & Sea Turtle.

Figure 26: Shades of green indicate the number of species reported for a given area.



## Introduction

Quadrilateral security dialogue (QUAD), which initially took birth as a disaster relief group in the aftermath of 2004 Indian Ocean Tsunami is now a, a security dialogue between Japan, Australia , India & USA. It was established in 2007 and lasted until 2008 but was revived in 2017 with the aim to counter Chinese military activities in the Indo-Pacific. Since then the QUAD has advanced its vision to make the Indo-Pacific free and open.

To know the role of Quad in the Indo- Pacific, it is important to gauge a clear understanding of the area. The term Indo-Pacific which was first mentioned by an Indian Naval Officer and further widely propagated by the Japanese, aims to cover a wide range of areas spanning across the Pacific Ocean and the Indian Ocean, along with the aligned countries.

The research paper titled “Quad and Multilateralism” begins by examining the origins of both the concepts of Minilateralism and Multilateralism separately, which is followed by a look at the types of Multilateralism that exist, their characteristics and examples. Alternative perspectives on Multilateralism, such as the emergence of China as a great power and their stance on Multilateralism and the problems associated are also examined, followed by the need for and possibility of Minilateralism, with examples of existing minilaterals in the Indo-Pacific, and the purpose they serve.

The region however faces a number of issues related to maritime security, economy and trade, threats to marine environment, amongst others. This research paper attempts to describe in detail the various issues being faced in the Indo-Pacific, the role of QUAD and other International organisations and major powers of the world; and also discover the possibility of a minilateral framework within the existing multilateral structure.

Maritime Security or the “good order at sea”(Geoffrey Till) in the Indo- pacific is fraught with four- fold challenges, namely sea realted disputes, piracy and armed robbery, maritime terrorism and also a number of new maritime security threats like natural disasters, sea level rise,etc.

China’s maritime expansion in the recent past, has however, brought the region to the centre of discussion by the major powers. Its attempts and strategies in the field of maritime control(PLAN) and in the technology clearly indicates its aspiration of emerging as the supreme power in the Indo-Pacific and thereby, in the world. Apprehensive of its increasing role, a number of International organisations and powers like UN, ASEAN and QUAD, have tried to emerge as balancing forces. A more evolved form of maritime terrorism- dark shipping and IUU has been emerging lately, paving the path for increased regulation by other countries in terms of treaties and active cooperation.

The threats to Maritime Security has an undoubted impact on trade and economy of the associated regions and worldover. The effort is to capture the outsized contribution of the seas to global trade, and how it is important to safeguard maritime trade through maritime security for an uninterrupted global economy. A look at the history of Maritime Trade, stretching back to the Neolithic Period, and progressing through the ages is worth a mention here. Further, the scope of Trade and the Economy in the Indo-Pacific region, glancing at the contribution made by this region to global trade and the global economy, and how it is only going to get more powerful in the future is considered as the subject of importance here.

China's presence in the Indo-Pacific and what it means for the world at large, in the context of trade and economy, as well as QUAD's role in this aspect and how it aims to contain China's presence and what it wants to achieve is discussed. A look at the IPEF or Indo-Pacific Economic Framework is also attempted here, followed by discussion on how marine biodiversity, as a subject of importance and increasing apprehension, has come up.

The Indo-Pacific region is exceptionally rich in marine biodiversity and natural resources. The region also contains some of the world's busiest trade routes as it is the centre of global trade and holds a lot of economic importance. With the continuous presence of shipping as well as military vessels and rise in sea temperature due to Global Warming, the fragile marine environment of the Indo-Pacific region is facing new maritime security threats like frequent occurrence of storms, sea level rise, destruction of coral reefs, poaching of endangered species, algal blooms etc. All these threats have a direct impact on the food security, employment and livelihood of the people living on coastal areas. Activities like Illegal, Unregulated & Unreported (IUU) Fishing, Marine litter by humans and destruction of reefs for construction of artificial islands are furthermore deteriorating the ecology and is having permanent negative impact on the marine biodiversity. The coral triangle which is home to thousands of exotic marine species is one of the worst affected areas in this region. If these issues are not addressed in time they can have a long lasting negative impact on the region.

# Chapter 1

## Concept of Minilateralism and Multilateralism

The concept of multilateralism, like many other things in the post WW2 modern world, is a direct product of American Foreign Policy. While it is true that the League of Nations is considered the world's first multilateral grouping, the failure of the League of Nations and the success of the United Nations has a lot to do with American participation in the multilateral programme.

Initially, the United States, even while participating in World War 1, looked at collaborating with other nations as more a matter of them having the same enemy as opposed to being true, multilateral allies. The USA was even involved in World War 1 at all because they had declared war on Germany, and they negotiated a separate peace with Germany after the war as well.

It was only during World War 2 that the United States of America finally collaborated with foreign powers in a real cooperative alliance, and after World War 2 it was involved in many multilateral activities, such as the Bretton Woods system, the United Nations and World Health Organisation. (Jones, 2021)

However, the idea of multilateralism arose from origins that predated World War 2 by at least 100 years, with Immanuel Kant stating "If it is to be 'perpetual', peace requires a treaty between states, fixing their rights and duties and establishing mechanisms for resolving differences between them."

Clearly, these ideas about treaties between states and them working together is what led to multilateralism, since these ideas are what led to the basis of the liberal internationalism espoused by the United States for much of the Wilson-Roosevelt-Truman era, extending beyond their reigns and seeping into the framework of the new world, one built on market economy, democracy and strong international organisations. (DEFARGES, 2003)

Therefore, it can be clearly argued that current perception of multilateralism is one that stems from the idea of liberal internationalism. This liberal internationalism has been described by G John Ikenberry as "openness in terms of trade and exchange; commitment to a rules-based set of relations; some form of security cooperation; the idea that power politics can be 'tamed' by building stable relations in pursuit of mutual gains; and finally, that liberal internationalism will foster the spread of liberal democracy." (Ikenberry, 2018)

Currently, you can achieve multilateral cooperation in two ways; through the inter-nation model (safeguarding your own sovereignty by membership in an organisation like NATO) or the supra-national model (surrendering some of your sovereignty in exchange for prosperity and stability). (Etizioni, 2018)

There is also a difference between the way that the great powers practice and think of multilateralism and the way that smaller powers think of multilateralism. This distinction is

known as instrumental and functional multilateralism respectively. (Waltz, 1999) This is because it has been argued by Kenneth Waltz that a superpower looks at a multilateral institution as a way to expand their hegemony. An example here is how we can look at how the USA behaved post WW2, despite their reluctance to collaborate with other nations over the years. Perhaps the only reason they participated was in order to expand their hegemonic power over other states as well as cement their authority by shaping the world order and establish themselves as the leader.

It is also true that these nations come with a certain degree of entitlement to these multilateral groupings, behaving as if the sole reason for the existence of multilateral institutions is to serve them and achieve their goals. Failing this objective, they believe the multilateral organisation is redundant, and they leave the organisation. This use and throw policy as long as interests are served is known as Instrumentalist Multilateralism, as multilateralism is thought of as an instrument or tool to be waved around to achieve one's own interest.

Functional Multilateralism, on the other hand, is a type of multilateralism that is practised by smaller powers. Since they do not have the same bargaining power or heft in the organisation, the changing of the status quo affects their situation and status the most. Therefore, those countries would rather that the status quo be maintained. They would rather follow the rules then break them, in hopes of a long-term payoff, as opposed to the superpowers that want instant gains. (Rob de Wijk, 2020)

Which brings us to an important question. What exactly is multilateralism? Multilateralism is defined as “the practice of coordinating national policies in groups of three or more states, through ad hoc arrangements or by means of institutions. Multilateralism becomes institutionalised when enduring rules emerge. Institutions thus ‘can be distinguished from other forms of multilateralism, such as ad hoc meetings and short-term arrangements to solve particular problems’ Multilateral institutions, by implication, take the form of international regimes or bureaucratic organisations.” (Keohane, 1990)

However, this definition was criticised by John Gerard Ruggie, for whom multilateralism meant “coordinating relations among three or more states...in accordance with certain principles that order relations between them. Multilateralism represented a generic institutional form (emphasis in original)’ and implied institutional arrangements that ‘define and stabilise property rights of states, manage coordination problems and resolve collaboration problems’. But it often took place in the absence of international organisations, which are a relatively recent arrival and still of only modest importance.” (Ruggie, 1992)

For Ruggie, Multilateralism also included generalised principles of conduct, indivisibility and diffuse reciprocity.

However, because of the competing definitions around multilateralism, it is much easier to multilateralism by what it is not. Multilateralism is voluntary, based on durable rules, against imperialism or coercion and it is not unilateralism, bilateralism or inter-regionalism. It is also true that the lowest bar for a multilateral organisation is 3 members. (Peterson, 2011)

The different forms that Multilateralism takes are important to discuss as well, and there are competing viewpoints on the subject. One of the forms that multilateralism takes is soft multilateralism, medium multilateralism and hard multilateralism. Soft Multilateralism is Multilateralism that describes the UN General Assembly. Medium Multilateralism refers to organisations like WTO and IMF, while Hard Multilateralism refers to a ‘Great Power’ coalition. (Rosecrance, 2008)

The alternative view here chooses institutionalised, crystallised and aspirant multilateralism as the denominational factors. Here, rule-based organisations like the WTO are examples of institutionalised multilateralism while organisations like the International Criminal Court are examples of crystallising multilateralism. Finally, international norms on things like child labour and foreign investment are examples of aspirant multilateralism. The following table will help us understand these demarcations better.(J. Peterson, 2008)

	Institutionalised	Crystallising	Aspirant
Characteristics	rules-based international organisations are established	new international rules and organisations are in the process of being established	norms inform foreign policy behaviour in the absence of any formally-codified rules
Examples	· WTO	· judicial intervention and the ICC · climate change post Kyoto	· child labour · foreign investment

There are also scholars that claim that they have uncovered a new form of multilateralism, or a ‘new multilateralism.’ Foremost amongst these scholars are Robert Cox, who criticised state centric approaches to multilateralism. He also criticised the privileges offered to Great Powers.

There were also scholars, such as Ikenberry, that argued about the novelty of 21<sup>st</sup> century multilateralism. He says that previous forms of multilateralism were much more skewed in the favour of the ‘Great States’, offering special concessions and voting powers and vetoes to them. However, the new multilateralism is much more demanding and necessitates much more concessions, requiring even ‘Great Powers’ to qualify their commitments. An example of this type of new multilateralism is the ICC, which has been described as ‘newer style of

multilateralism in which the scope of the agreement is universal and the binding character is law-based and anchored in international judicial authority.’ (Ikenberry G. J., 2003)

An important perspective on multilateralism is that of emerging ‘great powers’ such as China. This is because rising powers challenge the established order in order to create space for themselves and their agendas. While it may not have been a tectonic shift when the mantle shifted from Great Britain to the USA, China is a completely different ballgame. This is because China is completely autocratic, socialist and extremely hierarchical and repressive, which is in complete contrast to the free market, democratic world order practised by the USA currently. In China, consensus denotes that a world order including Chinese characteristics would be much more beneficial in terms of money, and would accommodate Chinese priorities, preferences and beliefs.

China is practising an instrumental form of multilateralism, trying to undermine the USA. It is also practising a new form of multilateralism, one distinct from the Western version.

China also does not completely reject multilateralism, but rather participates in multilateral forums to serve Chinese interests and boost Chinese influence. China participated in multilateral programs during the 1990s to stabilise the region. They have also used the multilateral framework to advance programs such as the Belt and Road initiative, the Shanghai Cooperation Organisation as well as the New Development Bank. (Rob de Wijk, 2020)

However, despite all the various supporters of Multilateralism, it has failed to solve plenty of problems in a way that has been satisfactory to its opponents. This is because de facto inequalities (size, population, military might, etc) have persisted and continued to impose themselves. This is visible when the ‘Great Powers’ only participate in following multilateral rules as long as it is convenient. The efficacy of multilateralism also depends from sector to sector, with Trade being surprisingly open to it while military sectors are not. Multilateralism fails to achieve inroads with ‘Great Powers’ being unwilling to submit their ‘Great’ status. (DEFARGES, 2003)

These are a few reasons why faith has shifted and people have started looking for other answers or options, and it led them to Minilateralism.

Minilateralism has first been conceptualised in Miles Kahler’s book “Multilateralism with Small and Large Numbers.” He posits that minilateral cooperation may supplant hegemonic power. This is further substantiated by arguments that illustrated how the post-war world was not built solely through American Hegemony alone but also through strong minilateral cooperation amongst a group of world powers within the larger multilateral. (Kahler, 1992)

Based on these arguments, it is safe to assume that the antecedents of minilateralism are just as old as multilateralism. The reasons for the emergence of the idea of minilateralism in the mainstream are manifold, ranging from “mounting woes over seemingly irreconcilable

interests in global governance, the slow pace of multilateral negotiations, and the ideological impasse fuelling US-China tensions.” (Amalina Anuar, 2021)

So, before we delve further into the topic, let us first define what minilateralism is. Of course, just like Multilateralism, we have competing definitions of Minilateralism, so let us examine all of them.

Miles Kahler, the first to coin the term “Minilateralism” defined it as “a system of governance through ‘great power’ collaboration.” His idea stemmed from what he observed regarding “large forms of collective action were morphed into smaller and more informal forms of collaboration between some countries within the post-war multilateral institutions.” (Kahler, 1992)

However, the term was popularised in international discourse because of Moises Naim. In his article, he defined minilateralism as “a smarter, more targeted approach: We should bring to the table the smallest possible number of countries needed to have the largest possible impact on solving a particular problem. Think of this as minilateralism’s magic number.” (Naim, 2009) His magic number idea seeks to solve the problems of the world by choosing the countries that are most relevant to solving the problem at hand. His main objective behind pushing minilateralism is breaking what he calls “an untenable gridlock” in international relations, the cause of which he identifies as multilateralism and its large-scale negotiations that seem to him to be slow and cumbersome.

Which basically means that Moises Naim is arguing towards an approach that seeks to form a minilateral alliance of the erstwhile ‘great powers’ to solve world issues. The problem with that, which Stephen Walt points out in his response to Moises Naim’s article, is that the “untenable gridlock” identified by Moises Naim is still existing, albeit in a different manner. This is because now instead of the gridlock being due to cumbersome decision-making processes and archaic negotiation models, the gridlocks are because of disagreements due to differing core beliefs of the great powers. (Walt, 2009)

There is also the problem that switching to such a minilateral alliance would undo all the work that has been achieved in the past couple of decades through the multilateral model, finally breaking the hegemony of only the ‘great powers’ and the enthusiastic march of the new multilateralism. (Ikenberry G. J., 2003)

It is Daniel Drezner, who in his response to Moises Naim’s article, articulates wonderfully how there is no need for minilateralism and multilateralism to be separate. With this, Daniel points out how it is not an either/or question, and therefore, coexistence is possible. He also points out how they complement each other, as well as how multilateral bodies often have minilateral decision making bodies. (Drezner, 2009)

A comprehensive definition of minilateralism is given by William Tow, who calls it “informal and more targeted initiatives intended to address a specific threat, contingency or security

issue with fewer states (usually three or four) sharing the same interest for resolving it within a finite period of time.” (Tow, 2019)

Features associated with minilaterals are that their number of participants is small, they are ad hoc, and their outcomes are voluntary. In contrast, multilateralism is defined as a “formal effort by three or more states to build trust and avoid conflict by identifying, institutionalising and observing rules and norms for a common vision of regional or international order. (Tow, 2019)

According to Aarshi Tirkey, one of the reasons for the shift to minilateralism is the growing importance of strategic alliances over global cooperation. (Tirkey, 2021)

Minilaterals have certain strengths that make it a popular choice. The use of minilaterals allows a group of countries to bypass frameworks and work on the issues that affect them all. Minilateralism has allowed countries to step out of formal trade networks and strike deals with partners on their own, encouraging a flurry of plurilateral trade deals.

Table 1: Minilaterals for Security Cooperation (2016-2021)

Minilateral/Plurilateral	Year Created	Objectives	Significant Meetings and Outcomes
India-France-Australia Trilateral Dialogue	2020	Cooperation in the Indo-Pacific region	Foreign Secretaries’ Dialogue (2020), followed by the first Ministerial Dialogue (2021).
Indonesia-Malaysia-The Philippines Cooperation (IMPC)	2016	To fight piracy, sea robbery, violent extremism and terrorism	Meetings at the level of foreign ministers, defence ministers, chiefs of defence. Air and navy patrols in the Sulu Sea.
Quadrilateral Security Dialogue (Quad) <i>Members: India, Australia, US, Japan</i>	2017	Cooperation in the Indo-Pacific region	Elevated meeting to leaders’ level in 2021. Launch of the Quad vaccine partnership, and working groups



			on climate and critical and emerging technologies. Joint naval exercises (2020).
Australia-Japan-India (AJI) Trilateral	2015	Supply Chain Resilience in the Indo-Pacific	Ministerial-level meetings. Launch of Supply Chain Resilience Initiative to attain strong, sustainable, balanced and inclusive growth in the region.
India -Italy-Japan Trilateral	2021	Cooperation in the Indo-Pacific region	Meetings with senior foreign ministry officials.
Australia-India-Indonesia Trilateral	2017	Cooperation in the Indo-Pacific region	Senior-level meetings.
Japan-US-India	2018	Cooperation in the Indo-Pacific region	Leader-level meetings, at the sidelines of G20 summits.
Afghanistan – Turkmenistan – US Trilateral	2020	Political, security, and economic matters	In the 2020 meeting, participants committed to the Afghan peace process and improving security cooperation.
US-Afghanistan-Uzbekistan-Pakistan	2021	Quad Regional Support for Afghanistan-Peace Process and Post Settlement	No meetings yet. Aims to cooperate to expand trade, build transit links, and strengthen business-to-business ties.

Table 2: Minilaterals for connectivity, infrastructure, and development cooperation(2016-21)

Minilateral/Plurilateral	Year Created	Objectives	Significant Meetings and Outcomes
India-Iran-Afghanistan (Chabahar Agreement)	2016	Establishment of Transport and Transit Corridor	Trilateral Agreement signed in 2016, first meeting held in 2018.
India-Russia-Bangladesh Trilateral Cooperation	2018	Civil nuclear cooperation	Signing of memorandum of understanding for construction of the Rooppur nuclear power plant in Bangladesh.
India-Iran-Uzbekistan	2020	Trade, economy and connectivity	Trilateral meeting on joint use of the strategic Chabahar port. First meeting in December 2020 at the level of senior officials.
Afghanistan-Turkmenistan-Azerbaijan Trilateral	2021	Cooperation on Eurasian Connectivity	A tripartite roadmap for deeper cooperation on the Lapis Lazuli Corridor.
Blue Dot Network (BDN) <i>Members: US, Japan, Australia</i>	2019	Infrastructure development	Helps members coordinate national approaches for infrastructure diplomacy, particularly

			in the Indo-Pacific region.
Mekong-US Partnership <i>Members: US, Cambodia, Lao PDR, Myanmar, Thailand, and Vietnam.</i>	2020	Development of the Mekong sub-region through cooperation	· Aims to cooperate on economic connectivity, energy security, human capital development, transboundary water and natural resources management, and non-traditional security.
Three Seas Initiative (3SI), also known as the Baltic, Adriatic, Black Sea (BABS) Initiative <i>Members: Austria, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia</i>	2015-16	Co-operation in economic matters: energy, transport and communications infrastructure.	Annual summits with heads of states.  Established the 3SIIF (Three Seas Initiative Investment Fund) in 2019 to target critical infrastructure investment in Europe.
Lancang-Mekong Cooperation (LMC) <i>Members: China, Cambodia, Laos, Myanmar, Thailand and Vietnam</i>	2016	Cooperation between the riparian states of the Lancang River and Mekong River.	Three pillars of cooperation: political-security issues; economic affairs and sustainable development; and social affairs and people-to-people exchanges.

Table 3: Minilaterals for Economic Cooperation (2016-2021)

Minilateral/Plurilateral	Year Created	Objectives	Significant Meetings and Outcomes
<p>Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), previously the Trans-Pacific Partnership (TPP)</p> <p><i>Members: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam</i></p>	2016	Free trade agreement between Pacific rim countries.	The CPTPP has entered into force for Australia, Canada, Japan, Mexico, New Zealand, Singapore and Vietnam.
<p>Regional Comprehensive Economic Partnership Agreement (RCEP)</p> <p><i>Members: China, South Korea, Japan, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia, Singapore, Brunei, Philippines, Indonesia, Australia, New Zealand</i></p>	2020	Free trade agreement built upon ASEAN+1FTAs	The RCEP will take effect after it has been ratified by at least six ASEAN and three non-ASEAN signatories. As of writing this brief, Japan, Singapore, China and Thailand have completed the ratification process.
<p>United States-Mexico-Canada Agreement (USMCA)</p>	2018-19	Replaced the North American Free Trade Agreement (NAFTA)	The USMCA builds on NAFTA. The new Agreement received bipartisan support in the US Senate.

(Tirkey, 2021)

Which brings us to one of the most pressing topics of today's times, that is, Minilateralism in the Indo-Pacific. In the Indo-Pacific region, Australia is one of the biggest proponents of minilateralism. It was Australia that participated in the Quadrilateral Security Dialogue, and Australia that joined a trilateral grouping with the US and the UK. However, these movements also have the potential to antagonise other players in the region, especially when they are seen as an alignment with the United States to challenge China. It is also believed that these initiatives are undermining ASEAN centrality, which is not true, because Australia firmly believes in ASEAN centrality. (Tyler, 2022)

## **Chapter 2**

### **Maritime Security & The Indo-Pacific**

British maritime thinker, Geoffrey Till, describes maritime security within the organising concept of “good order at sea,” whereby the sea as a resource, as a medium for trade and information exchange, and as an environment, faces “risks and threats to the good order on which their continued contribution to human development depends.

A Canadian study also identifies four “basic principles which govern the use of the oceans” similar in substance to Till’s conception: recognition of the oceans as a “source of wealth,” as a “life support system” and a medium for trade and communications, and a “tradition ... that those who use the oceans should do so in peace and security.”

However, the concept of good order at the sea lacks the discussion by whose standard is it that order at sea be considered good. It then continues on to the conception of peaceful use of the seas regulated by the UN Convention on the Law of the Sea (UNCLOS). Nation states may refer their maritime boundaries to UNCLOS; however nation states which seek maritime supremacy will tend to ignore UNCLOS.

Strong maritime nations then derived their strategic thinking from sea power concept by Alfred T. Mahan which explained as following: “Control of the sea by maritime commerce and naval supremacy means predominant influence in the world... is the chief among the merely material elements in the power and prosperity of nations” (Alfred Thayer Mahan, 1918)

To Christian Bueger, maritime security extends beyond traditional dimension. Maritime security connects several issues through existing concepts of security, and adapts with emerging temporary issues. Bueger still considers the concept of sea power, especially the naval forces as a tool for achieving national security. Sea power in maritime security also discusses how nation states operate their navies outside their territorial waters. The naval power projection of states for warfare means, to secure the SLOCs, and to increase the awareness of a states’ presence in international waters are the core purpose of traditional maritime security. Protecting the SLOCs also include search and rescue, preventing oil spills in in ocean, regulation of maritime installations, and counter operations against piracy and terrorism.

As mentioned before, the aim of maritime security is also to protect the SLOCs, either for trade shipping lines, gathering natural sea resources, and other sea-based activities. Thus beyond traditional notion, maritime security addresses the strategy in managing maritime economy or ‘blue economy’. Blue economy uses maritime security to create a safe maritime environment both through laws and regulations, and the management of marine resources. The management of the blue economy links with another dimension in maritime security, which is human security. The humanity in maritime security relates with humanitarian actions

/disaster reliefs, food security through protecting fishery industry from Illegal, Unreported, and Unregulated (IUU) fishing, and also protection of marine environment.

Maritime security can be seen in a “maritime security matrix” with related concepts, including national security, marine environment, economic development and human security; it can be put into a “securitisation framework” with a list of threats to human beings; or it can be seen through the aspect of “security practises and communities of practice” or the security of those whose work is related to the sea.

To elucidate the above, the 2005 National Strategy for Maritime Security by the United States considers maritime security from the perspective of a list of threats, including nation-state threats, terrorist threats, transnational crimes and piracy, environmental destruction, and illegal seaborne immigration. Meanwhile, India’s 2015 Maritime Security Strategy views maritime security as conditions for the “freedom to use the seas for the pursuit of maritime activities, in support of national development and prosperity, and [to] promote legitimate use of the maritime global commons.”

Maritime security is no longer just threats to sea ports or infrastructures. They now include threats to the livelihoods of coastal communities as well as measures to promote economic development by sustainable use of seas and oceans. Therefore, maritime security expanded from traditional issues like territorial and maritime disputes, maritime terrorism, piracy and armed robbery to newly emerging issues such as sea-level rise, marine pollution, IUU fishing and smuggling.

Such an approach, originally developed by Geoffrey Till, focuses on the functional understanding of ocean governance as a matter of wider regional stability, including both material issues of hard power and normative issues of behaviour.

In this respect, the pursuit of good order at sea in the Indo-Pacific rests upon a fundamental paradox. On the one hand, there is considerable agreement over the importance of stability at sea, especially in a context in which the ocean represents a primary connecting fabric within and among states. On the other hand, there is a measure of disagreement over how such an objective should be pursued, given the significant differences in capabilities, capacity, and priorities.

Looming upon such disagreements is the understanding that challenges to good order at sea in the Indo-Pacific reflects broader trends. Crucially, governance cannot be fully disentangled from a question of maritime order that unfolds from a balance in regional military and paramilitary power. Shared perceptions about the shifting maritime power balance inform how regional actors perceive stability as a matter of regional governance. Yet, regional maritime security is affected by a vast range of issues beyond traditional great power politics, including sustainability (such as overfishing and undersea mining), natural disasters and human rights at sea. Regional states are increasingly required to manage and prosecute ‘blue crimes’ in their maritime jurisdictions, such as Illegal, Unreported and Unregulated (IUU) fishing, piracy and illegal arms-, people- and drug- trafficking.

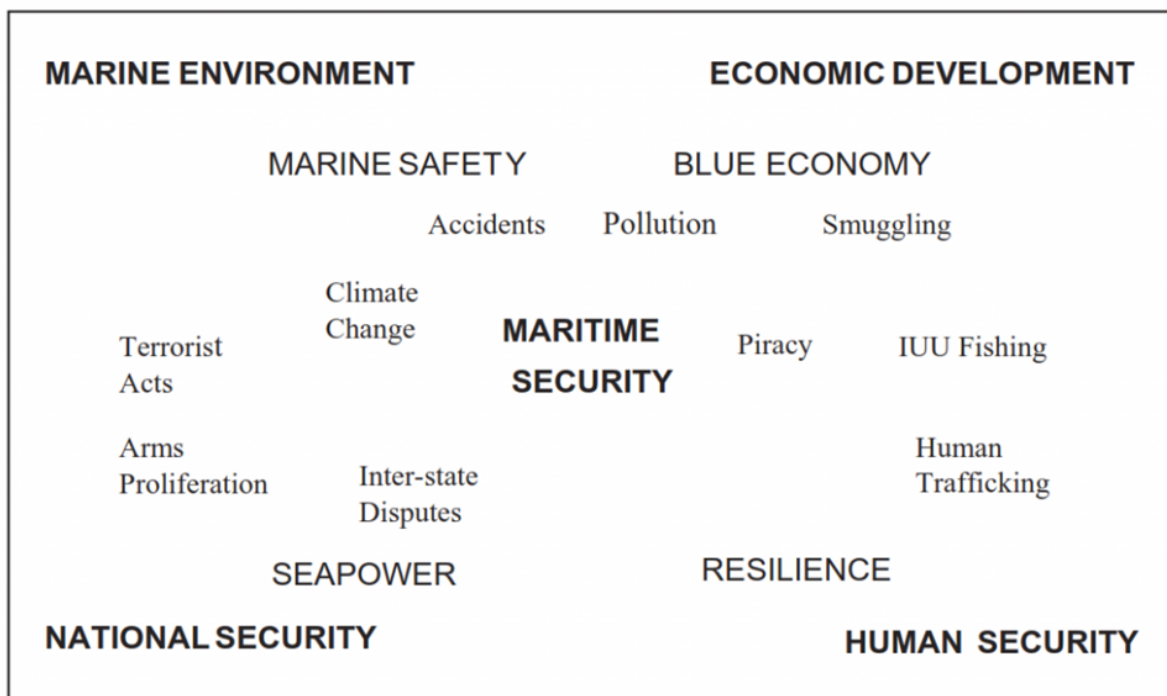


Figure 1: Maritime Security Matrix by Christian Bueger (2015)

(BRI) places the highest priority on the maritime domain when it proposed the 21st Century Maritime Silk Road, which links sea ports together, as one of its two main connections between China and Europe. The United States’ Indo-Pacific Strategy believes that the vital sea lanes of the Indo-Pacific “underpin global commerce and prosperity.” The United States, therefore, tries to promote a free and open Indo-Pacific through promoting linkages in economics, governance, and security. Japan also has its own “Free and Open Indo-Pacific” initiative, which stresses the importance of linking the Indian Ocean with the Pacific Ocean. This initiative aims to promote a rules-based order; freedom of navigation; free trade; economic prosperity; and commitment to peace and stability. India has its own vision of the Indo-Pacific, in which it wants to promote peace and stability through equal access to the sea and air, freedom of navigation, combating maritime crimes, protecting the marine environment and developing the blue economy. Australia also places high priority on maritime security, especially in the Indo-Pacific region. Australia pledges to invest in maritime security capacity-building, regional maritime domain awareness, protection of the marine environment and international law, and freedom of navigation and overflight. Russia focuses on inland connectivity in its Greater Eurasia initiative. However, Russia also understands that its initiative is actually aiming “Toward the Great Ocean” to use it to link Russia with the Greater Eurasia, a vast area of land from Europe to East Asia. The European Union also proposes to use its “Connecting Europe and Asia” strategy to link Europe with Asia via transport, energy, digital connections, and human-dimension networks. Maritime connections are important because 70 percent of the trade value between Europe and Asia goes by sea.



The differential connectivity strategies create fragmented efforts in regard to the region's maritime security. The United States, China, Russia, Japan, Australia, India and ASEAN have each proposed a connectivity strategy for the region. However, these strategies do not accommodate each other. They are formulated in order to advance the national interests of their own originating countries. China's BRI was initially said to be for improving infrastructure connectivity in the region. However, since its inception, the BRI has changed its name from "One Belt, One Road" to "Belt and Road Initiative" and expanded to encompass policy coordination, facilities connectivity, unimpeded trade, financial integration, and people-to-people bonds. The scope of the Belt and Road Initiative was also enlarged to include Latin America and the Arctic. Therefore, China's BRI is beyond an infrastructure initiative.

The United States' Indo-Pacific Strategy is clearly aimed at maintaining the United States' leadership in the region and countering the increasing influence of China. Connectivity strategies by Japan, India, Australia, and Russia each hope to better position their originating countries in an evolving regional structure. Bilateral cooperation seems to be more favourable to most countries. Regional countries, particularly small and medium-sized countries, are likely to be trapped in power struggles among major powers. The regional countries are now on the verge of having to take sides if the confrontation between the US and China escalates, perhaps even resulting in another Cold War.

Challenges to the maritime security in the Indo-Pacific can be understood in the following four broadly explained threats, which we shall understand in greater detail in the next section.

First, it has about 40 sea-related disputes among regional countries, either disputes on sovereignty over territories at sea or sovereign rights over maritime areas. Among those disputes, some, such as those in the South China Sea or the Senkaku/Diaoyu Islands, are considered potential causes of a Sino-US war or even a Third World War.

Second, piracy and armed robbery often cause the South China Sea and the Indian Ocean to be placed at the top of the list of the world's most dangerous waters. In 2018, the number of piracy and armed robbery incidents in those areas were 57 and 25 respectively, ranking only after West Africa with a total of 81 cases.

Third, maritime terrorism has been spread to the region by Al Qaeda and other terrorist groups like Abu Sayyaf and Jemaah Islamiyah in Southeast Asia. The SuperFerry 14 case, the bombing of a ferry in the Philippines in 2004 which killed 116 people, is considered the world's deadliest terrorist attack at sea even today.

Lastly, the Indo-Pacific is also witnessing a number of new maritime security threats that affect the lives of coastal communities, including sea-level rise, an increase in the frequency and severity of natural disasters, a mounting volume of marine debris, and losses of biodiversity.

## Understanding Maritime Disputes at length

- Tracing the threats in South China Sea

South China Sea is in the northwest part of Southeast Asia, bordered by most of the Southeast Asian countries and China. Paracel Islands, Spratly Islands, Scarborough Shoal, Natuna Islands, and Macclesfield Bank are forming the major islands and reefs in the region. South China Sea has a strategic location for global shipping trade, with around USD3.37 trillion trade values passed through in 2016. The Strait of Malacca serves as the doorway to the South China Sea and has been dubbed as the second busiest oil shipping line after the Strait of Hormuz. The Indo-Pacific countries have been relying on the aforementioned economic values of the South China Sea. Holding such strategic importance and surrounded by China and the Southeast Asian nations, the South China Sea is embroiled with regional maritime disputes. It is claimed by the Philippines, Vietnam, Malaysia, and China.

The most notable claim is China with its nine-dash line that covers most of the region. China is building artificial islands across South China Sea to further expand its naval presence, while also began exploiting the natural resources within. China's unilateral claim has then sparked disputes with the Philippines, Vietnam, Malaysia, and Indonesia. Vietnam and Philippines which face directly with China's nine-dash line have then increased sea patrols and coast guard activities to monitor and, if necessary, respond to any Chinese intrusion in their territories. The Philippines even filed an international arbitration case against China which the Philippines won in 2016. China has rejected the result of the tribunal and continued its maritime activities. Although there has not been any major standoff lately, the territorial maritime dispute still has the potential to resurface and disturb regional stability. The confusing sea territory claim has also caused SLOCs insecurity in South China Sea, which put every country at risk.

