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FROM THE GUEST EDITOR

Prof. Gulshan Sachdeva

The idea of the Indo-Pacific is developing; but foreign policy discussions in many countries have been significantly shaped by the still-evolving Indo-Pacific narrative. Depending on their strategic and economic interests, countries have defined their own Indo-Pacific geographies. Beyond the establishment of a few formal platforms—like the Quadrilateral Security Dialogue (Quad) or the trilateral security pact between Australia, the United Kingdom, and the United States (AUKUS)—Indo-Pacific is a powerful narrative to counter the rise of an assertive China. Due to the nature of the narrative, the major focus, thus far, has been on strategic matters within the region. Apart from strategic importance, all major powers have recognised that the Indo-Pacific region will also be an economically dynamic region. As a result, many outside powers have been attracted towards Indo-Pacific discussions. More than a dozen countries from the region have established the Indo-Pacific Economic Framework (IPEF). The European Union and many of its member states have also come out with their own Indo-Pacific visions or strategies. Apart from strengthening economic cooperation within the region, we need to be equally concerned about sustainability issues within the Indo-Pacific.

The region will experience substantial economic growth, but this will occur amid increasing geopolitical competition and contested connectivity strategies. Therefore, despite these pressures, the Indo-Pacific region needs to be equally focussed on the 2030 Agenda for Sustainable Development and Paris Agreement on Climate Change. Most countries in the region are densely populated. They are disproportionately vulnerable to climate change. Discussions on these issues and efforts to build a cooperative mechanism on sustainability within the Indo-Pacific may be far more important than immediate strategic concerns. Realising this, the second issue of the Indo-Pacific Review has focussed on the theme: "Building a Sustainable Indo-Pacific".

Marufa Akter and Subaita Fairooz's paper highlights causes and consequences of climate change and global warming in the Bay of Bengal region and its littoral states. The countries in the region are at the forefront of challenges arising from climate change and the biodiversity crisis. Therefore, the paper argues in the favour of a legitimate regional governance structure to deal with these issues. Oorja Tapan explains the concept of blue economy and highlights the potential of blue economy cooperation in the Indo Pacific, particularly in the Indian Ocean. She demonstrates that blue economy cooperation will take care of geo-economic interests and environmental concerns. This will also provide an accessible opportunity for littoral states in the region to collaborate in a multilateral setting. The paper also describes some of the Indian initiatives in blue economy sphere.

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BUILDING A SUSTAINABLE INDO-PACIFIC

Helena Varkkey and Shofwan Choiruzzad describe that palm oil is mainly produced in the countries in the South and its expansion and intensification is linked to many social and environmental issues. These concerns are raised in the North which has led to Northern-led policies to guide the sustainable transition of the sector, which the paper questions. Indonesia is the largest producer and exporter and India is the largest importer and consumer of palm oil. The paper contends that both of these countries could contribute to a more effective and sustainable transition for the sector. Shwe Yee Oo's paper shows that to improve energy security, many countries in the Indo-Pacific region are considering Small Modular Reactors (SMRs) and Floating Nuclear Power Plants (FNPP) as a solution. The author is worried that nuclear expansion could become a threat to the region's existing security challenges. At the same time, nuclear energy could be an area of cooperation in terms of sustainable innovation.

Dhanasree Jayaram and Kurnica Bhattacharjee explain that the Indo-Pacific region is not only highly vulnerable to climate change but also contributes to more than half of the global greenhouse gas (GHG) emissions. The worst impacts of energy poverty are experienced disproportionately by women and other marginalized groups. The authors build a case for a gender-transformative just-energy transitions agenda in the region that ties together climate justice and gender justice imperatives. Elizabeth Morison describes that the demand for critical minerals is essential for the expansion of renewables and also important for the energy transition. However, deep-sea mining could cause irreparable damage to both the environment and Australia's relationships within the Indo-Pacific.

Through these papers, we have been able to raise some of the crucial issues concerning a sustainable Indo-Pacific region. I hope this special issue of the Indo-Pacific Review will contribute meaningfully to evolving discussions on the Indo-Pacific and will be of interest to scholars working on various issues concerning the region and sustainable future of the world.