The South China Sea has emerged as an area that needs enhanced cooperation. As connectivity strategies, whether by the United States, China, EU, Japan, Australia, or India, more or less centred on the Indo-Pacific, the South China Sea – as the bridge between the Indian Ocean and the Pacific Ocean – has become the weakest link in the region's maritime security. In the South China Sea, there are three layers of disputes: territorial claims on islands/rocks in the sea, demarcation issues among littoral states, and power struggles among major powers, particularly between the United States and China. As a result, greater cooperation on the maritime security of the South China Sea is needed in order to maintain peace and security.

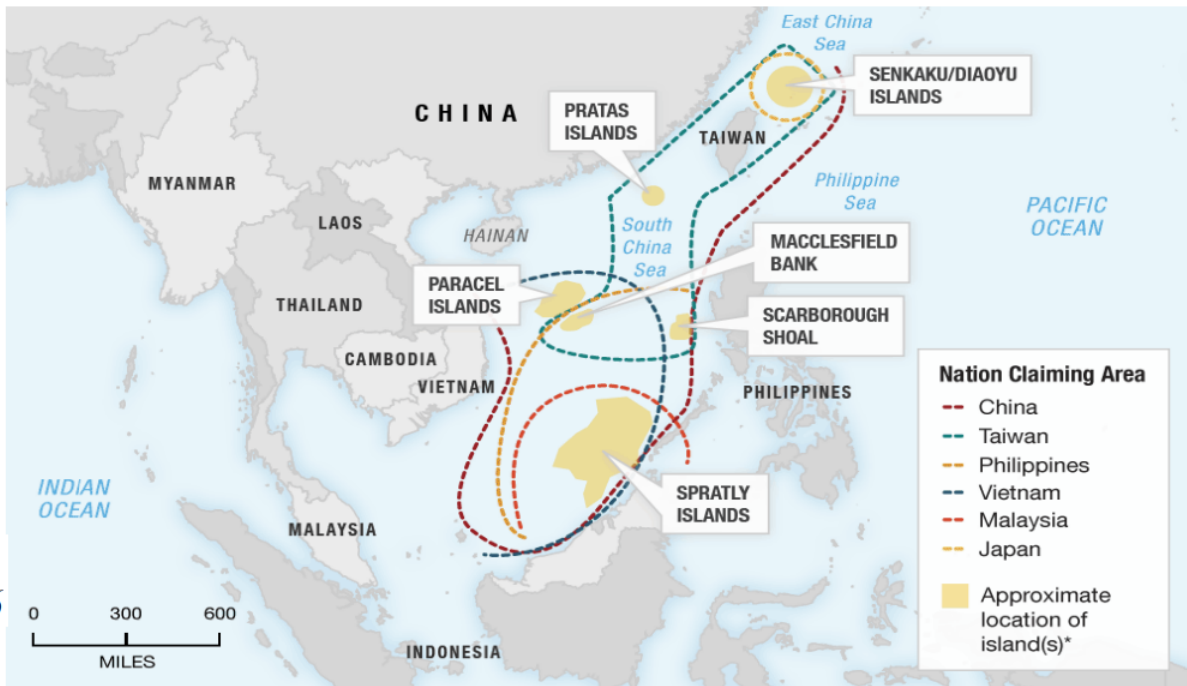


Figure 2: Claims over South China Sea

Source: National Public Radio, 2016

- East China Sea

The East China Sea is home to the major economic powerhouse of Asia, namely China, Japan, and ROK. The three countries comprise around 23% of total world's GDP as of 2016. The East China Sea region continues the shipping lines from South China Sea, making the region to be strategically important. Natural resources, fisheries, and oil and natural gas deposits are also reportedly found in the region. The most notable maritime dispute in the East China Sea is the Senkaku/Diaoyu Islands dispute. The Senkaku/Diaoyu Islands are located in southeast Japan and at the southwestern tip of China. Both China and Japan claim the rights over the region within the exclusive economic zone (EEZ) of 200 nautical miles. Japan has been managing the islands since 1895; however, China reclaimed the region by citing the historic rights over the area. Senkaku/Diaoyu Islands is strategically located overlooking the South China Sea, which would provide SLOCs security for both China and Japan. In 2012, Japan officially nationalised the islands in which China replied in the following year by declaring an air defence identification zone (ADIZ) covering most of the region. Tensions peaked between China and Japan, with each state's military flexing at one another in the region.



Source: *Oil&Gas Financial Journal*, 2015

Figure 3: The Senkaku/Diaoyu Islands Dispute

- Indian Ocean

The territory of the Indian Ocean stretches from the Arabian Sea, south India's coastal waters, until the Bay of Bengal near the entrance of Strait of Malacca. As seen in Figure 4, the Indian Ocean provides an important international shipping route. Oman, Yemen, Somalia, India, Pakistan, Sri Lanka, Bangladesh, Myanmar, and Indonesia are the littoral states surrounding the Indian Ocean. However Chinese boats are often found roaming the area through Pakistan and Sri Lanka<sup>16</sup>, as does the United States navy which annually held joint maritime exercises with India. With the strategic importance and the countries contesting the region, the Indian Ocean's stability is being rattled. At the heart of the Indian Ocean is India, which shares a maritime border with its seven neighbours. According to India's maritime papers, India has settled maritime boundaries with all neighbouring countries, except Pakistan. India and Pakistan have a long history of border disputes, and one of which is the Sir Creek maritime dispute. However, compared to the Kashmir border standoff, the Sir Creek dispute is not a big problem. Alas, India and Pakistan geopolitical rivalry has the potential to trigger a maritime dispute in the Indian Ocean.

China's growing presence is currently the focus of discussion in Indian Ocean maritime security. India worries over the number of Chinese warships and even the nuclear-capable submarines roaming in the Indian Ocean. Although Chinese officials stated that its naval activities are to protect the shipping lines from piracy and such threats, there are speculations saying China is asserting maritime dominance across Asia. India through the Act East policy is also increasing maritime control in the Indian Ocean and even seeking engagement in the South China Sea. As both states are emerging global powers with shared borders, they see each other as regional rivals.

## The Issue of Non-traditional Maritime Threats

The most common non-traditional maritime threat is piracy. Piracy used to be a major threat in the Strait of Malacca, however multilateral engagement has been successful in eliminating the danger.

Then starting in 2005, Somali pirates began roaming the Indian Ocean with modern equipment which enabled them to operate in the range of 1,500 nautical miles from the Somali coastline. Moreover, the Somali pirates are also linked to terrorist organisation such as Al-Qaeda and Al Shabab.



Figure 4: Somali Pirates

Maritime terrorism began to be taken as serious threats after the 26/11 Mumbai attacks which killed 160 people. Maritime terrorist evolve from using the ship lines as supply chain to conduct terror attacks towards ships and vessels to send political message. Philippines-based terror group, Abu Sayyaf which pledged allegiance to ISIS, has been conducting strikes to cargo ships in Sulu Sea and abducting hostages. The most deadly being the bombing of ‘Superferry-14’ in 2004.

SuperFerry 14- the Deadliest terrorist attack in Philippines: At 11 pm on 27 February 2004, the 10,192-ton ferry departed from Manila for Cagayan de Oro City, carrying 899 passengers and crew onboard. An hour after departure, just off either El Fraile or Corregidor Island, an explosion onboard started a fire that engulfed the ship. Captain Ceferino Manzo issued the order for abandonment at about 1:30 a.m. As the fire spread across the vessel, most of the survivors jumped into the sea or boarded rescue boats. The vessel eventually sank. A total of 116 people, including 114 passengers and two crew members, lost their lives in the blast. The

recovery of bodies lasted for months, with only four bodies recovered by Coast Guard divers from the half-submerged ferry in the first week, despite it having been towed to shallower waters near Mariveles town, west of Manila. About another 12 bodies were recovered the following day. Testimonies by survivors -including Capt. Manzo – after the tragedy, as well as inspection by the divers later, all showed evidence of a bomb blast. As such, five months after the sinking, the scenario of a terrorist attack came officially on the surface: The President announced on 11 October 2004, that the explosion had been caused by a bomb. According to officials, a man named Redondo Cain Dellosa confessed to planting a bomb onboard for the al- Qaeda linked Abu Sayyaf group. He held a ticket on the ferry for bunk 51B, where the bomb was placed, and disembarked before the ship's departure. The explosives were stored inside an emptied-out TV set.



Figure 5: Bombing of Superferry 14

Although piracy and maritime terrorism appear to aim different targets – the former being economic-driven, while the latter being more political, In recent years, terrorists and pirates have appeared to draw closer, even if the exact nature of their collaboration is not clear. Somali pirates and terrorists are said to have worked together in arms trafficking, and Al-Shabaab is said to have even have trained pirates for ‘duties’ at sea. An investigation by the United Nations (UN) in 2017 found evidence of collusion between pirates and the Al Shabaab, including the possibility that pirates helped the latter smuggle weapons and ammunition into Somalia. As discussed earlier, in Southeast Asia, the Abu Sayyaf's turn to piracy has resulted in millions earned via ransom payments. Its cadres have used the revenue earned from pirate activity to expand the radical organisation's presence in Southeast Asia. This backdrop leads to the emergence of the concept of Terrorism-Piracy nexus.

Human smuggling and drug trafficking are also common transnational crimes found in the Indo-Pacific. Drugs produced in Afghanistan, India, and Indonesia are distributed by sea to other countries through illegal markets. Moreover hundreds of percent profit margins are often used to fund other illegal activities such as terrorism and piracy. Strong link between the transnational crimes, piracy, and terrorism has advanced the complexity of non-traditional

maritime threats in Indo-Pacific. Plus, drug trafficking and human smuggling are not dealt with efficiently due to lack of counter measurement by the coast guards or port security facility. Seaborne economic activities, such as oil transfer and offshore drillings, fishing, and cruise ship movements have the potential to damage the surrounding marine environment, which would be discussed in the later chapters. Major oil spills to the sea would affect the sea ecology and eventually kill many marine species. Illegal fishing that often uses explosives and cruise ships are prone to endanger the coral reefs that harbour marine biodiversity. While the damage is threatening to marine ecology, such sea accidents may also disturb SLOCs, thus should be considered as common maritime threats, especially in busy waterways of the Indo-Pacific.

### **China's Maritime Expansion in the Indo-Pacific**

China views its security environment in the Indo-Pacific as generally peaceful. However, China addressed the United States' Rebalance and Japan's security policies as potential disturbance to regional stability. China acknowledges that its expanding national interest causes its national security to be more vulnerable to geopolitical turmoil, thus China needs a strong military.

China is developing a "two ocean" strategy in order to expand its naval operations to reach the Indian Ocean. This strategy will change Chinese Navy capability from only conducting far seas operations to actually projecting its naval force to protect far seas maritime assets. China is currently expanding its maritime dominance beyond the East and South China Seas. Thus, the maritime strategy has increased Chinese naval presence in the Indo-Pacific, especially in the Indian Ocean, in order to take a larger role in 2017. The most notable Chinese naval strategy is the A2/AD which started to be developed in the 1990s. The A2/AD strategy includes development to carry out preemptive attacks at long ranges to any adversary forces within the range of western Pacific Ocean in the air and maritime area.

China's coastal defence cruise missiles, submarines, and naval mines enable the PLAN to target any adversary entering the Chinese territorial water. Moreover, the PLAN South Sea Fleet, whose area of responsibility is in the South China Sea, has been equipped with anti-aircraft destroyers which would cover the air defence system in the A2/AD. Thus the A2/AD strategy will protect China's territory during wartime, and secure the SLOCs for economic purposes during peacetime. China is seeking to project its naval forces through the nine exits across the Indo-Pacific. However, in its expansion, the PLAN's activities are perceived as assertive by the regional countries.

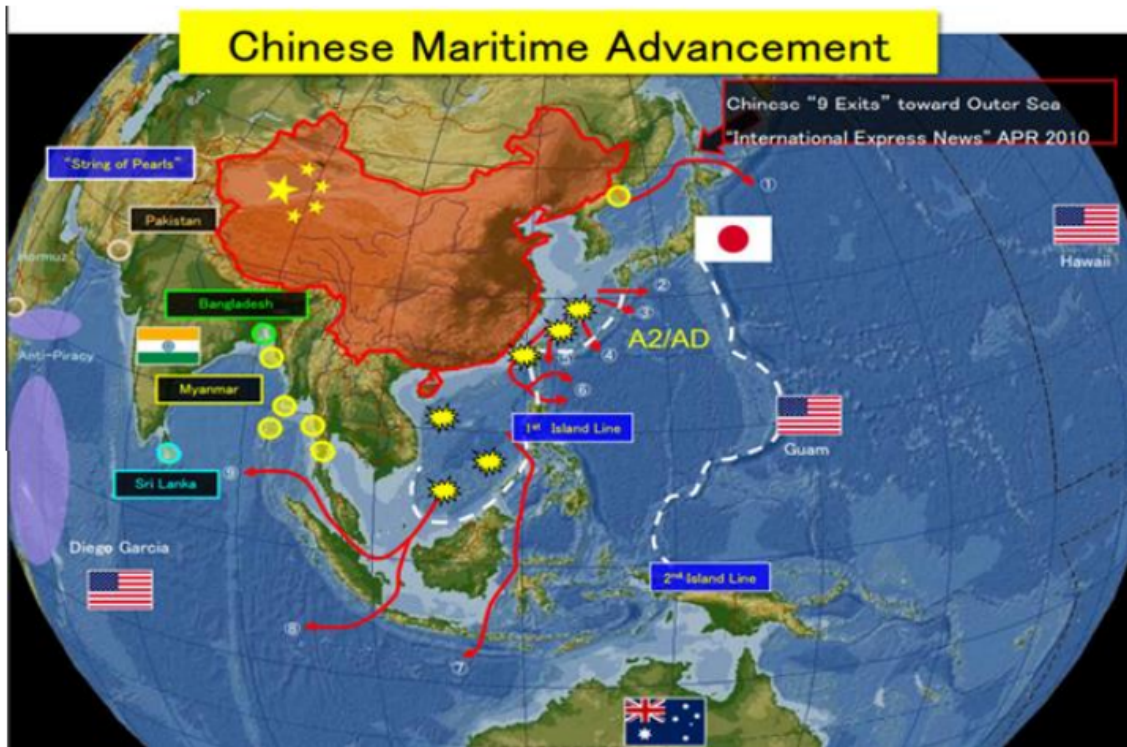
In the Indian Ocean, Chinese maritime presence is supported by ports in foreign countries. Through the Maritime Silk Road, China built a deep-water port in Kyauk Pu, Myanmar and in Hambantota, Sri Lanka. Recently, China has also opened its first overseas military base in Djibouti. However China's major entry point is in Gwadar Port, Pakistan, which is part of China-Pakistan Economic Corridor (CPEC). Starting in 2017, the PLAN will use Gwadar Port as a naval base for the next 40 years. The ports and military oversea bases would boost the PLAN's presence in the Indian Ocean.

China's military technology innovation comprises its technical and technological level strategy, particularly advances in artificial intelligence (AI), space, cyberspace, and the electromagnetic spectrum. China has already developed AI weapons, military drones, hypersonic weapons, ballistic missiles, aircraft carriers, and stealth fighters. U.S. Strategic Command regards China's hypersonic glide vehicles, such as DF-17, as strategic nuclear systems. In August 2020, China test-fired its DF-26 "Guam killer" missiles, which are capable of targeting moving aircraft carriers. The PLA's fourth aircraft carrier, currently under construction, is believed to be a nuclear-powered aircraft carrier, while the Pentagon warns China is attempting to double its stockpile of nuclear warheads. In order to counter China's military technological innovation, the Biden administration has expressed its determination to invest in the development of AI-powered autonomous weapons systems.

Under a new geopolitical environment characterised by China's military rise, its growing assertiveness as well as rivalry for influence among the great powers, such actions, alongside re-provisioning of military troops on occupied features and the strengthening of security alliances, are now deemed by China to be acts of deliberate provocation to be met with serious response. For the first time since the violent Sino-Vietnamese clashes in 1988 in the Spratlys, it is no longer merely the prospect of miscalculation and accidental clashes among claimant governments that cause concern. Incidents of deliberate (albeit modest) use of force or coercion have begun to occur, most recently with China's use of water cannon against fishermen and subsequent sinking of a Vietnamese fishing vessel. With the anti-Chinese rioting in Vietnam leading to civilian casualties and mass evacuations, and with new evidence of Chinese construction of military facilities in the Spratlys, one gets the sense that things could get much worse, should the governments concerned abandon all self-restraint.

The Indo-Pacific region is critical to the world economy and security. On one hand, we have the US, which has been a dominant player for many decades. On the other hand, we have China, a rising power that is viewed with suspicion because it threatens the status quo. The Sino-US strategic competition also casts shadow on other countries in the Indo-Pacific. The world may hope for cooperative prosperity and peaceful coexistence. However, an assertive and expansionist China appears to have chosen the path of confrontation. China's aim has been to regain its lost glory, by dominating Asia in the short term and the world in the future. Therefore, the rise of China will continue to be a challenge for nations in the Indo-Pacific and beyond. Several countries and regional groupings are fence-sitters and watching the scene unfold. They will have to calibrate their responses to protect their national interests while monitoring China's rise and its intent.





*Source: DPG Conference Report, 2016*

Figure 6: The PLAN Routes in Indo- Pacific

### QUAD AS A BALANCING FORCE IN THE INDO- PACIFIC

China’s rise as an economic, technological, military, and political powerhouse has resulted in a tectonic shift in the power balance. The tremors are now evident, and their ripples are being felt across the globe. Consequently, it is being argued that managing the rise of a tactfully belligerent China will be critical for the safety, security, and stability of the Indo-Pacific region.

Although, the Quad found its origins “in the so-called ‘Tsunami Core Group,’ an ad-hoc grouping that sprang up to respond to the devastating Boxing Day tsunami of 2004,” efforts to hold the grouping together in its first iteration met with failure as members left the group in 2007–2008. The resurrection of the grouping during the 2017 ASEAN Summit in Manila, indicated the countries’ renewed desire to balance the rise of China. China is monopolising strategic choke points in the Indian Ocean region by investing in geopolitically important ports from Hong Kong to Sudan. The String of Pearls quite literally encircles neighbouring countries, particularly India. In July 2017, Chinese troops established its first overseas military base in Djibouti. The logical move for Japan and the United States to counterbalance China’s emerging String of Pearls strategy was to strengthen its security alignments with India and Australia, forming the Quad. Quad leaders share strategic goals of countering

China's aggressive maritime policy and the encirclement of India with the String of Pearls. Hence, a more aggressive China has resulted in the revival of the Quadrilateral Security Dialogue viewed as balancing power in the region.

### Role of International Institutions and Major Powers in the Indo Pacific

2021 has been a watershed year for the Indo-Pacific region, with major policy, framework, and posture adaptations made by many countries and regional groupings, both within and outside the region. With clear recognition of the all-round importance of the region in the coming decades, the hardening of big power rivalry and competition, and the emergence of new approaches tailored for the post-pandemic world, many new formal and informal partnerships and arrangements were initiated. Major developments took place in the geostrategic space, based on respective interests and assessment of the current and emerging threats, challenges, and opportunities. Coercion as well as counter-coercion strategies, and military balance discussions became important again, consequent to the actions of some powers.

While China increased its efforts to strengthen influence in the region, counter the American strategies and actions, maintain aggressive stance in ongoing disputes/tensions, and regain initiative in areas adversely affected by the pandemic, the new Biden administration maintained the primary focus on China and the Eastern Indo-Pacific region, albeit with a different approach and an increased sense of urgency, as compared to the Trump administration. The maiden virtual summit of the Quad was held in March 2021, followed by another in-person summit in September 2021, formalising the partnership between Australia, India, Japan, and the United States (US). A new semi-formal security alliance AUKUS, comprising Australia, the UK, and the US, was announced in September 2021. Russia indicated clear intent for a more proactive role in the region. The European Union (EU) outlined its maiden, very comprehensive strategy for the Indo-Pacific region in March 2021, and adopted the final version through a joint communication in September last year. It highlighted the plan to deepen partnerships with countries/groupings that have enunciated Indo-Pacific strategies/outlooks of their own. The UK released its Integrated Review—"Global Britain in a Competitive Age"—and its plan for a 'tilt' to the Indo-Pacific region in March 2021. Japan, India, and Australia stepped up initiatives in multiple domains, ASEAN stressed the importance of ASEAN-led mechanisms, and major realignments took place in West Asia, Afghanistan, and the Middle East. A 'West Asia Quad' was also announced. To some extent, these developments were also facilitated by the growing appeal of minilateralism. The region was also at the centre stage during the summits of G20 and BRICS, and during the deliberations at COP26.

There was increased consensus to keep the maritime routes safe and open; accord priority to the blue economy, maritime infrastructure and connectivity; make global value chains resilient and leverage maritime partnerships for public good. In August 2021, the UN Security Council unanimously adopted its first-ever statement on maritime security, under India's presidency. The need for a framework of mutual understanding and cooperation in

five key areas—trade, disputes, natural disasters, environment, and connectivity—was also stressed by India. The trend of gradual enhancement in the ambit of maritime security continued, with new emphasis on traditional as well as non-traditional threats. Bilateral and multilateral naval exercises increased in numbers and scope; and information-sharing, maritime domain awareness (including underwater), capacity building, and capability development remained key themes in cooperative initiatives. The need for compliance with International Maritime Law, particularly the UNCLOS, was stressed by many countries. Despite numerous partnerships and specific steps taken, the overall maritime environment remained challenging and uncertain, particularly in the East China Sea, South China Sea, and the Bab-el-Mandeb Strait.

New security and economic partnerships are likely to emerge, and new initiatives under the existing alliances and partnerships may be announced. The extension of competition and differing connectivity strategies in all domains, including ideological, technological, social, and even sports, would exacerbate friction.

The trends of 2021 in the Indo-Pacific are likely to continue in the coming year, with the overall environment staying tense and uncertain.

However, with the ushering of technological advancements, maritime terrorism has also changed its scope and has now emerged as an even more treacherous threat given the rise of a new form of maritime terrorism, namely dark shipping which has led to the dramatic dominance of China and its exploits through Illegal, Unreported, Unregulated Fishing (IUU).

### **Shining a light on ‘dark shipping’ and IUU**

According to the White House, “dark shipping” are “the ships trying to evade detection by turning off their transponders which transmit identification and location data”. These ships are usually carrying/transporting banned weapons, fishes caught illegally and sometimes even human beings for trafficking.

In recent times, there has been a sudden surge in illegal, unreported and unregulated (IUU) fishing in the protected waters of coastal countries. High seas are the areas that are outside the Exclusive Economic Zones (EEZ) of the coastal nations, according to UNCLOS, an EEZ extends till 200 nautical miles off of a coast of a country and EEZs alone make up almost 137 million sq km of open water. While fishing is legal in High Seas or areas outside the EEZs, several Chinese fleets have been caught within the EEZs of several nations. These fleets are engaged in several illegal activities due to which they turn “dark” and turn off their transponders which makes it extremely difficult to track them. Most of them, however, engage in Illegal, Unreported and Unregulated (IUU) Fishing. These dark ships turn off their Automatic Identification System (AIS) despite the International Maritime Organisation (IMO) mandating its use.

Illegal fishing is the third most profitable illegal activity in the world. Around 26 million tons of fish and other marine resources are illegally fished annually to supply a black market worth up to \$23 billion. (Maria Salazar, 2021)

Unfortunately for the South China Sea, China is known as the largest exploiter of global fishing and is responsible for 95% of Illegal, Unreported, and Unregulated (IUU) fishing in the IOR [ CRS,2022]. China usually uses grey-zone tactics to assert its dominance and these become extremely difficult to combat. “Grey-zone activities are coercive statecraft actions short of war. The grey-zone is a mainly non-military domain of human activity in which states use national resources to deliberately coerce other states.” (Dobbs et al, 2022 ). This China does through its massive dark fleets that scour the oceans to commit an array of illegal activities, the most prominent of which is illegal fishing.

IUU and Dark Shipping are usually linked together and tackling one issue would automatically involve the slow expunging of the other problem. Even the United Nations’ Sustainable Development Goal 14.4 is to end Illegal, Unreported and Unregulated (IUU) fishing practices. However, we need to understand the meaning and the sheer scope of IUU and transnational crime to estimate the scope of the Dark Fishing Fleets and the danger they exhibit.

Illegal, Unreported and Unregulated (IUU) fishing includes:

- “(1) Fishing-related activities conducted in contravention of national and international laws;
- (2) Non-reporting, misreporting, or under- reporting of information on fishing operations and their catches;
- (3) Fishing by “Stateless” vessels;
- (4) Fishing in convention areas of Regional Fisheries Management Organisations (RFMOs) by non-party vessels; and
- (5) Fishing activities which are not regulated by States and cannot be easily monitored” (Agnew et al., 2009; [2]). ([2] Agnew DJ, Pearce J, Pramod G, Peatman T, Watson R, Beddington JR, et al.; 2009)

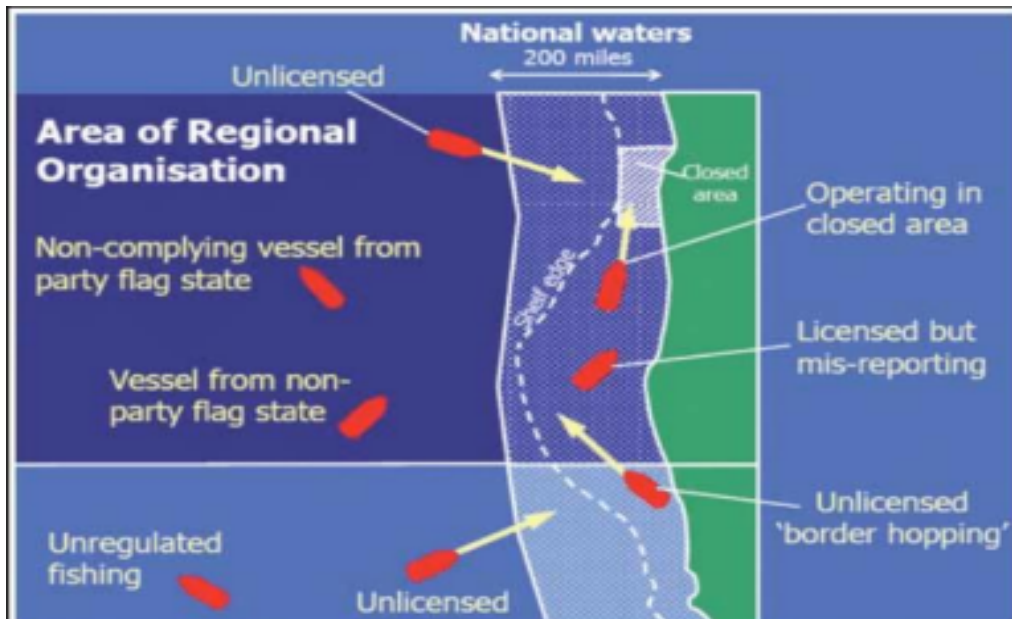


Figure 7: An insight into Illegal, Unreported and Unregulated Fishing (MRAG, 2005)

Around 900 Chinese dark ships were found in North Korea's waters by Global Fishing Watch in 2017. This was done by utilising data from multiple satellites that were able to catch and track boats despite their Automatic Identification Systems (AIS) transponders being offline i.e. even though the boats were untraceable through the use of conventional naval technology, the not-for-profit organisation's satellite technology tracked these boats regardless.

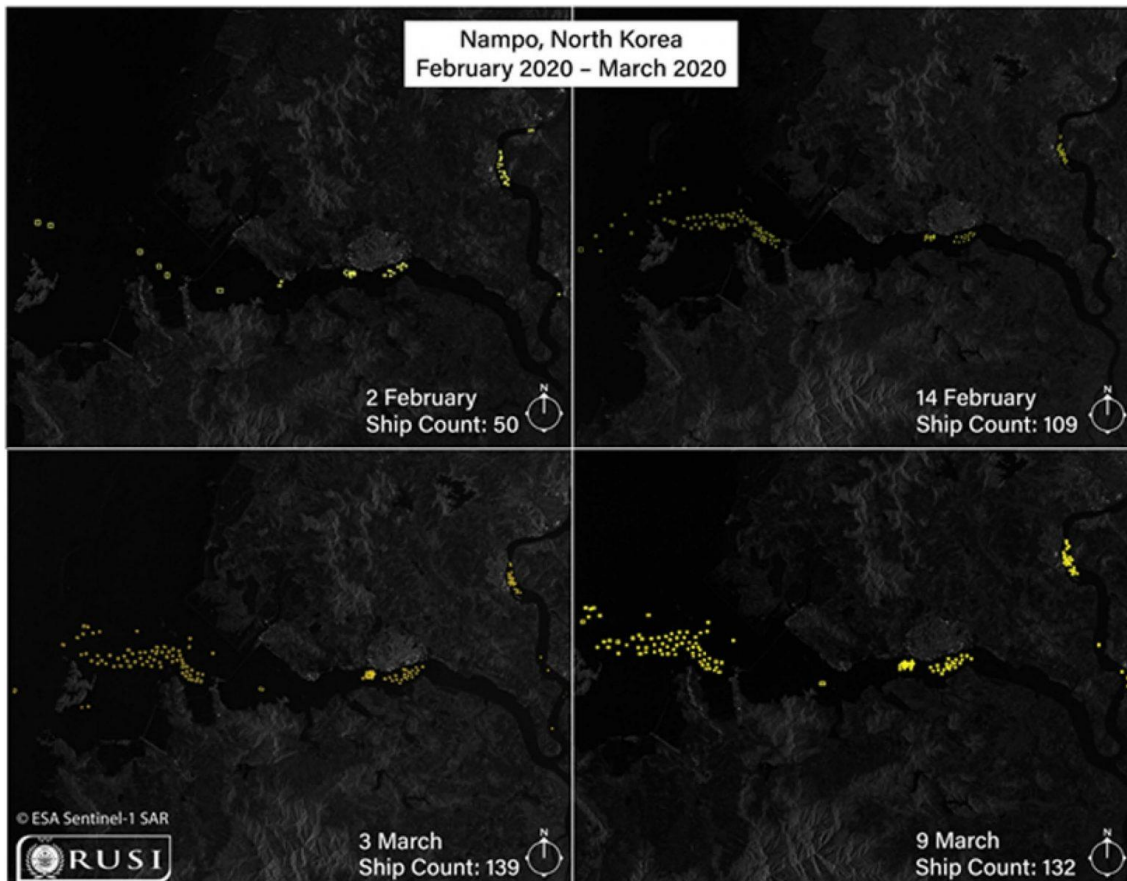


Figure 8 : SAR imagery showing North Korean vessels engaging in illegal trade with China returning home after the outbreak of Covid-19. February–March 2020 period (European Space Agency)

Unfortunately, these practices are widespread in international waters. Recently, several reports have emerged where exploitation of workers on board the vessels is being reported and the worker conditions overall have been understood to be extremely indigent. Several reports, including those of the *Overseas Development Institute* have also emerged wherein Chinese vessels have harboured Indonesian and Filipino crew working in slave-like conditions.

### **Dark Shipping and Security Concerns**

According to a report by the United Nations Office on Drugs and Crime, “a general lack of governance and rule of law in the fishing industry,” is a major factor that has caused transnational maritime crime to skyrocket in recent times. This lack of governance includes power technology with respect to sea surveillance, legal loopholes that allow the pirates and the criminals to exploit the seas (examples of which will be seen in the next section), poor communication and cooperation among nations and other stakeholders.

According to a 2022 Congressional Research Service (CRS) Report, China’s dramatic and hegemonic rise in the South China Sea has caused severe damage in the region and its powerful position within the regional multilateral institutions has caused an overall lapse in justice. Moreover, the intrinsically “international” nature of fisheries crimes further makes the efforts to bring perpetrators to justice even more complex. China’s massive sea-food market has been understood as a glaring reason for their illegal dark ship fleets according to the report. According to a Shenzhen based Chinese research consultancy, China’s seafood production will increase to 66.1 million. The report also claims how Chinese-flagged dark vessels have been found by various NGOs and governments throughout different nations’ EEZs including are alleged to engage in illegal fishing in the EEZs including South American countries, Micronesian nations and several littoral states in the East and South China Seas.

### **HOW TO TRACK DARK SHIPPING?**

The International Maritime Organisation (IMO) has laid down laws that require ships carrying more than 300 tons and travelling internationally and cargo ships carrying more than 500 tons to instate AIS. This technology makes the spotting and tracking of vessels easier. AIS, however, has two major hindrances, first consists of the vessels switching off their AIS transponders and going “dark” i.e. becoming untraceable. The second problem is of these vessels switching their response codes and adopting codes of other vessels thereby assuming their identities, this is known as “spoofing”. Both these issues allow the vessels to engage in illegal activities.

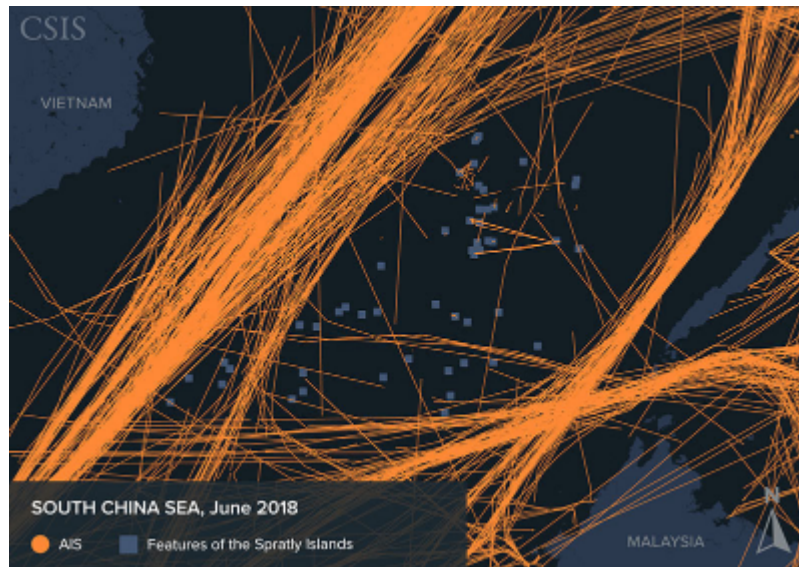


Figure 9: A representation of AIS signals detected in and around South China Sea in June 2018. (CSIS)

“Southeast Asian, Southern Pacific and Indian Ocean nations by and large lack the capacity or the interest to respond to China’s infringement of their economic zones.” (Kapur 2022) Thus, there is a need for sophisticated technological collaboration in the region which was proposed by Quad through IPMDA.

Even though the vessels try to switch their AIS transponders off, it is still possible to track these vessels using certain tailor-made technologies. This sub-section will deal with the technologies needed to track dark shipping. Further on, we will see whether these technologies are being incorporated by the IPMDA and what other technologies could be incorporated into the initiative or even shared with other countries in the region. Several technologies have been used to combat dark shipping but we will be focusing on the two most effective technologies- VIIRS and SAR

### **Visible Infrared Imaging Radiometer Suite (VIIRS)**

According to a CSIS Report published in 2019, “One of the most helpful sources of data on fishing in the South China Sea is the Visible Infrared Imaging Radiometer Suite (VIIRS) Boat Detection product, which can detect bright light sources at sea. It reveals a huge amount of fishing activity takes place in the South China Sea..despite its invisibility in the AIS record.” (Poling, 2019)

VIIRS data accurately shows the dark fleets which can further help the littoral states and other maritime partners to create appropriate data and amp up their technology and deployment accordingly in the periods where fleets become more active. For example, according to CSIS, VIIRS data shows an exorbitantly high amount of fishing in the South China Sea between the months of March and June. “There is also an increase in activity along the coasts of China and Vietnam in August, coinciding with the end of a unilateral

three-month fishing ban that Beijing imposes each year in the northern portion of the South China Sea. But most importantly, VIIRS shows that the overall level of activity, regardless of season, has been steadily increasing year to year.” (Ibid)

## SAR

“Synthetic Aperture Radar, or SAR. SAR is a type of active data collection where a sensor produces its own energy and then records the amount of that energy reflected back after interacting with the Earth.” (NASA)

SAR satellites make use of different radio waves to capture the Earth’s surface. This radar can penetrate through clouds and other obstacles like darkness to identify dark vessels as ships usually have a large radar cross section. These images are then used by analysts and coupled with Machine Learning algorithms which are then combined with other AIS and radar data. The data from electro-optical or hyperspectral images can also be utilised sometimes to draw information about ships.

The same CSIS report expounded upon how the Chinese Naval militia fleets participate in patrolling, surveillance, resupply, and other activities to strengthen China’s presence in the South and East China Seas. It says that “Beijing makes no secret of their existence, and some of the best-trained and best-equipped members engage in overt paramilitary activities such as the harassment of foreign vessels operating near Chinese-held islets or dangerous standoffs with vessels from neighbouring states.”

The Yue Tai Yu vessels are the most notorious in the region and are known for being armed and well equipped. These vessels have been caught several times in the region through SAR imagery, interestingly, these satellite images do not show the ships spending much time in fishing. Thus there have been speculations that these vessels are engaged in other illegal activities as “large modern trawlers, which likely cost \$100 million or more to build, are not producing much commercial benefit to their owners.” (Ibid)

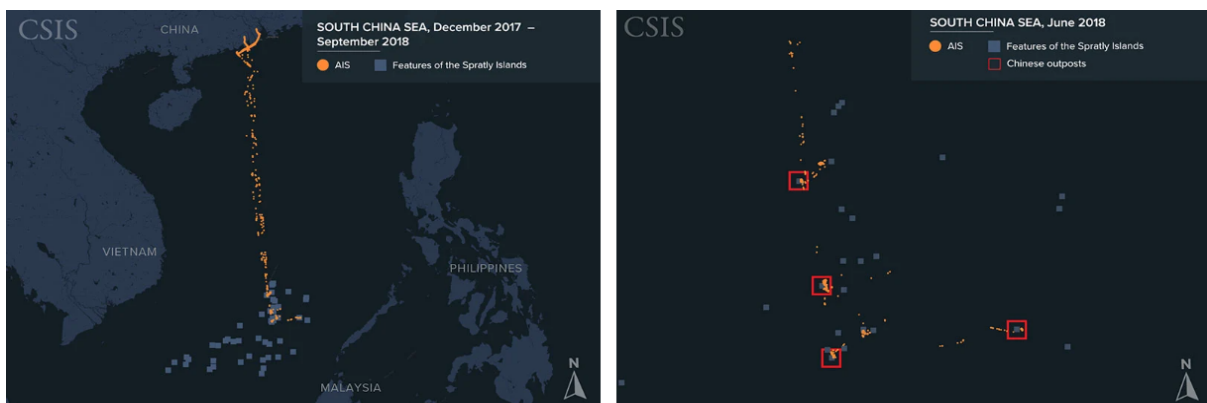


Figure 10: “**Left:** AIS signals show that the Yue Tai Yu ships sailed from the shipyard to the port of Shadi in December 2017 and then on to the Spratly Islands. **Right:** AIS signals show



that from January to September 2018, the Yue Tai Yu vessels have operated near Chinese outposts in the Spratlys with no apparent signs of fishing.” (CSIS)

These vessels have been known to carry many more nefarious activities than just fishing and these AIS results might be indicative of the same.

#### - **Quad as an entity to combat**

The ills of maritime terrorism have permeated to most coastal countries and Quad countries are no stranger to the torments of illegal maritime activities. All the four nations announced an Indo-Pacific Maritime Domain Awareness (IPMDA) initiative during the Quad Leader’s Summit held on 24 May 2022 in Tokyo, Japan.

“This initiative will transform the ability of partners in the Pacific Islands, Southeast Asia, and the Indian Ocean region to fully monitor the waters on their shores and, in turn, to uphold a free and open Indo-Pacific..Thus the data will include and integrate the Pacific Islands, Southeast Asia and the Indian Ocean region in the Indo-Pacific”, the Washington statement said.

“The Chinese navy is seeking to extend its influence over the first, second and third island chains. And to move eastward, towards the United States Coast and acquire greater presence in Guam and up to Hawaii. The Quad will keep a close eye on that..along with helping with the enforcement of laws”said Chaitanya Giri, an information systems consultant in New Delhi with the Indian foreign ministry’s autonomous Research and Information System for Developing Countries in an interview to CNBC. He also said that the “IPMDA will have the ability to track submarines through undersea commercial cables in the region.”

The initiative’s real time benefits will span over to discern ship’s identification numbers/call signs, their locations, potential paths, their port of origin and final destinations, according to Giri.

#### **IMPORTANCE OF MDA**

Marine Domain Awareness paves way for a stronger defence cooperation wherein the stakeholders indulge in intelligence sharing, asset monitoring and a collaboration between private, public, civilian and military actors. Therefore, it helps in tying an overall picture of the specific marine area. Joseph L. Nimmich and Dana A. Goward, in their paper “Maritime Domain Awareness: The Key to Maritime Security”, define MDA as “a process that collects, fuses, and analyzes data about activities in, and the conditions of, the maritime environment and then disseminates the data gathered and analysis results to decision-makers”(Nimmich and Goward, 2020). This information is usually run through the appropriate chain of command where it is used to abate maritime threats and identify other illegal activities.

“The promotion of Maritime Domain Awareness enables getting a more precise, updated and informed picture of what is going on at sea (incidents, traffics, crimes at sea,

etc.)...Information sharing is key, and should allow for more transparency and trust. Successful examples of MDA initiatives also abound in Southeast Asia, the Indian Ocean and the South Pacific. For example, the Information Sharing Centre of the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (RECAAP) (2006) in Singapore, the Information Fusion Centre (IFC) of the Republic of Singapore Navy (2009) and the Piracy Reporting Centre of the International Maritime Bureau in Malaysia (1991) have become models for how to organise information sharing. In the Indian Ocean, the Djibouti Code of Conduct process has been modelled after the Southeast Asian experiment and in 2018 the India's Information Fusion Centre for the Indian Ocean Region (IFC-IOR) was established.” (Celine Pajon, 2020; Nishihara, M., 2020)

The technology of the trilateral maritime security cooperation between India, Maldives, and Sri Lanka which was signed in 2013 can also be perceived as an avant garde MDA framework as it permeated to surveillance of Exclusive Economic Zones (EEZs), conducting anti-piracy operations along with Search and Rescue (SAR) operations. Thus, India already has a somewhat successful background in organised information sharing and asset monitoring in the region.

Marine Domain Awareness, however, is incomplete without a well-established naval presence. MDA is an important initiative to understand technical intricacies for informed military choices and collaborations.

### **The Indo-Pacific Maritime Domain Awareness Initiative:**

The Indo Pacific Maritime Domain Awareness Initiative (IPMDA) aims to focus on the “Indian Ocean Region (IOR), Pacific Islands and South-east Asia ”, to tackle the illegal maritime activities. To enable this vision, Quad countries ought to engage in mutually coordinated maritime surveillance and information sharing and have a bona fide understanding with other partner and littoral states. The initiative will also include the detection and tracking of dark shipping. MDA, in general, through its expansive communicative network ensures a larger sweep of the area and a better solution of the problems in the said domain. The ascent of China has further prompted the Quad nations to come up with the initiative to establish stability and peace in the region. The fact sheet after Quad' Tokyo Summit also said that IPMDA will “transform the ability of partners in the Pacific Islands, Southeast Asia, and the Indian Ocean region to fully monitor the waters on their shores and, in turn, uphold a free and open Indo-Pacific” [ Fact Sheet: Quad Leaders' Tokyo Summit 2022].

However, IPMDA, at least for now, is primarily focusing on dark shipping and has largely kept piracy and other maritime crimes out of its ambit.

According to Prof. C. Raja Mohan, “the most important impact of the IPMDA is to reinforce the efforts of the Quad to be seen as a coalition providing public goods in the Indo-Pacific rather than a geopolitical gang-up to counter China ” [ Mohan, C. Raja., 2022 ].

As already established, Maritime Domain Awareness as an initiative in the region was the need of the hour but given the fact that a proper layout for the implementation of the initiative has not been provided, it means we have to assume IPMDA to be similar to other MDA initiatives and make our assumptions based on those models. MDA covers all aspects of information sharing including the media for the exchange of information, identification systems, enablers, support systems.

Thus, all of these elements that will take different positions within IPMDA will need certain developments, mainly including areas such as :-

- Surface and Aerospace Surveillance- Effective surveillance of the surface and aerospace dimensions of the pre-decided maritime zones and the appropriate areas. These however, will require heavy investments in innovative and tailor made technologies, examples of which will be seen in the following sections.

- Identification- After the necessary surveillance, the next step becomes relaying the information, thus strong Joint and single service identification systems are needed that can discern and allow the appropriate information to pass through.

Information and Communication Technology- After the identification, information and communication becomes the focal point. Information and communication technology ought to be synthesised to allow a safe, dependable and a prompt exchange of data. This step will further help in the formation of military and other networked operations in the region with a higher efficacy.

CyberSpace- As a lot of data requires satellite imagery, there is a colossal need for safeguarding this information and creating better technology for this information's dissemination. (Ministry of Defence [India](Navy), 2015)

While the Quad's introduction of IPMDA will not be adequate enough to put a halt to Chinese grey-zone tactics, the extensive intelligence sharing will provide Quad the appropriate tools to deter the kraken China has become in recent times. ( Zhnag, R.,2022)

### **Existing Infrastructure:**

As explained above, India already has a strong footing in MDA collaborations in the region. India's Information Fusion Centre – Indian Ocean Region (IFC-IOR) which was created to foster cooperation among important stakeholders of the IOR, at its core, extensively engages in information sharing and collaborations, the experience and expertise of which can be incorporated in the initiative. “The IFC – IOR is also considered to be one of the most successful regional maritime initiatives like the Information Fusion Centre in Singapore..Apart from personnel from the Indian Navy and the ILOs, the centre also houses MDA analysts from civilian bodies. The centre also releases Monthly Maritime Security Update (MMSU), Half Yearly Overview, and Annual Reports, which together form a comprehensive information source on multiple maritime issues.”(Information Fusion Centre – Indian Ocean Region, Indian Navy,)

The IPMDA's target zone however seems to be unambitious. According to the fact sheet released by the countries after the Tokyo Summit, the IPMDA will be connecting four Information Centres namely in Gurugram, Singapore, the Solomon Islands, and Vanuatu.

This linkage however is lacking as other important Information Centres have been excluded from the framework, for example, the Regional Maritime Information Fusion Centre in Madagascar run by France and the EU among others is absent. “Connectivity to either the MDA component of US Operation Sentinel or the European Maritime Surveillance Mission in the Straits of Hormuz is also essential (and Bab-el-Mandeb). At a time when India has placed a liaison officer at NAVCENT Bahrain and joined as an observer the Indian Ocean Commission, the Djibouti Code of Conduct, and the Coalition Maritime Force in Bahrain, this exclusion becomes glaring.” (Singh,2022)

Since the initiative is still in its initial stages, we will have to wait for its implementation in order to imbibe and measure its impact on the region, mainly to observe how it has curbed the contemporary issue of dark shipping as it forms the core problem that IPMDA aims to tackle.

- **FAILURE OF ASEAN AND OTHER MULTILATERAL ORGANISATIONS**

There is already a network of organisations and other mechanisms that deal with different aspects of maritime security. They include global multilateral institutions such as the United Nations, European Union and its subsidiary bodies, and various regional organisations along with other local institutions and treaties. These mechanisms have created forums for the countries to work together. However, countries usually place a higher importance on their respective foreign policies and strategies due to which they are extremely selective of the forums they choose to engage with. For example, China established the Asian Infrastructure Investment Bank (AIIB) to support its BRI. The United States supports ASEAN, the Asia-Pacific Economic Cooperation (APEC) forum, the Quadrilateral Consultation (Quad) with Japan, India, and Australia, and other regional institutions, including the Lower Mekong Initiative (LMI) and Indian Ocean Rim Association (IORA). ( Department of State, 2019.; Tuan 2020)

Therefore, it is difficult for a multilateral institution to function actively in the Indo-Pacific region especially when it comes to maritime security as security by itself has different connotations for all the players in the region. “The most inclusive framework so far is the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP), whose members are 20 Indo-Pacific countries and 4 European countries (Norway, the Netherlands, Denmark and UK). However, this framework is just focused on intelligence sharing via the ReCAAP Information Sharing Centre.” (“About ReCAAP Information Sharing Centre,” 2019.; Tuan 2020).

Unfortunately, the region lacks a cumulative, accordant and enforceable strategy on maritime security. Many countries even lack their own national strategies on maritime security.

“In the South China Sea, there are three layers of disputes:

1. Territorial claims on islands/rocks in the sea, demarcation issues among littoral states, and power struggles among major powers, particularly between the United States and

China. As a result, greater cooperation on the maritime security of the South China Sea is needed in order to maintain peace and security.

2. Furthermore, as the connectivity strategies view the importance of the marine domain from different angles, they broaden the notion of maritime security. Maritime security... now includes threats to the livelihoods of coastal communities as well as measures to promote economic development by sustainable use of seas and oceans. Therefore, maritime security expanded... to newly emerging issues such as sea-level rise, marine pollution, IUU fishing and smuggling. As a result, regional countries can work together on these new areas of cooperation on maritime security.
3. They expose the need for collective actions on maritime security. Although countries develop their connectivity strategies through unilateral approaches, they understand that their strategies cannot succeed without the support of other countries and multilateral institutions.” (*ibid*)

While informal and mostly non-governmental efforts since the 1980s have taken multiple forms and have spanned from discussions on diplomatic cooperation to joint scientific research pertaining to marine ecology, the results have largely been stagnant.

"Government-level negotiations have resulted in limited agreements on general principles of conduct and joint development efforts, such as the 2002 ASEAN China Declaration on the Conduct of Parties in the South China Sea, and the Joint Marine Seismic Undertaking (JMSU) signed by China, Vietnam, and the Philippines. But negotiation on a more binding code of conduct has proved elusive.

ASEAN's role in defusing tensions is seriously hampered. Several of its members are claimant states in the disputes, and some non-claimant states are reluctant to allow the organisation as whole to be entrapped in a prolonged territorial dispute with China. There are good reasons for this: in 2015, ASEAN-China two-way trade reached US\$460 billion. External powers such as the United States, Japan and Australia have advocated peaceful and diplomatic resolutions to the disputes and called for restraints on unilateral activities such as land reclamation, effectively lending support to norms and principles that uphold a rules-based order in the region. The United States is increasingly playing a prominent role in the South China Sea disputes by refusing to recognise any unilateral actions aimed to create new realities on the ground and supporting some of the claimant states' efforts to refer the disputes to international arbitration.” (*Ibid*)

## **ASEAN'S ROLE**

### Confidence-Building Measures

The ASEAN Regional Forum was created by ASEAN IN 1994-94 to address regional defence and security issues.

The Forum adopted a Concept Paper based on three stages:

1. Confidence-building

2. Preventive diplomacy (Preventive diplomacy refers to diplomatic action taken to prevent disputes from escalating into conflicts and to limit the spread of conflicts when they occur; <https://dppa.un.org/en/prevention-and-mediation>),
3. Conflict resolution (changed to elaboration of approaches to conflict).

Later, ASEAN confirmed that the promotion of confidence-building measures became the modus operandi of ASEAN's approach to security issues.

It was therefore not surprising that ASEAN and China included Confidence Building Measures in their 2002 Declaration Of Conduct: "The Parties are committed to exploring ways for building trust and confidence in accordance with ... [the UN Charter, UNCLOS, ASEAN Treaty of Amity and Cooperation, Five Principles of Peaceful Coexistence, and other universally recognised principles of international law] and on the basis of equality and mutual respect..." (Declaration on Conduct of Parties in the South China Sea (4 November 2002))

In order to build trust and confidence, the DOC listed four measures:

- (a) holding dialogues and exchange of views as appropriate between their defence and military officials;
- (b) ensuring just and humane treatment of all persons who are either in danger or in distress;
- (c) notifying, on a voluntary basis, other Parties concerned of any impending joint/combined military exercise; and
- (d) exchanging, on a voluntary basis, relevant information. (ASEAN)

However, not one of these trust and confidence-building measures has been invoked to address the source of current tensions in the South China Sea, such as the assertiveness of the China Coast Guard, China's construction of artificial islands, rise of illegal Chinese fishing fleets, etc. Several of these measures could be used to address current tensions. (Thayer, 2016)

### **PROOF OF WANING INFLUENCE OF ASEAN**

On May 30th, 2018, the US Secretary of Defence officially renamed US Pacific Command (USPACOM) to US Indo-Pacific Command (USINDOPACOM) at a ceremony in Joint Base Pearl Harbour Hickam (USINDOPACOM, 2018). This was America's defence strategy to strengthen their role in the Indo-Pacific region all the while engaging India and countering China's naval and economic hegemony in the region. This can be seen as the negation of influence of ASEAN in shaping the scope and direction of policy in the Southeast Asian region.

The polarity of the Southeast Asian regional security complex can be seen through the prism of the changes brought in by the FOIP. Most security issues within the realm of ASEAN have now shifted to maritime issues. Thus, several countries show a tendency to be close to China,

others maintain strong partnerships with the United States, and some strive to remain neutral. This can be observed during the annual meeting of ASEAN Defence Ministers (ADMM), along with the Non-ASEAN Partners, where large focus is delegated towards securitization of maritime issues (Lubis, 2018).

This, however, acts as a central issue as China has already established a strong presence in the South China Sea and has created a hegemonic presence within the ASEAN itself. Conflict resolution, especially maritime resolution has become almost impossible due to this. In 2016, the ASEAN Summit in Laos failed to produce any agreement due to a dispute over the resolution of the South China Sea dispute (Mogato, Martina and Blanchard, 2016). Maritime issues do have a historical record that divides ASEAN as something similar had happened during the 21st ASEAN Summit in Cambodia in 2012 (Thul and Stuart Grudgings, 2012).

In the defence sector, ASEAN already has a multilateral ASEAN Defence Ministerial Meeting (ADMM) forum that discusses defence issues and policies among ASEAN countries and other regional partners. (Tan, 2018).

“Even though the defence issue is not in the recommendation cooperation sector, the ADMM offers a multilateral approach with details of the program based on local issues of the Southeast Asian region and without the tendency of strategic alliances which makes it very relevant to be applied within the framework of the ASEAN Outlook on the Indo-Pacific. (Lubis, 2018; Rusfiana, 2018). [Risman et. al. 2020]

But as discussed above, even ADMM is not of much practical aid as it usually fails to reach concrete results and/or is generally weak in implementing its policies or enforcing its decisions. The member states are unable to get diplomatic closures, especially when China is to be blamed.

### **ASEAN and its failure**

“ASEAN is adamant not to link terrorism with any religion or race due to the organization’s collegial approach that stresses consensus and unity within the group.” (Teo, 2007) ASEAN is willing to undertake an anti-terrorist policy only if it is in concurrence with its other initiatives as ASEAN’s aims are targeted towards winning the support of the local populations.

Yun Yun Teo also claims that this policy of ASEAN could lead to a higher risk of maritime terrorist attacks occurring in the South China Sea, especially when terror groups like Jemaah Islamiyah are based in this region.

“In 2001, US forces found a video in Afghanistan, scrutinising the routes and travel patterns of Malaysian naval vessels. In addition, instances of piracy in the South China Sea wherein the hijackers of naval vessels were not as interested in stealing as much they were in learning how to steer and manoeuvre the ship have panicked the international community due to parallels with the 9/11 attackers. Much of the work on maritime terrorism in the South China Sea is cognizant of the fact that out of all the littoral states, Indonesia has downplayed most the threat of maritime terrorism whereas Singapore has been the most receptive towards

initiatives on this matter. Although, Indonesia is the most populous Muslim country, its lack of activity on curbing terrorism is peculiar in light of the fact that it has suffered considerably under terrorist violence, i.e. namely the 2003 and 2005 Bali attacks. The government’s lack of decisive action against terror suspects has been attributed to fears of a public back-lash as the extremists in Indonesia are believed to have a vociferous following.” (Kang, 2009)

Table 1: Comparing US-lead Indo-Pacific Strategy vs ASEAN's Indo-Pacific approach

Aspects	INDO-PACIFIC STRATEGY	THE ASEAN OUTLOOK ON THE INDO-PACIFIC
Region Border	Indo-Pacific as contiguous territorial space	Indo-Pacific as an interconnected Asia-Pacific and Indian Ocean Region
Main Principle	Free and Open	Inclusive, Openness, ASEAN Centrality
Interaction model	Bilateral/minilateral cooperation; strategic alliance	Multilateral cooperation; dialog and consultation
Cooperation focus	Security and Defense	Economy, Maritime, Connectivity, Human Development

Table 4: This table can help us to elucidate why ASEAN’s outlook is out-dated and fundamentally opposite to the US-led Indo-Pacific strategy that seems to be focused on minilateral cooperation (Risman et al 2020)

Yun Yun Teo also suggests that one ought to draw parallels between maritime terrorism and piracy and realize that there is a close nexus between the two operating in the region. He elucidates this link by claiming that these gangs of pirates are usually armed and equipped better than many naval authorities, and as established above, their nefarity has only been rising in the recent times and shows no indications of halting. Moreover, terror outfits like Jemaah Islamiyah still have no actions taken against them which infers to the blurring line between piracy and terrorism and how they are being allowed to fester proving how ASEAN has mostly failed to exacerbate the threats looming in the South China Sea.

**THE UNITED NATIONS**

The United Nations Convention on the Law of the Sea (UNCLOS), a treaty that was concluded in 1982 and ratified in 1994 constitutes international maritime law and lays down protocol on the use of the oceanic expanses by nation-states.

The UNCLOS definition of piracy can be considered to be detrimental for international cooperation as it, in certain regards, gives a leeway to the piracy problem. “The limitation of the UNCLOS is its definition of piracy which is only applied to piracy taking place on the high seas or outside of the jurisdiction of any State. This means that the international obligation to combat piracy is unenforceable when the pirates have moved into the jurisdiction of any coastal state”. (Li, Cheng, 2006)



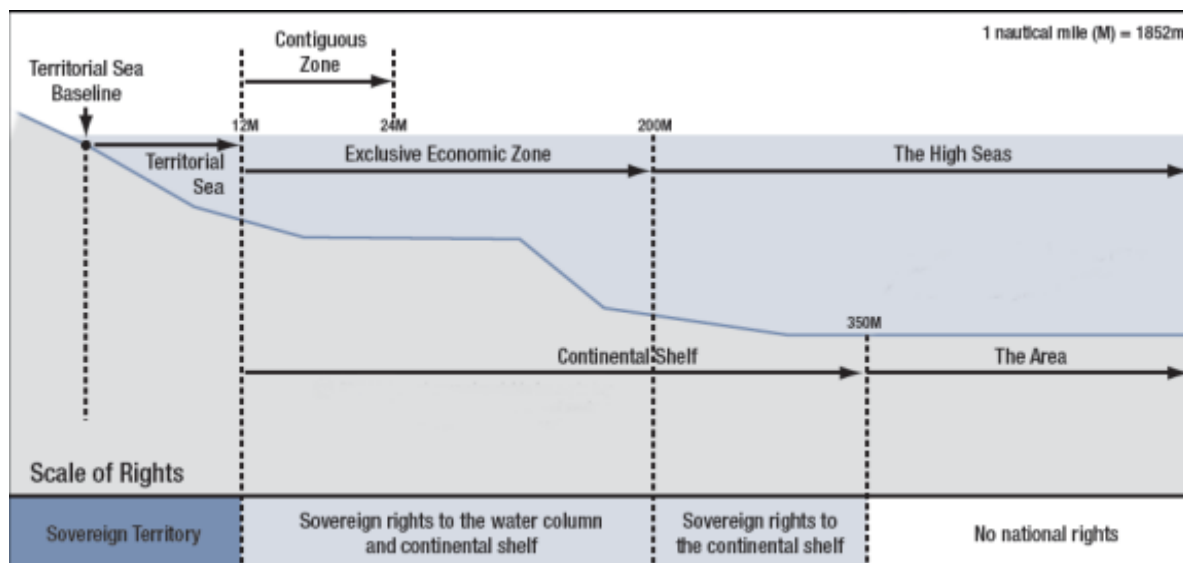


Figure 11: Source: Arctic Council, Arctic Marine Shipping Assessment 2009 Report (Tromsø, Norway: 2009)

“Although ships have the right of free passage through the straits under the UNCLOS, waters out to 12 nautical miles remain under the sovereignty of the coastal states. The international legal definition of piracy applies only to international waters. This means pirates can hijack a ship in Singapore waters and escape prosecution once they enter Malaysian or Indonesian waters”. (Teo, 2007) As discussed above, Indonesia is already sceptical about combating maritime terrorism, therefore there is a very prominent contradiction in the region that is actively halting the securitisation process. ASEAN, UN and other sovereign states like Indonesia have been thrown in a mix where none of them are pursuing any active amendments which have rendered the region stagnant and increasingly unstable.

Another maritime treaty by the UN that ought to be studied is the “Convention for the Suppression of Unlawful Acts” (SUA) which was enforced in 1992, this treaty is usually considered to be a more realistic and responsible solution for the region. Under this treaty, even the coastal areas of a nation which were earlier exempted from international law according to UNCLOS, will be liable to the international law.

“Article 3 of the convention in fact categorically requires signatories to cooperate with one another in the prevention of maritime offences. Authors Li and Cheng find this treaty unique for its use of the terms ‘unlawful acts’ and ‘intentional attacks’. However, an interesting detail with regards to Southeast Asia, also mentioned by Li and Cheng, is that while countries such as Brunei Darussalam, China, India, Japan, and Myanmar are signatories, other crucial littoral states, such as Indonesia, Malaysia and Thailand, have not ratified it.” (Kang, 2009)

Thus, problems of sovereignty and strategic interests usually clash to work stealthily within the international legal structure of the status quo. An example of this can be seen when the diplomatic relations between Indonesia and Malaysia turned acrimonious after the

International Court of Justice's (ICJ) decision on the rightful control of the Sipadan and Ligitan islands was awarded in favour of Malaysia in 2002.

The disinterest of Indonesia in being an active member in aiding marine security can be seen as a response to them being on the other side of the fence with respect to the United Nations and their general disregard for its laws.

“This situation has led to worries over potential loss of territory due to neglect and the Indonesian Navy's inability to mount a real presence, let alone provide effective enforcement throughout such a vast archipelago”. (Schofield, Ian 2005)

As explained before, littoral states might be extremely irascible regarding their borders and might see their naval borders altered as per their sovereign stands which may not be in accordance with international laws and definitions.

“Countries with extensive coastlines on the South China Sea such as Indonesia, Malaysia, Vietnam and China want to protect their recently declared sovereign rights and resource control over an exclusive economic zone (EEZ) up to 200 nautical miles off their coastlines as provided by the United Nations Convention on the Law of the Sea (UNCLOS)”. (Rosenberg, Chung 2008)

In October 2020, Japan and Indonesia held a joint bilateral naval exercise in Indonesia's Exclusive Economic Zone. It is believed that this exercise could be seen as a willful provocation against China as Beijing and Jakarta are at odds over the latter's claim to its Exclusive Economic Zone demarcation line which is falling within the South China Sea. Although Indonesia will never be openly hostile towards China and aggravate it further by joining an organisation like Quad, it is trying to subtly challenge the hegemony in the South China Sea. (Antonopoulos, 2021)

But the issue of individual foreign policy issues being larger than participating in a cumulative multilateral solution is more prominent in recent times than ever. Another example of this can be India's hurried pull back from the Regional Comprehensive Economic Partnership (RCEP) in 2019 partly due to India's anxiety regarding the RCEP creating an avenue for amplifying the hegemony of China. This, ofcourse, acted as a huge loss for Indonesia, as it had proposed the deal in the first place. However, since QUAD and ASEAN are not mutually hostile, Indonesia can help in creating cooperative ties between the two organisations given it is the central voice of ASEAN.(Jaknanihan, 2021)

This overlap of international law with sovereign issues is why multilateral organisations have failed in maintaining maritime organisation. Thus, the two biggest multilateral organisations in the Indo-Pacific region have failed to bring out a tangible solution to such a colossal issue due to clashes between member states and their sovereignty, poor policy designs, hegemony of single member states and the overall outlook of reactivity rather than proactivity. Other steps taken by several other multilateral institutions and their bodies have also failed to yield a positive result as we will see in the next section.

## **INTERNATIONAL MARITIME ORGANISATION (IMO)**

While IMO has similar interest areas as compared to other multilateral organisations, it does have certain qualities that distinguish it from other multilateral organisations and also challenge our conclusion on ASEAN and UN being stagnant with respect to their policies. Akin to the UN treaties, IMO documents, apart from advocating international cooperation, also acknowledge that there is a lack of effective legislation that is acting as a hindrance to make international maritime conventions obligatory. Thus, IMO documents have separate clauses wherein they are encouraging coastal and neighbouring states to enter into binding agreements with special protocols for joint operations and effective communication. (Li, Cheng, 2006)

## **EUROPEAN UNION**

The EU has formulated an exhaustive maritime policy titled, “towards a future Maritime Policy for the Union: A European Vision for the Oceans and Seas” wherein the EU proposes several novel ideas and projects are introduced to combat maritime terrorism and other crimes. (European Union, 2005).

For instance, “Project MarNIS28, a Community Vessel Traffic Monitoring and Information System, aims to create a platform to integrate various European member-states for maritime safety, improving port services, maritime security and environmental protection (EC Project MarNIS, 2007). In MarNIS, Automatic Identification System (AIS) is used to track the data of ship movements through shore-based networks, and this data is then supplemented from Long Range Identification and Tracking (LRIT) (“MarNIS Concept”). The project is likely to be operational between 2012 and 2020” (MarNIS Information Centre, n.d.).

“From the maritime security point of view, the project will be a boon since the most important requirement of security is a reliable database of information on ships so that the security agencies can monitor and carry out analysis of the voyage of ships, a facility which is presently not available. As per the survey results, the ships data from AIS, ship reporting system & Ship entering/leaving ports are not being effectively shared with the security agencies for analysis in most of the countries. Non availability of ships data for analysis is detrimental to maritime security and needs to be addressed between the maritime administration and the law enforcement agencies of the country” (Kothari, 2008)

### **Loopholes in the EU’s Indo-Pacific Strategy?**

Pardo and Leveringhaus explain how “while combining engagement with regional institutions (ASEAN) and key Middle Powers is a smart approach for the EU in its approach towards the Indo-Pacific, alignment in fundamental principles will be harder to achieve. Do all EU actors, Member States and partners share the same definition of – and interest in – an open and free Indo-Pacific” (Pardo, Leveringhaus, 2021)

Thus, we run into the same problem of clashes among mutual stakeholders and the overall inability for a concrete policy solution. These were the same problems deduced from the cases of ASEAN, IMO and UN as well.