Gulshan Sachdeva

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EXPERT COMMENTARY

Just Energy Transitions in the Indo-Pacific: A Case for a Gender-Transformative Agenda

Dr Dhanasree Jayaram and Kurnica Bhattacharjee

Energy transitions, climate action, and the sustainable development agenda are closely intertwined with each other. Meeting the Paris Agreement's goals by transitioning away from carbon-intensive energy sources along with the pursuit of universal energy access that leaves no one behind is critical to energy transition policies in the Indo-Pacific region. The Indo-Pacific region is not only highly vulnerable to climate change but also contributes to more than half of the global greenhouse gas (GHG) emissions ("New UN Report"). Moreover, within this region, approximately 50 million people are likely to continue to remain without energy access in 2040 ("Enhancing Energy Access"). As of 2015, nearly 455 million people lacked access to electricity and about 1.9 billion people were dependent on traditional solid fuels for cooking and heating. However, the worst impacts of such energy poverty are experienced disproportionately by women and other marginalized groups ("Gender and Energy"). This calls for a gender-transformative just energy transitions agenda in the region that ties together climate justice and gender justice imperatives.

What does Gender-Transformative Just Energy Transition Entail?

While just energy transition is aimed at developing fair and inclusive processes of transitioning away from fossil fuels, a gender-transformative approach in the energy sector helps to ensure that energy transition-related policies take into consideration the differentiated needs, roles, and expectations of different genders. Furthermore, it helps create equal opportunities for all genders through adequate representation in policy-making, labour force, financial activities, and knowledge and capacity-building initiatives. What is equally important to recognize is that a gender-transformative approach goes beyond providing equal opportunities and ensuring equal representation to women. It stresses

upon empowering marginalized communities by addressing the structural inequalities, power imbalances, and gender norms that put women and other marginalized communities at a disadvantage when it comes to accessing these opportunities. For instance, the lack of access to grid-based electricity forces women and children in the Indo-Pacific region to spend approximately 20 hours per week fetching fuel (especially firewood) for activities such as cooking, indoor cooling, heating, and lighting (Zhai). On the one hand, women suffer from several respiratory illnesses as they are subjected to indoor pollution caused by the use of fossil fuels. On the other hand, the lack of adequate outdoor lighting, especially in rural areas, render women and girls more vulnerable to violence including sexual assaults from intimate and non-intimate partners. Access to affordable clean energy can enable women to participate in more empowering and productive societal activities that have so far witnessed their underrepresentation and marginalization.

Although women are better represented in clean energy jobs than in the fossil fuel-based sectors, their participation accounts for only one-third of all renewable energy jobs globally ("Renewable Energy and Jobs"). A transformative agenda would need to bridge the gender gap in the labour market through targeted policies and governance initiatives. Another challenge is to address the lack of recognition of informal, unpaid work performed by women in both fossil fuel and clean energy-based labour market marginalizes them further. For instance, a transition away from fossil fuels such as coal, which is a primary energy source in many Indo-Pacific countries, would have to take into consideration women's participation in informal and small-scale mining sectors that is often disregarded in the just transitions-related policy discussions ("Just Transition for All").

Figure 1: Share of Women in Oil & Gas, Renewables, and Global Labour Force

(Source: "Gender Equality for an Inclusive Energy Transition." *International Renewable Energy Agency*,12Jan.2019,https://www.irena.org/news/articles/2019/Jan/Gender-equality-for-an-inclusive-energy-transition.)

Beyond the economic imperatives of better participation in the labour market, a transformative approach would focus on boosting women's agency through empowerment in choosing socio-economic roles deemed appropriate by them, including the modalities of securing access to and managing energy resources (United Nations Industrial Development Organization). Greater women's representation in decision-making processes can usher in transformative change in workplaces by steering the adoption of gender-sensitive policies, fair distribution of socio-economic opportunities, and incorporation of gender-based differences in perspectives on efficient energy usage (such as based on women's experiences of managing households) ('Gender Equality for an Inclusive Energy Transition").