However, since EU security-related efforts will be undertaken in four priority areas: **“Counter-Terrorism/Prevention of Violent Extremism (CT/PVE), Cybersecurity, Maritime Security and Crisis Management”**(Ibid), one can expect atleast a hope of technology sharing between the stakeholders, similar to the project talked above.(Huang, 2008)

### **OTHER ATTEMPTS TO COMBAT MARINE INSECURITY/MULTILATERAL FAILURE**

There have been other attempts to combat maritime crime as well. The problems of clashes, however, still plagued the process for maritime cooperation. Apart from that, we can also observe the negation of other external powers (apart from the littoral states) and their attempts to usher security in the region. For example, “the Regional Maritime Security Initiative (RMSI), proposed by the United States, was strongly opposed after the media inaccurately reported that U.S. high-speed vessels would conduct antiterrorist patrols in the Strait of Malacca” (Bradford, 2005)

Opposition can also arise by non-littoral states and states outside the focal territory of Southeast Asia as well. For example, when Keizo Obuchi, the Prime Minister of Japan laid down a proposal in 1999 pertaining to the establishment of a regional coast to combat antipiracy, it was promptly and vociferously rejected by China. (Rowman and Littlefield, 2005)

### **Japan's Ocean Peacekeeping Force**

Throughout the 1990s, Japan consistently proposed to enhance the measures taken for maritime security by providing the requisite aid and training to the littoral states. Eventually, in 1999, Prime Minister Keizo Obuchi officially proposed a regional coast guard to combat piracy, at the Association of Southeast Asian Nations (ASEAN) Plus summit.

This formation was supposed to conduct multilateral surveillance patrols that would include Japan, South Korea, China, Malaysia, Indonesia, and Singapore. The proposal was swiftly and aggressively opposed by China, as it saw it as an attempt by Japan to increase its maritime dominance in the region.

“Other Japanese-proposed initiatives, like the **Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP)**, have been much less ambitious in scope, covering only voluntary information submission, and funded by voluntary contributions. This... suggests that, in general, attempts by extra regional powers to exert leadership are likely to trigger unfavourable reactions from rivals. Since the littoral states can ill afford to offend any of the extra regional powers, externally led efforts at leading change are unlikely to meet with success.” (Huang, 2009)

## A MINILATERAL ORGANISATION

Among all the diplomatic and defence chaos, a few littoral states created a minilateral entity to combat the terror that haunted their seas. The Malacca Straits Patrols was purposely designed to be modest, originating from three littoral states, and now four- Indonesia, Malaysia, Singapore and Thailand. The four littoral states launched coordinated patrols on 20 July 2004. (Ministry of Defence, Singapore, 2004)

“Each littoral state patrols within its respective territorial seas since the sea patrols are coordinated; the states rely on a hand-off mechanism to handle cross-boundary enforcement. Therefore, they gained operational effectiveness without the issues of legality that would arise from intrusion into other states' waters. A conceptually linked but officially unrelated boost to the initiative's effectiveness was **Project SURPIC**, a technical system that allows information sharing between Singapore and Indonesian command and control (C2) centres in order to achieve a common operating picture in the Singapore Strait, facilitating communication and enforcement.” (Huang, 2009)

Another initiative called the "Eyes in the Sky" initiative was also launched by the aforementioned four nations to “enhance surveillance through combined maritime air patrols” on 13 September 2005. The use of air assets, and other intelligence sharing mechanisms “which have less psychological "presence" than surface craft, also alleviates sensitivity about sovereignty. Since the aircraft can conduct only surveillance, not enforcement--in fact, they carry no weapons that could be used for enforcement purposes--there is no possibility of one state enforcing laws in another state. Overall, such efforts as these have no impact on foreign-power rivalries or international law, and they demonstrate the ability of the littoral states to police their own waters and airspace under initiatives limited in scope and purpose.” (Ibid)

Even Quad is planning to launch an eye in the sky initiative to curb IUU and dark shipping.

## FRICION WITHIN MULTILATERAL INSTITUTIONS

The Indo-Pacific had high expectations regarding the extended membership of ASEAN, namely ASEAN +3 and the East Asia Summit (EAS), which were created in 2005 and included other external members, namely, Australia, India, and New Zealand, apart from the already existing ASEAN+3 countries. However, this wore off quickly. There were other juxtapositions of growing competition in the region and the influence of other external powers such as the US joining the EAS in 2011 and trying to divert its focus to the Indo-Pacific region as the Obama administration had decided to pull out from the Middle East. During the same time (early 2000s), China too became increasingly aggressive and hegemonic in the region, trying to claim more and more territory in the region and initiating the construction of its massive naval fleets. Thus, the growing Chinese assertion and the

American diplomatic swivel created the perfect situation for a fierce contestation of regional domination which also trickled down to the multilateral organisations they were a part of.

Thus, multiple instances have occurred where two hegemonies have engaged in mutual mudslinging in recent multilateral forums. “For example, at the 2017 Shangri-La Dialogue, then US Secretary of Defence James Mattis touched upon the Taiwan issue. This extracted a rebuke from a senior PLA officer, criticising the US’ meddling in the One China Policy.( Chan. 2017) Again in 2018, at the next Shangri-La Dialogue, the two clashed over South China Sea issues. James Mattis criticised Chinese militarisation attempts in the South China Sea.(Gibbons-Neff , 2018.) And the Chinese military delegation rebuked this.” (Lee, 2020)

The most recent example occurred at the APEC 2018 meeting where former US Vice President Mike Pence described the Chinese Belt and Road Initiative (BRI) as “dangerous debt diplomacy” and said, “[US Indo-Pacific] will stand in sharp contrast to the dangerous debt diplomacy that China has been engaging in in the region.” (Jaipragas, 2018). The Chinese Foreign Ministry spokesperson responded by saying, “We take note that some voices worry whether the US can make good on its promises and whether they’re just paying lip service”.(Straits Times, 2018)

After the US-China bilateral meeting conducted on August 1 on the occasion of 2019 ARF in Bangkok, Mike Pompeo condemned China and his Chinese equal, Wang Yi responded by saying, “There may be at various times issues and problems between China and the United States, but no matter how many problems, it is important for both sides to sit down and have face-to-face discussions.” Meanwhile, Pompeo intimated of Chinese “coercion” in the South China Sea territorial disputes and asserted, “We are working with them on many fronts... But we are also very candid about the places we are hoping China will behave in ways that they are not behaving today and we talked about each of those as well.” (Cadell and Senpai Pat, 2019)

Therefore, it is not a surprise that regional and littoral countries view these multilateral institutions as an arena for superpower rivalry (Lee, 2020) and it would not be far fetched to say that this is why their interests in cooperating and participating within these institutions has also eroded over time. The next logical thus seems to be a multilateral organisation that solely deals with regional powers similar to the unilateral institution of marine patrols but one ought to understand that there is a big chance that even regional cooperation will fail in the region.

### **WHY REGIONAL COOPERATION WILL FAIL AS WELL**

There is a growing proposition that “regional middle powers or small and medium powers (SMPs)” have to synthesise their own rules-based order inclusive of “multilateralism, free trade, democracy, human rights, rule of law, etc”. Other middle powers like ASEAN, Australia, India, Japan, New Zealand, South Korea, etc. are genuinely focused on creating a peaceful maritime order. Moreover, middle powers also have the required bargaining power to shape and instrumentalise their own regional order.

However, this argument is not without its flaws as, firstly there is “a collective action dilemma [as]... the root of this problem is the trust or confidence deficit among regional middle powers. Regional middle powers...are finding it difficult to build an effectively working framework through which they can exert a concerted influence in the region...SMPs are swinging back and forth between principles and narrowly defined national interests...Individual states, afraid of being abandoned by superpowers on whom they are dependent for their security and economy, are always tempted to defect, undermining the united front of middle powers.” (Lee, 2020)

Thus, even the scope of regional powers creating their own multilateral institution to counterbalance the superpowers seems like a failed idea.

An interesting example of the Chiang Mai Initiative (CMI) can be taken. “CMI, which is a regional multilateral currency swap agreement, was originally created as a bilateral swap agreement and soon expanded to a multilateral format into the Chiang Mai Initiative Multilateralization or CMIM . Now, this initiative has become a central part of ASEAN+3 since the institution’s goal was to jointly overcome the financial crisis. and to prepare for rainy days in the future. This initiative is considered to be a success as even the fund promised increased from USD 78 billion in 2000 to USD 240 billion in 2012.” (Ibid)

Therefore, a successful multilateral institution in the region also started through a bilateral model and only when it tasted success did it plan to expand. This bottom-top approach could be a lesson for the region.

- **QUAD’S STRATEGIES AND RECOMMENDATIONS**

Australian academicians are worried regarding the tangible benefits that the country will yield by being in the group and they thus encourage the Quad to focus on a single issue of maritime crime and the consensus largely lies within the domain of dark shipping and illegal fishing as it affects not only the Quad countries but also the region overall; it is also an area where robust enforcement could have a strong impact and would be easier to gauge Quad’s success through numbers and increased monitoring of the region. In the similar beat, Quad needs to work on both technological and theoretical aspects to ameliorate the South China Sea region.

## **COMBATING DARK SHIPPING AND IUU THROUGH TECHNOLOGY SHARING**

### **SKYLIGHT**

We could understand the specificities of the technology required to combat IUU and dark shipping through “Skylight”- a tool “focused on addressing illegal, unreported and unregulated (IUU) fishing, but can be applied to many types of maritime crimes.”

According to their website, it is important to:

- “Identify incursions or loitering by commercial fishing vessels in or near Marine Protected Areas and highlighting transshipments of fish or other goods near or in a country's Exclusive Economic Zones
- Track networks and enablers of illegal activity, such as vessels who bunker (re-fuel) other illegal fishing vessels

#### Alerting Tools Aid in Real-Time Awareness

##### How Skylight Detects and Deters IUU Fishing

- Skylight is the Allen Institute for Artificial Intelligence’s contribution to ocean health and there is no cost to end users who are serious about detecting and deterring IUU.
- Millions of incoming data points are automatically analyzed to highlight highly suspect events rather than showing a “spaghetti bowl” of vessel tracks.
- Automatic Identification System (AIS)-based alerts are generated and shared in real-time.
- Features like dark rendezvous (An event where one vessel is transmitting AIS while indicating a prior meeting with a dark ship.) employ advanced machine learning analytics.
- No specialised hardware is needed since Skylight is available through a simple and secure web-based login.” (Skylight.org)
- “Skylight can monitor vessels on AIS encroaching into various areas of interest.
- Basic functionality for monitoring general activities around areas of interest (AOIs). AOIs are customizable by users.”(UNODC, 2021)

Skylight has various partnerships and finding sources through which they share their technology. Their partners include WildAid and the United Nations Office on Drugs and Global Maritime Crime Programme and contribute grass root level resources in littoral and other stakeholder countries that are victims of IUU and other maritime threats.



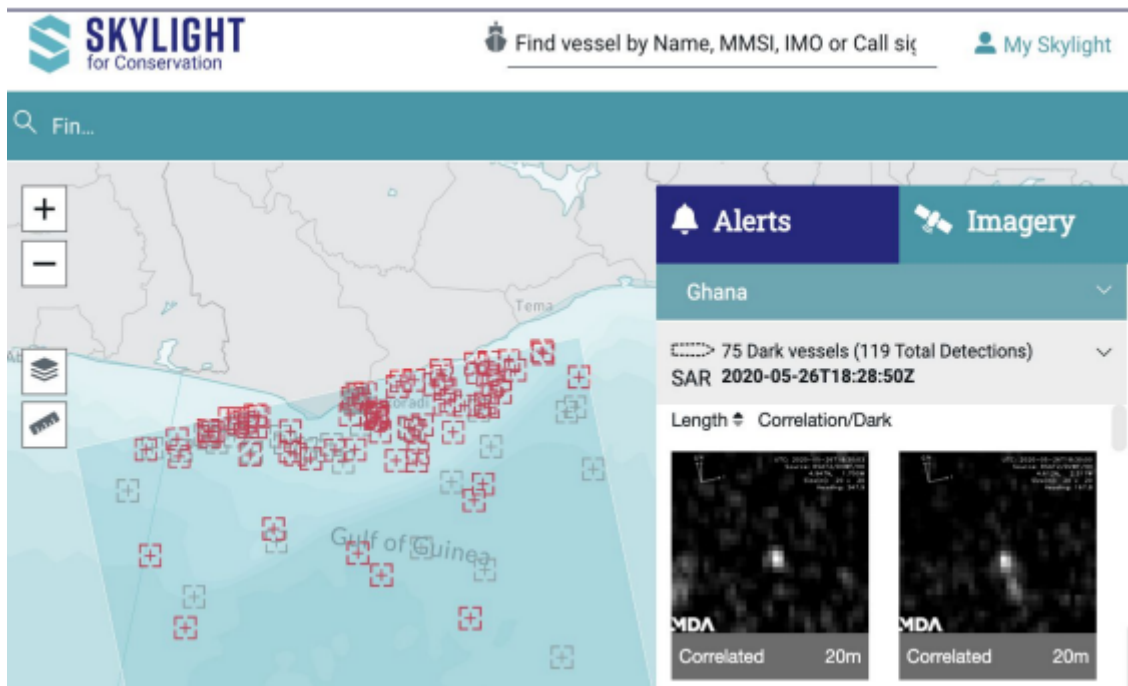


Figure 12: An example of Skylight detecting dark vessels; Source: UNODC

Global Fishing Watch, an online tool founded by Google operates as one of the technology partners of Skylight working alongside Skylight. Together, they present holistic and technologically sound proposals to various stakeholders inclusive of “enforcement, deterrence, and transparency by leveraging advanced technology, skilled analysts, and the most extensive data available” to combat IUU. They also have various other partners. A public-private partnership or a joint technology sharing with Quad can be beneficial for the region. Even though there are active global engagements of Skylight in the Indian Ocean and South-East Asia, we could not find any resource showing Quad’s interest in a collaboration.

The US Navy has also collaborated with the tool in 2021 during its anti-narcotics and anti-IUUF operation in and around Cabo Verde (African waters). In the same year, Skylight also helped Maldives in catching illegal Sri Lankan vessels from Maldives’ EEZ. Given the robust record and partnerships of Skylight and a member of Quad having already worked in the area and the system already operating in the region, a Quad-Skylight collaboration seems pertinent.

Skylight cannot deliver value in a vacuum. But, by partnering with other organizations in this area, we can provide a more complete intervention.

## PATH TO DETERRENCE

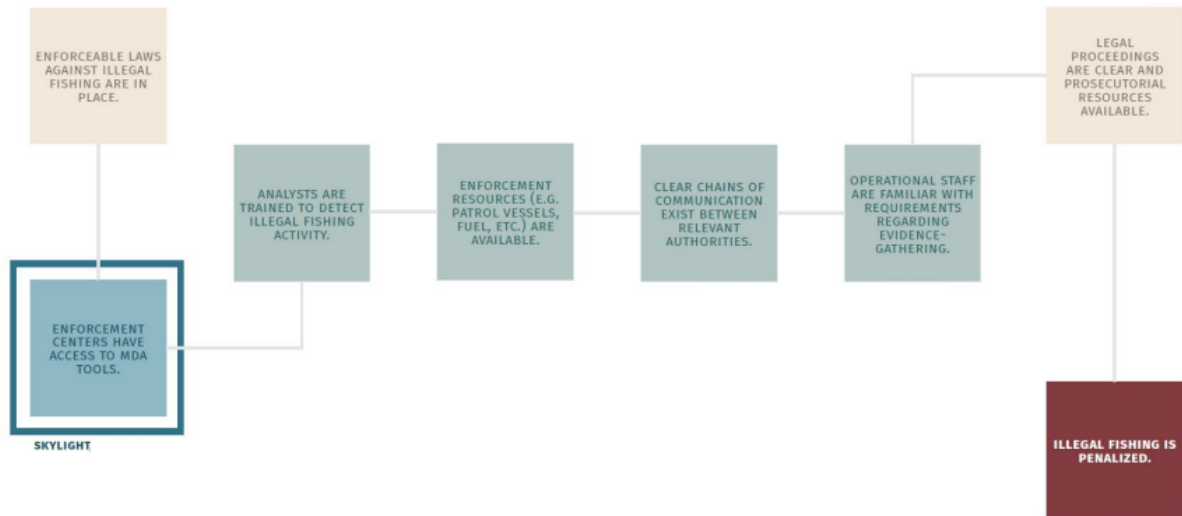


Figure 13: A layout of what a collaboration between various stakeholders and skylight would look like (UNODC)

### ICEYE

Another Public-Private Partnership can occur between the Finnish Company ICEYE, a satellite manufacturer and Quad where the former engages specifically with satellites and SAR.

According to their website, they specialise in:

- “Planning maritime operations within EEZs in a safe and efficient manner, using near real-time information about maritime traffic as a foundation.
- Interdicting illegal activities happening in your country's waters, such as drugs and arms smuggling, unauthorised cargo transshipment, illegal fishing and other, based on information derived from ICEYE SAR data.
- Raising awareness of every collaborative and dark vessel that entered the area of your interest.
- Timely responding to maritime catastrophes, enabled by information about the incidents derived from near-real-time ICEYE SAR satellite data.” (ICEYE)

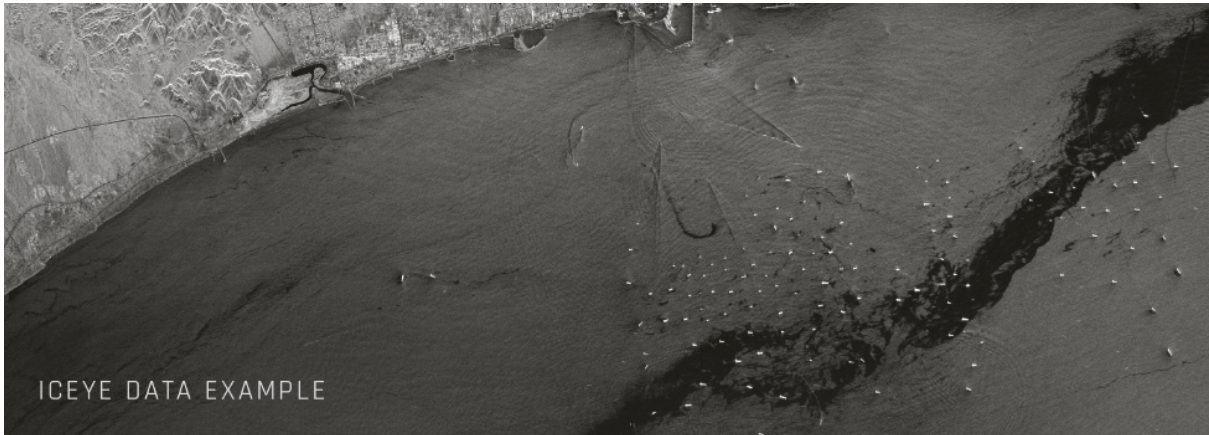


Figure 14: An example of what dark vessel detection looks like when ICEYE is used (ICEYE)

Thus, while Skylight specialises in AIS tracking, ICEYE is more SAR oriented which can be a great prospective for a PPP collaboration.

### **C4ISR**

Recently, Defence Minister Rajnath Singh exhibited technologies for military use. The technologies included the **Command, Control, Communications, Computers Intelligence, Surveillance and Reconnaissance (C4ISR)** systems which are meant to be exported to friendly nations.

“C4ISR provides for information, knowledge and intelligence along with comprehensive situational awareness to decision makers that enable superior decision necessary to execute governmental/coalition decisions... The envisioned outcome is a comprehensive network enabled capability which includes technological aspects such as command and control, communications, sensor data fusion as well as human aspects including concepts, doctrine and educational principles.” (Thiele, 2013) Thus, it fits perfectly into the agenda to combat their increased maritime threats.

### **NISAR**

NASA and ISRO are currently collaborating on a surveillance satellite called “NISAR” or NASA-ISRO Synthetic Aperture Radar, which is to be launched by India in 2023. “It provides the ability to see through clouds, warranting improved radar tracking of dark vessels. The challenge so far has been availability of satellite data at a reasonable price.” (Kapur, 2022)

However, since the intelligence sharing of the NISAR generated data is planned to be free of cost, the problem will find a solution.

Apart from the technological, there are other glaring issues in the region that can hamper even these technological collaborations, if not combated by Quad. All of the problems of Chinese hegemony and the response of littoral states can be summed up in a strategy known as “Hedging”.

### **COMBATING DARK SHIPPING AND IUU THROUGH THEORETICAL UNDERSTANDING: HEDGING STRATEGY**

Hedging is a defence strategy that is usually adopted by South-East Asian nations to protect their interests when they are challenged by the regional hegemon. According to Ann Marie Murphy, “this type of strategy seeks resistance or creates contradictory actions as a way to minimise or mitigate weaknesses risk related to the behaviour of alliances. Key indicators of the Hedging strategy include strengthening the military without declaring hostility, increasing participation in bilateral and multilateral cooperation, the absence of decisive balancing and bandwagoning efforts and strengthening of simultaneous relations with two regional powers” (Murphy, 2017). In the previous section, we have seen how nations like Indonesia have adopted this strategy wherein the nation has displayed an interest in countering China but not through explicit military action. This is observed all throughout the region.

“The chief criteria of this strategy include military strengthening without overtly mentioning the “enemy”, heightened participation in bilateral and multilateral cooperation, a non-existence of bandwagoning while covertly attempting to ally with two strongest regional powers.” ( Goh, 2005).

Another crucial element of hedging is “engagement”, which is defined as “the use of non-coercive means to ameliorate the non-status quo elements of a rising power’s behaviour.”(Schweller, 1999) Engagement, further alludes to attempts made to fraternise with other emerging powers. Engagement is considered successful if the emerging power in question becomes a relevant stakeholder in the international order.

“In the Southeast Asian case, all the states under discussion here have used the Association of Southeast Asian Nations (ASEAN) as a tool to engage China. States can form alignments with multiple states as a way of diversifying risk under conditions of broad regional uncertainty. Goh has called this a deliberate effort to entangle the United States, China, and others in a web of interdependent economic and diplomatic relations in the hopes of forestalling aggressive action. All of the states..have attempted to enmesh China and the United States into ASEAN-based institutions.” (Murphy,2017)

Thus, we can observe how the littoral states in the region are trying to subvert conflict through hedging and not engaging in direct confrontations. This can be used as a leverage by

Quad as it is already functioning as a minilateral institution and can thus amass the support of littoral states and other stakeholders implicitly which can be mutually beneficial for both Quad and the nations. However, to do this, the USA has to cease playing the part of a regional policeman as that has been known to repel the states from cooperation. “For example, the Regional Maritime Security Initiative (RMSI) designed specifically for the Straits of Malacca and Singapore was categorically rejected by the littoral states particularly Indonesia followed by a spat between the two nations” (Kang, 2009) . Further, Rosenberg and Chung, “Despite considerable pressure from Washington to fully and publicly participate in the PSI, key maritime nations such China, India, Indonesia, Malaysia and South Korea have thus far not joined.” (Rosenberg, Chung 2008)

Thus, Quad needs to function without any disproportionate internal and external influences in order to truly make a difference in the region. Moreover, there ought to be more innovative collaborations between the nations and other independent parties. We have seen how various multilateral institutions have repeatedly failed the region and how there has been an even newer surge of contemporary maritime security threats i.e. dark shipping, illegal fishing, etc. To emerge as a successful venture, the Quad ought to focus indubitably on IPMDA and focus on making it a dynamic initiative with a precise plan that can coax even the apprehensive littoral states into supporting the initiative and aiding with information sharing and technology sharing.

## **Chapter 3**

### **Economic Prospect of QUAD**

#### **Introduction**

When we talk about international trade, we simply cannot disregard maritime transport. Shipping has been described as the lifeblood of the global economy, because of its outsized contribution to international trade. Without shipping, intercontinental trade, including the bulk transport of raw materials, affordable food and manufactured goods would simply not be possible. In fact, in its role as the backbone of international trade and the global economy, around 80 percent of global trade by volume and over 70 percent of global trade by value are carried by sea and handled by ports worldwide. (Development, 2018)

The outsized contribution made by maritime transport through shipping on the world economy and global trade is a sign of how integral to our daily lives maritime transport is. Without maritime transport and maritime trade, many of the commodities and luxuries of daily use we take for granted might as well disappear. Therefore, it makes sense that one of the first things to do when talking about trade is to talk about maritime security, as it is maritime security which connects and safeguards the global trade and economy. Improving safety at sea is one of the easiest ways of ensuring that the global commercial exchange isn't disrupted.

Maritime Security with relation to Trade isn't also a question of safeguarding all the oceans around the world, which would be undertaking a Sisyphean task of herculean proportions. In fact, there are 8 popular, predetermined shipping routes, similar to highways, that have been chosen for the speed they offer when travelling to and from the world's major seaports. These 4 major routes for shipping lanes are The English Channel; which separates England from France and connects the North Sea and the Atlantic Ocean, the Strait of Malacca; which is the shortest sea route between India and China, the Panama Canal; which connects the Atlantic Ocean to the Pacific Ocean and divides North and South America and the Suez Canal; which is the fastest crossing between the Atlantic Ocean and the Indian Ocean. The intrinsic necessity of these trade routes is demonstrated by the fact that when a Japanese commercial container ship called MV Evergiven blocked the Suez Canal by getting moored for 6 days, completely blocking the Suez Canal for all ships. In 6 days, an estimated loss of 54 billion dollars was caused to global trade, because of shipments being delayed and halted. If a single trade route being blocked can cause so much damage within 6 days, the necessity of safeguarding and protecting these routes becomes all the more imminent.

Historically, maritime trade has been associated with maritime security, as these two go hand in hand. During 1815-1914, also known as Pax Britannica, the British Royal Navy controlled most of the key maritime trade routes, suppressing piracy and the slave trade. Today, it is the US Navy that secures maritime routes globally, and its presence utilises its ability to hold maritime routes open. It is for this purpose that the American navy regularly holds Freedom of Navigation Operations, which are operations to combat coastal states' attempts to

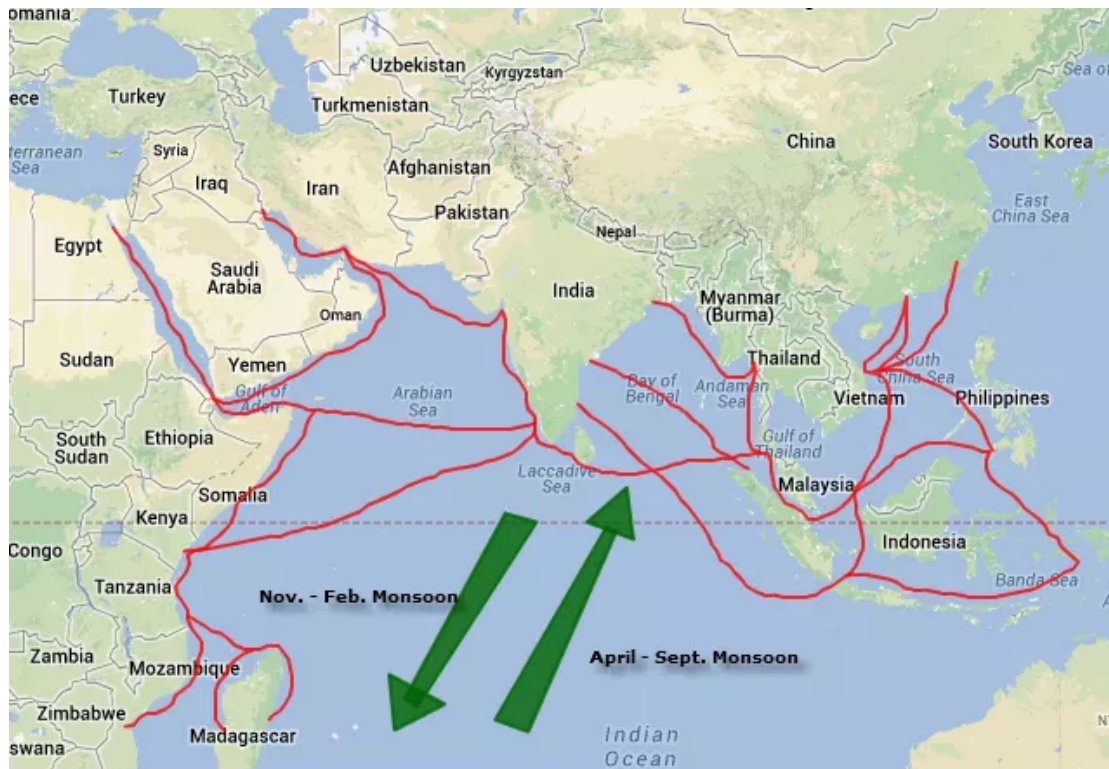
unlawfully restrict navigation and overflight rights and freedoms and other uses as guaranteed by the 1982 Law of the Sea Convention.

Maritime Trade has been present in Asia since almost the Neolithic Period, with the trade networks of the Austronesian people. It has connected China with South Asia and the Middle East since approximately 500 BCE. It was this route that facilitated the spread of Southeast Asian spices and Chinese goods to the West, as well as the spread of Hinduism and Buddhism to the east. This is also the route that would later become known as the Maritime Silk Road. (Bellina, 2014)

In a way, it could be said that for as long as people have been settled in the Indo-Pacific region, they have engaged in trade through land routes and sea routes. The Silk Road, one of the first trade routes to join the Eastern and Western worlds, connected East and Southeast Asia, the Indian subcontinent, Central Asia, the Middle East, East Africa and Europe. (Society, 2019)

Trade in the Indian Ocean was prosperous long before the Europeans stepped foot on the subcontinent, with enterprising business people commandeering small boats, called dhows to sell spices, pearls, incense and ivory. In the classical era (4<sup>th</sup> century BCE- 4<sup>th</sup> century CE), trade flourished in the region, with the Achaemenid Empire, the Mauryan Empire, the Han Dynasty and the Roman Dynasty being amongst some of the major powers in the region.

Figure 15: Indian Ocean Trade driven by monsoons in the 3<sup>rd</sup> century BCE.



It was in the Medieval Era(400-1400CE) that trade flourished in the Indian Basin. With the Umayyad and Abbasid caliphates flourishing on the Arabian Peninsula, a powerful western

node for trade was created. By this time, new dynasties, namely, the Tong dynasty and the Song dynasty had also emerged in China. These dynasties emphasised trade and commerce as well, developing strong ties along the Silk Roads and encouraging maritime trade. The Song rulers even created an imperial navy to safeguard their naval commerce, being amongst one of the first examples of a nation utilising its navy to safeguard maritime trade routes and keeping them open.

This development also resulted in many nations along the coast developing as focal points of trade, becoming powerful as a result of the commercial interests that passed through them. In Indonesia, the Srivijaya Empire emerged as a result of taxing trading vessels that passed through the Malacca Straits, which was an important trading route even at that time. (Szczepanski, 2019)

Today, Trade is important in the Indo-Pacific globally because of the presence of three of the world's largest economies in the region, that is, the United States of America, China and Japan. With the presence of the three largest economies, the amount of trade that is driven through these waters amounts to a whopping 60% of global maritime trade. This area also accounts for 60% of the global GDP, which is why one of the commitments in the creation of QUAD was the member countries common goal of a free, fair and inclusive Indo-Pacific. (Ray, 2021)

### **The Scope of Trade and Economy of the Indo Pacific Region.**

Soon after the new South Korean President Yoon Seok-Youl was elected, in remarks while showing President Biden around a Samsung semiconductor facility, CNBC quotes him as saying “Mr. President, today we’re living in the era of economic security, where economy is security and vice versa” (Kemp, 2022)

This statement highlights how nations in the Indo-Pacific region, alarmed by the rise of China and the burgeoning threat to the global economy that the disruption from the Ukraine-Russia war has brought about, are starting to view money as necessary to their security, and by extension sovereignty. It also highlights the perils that China's throwing around of its economic heft in its perusal of its debt trap policy (where China grants loans to nation ostensibly to bolster development and takes resources in return on non-repayment of dues) has caused in the mindset of the nations situated in the Indo-Pacific region.

The QUAD has certainly helped boost trade in the region, with Australia and Japan inking deals with India. Australia recently signed a FTA, or Free Trade Agreement with India on 2<sup>nd</sup> April 2022, which will be likely to double the value of trade in 5 years to around 50 billion dollars, as well as generate 1 million new jobs. (Singh, 2022) India and Japan have collaborated in building a Startup Hub as well, to enable Japanese and Indian entrepreneurs to collaborate on joint endeavours and inventions. An Indian-Japanese digital fund has been created as well, with an estimated 200+ Indian start-ups set to receive the benefits. (Kaushik, 2022)



In fact, lately it has been said that QUAD is transforming into a trade alliance from a military alliance. These statements refer to the fact that with a combined 1.8 billion of the world's population and over 30 trillion in combined GDP, it makes for a very powerful alliance. The alliance has two of the world's biggest economies (Japan and USA) and the second largest nation by population in the world (India). Trade between these 4 countries also exceeded 440 billion dollars in 2018, and they had 6 trillion in trade with the rest of the world. (Acube IAS, 2021)

Despite this sort of economic heft, it is still surprising to note that one of the foremost trading partners for all of these countries is still China. (Workman, n.d.) (Workman, Japan's Largest Trading Partners, n.d.) In fact, one of the main reasons for the emergence of QUAD was the need that these four countries felt to reduce their dependence on China and ensure that they had alternatives they could rely on. With that being said, if the metric for the success of the alliance was decided to be fulfilment of one of their initial driving goals, it could be said that the QUAD was a successful alliance if they together managed to unseat China from their number one trading partner. So far, the only successful country on that account is India, which has managed to get the USA to the top position on its list of trading partners, unseating China. (PTI, 2022)

A study was conducted by Mohammad Masadur Rahman, Chanwahn Kim and Prabir De, that sought to simulate the trade benefits of Indo-Pacific cooperation. (Mohammad Masudur Rahman, 2020)

According to this study, the potential of the Indo-Pacific region is immense. The region comprises of more than 30 countries, spread out across 44% of the world's surface area and 65% of the world's population. This region also accounts for 62% of the world's GDP and 46% of the world's merchandise trade.

Indicators	Share in World %
Surface Area	44
Population	65
Economic Size(GDP, current US\$)	62
Economic Size(GDP, PPP \$ term)	66

Merchandise Trade	46
-------------------	----

The study simulated two scenarios. The first scenario they simulated was all bilateral tariff eliminations by all its partners under four different scenarios. The second scenario simulated by them was improvement of trade facilitation by 25% in the region.

The results showed that if Australia, Japan, India and USA removed tariffs, a huge gain in welfare, real GDP and exports is seen. The real GDP would increase by 0.23% for India, and Indian exports could increase by 0.23% and Indian imports by 2.3%. The real GDP of Australia, Japan and USA would increase by 0.11, 0.05 and 0.01% respectively and their exports would increase by 1.27%, 0.58% and 0.56% respectively. The welfare gain talked about would come about because of the improved trade facilitation, helping reduce import costs for trading partners.

This study has shown that trade-related transaction is one of the major trading barriers to growth in the Indo-Pacific intra-regional trade. Lowering trading costs for 25% shows India gaining by 31 billion dollars in economic welfare and an increase in GDP by 1.87%. The GDP increase because of lowered trade costs for Japan, USA and Australia is 1.72%, 0.9% and 0.42%.

The overall gains showcased in this study are enormous. Simply eliminating tariffs increases welfare by 14.1 billion dollars. However, reducing trade related tariffs and removing tariffs altogether leads to a gain of a whopping 217 billion dollars.

Table 5: Impact of Tariff Elimination in Indo-Pacific.

	Only Tariff Elimination	Tariff Elimination plus Trade Facilitation
World	5.174	120.563
Indo-Pacific Members	14.181	217.846
Non-Members	-9.007	-97.282

This study therefore clearly indicates the immense scope and potential of the Indo-Pacific region when it comes to trade, and the huge impact that this has on the global economy. The results of this study clearly show that when the Indo-Pacific region engages in mutually

beneficial trade, the growth seen can enlarge the world economy to the extent of 217 billion dollars, ensuring the rise from poverty of billions of people and creating millions of jobs.

Another study had been conducted which modelled the scenarios regarding the economic order in the Indo-Pacific by 2040. This study came out with 4 scenarios. They are as follows:-

#### 1. First Scenario

In this scenario the authors of the study posited that the current economic situation would continue in 2040 as well, with the Sino-US rivalry continuing and creating an unstable economic situation. This scenario posits that this “cold” clash would result in ASEAN getting divided, with some countries siding with China and some with the USA, Japan or South Korea.

#### 2. Second Scenario

In this scenario the authors imagined a bipolar Indo-Pacific, with the US and China being the major powers in the region. There are both decoupling and separate systems of both technology, trade arrangements and manufacturing, as well as competition in development assistance and infrastructural development and financing. In this scenario countries either choose to join the USA led CPTPP or the China led BRI. The stability of the region would also come into question and would probably be China dominated if the USA fails to match China.

#### 3. Third Scenario

In this particular scenario the United States maintains its preponderance in the region and China grapples with major domestic trouble because of its demographic pressures. This scenario would probably prevail in case of a Chinese economic crisis.

#### 4. Fourth Scenario

In this scenario, no one country dominates the Indo-Pacific without destabilising frictions and all the countries cooperate. (Nicholas, 2021)

These models illustrate the current threat to economic security of the Indo-Pacific region and the possible conclusions that could emerge out of them. Either way, the economic heft and importance of the Indo-Pacific is for sure to be unchallenged in the coming years, with it gaining a central role in both discourse and power models in global politics. The trade and economy of the region is certainly of great interest to the world’s largest powers, and that trend is likely to continue as well

### **How does Illegal Fishing and Dark Fishing/Shipping affect the economy of the region?**

Dark Fishing/shipping refers to the practice of ships going “Dark” or turning off their satellite locator or Automatic Identification System (AIS). There are certain reasons why a fishing ship might turn their locator off, such as preventing an attack by pirates or avoiding competition. However, usually this practice coincides with transshipment, which is the fishing

ship offloading their cargo onto a giant refrigerated cargo ship, known as a reefer, and getting themselves refuelled and resupplied in the process.

This allows ships to continue fishing relentlessly, however, the reefer system is also how IUU, or illegal, unreported and unregulated fish can be smuggled in. Reefers can mix IUU catches with legal catches, making it almost impossible to detect fraud, as well as allowing entire fleets to operate out of sight. (Clark, 2020)

According to the Food and Agriculture Organisation of the United Nations, IUU Fishing is “

Illegal fishing:

- conducted by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations;
- conducted by vessels flying the flag of States that are parties to a relevant regional fisheries management organisation but operate in contravention of the conservation and management measures adopted by that organisation and by which the States are bound, or relevant provisions of the applicable international law; or
- in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organisation.

Unreported fishing:

- which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; or
- are undertaken in the area of competence of a relevant regional fisheries management organisation which have not been reported or have been misreported, in contravention of the reporting procedures of that organisation.

Unregulated fishing:

- in the area of application of a relevant regional fisheries management organisation that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organisation, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organisation; or
- in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.” (Nations, n.d.)

The primary problem with dark fishing and IUU in the Indo-Pacific is that it is simply not a standalone event. With it go other activities hand in hand that undermine a rule based international order (one of the primary demands of QUAD) and the international sovereignty

of other countries in the area as well as the disputed regions in the South China Sea and the waters of East Asia. (Menon, 2022)

This is critical because China is the world's largest fishing nation, and about 60% of that catch are allegedly IUU fish. Therefore, these fishes are coming from the regions that belong to other countries, which China is illegally infringing upon, violating the sovereignty of those nations. This plunder by China of the exclusive economic resources of other nations is theft, and adversely affects employment opportunities in the fishing sector and assorted industries that are intertwined with it in the countries that are being harmed by China. (Kaushik N. , 2021)

The economic damage to this industry, employing 60 million people and valued at 253 billion dollars in 2021 (Shahbandeh, 2016) is estimated at around 20 billion dollars annually, without including loss to governments on taxation revenue, which would add up to around 2.5-3 billion dollars based on a 15% tax rate. (Parliament, 2022)

The damage is exacerbated by the fact that not only is China fishing in the sovereign waters of other countries, but it is also not allowing those countries to fish in their own sovereign territories. China is prohibiting Vietnam and Philippines from fishing in their waters as it claims the entire disputed South China Sea for its own. (Mint, 2022)

Illegal Fishing may also be involved in money laundering and tax evasion. This can take the form of evading import and export duties by smuggling the fish into the country or the use of front companies with untraceable ownership structures registered in multiple jurisdictions.

The fishing industry is also disproportionately made up of more than 50% of developing countries, which are at risk due to illegal fishing, as it affects their livelihood. Many of those countries are singularly dependent on the fishing industry to maintain their GDP, as well as their food security. (Bondaroff, 2015)

### **China's Role In The Indo-Pacific**

The presence of China in the Indo-Pacific region is inevitable and to a very large extent even troublesome for many countries in the region and even for the Quad. To understand the role or the presence of China in the region, we need to analyse the developments in the foreign policy of China. Hans J. Morgenthau stated in regards to International politics, "International politics, like all politics, is a struggle for power". In the last decade or so we have seen a drastic rise of China in the economic and strategic sphere, challenging for that matter the hegemony of the United States of America. The ravages of this can be felt directly in the Indo-Pacific over the past few years, basically after the revival of Quad under Donald Trump in 2017. This phenomenon is alone very significant in pointing out the role and presence of China in the Indo-Pacific or what they refer to as the Asia-Pacific. In recent times we have seen how China has reacted to the visit of Nancy Pelosi to Taiwan or how the Sri Lankan economy has suffered. The debt trap policy of China has been very active in Asian and African economies and the consequences were visible in Sri Lanka. In this regard, it becomes a challenge for the Quad to present an alternative to such countries. One can ask how China

has become a challenge for the economy and trade of the Indo-Pacific. Secondly, what does the Quad have to offer? We also need to ask whether the cooperation just between the Quad is enough or if the Quad needs to engage with the countries of South Asia and Southeast Asia as well. In short, is minilateralism or multilateralism a solution for the region?

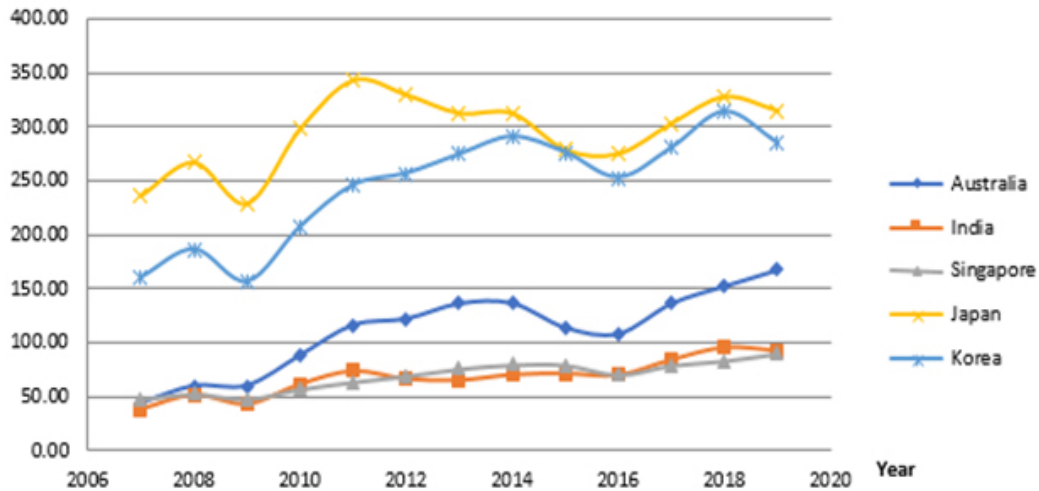


Figure 16: China's Trade Volume with the major Indo-Pacific countries (In billion USD)

Manipulative trade practices by China have to be brought under a scanner. China is rightly quoted as the manufacturing hub of the world. It has the power to disrupt the supply chains not only in a country but in the whole world, a phenomenon everyone states for America as well. China has the largest foreign exchange reserves in the world which is around 3.1 trillion dollars. India's GDP in 2021 for that matter was 3.2 trillion dollars according to the World Bank. We also need to look at the economic importance of the Indo-Pacific. The world has seen a shift from the west to the east in the twenty-first century and hence has led to the growth of the region. Apart from the geopolitical importance, it carries economically it is equally crucial. According to estimates, 'the region accounts for more than 60% of the global GDP and handles around 50% of the global merchandise trade through waters'(Singh,2022). The region is home to the four big economies of the world namely the USA, China, Japan, and India. Chris Murray in his book *Selling with EASE: the four-step sales states*, "We're all somebody's prospect; we're all somebody's customer." China understands this very well and uses it as its leverage when dealing with other countries.

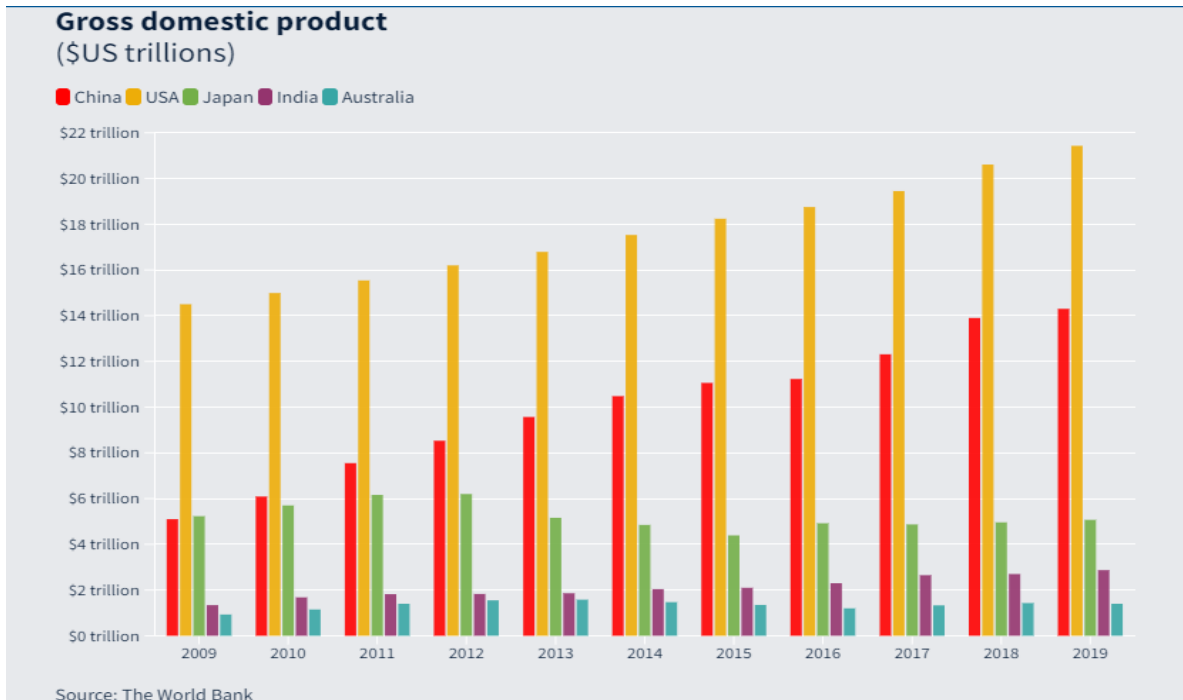


Figure 17: GDP of China and QUAD.

The presence in the region of China can also be identified in the form of the ‘String of Pearls’ theory which is a geographical theory related to the Chinese intentions in the Indian ocean. The extent of the string of pearls covers the military, commerce, sea lanes of communication, etc. China has port facilities in Pakistan, Myanmar, Bangladesh, Sri Lanka, etc. around India and these routes extend further to mainland China as well. It isn’t that India is sitting idle but the threat it poses to the security (not just from a military point of view) of India is very significant. When we discuss security we also need to talk about the Belt and Road Initiative (talked about in the later part) and the largest project China Pakistan Economic Corridor that India has openly opposed is undermining India’s territorial integrity and sovereignty. This very effectively gives a glimpse of the influence of China in the region that challenged another superpower in South Asia. Not just South Asia but even Southeast Asia is a viable reason for China’s rise. ‘China presents both geopolitical challenges and potential economic benefits to Southeast Asian countries. Their responses to China’s rise will depend on geographic proximity, economic opportunity, threat perceptions, historical experience, and other factors’(Stromseth, 2019). It is understandable when the smaller nations try to hold the national interest rather than to the geopolitical scenario emerging as they know they are not the main target, which to a certain extent is true. But how China behaves in the region this thought process needs to be relooked at and other global powers need to emerge in such a scenario because these countries prove to be very significant allies. Also, these countries will rather decide in this scenario who will have a greater say in the region the Quad or China. In the coming section, we will see what the IPEF framework is and what Quad has to offer to the region where it is seen as a viable or influential player in the Indo-Pacific region.

**IPEF: Vision of The QUAD**

Now, when we see China's role at international forums and in the Indo-Pacific we look at it with a sense of skepticism on one hand, but it is also true that smaller nations often try to use the incentives of the presence of bigger nations in their proximity. So, in this regard, how is China solely responsible, and what is the guarantee that the Quad will not do the same in the region? These are some suitable questions. The answer stays with the future regarding Quad because it portrays itself as a 'force for common good' and we should not forget that the US is also present in the group. Henry Kissinger said regarding America, "America has no permanent friend or enemies, only interests." The rise of the Indo-Pacific Economic Framework (IPEF) in the recent Quad summit in Tokyo raises the question, whether it will prove to be a watershed moment in the present times witnessing the geopolitical and geoeconomic scenarios. Joe Biden at the launch of the IPEF announced that "The future of the 21st-century economy is going to largely be written in the Indo-Pacific.. We are writing the new rules for the 21st-century economy."(Singh, 2022) this statement is crucial in defining the Quad's vision for the Indo-Pacific region. What is IPEF and how will it affect the region? It is an economic partnership among participating countries to enhance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness in the Indo-Pacific region. Further, it has four pillars; Supply-chain resilience, Clean energy, decarbonization & infrastructure, Taxation & anti-corruption Fair & resilient trade. It has the potential to challenge the economic power structures established presently in the region. Mainly in the context is China, as the other two economic powers are part of the Quad namely, India and Japan. China in 2013 launched a very ambitious project, the Belt and Road Initiative (BRI). In the initial years, it was quite discussed from the economic and geopolitical perspectives. Though in recent years we have seen the decline of the projects under BRI, majorly the largest project under the BRI i.e. China Pakistan Economic Corridor (CPEC). Pakistan's government now wants to scrap the CPEC authority as was stated by the Tribune. Chinese foreign ministry spokesman Wang Wenbin on the situation mentioned that "We believe that future communications will be even closer and smoother and CPEC building will achieve the greatest results,"(Varma, 2022). This can be a great opportunity for the Quad to assert its position in the economic sphere in the region and the countries in the region would also like to cooperate, witnessing the conditions of both Pakistan and Sri Lanka. The IPEF framework will offer the region better alternatives to fulfill its developmental goals. Unlike what China has to offer to the countries in the region. The quadrilateral grouping is a group of like-minded democratic countries, whereas China has always tried to be a hegemonic power in the region. It has repeatedly used economic interdependence to punish the countries opposing it through various economic means i.e. sanctions and trade tariffs or import duties. One such example is Australia which was one of the countries which backed the idea of an investigation of the origin of coronavirus, in return it had to face economic sanctions from China and the imports from Australia were welcomed with huge tariffs, and the exports were deliberately delayed from the side of China. IPEF has also silenced the voices claiming the Quad to be a military grouping, which has helped to enlarge the vision for the region as well as define the role of Quad. The Indo-Pacific undoubtedly is a crucial geopolitical region but its economic dimension is equally important.



Quad initially was just sought as a military grouping that would try to increase and enhance the security concerns of the member states. This view was to a great extent even accepted by many geopolitical analysts, in view that groups such as AUKUS were developing on the same lines and a parallel was being drawn, but the latest Quad summit introduced the IPEF adding the economic dimension to the cooperation between the nations and the economy in the region is more driven by the oceanic routes. Oceans are mostly used for global trade, 80% of the volume of global trade crosses through the Indo-Pacific. Also if a country has tremendous control and presence in the region it will always have an upper hand as the region has important trade choke points such as the Malacca strait, Bab el Mandeb, and for that matter the Strait of Hormuz. For continuous and open trade from the region, the region must be more stable and secure so that trade does not suffer. The big economies are capable of finding a way out for themselves but it might not be possible for the small economies in the region to sustain a conflict. Tensions in the region will be more devastating for the small economies in the region and the global supply chains will face the direst consequences. It would be a mere consolation if we think this will not impact the countries away from the region. Each sector of the economy will have to suffer, common masses will suffer even when they don't belong to the Indo-Pacific region because it will have a global impact, not just a regional one. The largest producer of fruits and vegetables, rice, is in Asia, China is crowned as the manufacturing hub, and the increasing demand for the service sector is coming from the Asian markets. One wrong step and all this will fall like a house of cards. This needs to be avoided in the greater interest of humankind. It is said that 'polity is the guardian of the economy, a well-defined polity for the region will eventually decide the future of the region in all aspects. When we talk about a well-defined polity, in this case even policy is one thing that should be analysed from this perspective i.e. Indo-Pacific Economic Framework (IPEF).

It is interesting to note what IPEF has done, if we analyse the condition of the region we must take into account the other regional players as well. China is a country that may not be the ideal one in any aspect, no country is. But, the outlook towards China in many countries is not positive (Pew Research Center, 2019). Most countries are indeed dependent on Beijing, and if any kind of an alternative is needed every stakeholder needs to be consulted. The thing that does not work for Beijing in this regard is that it has conflicts with most of the countries in the region that are also the stakeholders in this. The position of Beijing is that it is in conflict with most of its neighbouring nations. Here, ASEAN comes into the picture as one of the fastest-growing economic regions of the world. The traditional groupings focus more on strategic security where these countries (ASEAN) do not fit in due to their low involvement in the defense sector, but the IPEF has aligned the ASEAN Outlook on the Indo-Pacific (AOIP). 'The AOIP again stresses the presence of an economically open region just as the Quad does'(Sundaraman, 2022). This is not going to be easy as one can think of the steps China might take. This again becomes important as we have seen the case of Australia being punished economically, a similar case with South Korea happened, a country which has shown keen interest in the Quad and even voiced support for the Quad plus initiative i.e. including itself as a partner in the forum. Coming to this later, to understand what happened, we need to go back to 2017 when South Korea installed a missile battery employing the U.S.

Terminal High-Altitude Area Defense system, or THAAD (The Associated Press, Defense News, 2022). In response to this South Korea had to face the economic consequences, their businesses in China faced obliteration, and tours were suspended by China. The presence of the Quad will surely make a difference, maybe for the worst or the better but definitely not for the best at least for a few years. Either it can force China to be reluctant or become passive in the region or for matters to become worse the world will see a more aggressive nature from Beijing.

Concerning the economy of the Indo-Pacific, one more sphere that is very important is the role of dark shipping in the region and the presence of illegal fishing in the Indo-Pacific region. In the East China Sea, China accounts for 94% of the total fishery and the workers in the sea even when it isn't the only country in the region. Many reports have claimed that China controls the majority of the dark shipping fleets in the Indian Ocean Region and it even goes beyond, as stated by many estimates that, "no major global fishery ecosystem is untouched by China's seafood economy"(Harris, 2022). Since the framework talks about the economic security of the regions and has at the same time Quad has also focused on the aspect of dark shipping. It also aims to track the ships by a mechanism developed by the Quad. Also in the region comes the aspect of IUU (illegal, unreported, and unregulated) fishing. Quad needs to look at these two phenomena in the region with much more responsibility as many country's economies depend on the fishing sector in the region. We can envision that even though the quadrilateral grouping has a vision for the Indo-Pacific but working in the region will be a tedious task for them. Forward are challenges in the region that the group needs to tackle just to place itself as a strong force.

### **Challenges for the QUAD**

When we talk about the Indo-Pacific region we need to keep in mind certain dynamics and aspects. It is noteworthy that the IPEF framework has tried to bring into the limelight the economic significance of the region. But it is hard to generalise the economy of the Indo-Pacific, as it has many layers to it. The economic aspect of the region has been highlighted pretty late by the Quad, countries in the region have seen various dynamics of power and economy changing rapidly, and nowhere in the scene was the USA until very recently. As soon as China was perceived as a threat to the global positioning of the United States the globe has seen the aggressive US that wants to contain China and assert its position. But this comes with various challenges both for the region and even for the USA. 'China's stance on the formation of Quad and the IPEF has been quite harsh, comparing it to Asian NATO and economic NATO respectively'(Varma, 2022). This alone will be a testing task for the Quad but not the only one. The challenges are even in the institution of Quad, the IPEF framework, the region itself is a challenge, the working of Quad will be a challenge witnessing the extent of the region whether the Quad work on a minilateral forum or a multilateral forum is surely going to be crucial as well as interesting to see as both scenarios will lead to different outcomes, also both need a very specific kind of handling.

Foremost the biggest challenge comes from China itself. We have seen the extent of China in the region. Recently an update from Solomon island came that they have stopped the entry of

the naval ships from the US and UK. Many have speculated about the role of China in this regard, but the truth only these countries know, for now, Solomon island has rejected these claims of Chinese influence. Also economically China has the largest share in the Indo-Pacific. It has also used the same for the coercion of various economies that have tried to go against it; the most recent examples from the region are Australia and South Korea, though they sustained the efforts and backlash. China's increasing economic heft has also translated into an increased political influence in multilateral institutions like the United Nations and the International Monetary Fund (Hancock, 2021). Also, a major issue in dealing is going to be how to move ahead for a solution i.e. a multilateral or a minilateral way. It is often seen that due to the economic might China has and the amount of dominance it shows even on multilateral forums such as the United Nations, all of this should be considered when talking about the challenges. Quad is seen as a minilateral institution and the countries that are part of the Quad display the intent to fight the hegemonic and coercive nature of China. In a minilateral setup, it would be easier to counter a specific motive, as it allows the countries to make their propositions without any external force and pressure because they don't have the compulsions that a much larger grouping have in general. Since the Quad wants a change in the power structures of the indo-pacific, the intent is pretty clear that the group wants to be an alternative in the region and wants to provide the countries a better option when they look for a cooperation.

A significant challenge is due to the amount of dark shipping and what is known as IUU (illegal, unreported, and unregulated) fishing that hampers the marine economy of the region. Both these phenomena cause a great loss to the region both economically and even ecologically. Most of the countries in the region are surrounded by water and a significant part of the economy comes from fishing as well. But, IUU fishing is a major non-traditional security threat for littoral states of the Indian Ocean region. Sustainable fishing is a crucial blue economy goal of the Jakarta Declaration as well as the earlier Mauritian Declaration, acknowledging the threat that IUU fishing poses to the livelihoods of coastal fishing communities as well as to ocean wildlife ecosystems. Foreign fishing vessels perpetuate illegal fishing in exclusive economic zones or territorial seas of other states. (Singh, 2022)

Also, a big challenge for the Quad is going to be the presence of large economies such as India, China, Japan, and Australia on the one hand and Bangladesh, ASEAN countries, and the small island nations in Oceania, etc. on the other. Getting all the countries on board for any kind of decision is a very complex task given the differentiated interests of the countries. Articulation of common interests is going to be a task in itself. Often when the big economies are involved in any kind of conflict the smaller nations try to mend out support from both sides, and in the region, China has been a partner of all major economies on the one hand and also a cause of conflict for the same set of countries. The economic interests of both the blocs are specific (larger economies and smaller economies) and their interests hardly overlap. Smaller nations often considered as the periphery country of the developed countries benefit more when they trade with them (developed nations) and many smaller nations enjoy rather a large trade surplus when dealing with developed countries, while there are exceptions but since they trade for some of the most valuable resources to those nations that don't have a

surplus of natural resources as a consequence they benefit from the trade relations. Here the interests differ between countries and similarities in interests make countries valuable partners and allies.

Apart from this another big question in this regard is going to be the dependence of Quad on China and how the countries aim to resolve this issue. Despite the rise of the Quad keeping in mind the China factor, a challenge that looms in front of the Quad is the dependence of the Quad countries on China. China enjoys a trade surplus with the US and India and a trade deficit with Japan and Australia though not a big trade deficit. It can adversely affect the economy of any of the member nations. The USA is in a position at present where it can stand against any action that China takes against it as it is the biggest economy presently, and many reports have claimed China will overtake it probably in a decade or so. If we see the other three members of the group, the reality is that they are not in a position to directly challenge China. The scenario at present makes the USA as the primary influencer of the policy decisions in the group.

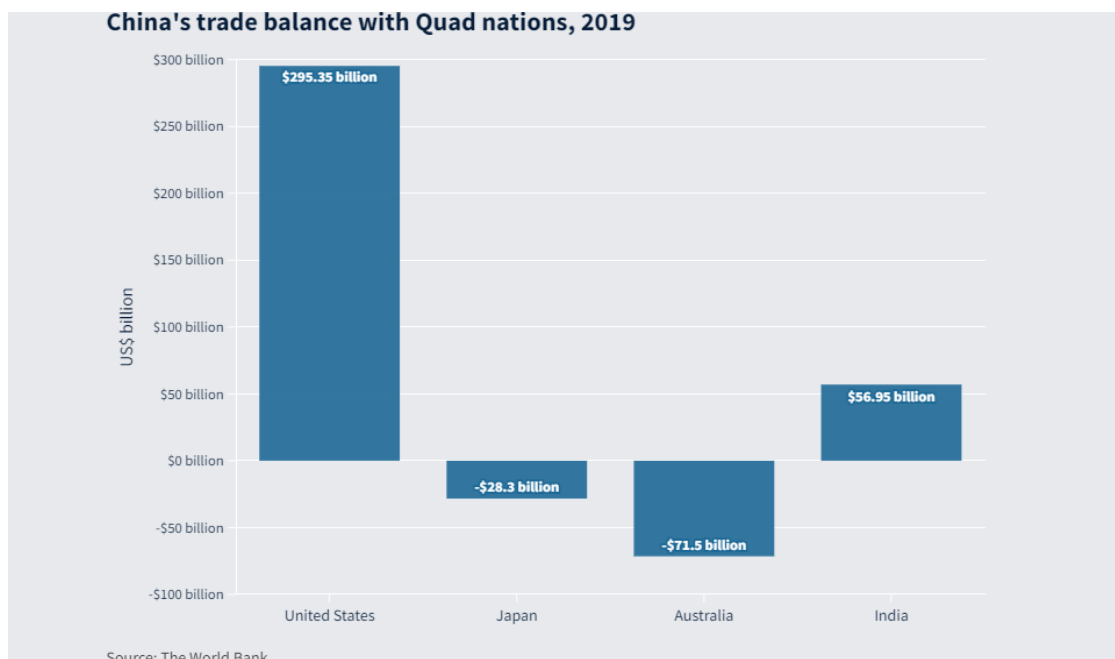


Figure 18: China's trade balance with Quad.

Also, a setback in the region for Quad comes from the presence of ASEAN as it is one of the fastest growing economies in the world and many countries also work with China and a direct threat to China in the region will be the increasing presence of Quad and in the recent times as we have seen China accusing Quad to a similar formation as of NATO for the east and this can limit the involvement of various economies from the ASEAN. Their dependence on China comes from the fact that China extends various loans to these countries, but many times these loans become a trap for these countries. The US will not be able to provide such loans to these countries because this issue for trade agreements and trade loans has become one of the issues of domestic politics there, which limits the prospectus. Japan is also a huge economy but providing hefty amounts in comparison to China is impossible. India has been

offering loans to many countries, and it has also been involved in granting a line of credit to many nations but those do not stand anywhere compared to the investments of China. It is not that this will lead to the hegemony of China in the region. Quad has for now established itself in the region and it will have to put in more efforts to counter China which will be interesting as well as challenging to see because the tensions in the region due to this will definitely increase.

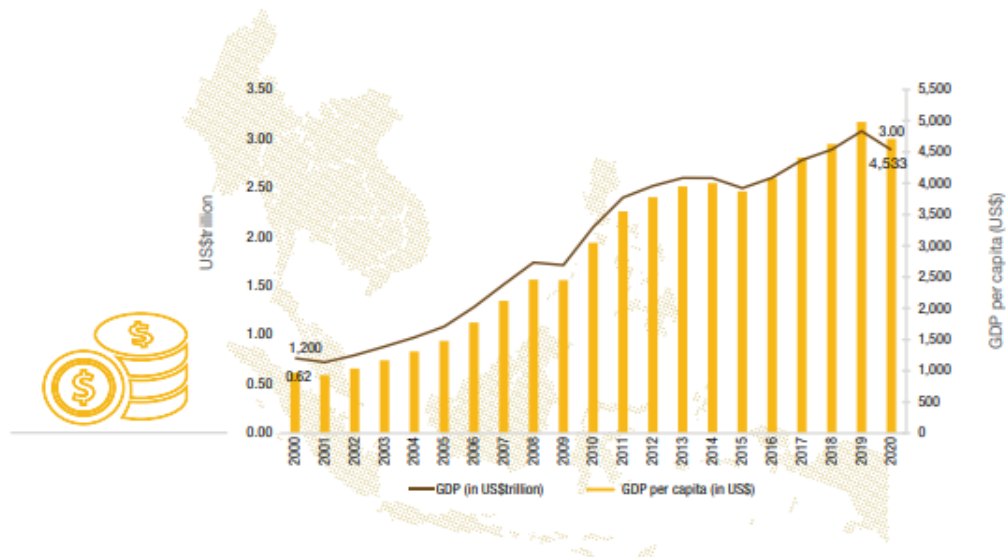


Figure 19: GDP of the ASEAN and GDP per capita 2000-2020.

Another challenge that the Quad will have to deal with will be the labelling of Quad as Asian NATO and in such a scenario countries will be reluctant in directly engaging with Quad in any form. Social media has become a part of intelligence warfare and China uses it extensively more than any country to build and destroy any kind of narrative. Making countries believe that Quad will not become NATO like will be really important for safeguarding the region. If at any point US claims Quad to be Asian NATO the countries part of the quadrilateral security dialogue themselves will become reluctant, because that in any form won't leave Indo-Pacific as an free and open area for China. Challenges are too many for the group, but the countries will have to find solutions as atleast no one wants their investments to go in vain.

### **Solutions For A Viable Economy for the Region**

Such challenges also make way for change, Quad being the rising actor with an aim of transnational appeal will have to make the most out of these challenges. It is necessary to understand that the region is very much critical for the whole international politics and that it requires minilateral cooperation. A multilateral forum can be thought of if we keep in mind the geographical extent of the region, but a multilateral institution will delay decision making. The first thing that one can think of in the post-pandemic world is to use the anti-China sentiment as a counter. The post-pandemic order in the Quad nations and outside the Quad has been very critical of China asking even for an independent investigation of the

whole origin of the pandemic. Here the Quad can pitch in to fill a gap as a democratic and accountable institution and slowly mark its presence in the region mainly in the economic sphere. Strategically Quad is very strong and economy is an aspect that can increase the relevance of Quad for the region manifolds.

Secondly, If we see the economic structure of the region, the trade volume that crosses the region each day is worth billions. Also this makes the region a strategic geopolitical region where the political structure will determine the economic base of the region. If we observe carefully the trade choke points in the region are few but account for more than half of the flow of goods and the choke points in the region are well connected to other major choke points across the globe. So in such a situation freedom of navigation is very critical for a smooth flow of goods in the region. The strait of Malacca, Hormuz, the Suez Canal, etc. these trade choke points can be useful in establishing Quad's position in the region. Even China has this fear that can be seen through the various connectivity projects it has started building beyond the regional spectrum. Before the establishment of the IPEF, China had started looking for alternative trade routes that if in any case, the region faces any kind of vulnerability China has the access to all over the world and it cannot be isolated from the countries of the world. If Quad can make a presence and observe any kind of control over the choke points in the region, the economic integration for Quad will become easier. The strategic choke points are one such issue that the Quad needs to cooperate with from a unilateral perspective. The involvement of many forums on such an issue will lead to chaos and a divided dynamics in the region which will make the functioning of Quad a much more challenging task. Such strategic equations need the minimum involvement of nations to achieve the maximum results.