With new energy systems and policies being implemented for cleaner energy transitions by countries in the Indo-Pacific region, the education sector plays a key role in the implementation of gender-transformative energy transition policies. Most countries in the region witness low participation of women in the fields of science, technology, engineering, and mathematics (STEM), leaving them at a disadvantage when it comes to entering the clean energy workforce as well as availing clean energy and climate finance. Even though government and public and private sector enterprises have made available several clean energy financing schemes, women are unable to access them. On the positive side, efforts are being made to enhance women's access to jobs and finance in most countries in the region. One such example is Bangladesh's Infrastructure Development Company Ltd. Programme which provides not only financing but also technical assistance to women entrepreneurs in the solar energy sector with support from the Green Climate Fund ("Gender Action Plan"). The proportion of women in the upper echelons of decision-making processes within the clean energy industries is far worse. In Indonesia, where women constitute less than 5 percent of the decision-making positions, the government in partnership with the United Nations Development Programme (UNDP) launched a certification training workshop to build capacities of women renewable energy practitioners to become energy managers and auditors (Dewanti).

The trends in many countries of the Indo-Pacific region indicate the marginalization of women in decision-making processes due to their lack of representation in political positions, including key ministries. Similarly, the negative ramifications of energy transitions on fossil fuel communities (including women who mostly engage in informal activities in the sector) need to be assessed (Suravee and Swain). Simultaneously, the impacts of large-scale clean energy projects on the marginalized communities, including women, in the form of dispossession (for example, of land rights) needs to be understood better by policy-makers in order to frame improved gender-responsive just transitions policies (Poojary, Narayan and Hingne). With countries investing in energy transitions, contemplating phasing down or out coal and other fossil fuels, and signing partnerships

for just transitions, it is imperative that these efforts take into account gender issues. This could be achieved by advancing gender-transformative socio-economic diversification, especially since fossil fuel sectors have traditionally been plagued with gender biases and barriers to women's participation.

Figure 2: Proportion of Women in Ministerial Positions (as of 1 January 2020)
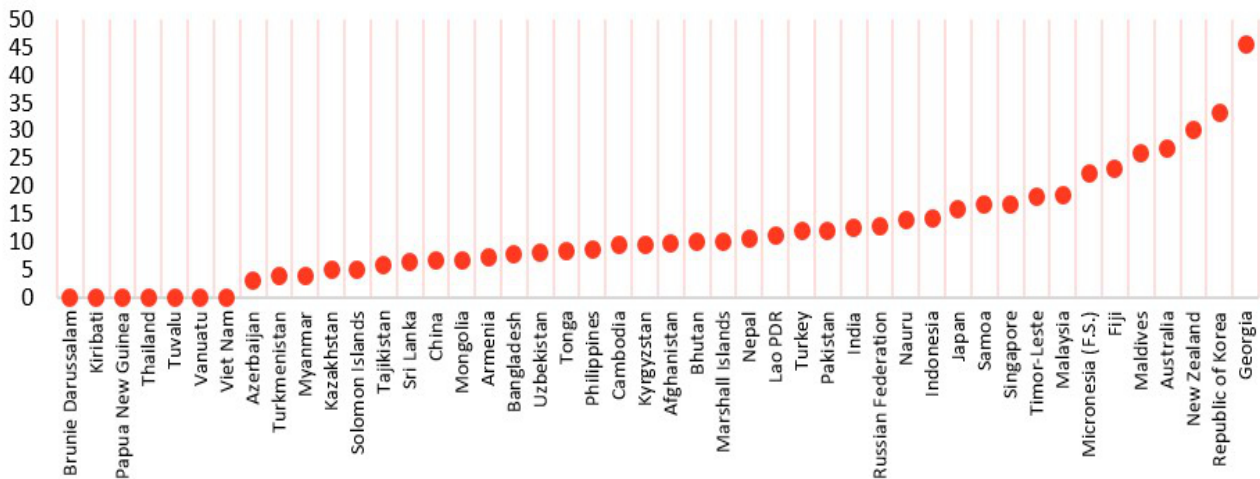
Source: United Nations Women. *Snapshot of Women's Leadership in Asia and the Pacific*, 2020, https://asiapacific.unwomen.org/en/news-and-events/in-focus/csw/snapshot-of-womens-leadership-in-asia-and-the-pacific.