As we have seen earlier the dependence of Quad on China will always stop Quad from functioning to the fullest extent. The Quad needs to reduce the dependence on China or at least find an alternative because as the situations have occurred in the region in the past few years, the increase in Chinese aggression in the Xinjiang region has been actively raised by the west regarding China. When we talk about the dependence issue India's 'Atma Nirbhar Bharat' mission is a very viable way out that is promoting the domestic industries for the fulfilment of the needs of Indian citizens at first, also the Quad countries even tried to give incentives to their companies to move their units out of China which also saw some success giving a strong signal to China. The economy is not a one-day task, it takes years to build and any kind of changes in the economy today, results are ought to be seen a few years down the line.

Another area where unilateral cooperation is needed is about providing bailout packages to the countries. In the region, China has been using its economy to influence countries, but later we have seen how they have turned to be 'debt-trap' because in return China takes control of the whole project or tries to lease out the land from the countries if they fail to return the loan which is a violation of sovereignty of the countries. The Quad can here provide the countries with bailout packages that are struggling to manage their economy, but it will also have to ensure that the countries don't fall for China. This can be done by making an agreement between the specific country and Quad or by developing a framework under Quad that these

countries can join as a guarantee. One problem with this solution is that USA's domestic politics has been averse to such bailout packages to nations and people have also been opposing free trade agreements in the USA. Without the help of the USA, it will be hard to provide any kind of loans or line of credit, as it is the only economy stronger than China. It can be argued here what role does the Quad have if only the USA will have a say on the major issues, but it is very true that without the involvement of the USA it becomes almost impossible for other nations to even put pressure on the Chinese economy.

Only minilateralism is not going to make an effect that should be understood. The concept of minilateralism should be the base for the Quad to function but there needs to be some deviation towards multilateralism as well. The stage of policy formulation by the Quad should be strictly minilateral in perspective because the stage of policy needs definite decisions so that actions could be taken much faster, with multilateralism in practice it becomes really hard to make a consensus among the participating countries as we see on various trade issues in the World Trade Organization (WTO). So when we talk about policy formulation it should be minilateral in nature, but the implementation part needs allies or in other words, multilateral action because the vastness of the region will lead to slow mobilisation against China. Hence post policy actions require multilateral working by Quad and allies willing to work in cooperation as South Korea, New Zealand have shown their interest for the same. Although the provisions seem good on paper but, the reality will hit harder seeing the dynamics of the economy in the region.

The Indo-Pacific region has a transboundary geopolitical effect and so we can see and understand the interest of other countries from the region and outside the region to work in coordination with the Quad nations. This has been named the Quad plus initiative, countries such as South Korea, France, etc. have shown great interest in the region. 'In 2020, representatives from South Korea, Vietnam, and New Zealand were included in the weekly Quad meeting. In May, the intent for the Plus format was strengthened when the United States hosted a meeting of Quad nations, which also included Brazil, Israel, and South Korea, to discuss a global response to COVID-19' (Panda, 2022). It will be an asset for the Quad if countries are ready to cooperate with them in the region. This will be more or less a minilateral cooperation because again the interests matter, many countries even from Europe having an alignment with the USA would not openly dare to challenge the dragon in South Asia. The countries are accountable to their citizens and if Chinese investments in a country looks good for the citizens any country would think before challenging Beijing. In the recent decade, it has shown tremendous growth in the economic sphere. Economic growth is the outcome of policies but when the growth becomes hegemonic the problem emerges, actually the case with China. Undoubtedly, China has been at the peak of its growth in the past decade, and the economy is so dynamic in nature that no presumptions work here.

But recently the world's economy itself has seen a downward trend mainly due to the Covid-19 lockdowns and China also saw the effect of the same besides the fact that for the past few years its economy is stalling, the conditions in China from the outside look very astonishing and lucrative but reality looms much further. According to a report from China's Southwestern University of Finance and Economics, 'the Gini coefficient – measured on a

scale of 0 to 1 with higher figures associated with greater inequality – was 0.61 in 2010. While it's not atypical for a fast developing economy to experience increasing inequality, China's level of inequality is comparable to that of the Philippines and Russia and much worse than that of Japan, the United States, and many countries in newly liberalized Eastern Europe' (Huang, 2022). This shows the difference between the rich and poor in China that gets unmentioned in most of the debates around the lucrative Chinese economy, also some economists refer to it as the “middle-income trap” i.e. ‘getting stuck at a level of development that falls short of that of more advanced economies’ (Huang, 2022). In such a time where the economy of China is weak, the Quad here can work to challenge the Chinese economy in some of the specific regions such as manufacturing which is one of the reasons for China to dominate and a minilateral cooperation on this issue is a prerequisite. Again to reinforce it will be hard to do away with multilateralism as we cannot just let the idea go, each perspective becomes relevant in different contexts.



Figure 20: Chinese economy in the Last Decade.

As mentioned earlier, dark shipping and IUU fishing is a threat to the economy of the region and the nations themselves need a way out. The Quad should capitalise on this issue and come up with a system that would help the countries, and yes this will require multilateral working in the region. Quad understands the dynamics in this sphere and at the most recent summit, ‘the Quad came up with a maritime initiative Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA) that will offer a near-real-time, integrated, and cost-effective maritime domain awareness picture’ (Desk Oneindia, 2022). Since economy for that matter has not been associated as one of the major traditional sources of threats, but polity and economy go hand in hand, and even though it may not be a traditional threat for many, but the importance it carries for a country or society is much more and can prove to be more harmful than a traditional threat. We have seen the condition of Sri Lanka's economy and how the country saw one of the darkest phases in its history. A country will collapse at any given moment as the economy starts to disrupt.



Many countries have shown their interest in the region and have made it clear that they support the vision shared by the Quad. Countries have also launched their Indo-Pacific strategies. The European Union has launched the EU Strategy for Cooperation in the Indo-Pacific. Besides the UK, France, Germany, etc. have also called for increased cooperation in the Indo-Pacific with the Quad, this is going to be a boon for the Quad as it provides legitimacy to the group on the international forums and such a vision will only increase multipolarity in the world that will ensure the balance of power both in strategic and economic terms. The economy given its nature is very volatile, in such a situation the demands may change suddenly. The economy is linked to various factors that may be relevant today but might change later, for example, technology and services as a part of the trade were uncommon decades earlier but today they constitute a major stake in the trade scenario. How well the Quad achieves its objectives, lies in the hands of time and the cooperation amongst the countries. The Indo-Pacific is going to be relevant for a very long time and the dynamics in the region are very unstable. Developments from one side change the narrative today and vice-versa.

### **Conclusion**

The dynamism of the region makes it significant both strategically and economically. Quad as an organisation for the common good of the region needs to capitalise on the issues of the region. China will be the strong resisting force for the Quad. How the Quad deals with it will set the power structures in the region. Dark shipping, IUU, and China are going to be the foremost challenge for the Quad. The close proximity of India, Japan, and Australia, particularly the position of the prior two countries is both an opportunity and challenge for the Quad. China at the present acts as the lone wolf in the present spectrum of the regional political scenario of the Indo-Pacific. It is also interesting how the power structures in the international realm have shifted to Asia post-2000s. The West is taking a keen interest in the region. What China-Russia refer to as Asia-Pacific the Quad counters it with Indo-Pacific. In this political scenario, what has been neglected is the economic significance of the region. The majority of the world trade crosses through this region and the control over the choke points in the region is going to be of utmost significance in aligning the interest of the countries in the Indo-Pacific and outside the region. Countering China in the region is not going to be a simple task keeping in mind the influence it exerts on the countries of the region and the level of dominance it enjoys, it has faced some backlash in the region but the effects have been in vain. The most recent example we can find in this regard is during the visit of US President Joe Biden to Japan and South Korea, where China along with Russia carried out an exercise very close to the Sea of Japan, and secondly, the visit of Nancy Pelosi to Taiwan and the resultant ultra aggressive stance of China. Quad will have to face all this resistance even in the economic sphere.

IPEF is a vision by Quad and the future of Quad is going to be very significant not only for the Indo-Pacific but all over the globe. world leaders, citizens, investors, geopolitical analysts everyone has their eyes on the future of Quad. China has been at the center of the global economic structure and this centrality of China puts a question mark on the effective functioning of the Quad when it talks about security. When the Quad talks about commitment

to a free, open, and rules-based order in the region, it also refers to trade as much as it does to security. Freedom of navigation, probably the Quad's longest-running issue, is about trade goods and fishing fleets moving without obstruction on the high seas. 'The Quad countries have unique economic strengths. The United States remains the world's largest and most dynamic economy. Japan is the third-biggest economy and technology power. India has a burgeoning economy, and it has made itself an indispensable part of the vaccine-manufacturing business. Australia, with a population of only 25 million, enjoys a trade surplus with China thanks to its critical natural resources and agricultural exports.' Economically the Quad is the strongest pillar on the globe that no country would like to upset in any manner as it will snatch away one of the biggest investors, markets, technological innovators, and a resource-rich country which are the US, India, Japan, and Australia respectively. Quad will want to establish itself as a strong alternative to the Chinese influence. Ideally nothing of this sort should have occurred in the region firstly, but it is also very true ideal conditions do not exist at the international level, all that matters there are the interests of countries. 'Greater the interest, brutal is the consequence.'

The economy of the Indo-Pacific is not only linked to the polity of the region but a very large area that was ignored for a very long time, has become very relevant in the present marine ecology. Indo-Pacific is the home to one of the most diverse biomes on the planet. Marine ecosystem has been a part of the economy of various countries in the region. Oceans are one of the weakest policy areas in the international domain. Marine ecology is also on the agendas of Quad and the upcoming section deals with the domain of marine ecology in more detail.

## **Chapter 4**

### **Marine Ecology In Indo-Pacific**

During the formation of Earth , billions of years ago it was a giant water body covered with ocean and life developed within it. Thus , oceans form an essential part of the Earth's ecosystem and support a wide range of biodiversity , life and food . The interaction between the land surface, ocean, seas , estuaries and other water bodies and the life residing in these water bodies is called a marine environment. It is very important to understand and preserve the marine environment as human beings and their activities are heavily dependent and interlinked with it. "Marine Ecology is the scientific study of marine-life habitat, populations, and interactions among organisms and the surrounding environment including their abiotic and biotic factors", which helps to closely understand and preserve the marine environment.

The study of marine ecology is a subset of marine biology and revolves around the study of impact of human activity such as medical research, development, agriculture, fisheries, and forestry in the oceans. It basically helps to understand the various interconnected symbiotic relationships and how there is an influence of many factors on a particular environment.

Understanding the marine ecology of the Indo-Pacific region becomes important as it includes the warm tropical waters of the Indian Ocean and the Pacific ocean thus forming a vast stretch of ocean connected by seas in the general area of Indonesia. This region is exceptionally rich in natural resources and marine species and is home to a large number of diverse coral reefs. The Indo-Pacific falls in the centre of the coral triangle (an area stretching from Malaysia and the Philippines, to Indonesia and the Solomon Islands) thus becoming the epicentre of global marine diversity. "There are nearly 4000 coastal fish species living, for the most part, in coral reefs". The Indo-Pacific region also home to around 60% of the world's population and consists of emerging political and economic powers in World politics.

With increase in International trade and the changing global order, this region has become strategically very important and consists of some of the world's busiest trade routes like the Strait of Malacca.

Unfortunately with the increasing environmental and ecological problems in the Indo-Pacific region along with increasing anthropogenic activities like busy trade routes, construction of artificial islands and political tensions leading to militarization of this area , there is a negative impact on the marine ecology of the region. All these factors have led to the disturbance in the marine ecosystem thus adversely affecting the rich marine biodiversity and the local climate. Fishing and aquaculture is the main source of employment living on coasts in this region which is also negatively affected and in turn impacting their livelihood and food security.

#### **TROUBLED WATERS: MARINE ECOLOGY THREATS IN INDO PACIFIC**

The Indo-Pacific in the 21st century is vulnerable to various environmental threats which can have a larger strategic impact on the countries in the region. Following are some of the

activities damage from which may not manifest itself conspicuously and immediately, but early indications show that its implications on the entire region will be nothing less than insidious if not addressed in time.

**Illegal, Unregulated & Unreported (IUU) Fishing**

Illegal Fishing refers to fishing activities by vessels that either violate fisheries laws or operate in the jurisdiction of another country, when such activities are unreported or deliberately misreported they are termed as Unreported Fishing. Unregulated Fishing occurs in areas where there are no applicable conservation or management measures & includes in its domain vessels without nationality.

The Bay of Bengal is a hot spot for illegal, unregulated and unreported (IUU) fishing & China is considered responsible for 80% to 95% illegal fishing in the Indo Pacific region & has been ranked as the worst offender out of 152 coastal countries in The 2021 IUU Fishing Index.

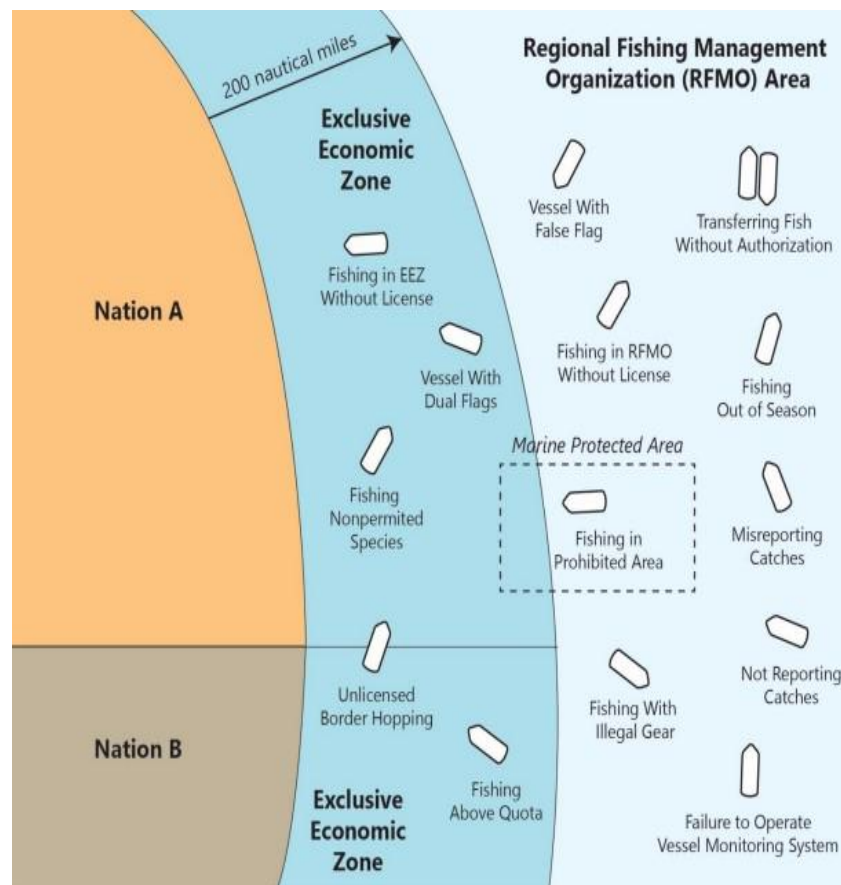


Figure 21: Prominent Forms of IUU Fishing

Poor governance, socio-economic factors & ‘worth the risk’ dogma can be cited as the main drivers of IUU fishing. States not only lack funds or resources for surveillance & tracking but also have inadequate regulatory systems in the issuance of fishing permits. A large section of fishermen are forced to indulge in such practices due to lack of alternative income &

employment opportunities while a small chunk perceive it as a windfall gain & are attracted to it due to the low risk, insignificant investment & high returns.

Fisheries provide a vital source of food, employment, recreation, trade and economic well-being for people throughout the world. IUU fishing threatens marine biodiversity, impacts livelihoods, exacerbates poverty, & augments food insecurity. According to the UN Food and Agriculture Organisation (FAO) illegal, unreported and unregulated fishing activities are responsible for the loss of 11–26 million tonnes of fish each year, which is estimated to have an economic value of US\$10–23 billion.

IUU fishing has grave ramifications on the economy, especially on that of developing countries as the government loses revenues from landing fees, licence fees, and taxes payable by legal fishing operators. There are further indirect impacts in terms of loss of income and employment in related industries. IUU harvests may be brought to market at a lower price as unfair competition to the same products from the regulated supply which may lower the overall quality & price of products available, thus creating an economic burden on harvesters following the laws and regulations.

IUU fishing can also have a significant impact on the sustainability of both the targeted species and the ecosystem. Fishing generally has the capacity to damage fragile marine ecosystems and vulnerable species such as coral reefs, turtles and seabirds. In fact, all eight sea turtle species are now endangered, and illegal fishing and hunting are two major reasons for their destruction. This may reduce future productivity and biodiversity and create imbalances in the ecosystem, if left unattended it may lead to reduced food security in communities heavily dependent on fish as a source of animal protein.

### **Hydraulic Fracturing (Fracking)**

Fracking is a drilling method used to extract petroleum or natural gas located deep within the earth's crust by injecting water, chemicals & sand at high pressure.

Since the 1990s Beijing has carried out several offshore oil & gas operations in 11 hotspots across the South China Sea with the maximum being concentrated in the disputed Spratly Islands which pose significant environmental dangers. According to Pratinashree Basu & Aadya Chaturvedi “The preliminary seismic surveys, rig installations, drilling, hydrocarbon production & transportation of oil & gas cause damage to the seabed. Big projects that dig deeper release huge amounts of liquids, solids & gas into the waters which damages the ecosystem & endangers the species that inhabit them. Seismic surveys cause noise, emissions & discharges that harm the fish pods which are dependent on auditory & visual cues as they traverse their habitat. Drilling operations dispose slurry consisting of mud, cuttings, wash water, drainage, and sewage into the ocean & also cause harmful emissions with frequent leakage and spillage of the extracted hydrocarbons.”

## Marine Litter

Marine litter is any persistent, manufactured or processed solid material discarded, disposed of or abandoned intentionally or unintentionally, directly in the marine and coastal environment. It mainly consists of plastics, wood, metals, glass, rubber, clothing and paper.

Based on the origin, marine litter can broadly be classified into sea based & land based. While the former refers to debris that is accidentally or purposely released into the sea by maritime activities, the latter encompasses activities which cause littering directly on the coast.

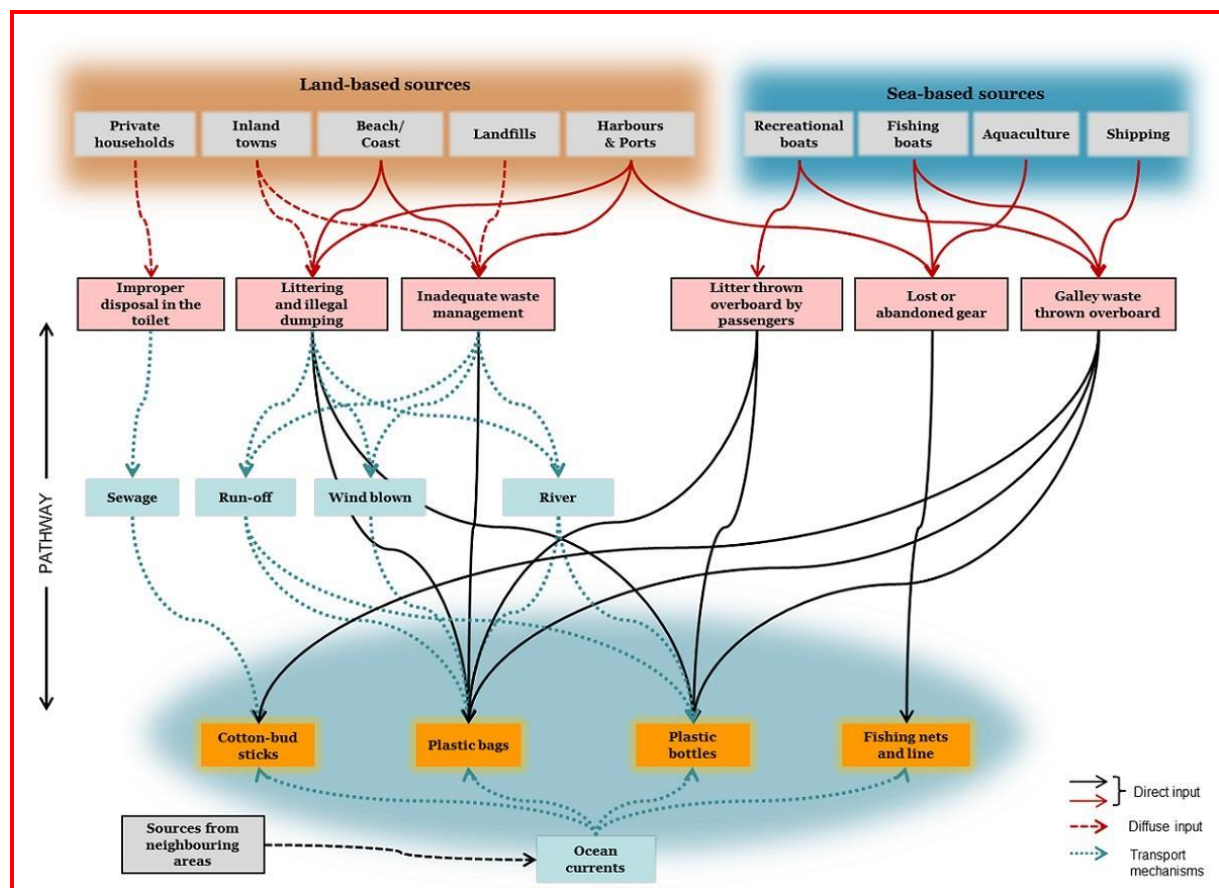


Figure 22: Major Sources of Marine Litter

“Plastics are now everywhere we don’t want them to be: In every ocean, from the tropics to the pole, intertidal to the deep seas, and at different trophic levels.” Extensive research in the field has brought to fore astonishing figures, it is estimated that about 1,00,000 turtles & marine mammals are killed by plastic marine litter each year across the globe. “Plastics are the most common man made objects at sea, with an estimate of 18,000 pieces of plastic litter floating on every square kilometre of the world’s oceans.” Marine litter threatens ecosystems, impacts public health, poses navigational hazards for shipping & jolts fishery industries around the globe. Marine fauna get entangled in plastic bags & die due to asphyxiation. Some studies highlight the creatures ingest micro plastics mistaking it for food as a result of which toxins enter the food chain & causes biomagnification & bioaccumulation. Marine litter takes a hit on tourism dependent economies as it negatively influences the public’s perception of

the quality of the environment; this when coupled with highly expensive beach & waterway cleanups has disastrous impacts.

### **Competing Territorial Claims, Poorly Demarcated Rights, Dredging & Construction of Artificial Islands, Ports, Military Installations & Airstrips**

Since 1947, China has made unilateral claims over much of the South China Sea. Beginning in 2015, it has aggressively followed the salami slicing & cabbage wrapping strategy & has reclaimed land in these islands and reefs either by increasing their size or creating new ones thereby violating the United Nations Convention on the Law of the Sea of 1982 of which it is one of the signatories. The following are the hotspots where most of the disputes are centred:

1. **Paracel and Spratly Islands** is a bone of contention primarily between China, Taiwan & Vietnam. PRC has constructed ports, military installations, airstrips, 72 fighter-jet hangers & has commissioned 10-12 large aircraft fighter jets, cruise missiles, and a radar system on Fiery Cross, Subi, & Mischief Reefs. China's land reclamation activities in the region has been termed as an effort to create a 'Great Wall of Sand' by US Pacific Fleet Commander Admiral Harry Harris.
2. **Scarborough Shoal** is another disputed area on which the Philippines, China & Taiwan lay claims.
3. **Natuna & Senkaku Islands** are claimed by China & Japan.



Figure 23: Disputes In The South China Sea (SCS)

The PRC states that the construction is for "improving the working & living conditions of people stationed on these islands" and that, "China is aiming to provide shelter, aid in navigation, weather forecasts and fishery assistance to ships of various countries passing through the sea. However, a multitude of latent reasons help explain China's claims & unilateral move to build artificial islands in the Indo Pacific, particularly the South China Sea.

1. In the contemporary era energy has been regarded as the "lifeblood & dynamic engine of economic growth" thus energy security is vital for Beijing to actualise the dream of emerging as the largest global economy by 2028 attracting them to create man-made islands having approximately 11 billion barrels of untapped oil, 190 trillion cubic feet of natural gas & considerable hydrocarbon reserves around them.
2. The region has long been rich in trade, it is estimated that more than \$5 trillion in global trade flows through the region each year & by gaining control over it the dragon can arm-twist major economies & superpowers of the globe.
3. China has been pursuing expansionist designs for a long time however claiming control does not merely stem from the expansionist ideology it also has the agenda of militarisation strongly attached to it. Construction of ports & airstrips will not only help establish strategic vantage points but will also enable the PRC to deploy maritime patrol aircrafts on a muchmore persistent basis & would enhance their situational awareness of the contested waters & features throughout the South China Sea.

The construction of the artificial island is done through the process of dredging (process of removing sand and sediments from the bed of a water body) which leads to the destruction of coral reefs in the oceans. It also leads to the killing of diverse species residing in the reefs and disruption of their natural habitat.

The construction & militarization of artificial islands in the South China sea has caused a huge impact on the marine ecology of that region. The fish stocks of the region have steeply declined. "Fish stocks have declined by one-third and are expected to decrease an additional 59 percent by 2045 if current practices persist" reported Global Strat view.

With the decline in fish stalks the aquaculture of the coastal region has also suffered a severe blow. The food security and livelihood of the people living on coasts has been negatively impacted and the fishermen are turning towards illegal activities like poaching of endangered species.

With the militarization of the islands and heavy movement of military vessels the political tensions in the region have increased along with disturbance and pollution of the fragile marine environment.

Harmful algal blooms , increase in debris and pollution in the water body and coral erosion due to acidification are also adding up to the deterioration of marine ecology in this region.



### **Cyanide & Dynamite Fishing: An Easy But Deadly Way To Catch Fish**

Cyanide fishing involves the use of sodium cyanide tablets crushed into plastic squirt bottles. Fishermen spray the concoction on the target fish, stunning them with poison and making it easier to scoop them out. It is prevalent primarily in the Coral Triangle - an area stretching from Malaysia and the Philippines, to Indonesia and the Solomon Islands. It is estimated that 90% of the 11 million tropical fish that enter the U.S. each year are caught using the practice.

Dynamite fishing on the other hand involves the use of homemade water explosives to kill & catch a school of fish quickly & inexpensively. It is regarded as the most destructive form of fishing as it indiscriminately kills any animal in the blast area—from fish eggs and plankton to whales and dolphins.

Reduced fish stocks near coastal areas, constantly declining Catch Per Unit Effort (CPUE), & unfair competition imposed by the large commercial trawlers can be cited as the main pull factors to such unsustainable practices. The international aquarium trade which is estimated at almost \$200 million a year & penchant for live fish in restaurants has fuelled cyanide fishing. According to the World Wild Fund for Nature (WWF) several fishermen have turned from fish-for-food to fish-for-aquarium trade due to greater profit margins in the latter. Corruption among officials, difficulty to patrol coastlines & lack of law enforcement also add to the menace.

Cyanide & dynamite fishing pose a serious threat to coral reefs. The threat eventually ripples up to marine ecology & human existence as reefs which are termed as rainforests of the ocean provide food, shelter, & breeding ground to fish, crustaceans, plants, and other aquatic animals. According to biologist Sam Mamauag "A square metre of reef is destroyed for every live fish caught using cyanide which is thus capable of converting the rainforests of the oceans into marine deserts." The United Nations Environment Programme equates dynamite bombing with reef bombing as the impact "fragments the calcium carbonate coral skeletons and reduce the reefs to rubble". The methods have resulted in chronic overfishing thereby threatening the livelihood & food security of the littoral population across the globe.

### **Livelihood Problem for Littoral Population As A Result of Climate Change & Overfishing**

Climate Change & Overfishing by Extra Regional Fishers are the main threats to the littoral population. Over the past few decades climate change has not only resulted in rising temperature & acidification of oceans but has also altered the oxygen & carbon concentration making the sustenance of marine life difficult. Rising ocean-surface temperatures have caused fish stocks to migrate farther north towards the East China Sea and Sea of Japan further reducing the CPUE. This coupled with decades long unabated fishing has resulted in declining fish stocks & has given rise to one of the biggest non-traditional security threats to the region. It has also threatened the food security in the densely populated seafood dependent region.

## **Destruction of Coral Reefs & Coral Bleaching**

A coral reef is an underwater ecosystem formed of colonies of coral polyps held together by calcium carbonate. They serve as breeding grounds for fishes and maintain carbon-dioxide levels in the ocean.

Destruction of coral reefs is emerging as a big problem in the marine environment as it is happening at a rapid rate . Coral bleaching is one of the factors which lead to destruction of coral reefs. Although it should be noted that corals can survive the bleaching process but are prone to destruction as they are under a lot of stress.

“When corals are stressed by changes in conditions such as temperature, light, or nutrients, they expel the symbiotic algae living in their tissues, causing them to turn completely white. This is called coral bleaching”.



Figure 24:Coral Bleaching

Coral reefs are a beautiful and unique underwater ecosystem. They hold a lot of importance for both marine as well as human life. They protect the coastal regions from natural disasters like hurricanes , and also provide livelihood for the people living on the coastal areas as they serve as excellent spots for recreational activities and sightseeing. They are the breeding grounds for marine life and thus support the entire ecosystem. The destruction of coral reefs has a negative impact on the overall marine ecosystem as well as the livelihood of people living in the coastal region.

The main cause for coral bleaching is climate change. With the increase in level of water temperature in the oceans the corals are expelling the algae and changing its colour to complete white. The colours also bleach due to many other reasons like excessive exposure to sunlight , low tides and pollution. These corals are under a lot of stress during the bleaching event but are not dead.

The coral reefs are also destroyed and damaged during the process of dredging , quarrying , destructive fishing practices , boat anchor , recreational misuse and coastal development. Overfishing can also cause damaging effects to corals as it reduces the number of grazing fishes that keep corals clean of algal overgrowth.

The destruction of coral reefs impacts both wildlife and human beings.

Wildlife - the coral reefs support the majority of marine biodiversity by providing shelter and protection to them. Species like sea turtles, jellyfish , shrimp , starfish , crabs etc. take shelter in the coral reefs to breed and protect themselves from predators. These species become prone to extinction with the destruction of coral reefs.

Human - Coral bleaching and destruction result in a negative impact on people's livelihoods , food security and safety in the coastal regions. The reefs act like natural walls which protect the coastal people from strong force of waves and storms. Overfishing and bleaching of corals removes links in the food web and hinders the breeding process of fishes thus directly impacting the food security of people. The rich biodiversity in the reefs is threatened with the bleaching process thus negatively impacting tourism of the region.

### **Poaching Endangered Species (Giant Clams & Sea Turtles)**

The Indo-Pacific region is rich in marine biodiversity and contains some of the world's most marine species. Unfortunately with the increasing cases of poaching of these exotic species they are prone to extinction and threat to marine biodiversity. Poaching is the illegal trafficking and killing of wildlife. Some of the examples of poaching of such endangered species include - Giant Clams & Sea Turtles.

#### **Sea Turtles**

Sea turtles are reptiles of the order Testudines and of suborder Cryptodira. They are sometimes called marine turtles. They are usually found in the seagrass beds of the Indian ocean , reefs of coral triangle and the eastern pacific area. There are seven different species of sea turtles - the flatback, green , hawksbill , loggerhead , kemp's ridley , leatherback and olive ridley sea turtles.

Sea Turtles are known for their magnificent shell and as a source of animal protein. The poaching and exploitation of these turtles has been a traditional activity in the coastal community as they act as a source of nutrition to the indigenous tribes living in the tropical region.

Sea turtles are also poached for the trade of their shell , especially the Hawksbill turtle whose shell is made up of scales shaded with gold , amber and brown. The shells are converted into jewellery and sold off in the market.

The practice of illegally harvesting sea turtle eggs for food and medicines is very prevalent in the South American and Asian region.

All these illegal activities have led to the endangerment of this species. The Hawksbill turtle has been listed under Critically Endangered in the IUCN Red list.

### Giant Clams

Giant clams are members of the Clam genus *Tridacna* that are the largest living bivalve mollusks. They live on coral reefs in the coral triangle and surrounding areas and use a combination of feeding strategies and are characterised to be very large and brightly colored.

Giant clams are becoming endangered because of factors like coral reef destruction , illegal aquarium trade and ornamental trade. They are threatened because of destruction of coral reefs and overexploitation by coastal communities for commercial harvesting. With the widespread destruction of coral reefs these clams no longer have a safe ecosystem to breed. These clams are highly exploited in China as they are considered symbols of wealth and protective charms in Chinese Buddhism. The coral reefs in South China sea are heavily exploited and damaged as they are rich in biodiversity and often face cases of poaching of endangered species.



Figure 25: Giant Clam (left) & Sea Turtle (right)

### Oil Spills

An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially the marine ecosystem, due to human activity, and is a form of pollution. This term is usually used for marine oil spills but the spills may also occur on land. Oil spills, especially the marine oil spills usually occur due to anthropogenic activities.

Oil spills can be both minor and major. Minor oil spills usually occur due to storage , regular maintenance or refuelling of ships. But major oil spill accidents happen during drill operations , breaking of pipelines , sinking of tankers or during terrorist attacks. The effect of serious incidents of oil spills can be felt for decades as we can see in the case of 2020 Oil spill in Mauritius - where a japanese cargo ship struck a reef and split up on 25th July,2020 leaking tons of oil into the finest coral reefs and the unique ecosystem of the island which severely affected the marine ecosystem as well as the economy and livelihood of that region as it majorly depends upon tourism.

The effects of oil spills can be devastating and have everlasting effects on both Marine life as well as Humans. The direct effect of oil spills can be very harmful for humans especially when the oil components come in contact with the skin and act as an irritant. There are some volatile components of oil which easily evaporate & when inhaled can enter the human body and hinder the breathing process. Oil Spills cut off the oxygen and the chemical compounds pollute the marine ecosystem thus harming marine life immediately and severely. The indirect impact of oil spills are equally harmful. The consumption of contaminated seafood is harmful for human health. It also impacts the economy as well as the livelihood of that region.

Oil spills are very common in the Indo-Pacific region as it includes one of the busiest sea trade routes for transportation of cargo and fuel. The strait of Malacca and the South China sea are the world's most important and busiest trade routes so there are frequent oil spills resulting in harmful effects on the marine ecology of the region.

### **Black Carbon**

Black carbon, or soot, is part of fine particulate air pollution (PM2.5) and contributes to climate change. Both India and China are the largest emitters of black carbon in the world, with emissions of up to 25-35 per cent.

Black carbon results from incomplete combustion of fossil fuels & wood. The Indo-Pacific being the political heart & economic centre of the world's economy comprises the world's most vital marine routes & some of the busiest ports in the world. About 60% of the world's maritime trade goes through this region making it vulnerable to devastating effects of soot.

According to the IPCC, "the presence of black carbon over highly reflective surfaces, such as snow and ice, or clouds, may cause a significant positive radiative forcing." Black materials deposit on plant leaves which obstructs the photosynthesis process. They also absorb more light and emit infra-red radiation that increases the atmospheric temperature which affects precipitation patterns, amplifies the global warming due to increase in CO<sub>2</sub> & causes glaciers such as Himalayas to melt & recede faster.

### **Algal Blooms**

The National Institute of Environmental Health Sciences , USA explains how "A harmful Algal Bloom (HAB) occurs when toxin-producing algae grow excessively in a body of water". The excessive algal growth is also visible to the human eye as they can be green or blue-green in colour, depending on the type of algae.

The Harmful Algal Bloom is triggered by the rise in water temperature and inflow of excessive nutrients from farmlands and sewage waste. "As climate change gradually warms the earth's climate, scientists expect HABs to become more frequent, wide-ranging, and severe."

The HABs can have a severe impact on the marine ecology as well as the local economies of the countries. The seafood gets contaminated with algal toxins which can harm human health. It also impacts the aquaculture of the region. Tourism and recreational activities get a severe blow thus directly impacting the jobs and livelihood of people along the coasts.

China is experiencing a large number of Harmful Algal blooms along with other countries like the Philippines , Malaysia , Hong Kong etc. the ecological and economic impacts of HABS is greater and more frequent in Asian region.

### **Decline of Seagrass Meadows**

Seagrass meadows are flowering plants found on the seabed of oceans and estuaries.

The seagrass meadows are found in salty and brackish waters along gentle slopes and belong to the group of plants called monocotyledons. They support a large biodiversity and clean the water. They also help in commercial fisheries and are a valuable asset to the marine ecosystem.

Seagrass meadows support and give shelter to small fishes and marine animals and serve as a feeding ground for them. They store large amounts of carbon dioxide from the atmosphere and in turn provide oxygen in the sea thus called “lungs of the sea.”

The removal and loss of seagrass can be very harmful to marine ecology. The seagrass meadows support a large biodiversity which means readily accessible fishes in the shallow regions which result in overfishing and result in death of seagrass as the removal of fishes disrupt the food cycle in the sea.

The increasing temperature of the sea is also negatively impacting these meadows. The inflow of nutrients from fertilisers and sewage waste from land cause algal blooms , blocking the sunlight thus disrupting the growth of seagrass.

All these activities negatively impact the growth of seagrass and in turn disrupting the flow of nutrients and removal of fishes from the sea. Seagrass meadows are an important component of the marine ecosystem which when damaged can disrupt the natural habitat of the ecosystem.

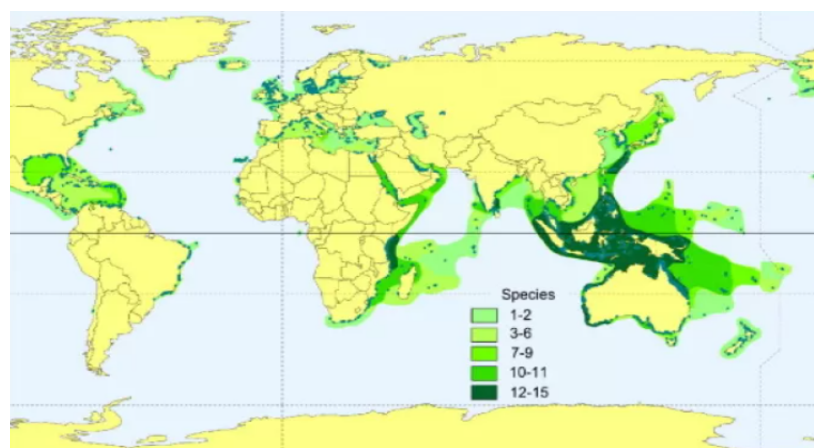


Figure 26: Shades of green indicate the number of species reported for a given area.

## **QUAD: CLIMATE ACTION & MARINE CONSERVATION**

The QUAD countries cover a pivotal regional arc encompassing the United States in the Pacific, India and Japan in South Asia and Southeast Asia, and Australia. The fast gaining pace on the narrative of climate action & the reeling pressure to address 21st century challenges has led the leaders to put forth ambitious initiative to “streamline, strengthen & enhance climate actions” such as:

**Climate Working Group (CWG):** It was an outcome of the first Quad Leaders Summit which was held virtually in March 2021 & aimed to “strengthen climate actions globally on mitigation, adaptation, resilience, technology, capacity-building, and climate finance.”

**Form a Green-Shipping Network:** The Quad countries encompass cardinal maritime shipping hubs with monumental ports of the world, having realised this the members resolved to deploy green-port infrastructure & clean-bunkering fuels after the first in-person meeting held in September 2021. A Quad Shipping Taskforce was launched to form a dedicated network of leading ports who would work towards greening & decarbonizing the shipping value chain & would aim to establish 2-3 low/zero emission shipping corridors by 2030.

**Establish a Clean-Hydrogen Partnership:** As a part of the first in-person summit, Quad members announced a clean-hydrogen partnership (hydrogen produced from renewable energy) to strengthen & reduce costs of the clean-hydrogen value chain. It involves scaling the production, stimulating market demand & developing technology & infrastructure to safely & efficiently transport, store, and distribute clean hydrogen in the Indo-Pacific region.

**Enhance Climate Adaptation, Resilience, and Preparedness:** It was the final outcome of the September 2021 summit. The Quad countries committed to increase the Indo-Pacific region’s resilience to climate change by improving critical climate information-sharing and disaster-resilient infrastructure. A Climate & Information Services Task Force was also convened to build a novel establishment through the Coalition for Disaster Resilient Infrastructure that will furnish technical backing in small island developing states.

### **Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA)**

QUAD welcomed a new initiative on maritime domain awareness ,the Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA), which aims “to work with regional partners to respond to humanitarian and natural disasters, and combat illegal fishing”. IPMDA will support and work in consultation with the Indo-Pacific nations by providing technology and training to support enhanced, shared maritime domain

awareness to promote peace , stability and prosperity in the region. Following the virtual meeting, on 3 March, 2022 - QUAD announced the establishment of "Quad Partnership on Humanitarian Assistance and Disaster Relief (HADR) in the Indo-Pacific" to strengthen the collaboration and increase effectiveness in response to natural disasters in the region.

**Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP):** The package was launched on 24 May 2022 at the second in-person summit held at Tokyo in the backdrop of the “urgent need to address climate change as emphasised in the latest Intergovernmental Panel on Climate Change (IPCC) reports.” The initiative with mitigation & adaptation as its two pillars aligns with the Paris Agreement & aims to deliver on the outcomes of the COP26 held at Glasgow. The Q-CHAMP package acts as an umbrella scheme which includes the ongoing activities under the Quad Climate Working Group as well as “new cooperation in clean fuel ammonia, CCUS/Carbon Recycling, cooperation and capacity building support, climate-smart agriculture, knowledge sharing on subnational climate actions, and ecosystem-based adaptation”.

#### **MINILATERALISM IN MARINE CONSERVATION**

The Indo-Pacific region dominates 50% of the world’s maritime trade , accounts for more than 65% of world’s population and more than 63% of world’s GDP. This region is rich in natural resources and also consists of the world’s highest marine biodiversity. Strategically , the Indo-Pacific region is extremely important as it consists of the world’s most important trade routes and is surrounded by some of the world’s most important emerging economic and political powers. With the ever increasing international trade and competition of territorial claims in the region because of its strategic importance the marine environment of the region is facing a severe blow.

For the conservation of marine environment of this region a minilateral approach which addresses “specific threat, contingency or security issue with fewer states (usually three or four) sharing the same interest for resolving it within a finite period of time” should be taken up.

QUAD has emerged as a minilateral group and is committed to work towards a free open Indo-pacific region and to fight climate change thus taking necessary and targeted measures towards climate change and environment conservation. Working from a perspective of a minilateral approach , it will offer a great deal of scope in terms of focused debates and efficient delivery in pursuing an actionable agenda, as well as informality and a certain amount of flexibility.

The following minilateral engagements in the Indo-Pacific have opened a menu of preservation strategies:



1. CO2-free Clean Hydrogen Partnership between Japan, the United States, Australia, and India will create practical incentives and heighten expectations for an environment conducive to green businesses and stable, clean-energy supply chains
2. Japan and Australia have been promoting the world's first Hydrogen Energy Supply Chain (HESC) project
3. Quad nations such as Australia, Japan, and the US can provide much-needed technology expertise required to achieve the energy transition goals set under frameworks such as the International Solar Alliance (ISA) and OSOWOG (One Sun One World One Grid).
4. The most commendable commitment is their focus on increasing the Indo-Pacific region's resilience to climate change by improving critical climate information-sharing and disaster-resilient infrastructure.
5. Plans such as building a new technical facility through the Coalition for Disaster Resilient Infrastructure to provide technical assistance in small island developing states and setting up a Climate and Information Services Task Force are good steps. But these will require constant monitoring and periodic review to ensure that a real difference is made on the ground.
6. In 2021 the Prime Minister of Australia and the Prime Minister of Singapore also agreed to explore a bilateral Green Economy Agreement (GEA). The GEA will seek to facilitate trade and investment in environmental goods and services, strengthen environmental governance, and contribute efforts to build global capacity to address climate change.
7. Australia's \$140 million Australian Climate Finance Partnership will mobilise private finance to reduce emissions and build resilience through investments across Southeast Asia and the Pacific.

In essence, minilateralism is a symptom of the growing power conflict in the region, not its cause. On the other hand, as William Tow argues, the rising phenomenon of minilateralism is not to be approached as “completely replacing existing alliances and institutions but as complementing them.” There is truth to this, because as mentioned earlier, states continue to be invested in regional and multilateral platforms despite their participation in minilateral settings. Successful outcomes within minilateral settings can be gradually taken to regional and multilateral platforms to garner support from the broader community. To do that, some form of consensus and coordination amongst a small group of countries is essential in an era of contested and fragmented international politics.

## **Chapter 5**

### **Conclusion**

The paper elucidates how maritime threats have become the bane of the South China Sea and the Indo-Pacific in general. It discusses the importance of maritime security and the need to aggrandise the scope of maritime security networks and technologies. Further, we seek to comprehensively gauge the history of maritime threats prevalent in the South China Sea and trace the various steps put in place to combat the same. It also unearths the rising dominance of China in the region and briefly discusses the various disputes the nation finds itself in. Further, the subsections seek to establish various forms of maritime threats and their nature, it mainly focuses on maritime terrorism and its evolving nature. It aims to deal with a metamorphosed and more evolved form of maritime terrorism- dark shipping and IUU.

The course then pivots towards the nature of dark shipping and the technological hindrances in tracking the same which has given China an upper hand in creating its hegemony through various maritime crimes. Quad and its proposal of IPMDA are then explored wherein we seek to imbibe the potential it has and the importance of MDA itself. We also establish the failures that several multilateral institutions have faced in combating these novel problems. We come to a common understanding of the geopolitical dynamics of the region and how clashes of sovereignty between several littoral and non littoral states have created a vacuum in the region where even multilateral regional institutions like ASEAN, ReCAAP among others have failed to usher peace and stability.

Certain technological recommendations pertaining to the IPMDA and diplomatic strategies pertaining to the region are considered for Quad. The fundamental finding points out towards the sheer potential Quad has as a minilateral institution which already has an upper hand when it comes to cooperation and practical experience in combating maritime terrorism and administering MDA programs. However, due to the nature of the crimes and the importance of geostrategy and geo-positioning, Quad has to seek assistance from several littoral states and other stakeholders that Quad cannot access as a sole minilateral entity. Thus, while minilateralism will help Quad reduce its internal frictions over sovereign clashes and respective foreign policies, it will also limit its physical scope for a smooth sweep over the area. The Quad, first, has to establish itself as a functional and successful minilateral entity before considering to branch into a multilateral institution, if at all and as a young organisation that has just begun to get a semblance of structure, this path seems far away. After security, other crucial components of the Indo-pacific encompass the economic and the ecological dimensions.

The Indo-Pacific as a region of economic importance has great potential. The crucial part is that it also carries a great strategic importance as well. The region has been one of the most contentious regions in the 21st century, and has affected the entire globe. The aspect of maritime trade in the region can be traced in history as well. Asia has been one of the most significant economic regions from past till present. The presence of the Silk route is an

example of the importance of trade in Asia. This is an example about the land, but with the emergence of immobile boundaries between nations (though it may not be true for all countries) with time cannot be neglected which has undermined trade in modern times. In this regard the trade routes in the oceans have gained significant importance.

The Indo-Pacific region is home to some of the world's largest growing economies. In such a scenario we see the rise of the Quad and China in the region. China has been a constant in the region, Quad's development however has seen ups and downs. It resurfaced as a group in 2017. From then we have seen the importance of Quad to be only increasing. If we see the economic dimension of the region, three big economies of the region are part of Quad. The economy of the group is double that of China. Even then the threat of the Chinese economy is significant for the Quad to deal with. Also the issue of dark shipping and illegal fishing threatens the economic sovereignty of the region. Many countries in the region are dependent on the marine economy.

The Quad launched the Indo-Pacific Economic Framework (IPEF) in this regard, which clearly shows the vision Quad has regarding Indo-Pacific. The misadventures of China in the region is also a reason that countries look towards Quad as a balancing power against China. Initially called as a military grouping that China even referred as Asian NATO has widened in its scope after the launch of IPEF. This comes with its own set of challenges. Foremost is the Chinese challenge. The extent of the region, presence of diversified economies, pre-existing economic agreements, etc. are all that the Quad needs to deal with. Also it will be quite interesting to see the approach of Quad either as a minilateral or multilateral grouping.

The policies for the region should be more of a minilateral decision that Quad can build consensus on. Post policy formulation the cooperation of other nations will be needed as they are equal stakeholders in the region. The vast extent of the region also makes it quite vulnerable therefore increasing the importance of allies. Also the increasing use of information warfare for building narratives will change the dynamics of the region. The region is a space that presents the interests of many. Greater the interest the greater are chances of conflicts and dire consequences. Quad will need to ensure every aspect of the region is well maintained so that stability can be maintained in the region, that will be beneficial for all in the region. The Quad at the basic structuring should work as a minilateral institution, rigidity in the process must be avoided but the principles of minilateralism shouldn't be done away with. Knitting Quad only within the sphere of four countries can increase the chances of polarisation against Quad. It will demand some sort of action towards multilateral setups as well.

Way forward for Quad should be to abide by the main principles and promises made for the region. If countries would see any difference in the region at the ground level the perceptions are bound to change in favour of Quad. As economy in the list of priorities for the Quad is very new and hence a very careful stance should be observed by the group because economy can make or break relations in international politics. After experiencing the importance of the

region, breaking ties in the region will be the worst one can think of both with regards to the economic and geopolitical scenario. Importance as well as the conflicts are going to increase in the region and Quad can be a crucial determinant in maintaining balance in the region. There is a big link between the economy in the region and the marine ecosystem. Marine ecology has become a crucial part of the security dimension in the Indo-Pacific region.

A detailed analysis of marine ecology brings forth the various challenges that the Indo Pacific reels under in the 21st century. The study highlights the effects of both anthropogenic as well as naturogenic activities on the marine ecology of the Indo-Pacific region. Anthropogenic activities like IUU fishing, poaching of endangered marine species like Sea turtles and Giant Clam , reclamation of land for construction of artificial island by destroying the coral reefs, cyanide and dynamite fishing and Hydraulic Fracturing are destroying the rich marine biodiversity of the region which in turn is impacting the food security and livelihood of the people living on the coastal areas. The coral triangle, which is at the heart of the Indo-Pacific region and is home to the world's largest marine species is getting negatively impacted due to such activities. The increasing number of storms and natural disasters on the coast lines, rise in sea level and rising of sea water temperature due to global warming has led to disturbance in the marine habitat , decline in seagrass meadows, growth of Harmful Algal Blooms (HABs) , coral bleaching and movement of fishes to cooler regions. It has also negatively affected the lives of coastal areas.

To cope up and preserve the fragile marine environment from these environmental issues , QUAD countries are collaborating amongst themselves and the regional states. They are committed to work against climate change by setting up a Green-shipping network , clean-hydrogen partnership and enhancing climate adaptation , resilience and preparedness through information-sharing and building disaster-resilient infrastructure. QUAD also announced the much needed new initiatives like Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA) and Quad climate change adaptation and mitigation package (Q-CHAMP) to fight climate change.

More focused and targeted engagements in the Indo-Pacific have opened like Japan and Australia promoting the world's first Hydrogen Energy Supply Chain (HESC) project, use of technology expertise from Japan, USA & Australia to achieve the energy transition goals set under frameworks such as the International Solar Alliance (ISA) and OSOWOG (One Sun One World One Grid) & Green Economy Agreement (GEA) between Australia and Singapore. These minilateral engagements will help to solve targeted issues and achieve the desired results quickly and efficiently.

The overarching conclusion then becomes that Quad as a minilateral entity holds immense potential to overcome the above mentioned issues and usher stability in the Indo-Pacific. The study has observed the failures in the working of several multilateral institutions to solve various prominent issues related to security, trade and ecology effectively. Several conflicts in the region have given rise to minilateral frameworks which can be seen as the manifestation

of the failures of multilateral institutions. Quad, as a minilateral entity, thus, possesses the rightful capability to address the prevalent maritime issues of the Indo-Pacific.

## References

2015, December 2. Resolution A.1106(29), REVISED GUIDELINES FOR THE ONBOARD OPERATIONAL USE OF SHIPBORNE AUTOMATIC IDENTIFICATION SYSTEMS (AIS)| IMO.

[https://wwwcdn.imo.org/localresources/en/OurWork/Safety/Documents/AIS/Resolution%20A.1106\(29\).pdf](https://wwwcdn.imo.org/localresources/en/OurWork/Safety/Documents/AIS/Resolution%20A.1106(29).pdf)

A. (2022, February 15). China's activities in the Indo-Pacific are causing severe environmental degradation. ThePrint.

<https://theprint.in/world/chinas-activities-in-indo-pacific-causing-severe-environmental-degradation/831970/>

A Blooming Concern: With IAEA Support, Countries in the Asia and the Pacific Region Address Harmful Algal Blooms | IAEA. (2014, August 4). A Blooming Concern: With IAEA Support, Countries in the Asia and the Pacific Region Address Harmful Algal Blooms | IAEA.

<https://www.iaea.org/newscenter/news/a-blooming-concern-with-iaea-support-countries-in-the-asia-and-the-pacific-region-address-harmful-algal-blooms>

Abhijit Singh, "Maritime terrorism in Asia: An assessment", ORF Online, Oct 14 2019.

<https://www.orfonline.org/research/maritime-terrorism-in-asia-an-assessment-56581/>

Acube IAS. (2021, June 25). Retrieved from Acube IAS:

<https://www.acubeias.com/article/transformation-of-quad-into-a-trade-bloc-from-a-military-alliance>

Agnew et al., 2009; [2]). ([2] Agnew DJ, Pearce J, Pramod G, Peatman T, Watson R, Beddington JR, et al.; 2009; "Estimating the Worldwide Extent of Illegal Fishing".

<https://doi.org/10.1371/journal.pone.0004570>

Aileen S.P. Baviera, University of the Philippines, "China-U.S.-ASEAN Relations and Maritime Security in the South China Sea", Wilson Center

[https://www.wilsoncenter.org/sites/default/files/media/documents/event/China\\_US\\_ASEAN%20Relations\\_Mariti\\_BAVIERA2015March.pdf](https://www.wilsoncenter.org/sites/default/files/media/documents/event/China_US_ASEAN%20Relations_Mariti_BAVIERA2015March.pdf)

Air Marshall Amit Dev, "China's Rise and the Implications for the Indo-Pacific", ORF Online, April 27, 2022.

<https://www.orfonline.org/expert-speak/chinas-rise-and-the-implications-for-the-indo-pacific/>

Algal Blooms. (2001, September 21). National Institute of Environmental Health Sciences.

<https://www.niehs.nih.gov/health/topics/agents/algal-blooms/index>

Amt, A. (n.d.). The Indo-Pacific region. German Federal Foreign Office. Retrieved September 17, 2022, from

<https://www.auswaertiges-amt.de/en/aussenpolitik/regionaleschwerpunkte/asien/indo-pacific/2493040>

Ambar Kumar Ghosh, Debosmita Sarkar, and Anasua Basu Ray Chaudhury, “Security, Economy, and Ecology: Setting Priorities for Cooperation in the Indo-Pacific,” ORF Special Report No. 184, February 2022, Observer Research Foundation.

ANI. “Quad Set to Launch Maritime Security Initiative to Track ‘dark Shipping’ in Indo-Pacific.” ThePrint, 24 May 2022, [theprint.in/world/quad-set-to-launch-maritime-security-initiative-to-track-dark-shipping-in-indo-pacific/968407](https://theprint.in/world/quad-set-to-launch-maritime-security-initiative-to-track-dark-shipping-in-indo-pacific/968407).

Anon, 2016. Global implications of illegal, unreported, and unregulated (IUU) fishing. Office of the Director of National Intelligence . Available at: [https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/NIC\\_White\\_Paper\\_on\\_IUU\\_Fishing.pdf](https://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/NIC_White_Paper_on_IUU_Fishing.pdf)

Anon, 2022. Harbor. National Geographic Society. Available at: <https://education.nationalgeographic.org/resource/harbor>.

Anon, 2022. Maxima Clam. Wikipedia. Available at: [https://en.wikipedia.org/wiki/Maxima\\_clam#/media/File:Almeja\\_gigante\\_\(Tridacna\\_maxima\),\\_Temple,\\_Sharm\\_el-Sheij,\\_Egipto,\\_2022-03-26,\\_DD\\_33.jpg](https://en.wikipedia.org/wiki/Maxima_clam#/media/File:Almeja_gigante_(Tridacna_maxima),_Temple,_Sharm_el-Sheij,_Egipto,_2022-03-26,_DD_33.jpg) .

Anon, How hydraulic fracturing works. National Geographic Society. Available at: <https://education.nationalgeographic.org/resource/how-hydraulic-fracturing-works/>.

Anon, International Day Against Illegal Fishing. United Nations. Available at: <https://www.un.org/en/observances/end-illegal-fishing-day>.

Anon, Marine Litter - European Commission. Available at: [https://ec.europa.eu/environment/marine/pdf/flyer\\_marine\\_litter.pdf](https://ec.europa.eu/environment/marine/pdf/flyer_marine_litter.pdf)

Anon, Quad Cooperation in climate change and launch of the quad climate . Ministry of Foreign Affairs of Japan . Available at: <https://www.mofa.go.jp/files/100347798.pdf>.

Awise, J. C.; Hamrick, J. L. (1996). [Conservation Genetics](#). Springer. [ISBN 978-0412055812](#).)

Black carbon | Climate & Clean Air Coalition. (2014, January 1). Climate & Clean Air Coalition. <https://www.ccacoalition.org/en/slcsps/black-carbon>

Bellina, B. (2014). Southeast Asia and the Early Maritime Silk Road. In J. Guy, *Lost Kingdoms of Early Southeast Asia: Hindu-Buddhist Sculpture 5th to 8th century* (pp. 22-25). New York: Yale University Press.

Birgbauer, Peter. “The US Pivot to Asia Was Dead on Arrival – The Diplomat.” The US Pivot to Asia Was Dead on Arrival, 31 Mar. 2022, [thediplomat.com/2022/03/the-us-pivot-to-asia-was-dead-on-arrival](https://thediplomat.com/2022/03/the-us-pivot-to-asia-was-dead-on-arrival).

Black carbon is a threat to Himalayan glaciers. (2020, December 7). Black Carbon Is a Threat to Himalayan Glaciers. <https://www.downtoearth.org.in/blog/climate-change/black-carbon-is-a-threat-to-himalayan-glaciers-74542>

Black Carbon Transported from Asia Plays Role in Pacific Ocean Climate. (n.d.). Black Carbon Transported from Asia Plays Role in Pacific Ocean Climate | NSF - National Science Foundation. Retrieved September 17, 2022, from [https://www.nsf.gov/news/news\\_summ.jsp?cntn\\_id=108465](https://www.nsf.gov/news/news_summ.jsp?cntn_id=108465)

Bladen, S. (2021, May 19). Report Exposes Rampant Illegal Fishing in North Korean Waters. Global Fishing Watch. <https://globalfishingwatch.org/press-release/illegal-fishing-north-korea/>

Bondarof, D. T. (2015). The Illegal Fishing and Organised Crime Nexus. The Global Initiative Against Transnational Organized Crime.

Brewster, D. (2016, July), Indo-Pacific Maritime Security Challenges and Cooperation | National Security College, Australian National University. [https://nsc.crawford.anu.edu.au/sites/default/files/publication/nsc\\_crawford\\_anu\\_edu\\_au/2017-05/indo-pacific\\_maritime\\_security\\_-\\_challenges\\_cooperation\\_-\\_final.pdf](https://nsc.crawford.anu.edu.au/sites/default/files/publication/nsc_crawford_anu_edu_au/2017-05/indo-pacific_maritime_security_-_challenges_cooperation_-_final.pdf)

Buddhavarapu, R. (2022, June 9). The Quad’s new maritime initiative has potential to spur militarization of the Indo-Pacific|CNBC. <https://www.cnbc.com/2022/06/09/quads-maritime-initiative-could-spur-militarization-of-indo-pacific.html>

Celine Pajon, 2020; Pajon, C., Nishihara, M.; February 2020; “East Asia Security in Flux. What Regional Order Ahead?”; Ifri Centre for Asian Studies and the Research Institute for Peace and Security (RIPS). <https://www.ifri.org/en/publications/etudes-de-lifri/east-asia-security-flux-what-regional-order-ahead>

China’s activities in Indo-Pacific causing severe environmental degradation. (2022, February 15). ANI News. <https://www.aninews.in/news/world/us/chinas-activities-in-indo-pacific-causing-severe-environmental-degradation20220215062511/>

“China GDP Annual Growth Rate - 2022 Data - 2023 Forecast - 1989-2021 Historical.” China GDP Annual Growth Rate - 2022 Data - 2023 Forecast - 1989-2021 Historical, [tradingeconomics.com/china/gdp-growth-annual](https://tradingeconomics.com/china/gdp-growth-annual). Accessed 11 Sept. 2022.



China's seafood production, consumption continue to grow | SeafoodSource. (n.d.).  
<https://www.seafoodsource.com/news/supply-trade/chinas-seafood-production-consumption-continue-to-grow>

Cho, R. (2016, March 22). The Damaging Effects of Black Carbon. State of the Planet.  
<https://news.climate.columbia.edu/2016/03/22/the-damaging-effects-of-black-carbon/>

Clark, N. (2020, Feb 28). Al Jazeera. Retrieved from Al Jazeera:  
<https://www.aljazeera.com/features/2020/2/28/how-dark-fishing-sails-below-the-radar-to-plunder-the-oceans>

Combating piracy at sea, maritime piracy, sea piracy. (n.d.)| ReCAAP Information Sharing Centre. <https://www.recaap.org/>

Coral reef ecosystems | National Oceanic and Atmospheric Administration. (2019, February 1). Coral Reef Ecosystems | National Oceanic and Atmospheric Administration.  
<https://www.noaa.gov/education/resource-collections/marine-life/coral-reef-ecosystems#:~:text=Coral%20reefs%20protect%20coastlines%20from,food%2C%20income%2C%20and%20protection.>

Critically endangered turtles are being poached for jewelry • Earth.com. (2019, October 31). Earth.Com. <https://www.earth.com/news/endangered-turtle-poached-jewelry/>

Cyanide is an easy but deadly way to catch fish. (n.d.). Retrieved September 17, 2022, from [https://wwf.panda.org/wwf\\_news/?5563/Cyanide-an-easy-but-deadly-way-to-catch-fish#:~:text=Catching%20live%20fish%20using%20cyanide,net%2C%20or%20even%20by%20hand.](https://wwf.panda.org/wwf_news/?5563/Cyanide-an-easy-but-deadly-way-to-catch-fish#:~:text=Catching%20live%20fish%20using%20cyanide,net%2C%20or%20even%20by%20hand.)

Daisuke Akimoto, "China's Grand Strategy and the Emergence of Indo-Pacific Alignments", 14 April, 2021.  
<https://isdpa.eu/chinas-grand-strategy-and-the-emergence-of-indo-pacific-alignments/>

Datta, A. (2022, March 11). New Satellite Technology to Track Dark Ships. Geospatial World.  
<https://www.geospatialworld.net/prime/technology-and-innovation/new-satellite-technology-to-track-dark-ships/>

David, R. Christopher, C. (2008) Maritime Security in the South China Sea: Coordinating Coastal and User State Priorities. Ocean Development and International Law. Declaration on Conduct of Parties in the South China Sea (4 November 2002);  
[http://www.asean.org/?static\\_post=declaration-onthe-conduct-of-parties-in-the-south-china-sea-2](http://www.asean.org/?static_post=declaration-onthe-conduct-of-parties-in-the-south-china-sea-2)

"Dealing with Indo-Pacific Countries." Drishti IAS, 9 June 2022,  
[www.drishtiias.com/daily-updates/daily-news-editorials/dealing-with-indo-pacific-countries.](http://www.drishtiias.com/daily-updates/daily-news-editorials/dealing-with-indo-pacific-countries.)

Department of State, “A Free and Open Indo-Pacific: Advancing a Shared Vision,” 4 November 2019, 7-8.

Desk, Oneindia. “How Quad Plans to Track ‘dark Shipping’ in Indo-Pacific - Oneindia News.” <https://www.oneindia.com>, 24 May 2022, [www.oneindia.com/international/how-quad-plans-to-track-dark-shipping-in-indo-pacific-3412154.html](http://www.oneindia.com/international/how-quad-plans-to-track-dark-shipping-in-indo-pacific-3412154.html).

Development, U. N. (2018). Review of Maritime Transport 2018. New York: United Nations Publications. Retrieved from ICS Shipping.

Dubrovin, V., Green sea turtle in shallow seawater. big green sea turtle closeup. Marine Species in wild nature stock image - image of Green, clear: 99502347. Dreamstime. Available at: <https://www.dreamstime.com/stock-photo-green-sea-turtle-shallow-seawater-big-green-sea-turtle-closeup-marine-species-wild-nature-green-sea-turtle-shallow-image99502347>

Editor, Insights. “EDITORIAL ANALYSIS :The Status of China’s Belt and Road Initiative in South Asia - INSIGHTSIAS.” INSIGHTSIAS, 6 July 2022, [www.insightsonindia.com/2022/07/06/editorial-analysis-the-status-of-chinas-belt-and-road-initiative-in-south-asia](http://www.insightsonindia.com/2022/07/06/editorial-analysis-the-status-of-chinas-belt-and-road-initiative-in-south-asia).

Editorial Team: Safety4Sea, “Superferry14: The world’s deadliest terrorist attack at sea”, [Feb 27, 2019](http://Feb27,2019). <https://safety4sea.com/cm-superferry14-the-worlds-deadliest-terrorist-attack-at-sea/>

Ellis, B.Brigham, L. Arctic Council, Arctic Marine Shipping Assessment 2009 Report| Tromsø, Norway. <https://oaarchive.arctic-council.org/handle/11374/54>

Everything You Need to Know about Coral Bleaching—And How We Can Stop It | Pages | WWF. (n.d.). World Wildlife Fund. Retrieved September 17, 2022, from <https://www.worldwildlife.org/pages/everything-you-need-to-know-about-coral-bleaching-and-how-we-can-stop-it#:~:text=The%20leading%20cause%20of%20coral,pollution%2C%20or%20too%20much%20sunlight>.

Experts: The Great Barrier Reef cannot be saved - Vox. (2017, April 18). Vox. <https://www.vox.com/science-and-health/2017/4/18/15272634/catastrophic-coral-bleaching-great-barrier-reef-map>

F. (2001, March 1). Impacts of IUU fishing in the Asia-Pacific region. Impacts of IUU Fishing in the Asia-Pacific Region. <https://www.slideshare.net/fishersforum/impacts-iuu-fishingasiapacificregionmarylackettffday>

1

Fact Sheet: Quad Leaders' Tokyo Summit 2022,  
<https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/23/fact-sheet-quad-leaders-tokyo-summit-2022/>

File:South China Sea claims map.svg - Wikipedia. (2012, July 31). File:South China Sea Claims Map.Svg - Wikipedia.  
[https://en.wikipedia.org/wiki/File:South\\_China\\_Sea\\_claims\\_map.svg](https://en.wikipedia.org/wiki/File:South_China_Sea_claims_map.svg)

Giant Clam. (2022, July 15). Oceana. <https://oceana.org/marine-life/giant-clam/>

Giant clam - Wikipedia. (2022, January 14). Giant Clam - Wikipedia.  
[https://en.wikipedia.org/wiki/Giant\\_clam](https://en.wikipedia.org/wiki/Giant_clam)

Girish Luthra, "The Indo-Pacific region, maritime focus, and ocean governance", ORF Online, Jan 08 2022.  
<https://www.orfonline.org/expert-speak/the-indo-pacific-region-maritime-focus-and-ocean-governance/>

Glibert, P. (2014). Harmful Algal Blooms in Asia: an insidious and escalating water pollution phenomenon with effects on ecological and human health. ASIANetwork Exchange: A Journal for Asian Studies in the Liberal Arts. 21. 52. 10.16995/ane.46.

Goh, E. (2005). Meeting the China Challenge: The US in Southeast Asian Regional Security Strategies | The East-West Center, Washington, Policy Studies

Great Wall of Sand - Wikipedia. (2015, May 29). Great Wall of Sand - Wikipedia.  
[https://en.wikipedia.org/wiki/Great\\_Wall\\_of\\_Sand](https://en.wikipedia.org/wiki/Great_Wall_of_Sand)

Gutierrez M., Jobbins G. June 2020 "China's distant-water fishing fleet: scale, impact and governance"; The Overseas Development Institute (ODI);  
<https://odi.org/en/publications/chinas-distant-water-fishing-fleet-scale-impact-and-governance/>

Hanada, Ryosuke, (2019), Quad as Maritime Cooperation in New Era | Quad-Plus Dialogue Sydney, Australia Feb 20-21, 2019  
[http://thf\\_media.s3.amazonaws.com/Quad%20Plus/2019%20Conference%20Papers/Hanada,%20Ryosuke%20-%20Quad%20as%20Maritime%20Cooperation%20in%20New%20Era\\_JLedit.pdf](http://thf_media.s3.amazonaws.com/Quad%20Plus/2019%20Conference%20Papers/Hanada,%20Ryosuke%20-%20Quad%20as%20Maritime%20Cooperation%20in%20New%20Era_JLedit.pdf)

Hancock, Tom. "Bloomberg - China's Economy Slowly Edges Toward World Dominance."  
Bloomberg - China's Economy Slowly Edges Toward World Dominance, 3 Mar. 2021,  
[www.bloomberg.com/news/storythreads/2021-03-03/china-s-economy-slowly-edges-toward-world-dominance](http://www.bloomberg.com/news/storythreads/2021-03-03/china-s-economy-slowly-edges-toward-world-dominance).

Harmful algal blooms and associated biotoxins | IAEA. (n.d.). Harmful Algal Blooms and Associated Biotoxins | IAEA. Retrieved September 17, 2022, from <https://www.iaea.org/topics/harmful-algal-blooms>

Harris, Paul G. "How China's Fishing Fleet Is Devastating Ecosystems, Harming Poor Countries and Contributing to Conflict - Hong Kong Free Press HKFP." Hong Kong Free Press HKFP, 12 Mar. 2022, [hongkongfp.com/2022/03/12/how-chinas-fishing-fleet-is-devastating-ecosystems-harming-poor-countries-and-contributing-to-conflict](https://hongkongfp.com/2022/03/12/how-chinas-fishing-fleet-is-devastating-ecosystems-harming-poor-countries-and-contributing-to-conflict).

Harsh V Pant and Shashank Mattoo, Eds., "The Rise and Rise of the 'Quad': Setting an Agenda for India," ORF Special Report No. 161, September 2021, Observer Research Foundation.

"How People around the World View China | Pew Research Center." Pew Research Center's Global Attitudes Project, 5 Dec. 2019, [www.pewresearch.org/global/2019/12/05/attitudes-toward-china-2019](https://www.pewresearch.org/global/2019/12/05/attitudes-toward-china-2019).

How Reefs Are Made - Coral Reef Alliance. (2021, September 9). Coral Reef Alliance. <https://coral.org/en/coral-reefs-101/how-reefs-are-made/>

How to manage the damage from oil spills. (2021, October 7). UNEP. <https://www.unep.org/news-and-stories/story/how-manage-damage-oil-spills>

Huang, V. (2008, January 1). Building maritime security in Southeast Asia: outsiders not welcome? | Gale Academic OneFile. <https://go.gale.com/ps/i.do?p=AONE&u=googlescholar&id=GALE|A177099865&v=2.1&it=r&sid=AONE&asid=8689420e>

Huang , Yanzhong. "The Dark Side Of Growth." <https://www.outlookindia.com/>, 3 Feb. 2022, [www.outlookindia.com/website/story/the-dark-side-of-growth/285964](https://www.outlookindia.com/website/story/the-dark-side-of-growth/285964).

Illegal, Unreported, and Unregulated (IUU) Fishing. (n.d.). Illegal, Unreported, and Unregulated (IUU) Fishing. Retrieved September 17, 2022, from <https://www.imo.org/en/OurWork/IIIS/Pages/IUU-FISHING.aspx#:~:text=IUU%20fishing%20threatens%20marine%20biodiversity,on%20conservation%20and%20on%20sustainability>.

Illegal, unreported and unregulated fishing - Wikipedia. (2016, February 1). Illegal, Unreported and Unregulated Fishing - Wikipedia. [https://en.wikipedia.org/wiki/Illegal,\\_unreported\\_and\\_unregulated\\_fishing#Economic\\_and\\_environmental\\_impacts](https://en.wikipedia.org/wiki/Illegal,_unreported_and_unregulated_fishing#Economic_and_environmental_impacts)

IMSE 2022. (n.d.). <https://imsehawaii.org>

Indo-Pacific Biodiversity – Indo-Pacific Conservation Alliance. (n.d.). Indo-Pacific Biodiversity – Indo-Pacific Conservation Alliance. Retrieved September 17, 2022, from <https://www.indopacific.org/biodiversity/>

Indo-Pacific Region - CEOWORLD magazine. (2022, September 16). CEOWORLD Magazine. <https://ceoworld.biz/indo-pacific/>

Indo-Pacific region - To the coral reefs - Aquarium La Rochelle. (2021, March 22). Aquarium La Rochelle. <https://www.aquarium-larochelle.com/en/universe/indo-pacific/>

Indonesia will not join QUAD as it delicately balances relations with all regional players. (n.d.)| BRICS. <http://infobrics.org/post/33079/>

IUU Fishing index 2021. (2021, December 23). Global Initiative. <https://globalinitiative.net/analysis/iuu-fishing-index-2021/>

Jaknanihan, A. (2021, May 12). Quad and the Test for Indonesia’s Leadership in ASEAN.| New Mandala. <https://www.newmandala.org/quad-and-the-test-for-indonesias-leadership-in-asean/>

Johnston, A.I; Ross,R.S. (1999)Engaging China: The Management of an Emerging Power| New York: Routledge. <https://www.routledge.com/Engaging-China-The-Management-of-an-Emerging-Power/Johnston-Ross/p/book/9780415208413>

Join us. (n.d.). Join Us. Retrieved September 17, 2022, from [https://www.endangeredspeciesinternational.org/news\\_april17.html](https://www.endangeredspeciesinternational.org/news_april17.html)

Joseph Tertia and Anak Agung Banyu Perwita, “Maritime Security in Indo Pacific: Issues, Challenges and Prospects”, School of International Relations, President University <https://media.neliti.com/media/publications/238224-maritime-security-in-indo-pacific-issues-495c8f4c.pdf>

Kang, H. (2009, June). MARITIME ISSUES IN SOUTH CHINA SEA A SURVEY OF LITERATURE| Institute of Peace and Conflict Studies (IPCS) <https://www.files.ethz.ch/isn/102500/SR76-Harneet-Final.pdf>

Kapur, L. (2022, June 23). Assessing the Indo-Pacific Partnership for Maritime Domain Awareness| Delhi Policy Group. <https://www.delhipolicygroup.org/publication/policy-briefs/assessing-the-indo-pacific-partnership-for-maritime-domain-awareness.html>

Kaushik, M. (2022, May 24). Logical Indian. Retrieved from Logical Indian:  
<https://thelogicalindian.com/trending/quad-summit-2022-india-japan-bilateral-relations-35720>

Kaushik, N. (2021, October 4th). Daily Pioneer. Retrieved from Daily Pioneer:  
<https://www.dailypioneer.com/2021/columnists/maritime-concerns-with-the---big-fish---.html>

Kemp, T. (2022, May 24). Asia Politics. Retrieved from CNBC:  
<https://www.cnbc.com/2022/05/24/quad-meetings-in-asia-economy-and-security-cant-be-separated.html>

Kemp, Ted. "Quad Meetings: In Asia, Economy and Security Can't Be Separated." CNBC, 24 May 2022,  
[www.cnbc.com/2022/05/24/quad-meetings-in-asia-economy-and-security-cant-be-separated.html](http://www.cnbc.com/2022/05/24/quad-meetings-in-asia-economy-and-security-cant-be-separated.html).

Kemp, Ted. "Quad Summit and China: Game Theory Predictions for the Future of the Quad." CNBC, 24 Sept. 2021,  
[www.cnbc.com/quad-summit-and-china-game-theory-predictions-for-the-future-of-the-quad](http://www.cnbc.com/quad-summit-and-china-game-theory-predictions-for-the-future-of-the-quad).

Kevin X. Li and Jin Cheng. Maritime Law and Policy for Energy Security in Asia: A Chinese Perspective. Journal of Maritime Law and Commerce, Vol 37, No.4, October 2006  
Launch of Trilateral Coordinated Patrols--MALSINDO Malacca Straits Coordinated Patrol;" Ministry of Defence, Singapore, 20 July 2004, [www.mindef.gov.sg](http://www.mindef.gov.sg)

Lauriat, George. "The Strait of Malacca and the Indo-Pacific Region: Between Regionalization and Maritime Trade | ISPI." ISPI, 20 Oct. 2021,  
[www.ispionline.it/en/pubblicazione/strait-malacca-and-indo-pacific-region-between-regionalization-and-maritime-trade-s](http://www.ispionline.it/en/pubblicazione/strait-malacca-and-indo-pacific-region-between-regionalization-and-maritime-trade-s).

Lee, J. (2020). Reviving Multilateralism in East Asia| Konrad-Adenauer-Stiftung Ltd  
<https://www.clingendael.org/sites/default/files/2020-11/Panorama%20publication.pdf>

Lubis, R. R. (2018) 'Sekuritisasi Isu Keamanan Maritim Dalam Mendukung Diplomasi Pertahanan Indonesia di ADMM Plus On Maritime Security'| Jurnal Pertahanan & Bela Negara. <https://139.255.245.6/index.php/JPBH/article/view/275/0>

M. (2018, June 18). Marine Ecology ~ MarineBio Conservation Society. MarineBio Conservation Society. <https://www.marinebio.org/conservation/marine-ecology/>

Marine litter | UNEP - UN Environment Programme. (n.d.). UNEP - UN Environment Programme. Retrieved September 17, 2022, from  
<https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/marine-litter>

MEA | Statements : Bilateral/Multilateral Documents. (2021, September 24). Ministry of External Affairs, Government of India.  
[https://www.mea.gov.in/bilateral-documents.htm?dtl/34319/Fact\\_Sheet\\_Quad\\_Leaders\\_Summit](https://www.mea.gov.in/bilateral-documents.htm?dtl/34319/Fact_Sheet_Quad_Leaders_Summit)

MEA | Statements : Bilateral/Multilateral Documents. (2022, May 24). Ministry of External Affairs, Government of India.  
[https://www.mea.gov.in/bilateral-documents.htm?dtl/35357/Quad\\_Joint\\_Leaders\\_Statement](https://www.mea.gov.in/bilateral-documents.htm?dtl/35357/Quad_Joint_Leaders_Statement)

Menon, L. G. (2022, May 31). The Print. Retrieved from The Print:  
<https://theprint.in/opinion/quad-wants-to-stop-illegal-fishing-in-indo-pacific-but-the-net-is-actually-for-one-shark/977305/>

Miller, L. (2022, February 10). BLACK CARBON 101: WHY IS THIS AIR POLLUTANT'S EFFECT ON CLIMATE CHANGE NOT ADDRESSED MORE OFTEN? - Met One Instruments. Met One Instruments.  
<https://metone.com/black-carbon-101-why-is-this-air-pollutants-effect-on-climate-change-not-addressed-more-often/>

Ministry of Defence [India](Navy), 2015,  
[https://www.indiannavy.nic.in/sites/default/files/Indian\\_Maritime\\_Security\\_Strategy\\_Document\\_25Jan16.pdf](https://www.indiannavy.nic.in/sites/default/files/Indian_Maritime_Security_Strategy_Document_25Jan16.pdf)

Mint, T. (2022, June 4). The Mint. Retrieved from The Mint:  
<https://www.livemint.com/economy/high-in-pesticides-many-countries-send-back-indian-tea-11654254667832.html>

Mogato, M., Martina, M. and Blanchard, B. (2016) ASEAN deadlocked on South China Sea, Cambodia blocks statement| Reuters.  
<https://www.reuters.com/article/us-southchinasea-ruling-asean/asean-deadlocked-on-south-china-sea-cambodia-blocks-statement-idUSKCN1050F6>

Mohammad Masudur Rahman, C. K. (2020). Indo-Pacific cooperation: what do trade simulations indicate? Journal of Economic Structures, 9.

Mohan, C. Raja., (2022), India, the Quad, and Indo-Pacific Maritime Security, Institute of South Asian Studies, National University of Singapore  
<https://www.isas.nus.edu.sg/papers/india-the-quad-and-indo-pacific-maritime-security/>

MRAG, Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries, 2005, at [http://transparentsea.co/images/5/58/Illegal\[1\]fishing-mrag-report.pdf](http://transparentsea.co/images/5/58/Illegal[1]fishing-mrag-report.pdf).

Murphy, A.M. (2017, August 04). Great Power Rivalries, Domestic Politics and Southeast Asian Foreign Policy: Exploring the Linkages.| Taylor & Francis.  
<https://www.tandfonline.com/doi/full/10.1080/14799855.2017.1354566>

NASA-ISRO SAR Mission (NISAR). <https://nisar.jpl.nasa.gov/>

Nations, F. a. (n.d.). Illegal, Unreported and Unregulated Fishing. Retrieved from Food and Agriculture Organisation United Nations:

<https://www.fao.org/iuu-fishing/background/what-is-iuu-fishing/en/>

Nicholas, F. (2021). The regional economic order: four scenarios. National Security College Futures Hub.

Nimmich and Goward, 2020; Nimmich, L. Joseph & Goward, Dana A., Maritime Domain Awareness: The Key to Maritime Security| USNWC

<https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1160&context=ils>

Oil Spill Pollution | Environmental Pollution Centres. (2010, May 3). Oil Spill Pollution | Environmental Pollution Centres. <https://www.environmentalpollutioncenters.org/oil-spill/>

Oil spill - Wikipedia. (2012, August 27). Oil Spill - Wikipedia.

[https://en.wikipedia.org/wiki/Oil\\_spill#:~:text=An%20oil%20spill%20is%20the,may%20also%20occur%20on%20land.](https://en.wikipedia.org/wiki/Oil_spill#:~:text=An%20oil%20spill%20is%20the,may%20also%20occur%20on%20land.)

Orth, R. J., B. Carruthers, T. J., Dennison, W. C., Duarte, C. M., Fourqurean, J. W., Heck, K. L., Hughes, A. R., Kendrick, G. A., Kenworthy, W. J., Olyarnik, S., Short, F. T., Waycott, M., & Williams, S. L. (2006, December 1). Global Crisis for Seagrass Ecosystems. OUP Academic. <https://academic.oup.com/bioscience/article/56/12/987/221654?login=true>

Oy, I. (n.d.). Security: Maritime Domain Awareness.

<https://www.iceye.com/use-cases/security/maritime-domain-awareness>

Panda, Jagannath. “Making ‘Quad Plus’ a Reality – The Diplomat.” Making ‘Quad Plus’ a Reality, 13 Jan. 2022, [thediplomat.com/2022/01/making-quad-plus-a-reality](https://thediplomat.com/2022/01/making-quad-plus-a-reality).

Parliament, I. (2022, May 23). Illegal Fishing in the Indo-Pacific. Retrieved from IAS Parliament: <https://www.iasparliament.com/current-affairs/illegal-fishing-in-the-indo-pacific>

Patrick, R. (2021, May 24). Dynamite Fishing: 2 Major Causes that Drive Marginal Fishers’ Destructive Behaviour. Research-Based Articles.

<https://simplyeducate.me/2021/05/24/dynamite-fishing/>

PTI. (2022, May 29). National. Retrieved from The Hindu:

<https://www.thehindu.com/news/national/us-surpasses-china-as-indias-biggest-trading-partner-in-fy22-at-11942-bn/article65473850.ece>

Poachers Destroy South China Sea Reefs in Quest for Giant Clams. (2016, August 30). Animals.



<https://www.nationalgeographic.com/animals/article/wildlife-giant-clam-poaching-south-china-sea-destruction>

Poaching | National Geographic Society. (n.d.). Poaching | National Geographic Society. Retrieved September 17, 2022, from <https://education.nationalgeographic.org/resource/poaching>

Poling, (2019, January 9). Illuminating the South China Sea's Dark Fishing Fleets. Stephenson Ocean Security Project, CSIS. <https://ocean.csis.org/spotlights/illuminating-the-south-china-seas-dark-fishing-fleets/>

Pratnashree Basu and Aadya Chaturvedi, "In Deep Water: Current Threats to the Marine Ecology of the South China Sea," ORF Issue Brief No. 449, March 2021, Observer Research Foundation

Prevention and Mediation. (n.d.).| Department of Political and Peacebuilding Affairs. <https://dppa.un.org/en/prevention-and-mediation>

Rajeswari Pillai Rajagopalan, "Explaining the Rise of Minilaterals in the Indo-Pacific," ORF Issue Brief No. 490, September 2021, Observer Research Foundation.

Rana, Shahbaz. "PM Gives Nod to Abolish CPEC Authority | The Express Tribune." The Express Tribune, 18 Aug. 2022, [tribune.com.pk/story/2371790/pm-gives-nod-to-abolish-cpec-authority](http://tribune.com.pk/story/2371790/pm-gives-nod-to-abolish-cpec-authority).

Ray, S. (2021). Commerce and connectivity for enhancing trade in the Indo-Pacific. ORF Online.

Rinkesh, Various Methods and Causes of Illegal Fishing That Affect Our Marine Life. Conserve Energy Future. Available at: <https://www.conserve-energy-future.com/methods-causes-illegal-fishing.php>.  
Sadia Afrin (2017). The Construction of China's Artificial Island in the South China Sea. Journal of Conflict and Integration, 1(2), 66-97.

Risman et. al., (2020, February). Indonesia Defence Strategy Towards Indo-Pacific (Case Study: The ASEAN Outlook on the Indo-Pacific)|International Affairs and Global Strategy. [https://www.researchgate.net/publication/340790052\\_Indonesia\\_Defense\\_Strategy\\_Towards\\_Indo-Pacific\\_Case\\_Study\\_The\\_ASEAN\\_Outlook\\_on\\_the\\_Indo-Pacific](https://www.researchgate.net/publication/340790052_Indonesia_Defense_Strategy_Towards_Indo-Pacific_Case_Study_The_ASEAN_Outlook_on_the_Indo-Pacific)

Rusfiana, Y. (2018) 'Diplomasi Pertahanan Indonesia Dalam Asean Defence Ministerial Meeting (Admm)', Jurnal Pertahanan & Bela Negara,. doi: 10.33172/jpbh.v4i2.335.  
Salazar, M. (2021, March 8). Illegal fishing: The great threat to Latin America's marine sanctuaries. Mongabay Environmental News.

<https://news.mongabay.com/2021/03/illegal-fishing-the-great-threat-to-latin-americas-marine-sanctuaries/>

Sanciango, J. C., Carpenter, K. E., Etnoyer, P. J., & Moretzsohn, F. (2013, February 15). Habitat Availability and Heterogeneity and the Indo-Pacific Warm Pool as Predictors of Marine Species Richness in the Tropical Indo-Pacific. *Habitat Availability and Heterogeneity and the Indo-Pacific Warm Pool as Predictors of Marine Species Richness in the Tropical Indo-Pacific* | PLOS ONE.  
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0056245#s3>

Schofield, Ian 2005; Clive Schofield and Ian Storey. *Energy Security and Southeast Asia: The impact on maritime boundary and territorial disputes*. Harvard Asia Quarterly 2005

Schweller, R.L. (1999). *Managing the Rise of Great Powers: History and Theory* | Routledge.  
[https://www.researchgate.net/publication/264549646\\_Managing\\_the\\_Rise\\_of\\_Great\\_Powers\\_History\\_and\\_Theory](https://www.researchgate.net/publication/264549646_Managing_the_Rise_of_Great_Powers_History_and_Theory)

Seagrass and Seagrass Beds. (2018, April 30). *Seagrass and Seagrass Beds*.  
<https://ocean.si.edu/ocean-life/plants-algae/seagrass-and-seagrass-beds>

Seagrass Meadows - Oceans, Coasts & Seashores (U.S. National Park Service). (n.d.). *Seagrass Meadows - Oceans, Coasts & Seashores* (U.S. National Park Service). Retrieved September 17, 2022, from <https://www.nps.gov/subjects/oceans/seagrass-meadows.htm>

Sea Turtle | Species | WWF. (n.d.). World Wildlife Fund. Retrieved September 17, 2022, from <https://www.worldwildlife.org/species/sea-turtle>

Sea Turtles | NOAA Fisheries. (n.d.). NOAA. Retrieved September 17, 2022, from <https://www.fisheries.noaa.gov/sea-turtles>

Sea Turtles Profile | PoachingFacts. (n.d.). *Sea Turtles Profile | PoachingFacts*. Retrieved September 17, 2022, from <https://www.poachingfacts.com/wildlife-encyclopedia/sea-turtles-profile/>

Shahbandeh, M. (2016, December 16). *Forecast seafood market value worldwide from 2020 to 2025*. Retrieved from Statista:  
<https://www.statista.com/statistics/821023/global-seafood-market-value/>

Shekhawat, Shivam. "Indo-Pacific Economic Framework (IPEF) for Prosperity- A Novel Approach to 'Regional Economic Engagement'? - Orcasia." *Orcasia*, 4 July 2022, [orca.org/2022/07/indo-pacific-economic-framework-ipef-for-prosperity-a-novel-approach-to-regional-economic-engagement](https://orca.org/2022/07/indo-pacific-economic-framework-ipef-for-prosperity-a-novel-approach-to-regional-economic-engagement).

Singh, Hemant. "How Would China's 'String of Pearls Project' Affect India's Security?" Jagranjosh.Com, 11 Mar. 2020, [www.jagranjosh.com/general-knowledge/how-chinas-string-of-pearls-project-would-affect-in-dias-security-1500355710-1](http://www.jagranjosh.com/general-knowledge/how-chinas-string-of-pearls-project-would-affect-in-dias-security-1500355710-1).

Singh, K. (2022, April 3). Indian Express. Retrieved from Indian Express: <https://indianexpress.com/article/india/india-australia-ink-economic-cooperation-and-trade-pact-to-boost-ties-7849230/>

Singh, Kavaljit. "The What, How and Why of the Indo-Pacific Economic Framework." The Wire, 27 May 2022, [thewire.in/economy/the-what-how-and-why-of-the-indo-pacific-economic-framework](http://thewire.in/economy/the-what-how-and-why-of-the-indo-pacific-economic-framework).

Singh, Sinderpal. "The Blue Economy in the Indo-Pacific: Friedrich-Ebert-Stiftung in Asia." The Blue Economy in the Indo-Pacific: Friedrich-Ebert-Stiftung in Asia, 2022, [asia.fes.de/news/blue-economy](http://asia.fes.de/news/blue-economy).

Skylight | Home. (n.d.). Retrieved September 17, 2022, from <https://www.skylight.global/>

Society, N. G. (2019). The Silk Road. National Geographic Society.

Soumyodeep Deb and Nathan Wilson, "The Coming of Quad and the Balance of Power in the Indo-Pacific", Air University, Dec. 13, 2021. <https://www.airuniversity.af.edu/JIPA/Display/Article/2870653/the-coming-of-quad-and-the-balance-of-power-in-the-indo-pacific/>

STAP (2011). Marine Debris as a Global Environmental Problem: Introducing a solutions based framework focused on plastic. A STAP Information Document. Global Environment Facility, Washington, DC.

Stopping fish bombing. (2019, February 21). UNEP. <https://www.unep.org/news-and-stories/story/stopping-fish-bombing#:~:text=Also%20known%20as%20blast%20or,and%20dolphins%E2%80%94and%20devastates%20corals>.

Stromseth, Jonathan. "The Testing Ground: China's Rising Influence in Southeast Asia and Regional Responses." Brookings, 18 Nov. 2019, [www.brookings.edu/research/the-testing-ground-chinas-rising-influence-in-southeast-asia-and-regional-responses](http://www.brookings.edu/research/the-testing-ground-chinas-rising-influence-in-southeast-asia-and-regional-responses).

Sundararaman, Shankari. "Quad and the Indo-Pacific Economic Framework- The New Indian Express." The New Indian Express, 1 June 2022, [www.newindianexpress.com/opinions/2022/jun/01/quad-and-the-indo-pacific-economic-framework-2460369.html](http://www.newindianexpress.com/opinions/2022/jun/01/quad-and-the-indo-pacific-economic-framework-2460369.html).

Szczepanski, K. (2019). Indian Ocean Trade Routes. ThoughtCo.

Tan, S. S. (2018) 'From ARF to ADMM+: Is the Asia-Pacific Finally Getting Multilateralism Right', Asian Studies Review. Routledge.. doi: 10.1080/10357823.2019.1691502.

Team, R. (2021, April 11). The Harmful Effects of Dynamite Fishing on Coral Reefs. Conservation.Reefcause.Com.  
<https://conservation.reefcause.com/the-harmful-effects-of-dynamite-fishing-on-coral-reefs/>

Territorial Disputes in the South China Sea | Global Conflict Tracker. (2022, May 4). Global Conflict Tracker.  
<https://www.cfr.org/global-conflict-tracker/conflict/territorial-disputes-south-china-sea#:~:text=China's%20sweeping%20claims%20of%20sovereignty,Philippines%2C%20Taiwan%2C%20and%20Vietnam>

Thayer, C.A. (2016, July 2016). Vietnam's Strategy of 'Cooperating and Struggling' with China over Maritime Disputes in the South China Sea| Sage Journals.  
<https://journals.sagepub.com/doi/abs/10.1177/2347797016645453>

The Associated Press, Kim Tong-Hyung. "China, South Korea Clash over THAAD Anti-Missile System." Defense News, 10 Aug. 2022,  
[www.defensenews.com/global/asia-pacific/2022/08/10/china-south-korea-clash-over-thaad-anti-missile-system](http://www.defensenews.com/global/asia-pacific/2022/08/10/china-south-korea-clash-over-thaad-anti-missile-system).

The Growing Prospects for Maritime Security Cooperation in Southeast Asia," Naval War College Review 58, no. 3 (Summer 2005).

The Horrific Way Fish Are Caught for Your Aquarium—With Cyanide. (2016, March 10). Animals.  
<https://www.nationalgeographic.com/animals/article/160310-aquarium-saltwater-tropical-fish-cyanide-coral-reefs>

This World Oceans Day let's talk about marine litter. (2022, June 8). This World Oceans Day Let's Talk about Marine Litter.  
<https://www.downtoearth.org.in/blog/science-technology/this-world-oceans-day-let-s-talk-about-marine-litter-83198#:~:text=Marine%20litter%20threatens%20ecosystems%2C%20affects,it%20enters%20the%20food%20chain>.

Thomas Dobbs, T. Fallon, G., Fouhy, S., Marsh, T.,Melville, M. (2022). The Perry Group Paper, Grey Zone, The Forge. <https://theforge.defence.gov.au/perry-group-papers/grey-zone>

Threats to Coral Reefs | US EPA. (2017, January 30). US EPA.  
<https://www.epa.gov/coral-reefs/threats-coral-reefs>

Thul, P. C. and Stuart Grudgings (2012) SE Asia meeting in disarray over sea dispute with China, Reuters.Available at:

<https://www.reuters.com/article/us-asean-summit/se-asia-meeting-in-disarray-over-sea-dispute-with-china-idUSBRE86C0BD20120713>

To Anh Tuan, "Maritime Security in the Indo-Pacific: Mixed Opportunities and Challenges from Connectivity Strategies"

[https://www.kas.de/documents/288143/10822438/Panorama\\_2019\\_02\\_4c\\_v5d\\_ToAnhTuan.pdf/bb017d3b-c195-681c-c5a3-19054947fec5?t=1606102327617](https://www.kas.de/documents/288143/10822438/Panorama_2019_02_4c_v5d_ToAnhTuan.pdf/bb017d3b-c195-681c-c5a3-19054947fec5?t=1606102327617)

Tuan, A. (2020). Maritime Security in the Indo-Pacific: Mixed Opportunities and Challenges from Connectivity Strategies| Konrad-Adenauer-Stiftung Ltd

<https://www.clingendael.org/sites/default/files/2020-11/Panorama%20publication.pdf>

Understanding Indo-Pacific Maritime Domain Awareness Initiative. |Cesscube(n.d.).

<https://www.cescube.com/vp-understanding-indo-pacific-maritime-domain-awareness-initiative>

UNEP 2005: Marine Litter, an analytical overview.

United Nations Office on Drugs and Crime, Transnational Organized Crime in the Fishing Industry, Focus On: Trafficking in Persons, Smuggling of Migrants, Illicit Drugs Trafficking, 2011.

[https://www.unodc.org/documents/human-trafficking/Issue\\_Paper\\_-\\_TOC\\_in\\_the\\_Fishing\\_Industry.pdf](https://www.unodc.org/documents/human-trafficking/Issue_Paper_-_TOC_in_the_Fishing_Industry.pdf)

Unsworth, R.K. and Cullen, L.C. (2010), Recognising the necessity for Indo-Pacific seagrass conservation. Conservation Letters, 3: 63-73.

<https://doi.org/10.1111/j.1755-263X.2010.00101.x>

User, G. (2019, May 16). Protect the environment/Right of nature. Earth Law Centre | The Solution to the Toughest Environmental Challenges.

<https://www.earthlawcenter.org/blog-entries/2019/5/rights-for-the-coral-reefs>

Varma, K. J. M. "China Gives Tacit Nod to Pak's Move to Scrap CPEC Authority Amid Reports of Rift." The Wire, 21 Aug. 2022,

[thewire.in/world/china-gives-tacit-nod-to-paks-move-to-scrap-cpec-authority-amid-reports-of-rift](https://thewire.in/world/china-gives-tacit-nod-to-paks-move-to-scrap-cpec-authority-amid-reports-of-rift).

Varma, K. J. M. "China Goes on Offensive against IPEF, Projects It as 'economic NATO' to Blunt Its Dominance." ThePrint, 24 May 2022,

[theprint.in/world/china-goes-on-offensive-against-ipef-projects-it-as-economic-nato-to-blunt-its-dominance/968603](https://theprint.in/world/china-goes-on-offensive-against-ipef-projects-it-as-economic-nato-to-blunt-its-dominance/968603).

Vaughn, B., Dolven, B. (2022, April 12). China's Role in the Exploitation of Global Fisheries: Issues for Congress, Congressional Research Service  
<https://crsreports.congress.gov/product/pdf/R/R47065/1>

Weatherbee, D.E. (2014) International Relations in Southeast Asia: The Struggle for Autonomy, Third Edition. Rowman & Littlefield.  
<https://rowman.com/ISBN/9781442223004/International-Relations-in-Southeast-Asia-The-Struggle-for-Autonomy-Third-Edition>

Wells, S. (1997) Giant Clams: Status, Trade and Mariculture, and the Role of CITES in Management. IUCN, Gland, Switzerland and Cambridge, UK ix + 77 pp

What is coral bleaching? (n.d.). What Is Coral Bleaching? Retrieved September 17, 2022, from  
[https://oceanservice.noaa.gov/facts/coral\\_bleach.html#:~:text=When%20water%20is%20too%20warm,and%20are%20subject%20to%20mortality.](https://oceanservice.noaa.gov/facts/coral_bleach.html#:~:text=When%20water%20is%20too%20warm,and%20are%20subject%20to%20mortality.)

What is IUU fishing?|Illegal, Unreported and Unregulated (IUU) fishing|Food and Agriculture Organisation of the United Nations. (n.d.). What Is IUU Fishing?|Illegal, Unreported and Unregulated (IUU) fishing|Food and Agriculture Organisation of the United Nations. Retrieved September 17, 2022, from  
<https://www.fao.org/iuu-fishing/background/what-is-iuu-fishing/en/>

What is Synthetic Aperture Radar? (2022, May 16)|Earthdata NASA.  
<https://www.earthdata.nasa.gov/learn/backgrounders/what-is-sar>

Why are sea turtles poached? | Olive Ridley Project. (2020, June 24). Olive Ridley Project.  
<https://oliveridleyproject.org/ufaqs/why-are-sea-turtles-poached>

Why do harmful algal blooms occur? (n.d.). Why Do Harmful Algal Blooms Occur? Retrieved September 17, 2022, from [https://oceanservice.noaa.gov/facts/why\\_habs.html](https://oceanservice.noaa.gov/facts/why_habs.html)

Workman, D. (n.d.). Australia's Top Trading Partners. Retrieved from Worlds Top Exports:  
<https://www.worldstopexports.com/australias-top-import-partners/>

Workman, D. (n.d.). Japan's Largest Trading Partners. Retrieved from Worlds Top Exports:  
<https://www.worldstopexports.com/japans-top-import-partners/>

Yun Yun Teo, St Andrews, Fife, United Kingdom. Target Malacca Straits: Maritime Terrorism in Southeast Asia| Studies in Conflict and Terrorism

Zhnag, R., (2022), The Quad, China, and Maritime Domain Awareness in the Indo-Pacific, Australian Institute of International Affairs  
<https://www.internationalaffairs.org.au/australianoutlook/the-quad-china-and-maritime-domain-awareness-in-the-indo-pacific>