Figure 3: Number of People Serving as Energy-Related Ministers and on Energy-related Parliamentary Committees, by Sex (as of August 2021), in the Pacific Island Countries and Territories

(Source: United Nations Women. *Gender Equality and Sustainable Energy: Lessons from Pacific Island Countries and Territories*, 2021, https://data.unwomen.org/sites/default/files/documents/Publications/Gender_Equality_and_Sustainable_Energy_Pacific.pdf.)

Gender-Transformative Just Transitions through Climate Diplomacy in the Indo-Pacific

In the Indo-Pacific region, climate change and energy transitions have indeed emerged as an important component of economic, defence, and security strategies of several countries, including India, Japan, Australia, and South Korea. These shared perceptions of challenges posed by climate change in the region have brought them together to create regional cooperative initiatives, including under regional organizations such as the Association of Southeast Asian Nations (ASEAN), Indian Ocean Rim Association (IORA), and Pacific Islands Forum (PIF) as well as frameworks such as the Quad (India, Japan, Australia, and the US). However, the existing climate change strategies are mostly not gender-responsive in nature, thereby calling for a reorientation of climate diplomacy approaches in the region, which should build on diverse just transition pathways based on local realities and aspirations that leave no one behind. The Guidelines for Quad Partnership on Humanitarian Assistance and Disaster Relief (HADR) in the Indo-Pacific, for instance, mentions the need to "promote inclusion by advancing gender equality and women's and girl's empowerment" (United States, U.S. Department of State). Similar norms must be embedded in all climate diplomacy-related frameworks in the region.

In fact, climate diplomacy could be a valuable tool to facilitate communication between governmental and non-governmental institutions and actors, and civil society organizations of different countries about diverse gender mainstreaming approaches. These approaches range from merely increasing women's representation in design, planning, and implementation of policies, programmes, legislations, and projects to assessing their implications on different genders, and transforming the social, economic, cultural, and political structures that discriminate against women and other marginalized communities. An example of such cross-border learning and collaboration is the establishment of Barefoot College in India under the Indian Technical Economic Cooperation (ITEC), which has been actively involved in training women from developing and least developed countries through workshops and courses on solar engineering as well as health, personal finance,

and business education ("The Barefoot Solar Mamas"). Since most institutional and bureaucratic processes tend to treat gender mainstreaming as a technical activity – a box-ticking exercise – that typically involves steps such as nominating more women in forums or organizing workshops with a focus on gender-related issues with the aim of promoting gender equality, rather than a continuous process, a stronger engagement with definitions, goals, and yardsticks of gender mainstreaming is required at all levels of decision-making and policy implementation.

Through existing formal institutional arrangements such as the Asian Development Bank (ADB) and International Solar Alliance (ISA), gender mainstreaming approaches are gradually being integrated by governmental and non-governmental actors into climate action and energy transitions processes. For instance, under the ADB's Gender and Development (GAD) policy, projects on energy access and related education programmes have been implemented that enhance women's participation in both the supply and demand sides of energy projects as well as design performance indicators of gender equality. However, a key challenge for achieving gender equality goals is the lack of availability of relevant data to evaluate the progress of gender mainstreaming goals, which could be tackled through greater engagement between different stakeholders and rights holders involved in intertwining issues related to gender, climate action, and energy transitions ("Gender-inclusive Approaches"). Hence, climate diplomacy that specifically targets the mobilization of climate finance and technologies to accelerate energy transitions could draw upon various lessons learnt from projects implemented through the ADB and other institutions in the region to usher in a gender-transformative policy. For instance, Just Energy Transition Partnership (JETP) signed by the G-7 countries with Indonesia and Vietnam will fail at achieving inclusive energy transitions in the region without a gender focus.

Besides, regional frameworks should adopt an intersectional approach that does not treat women and marginalized communities as a homogenous group, but rather addresses the vulnerabilities and capacities based on race, class, colour, disability, nationality, caste, and other factors that impinge

upon marginalization and dispossession. This is why conceptualizations of gender-transformative policies at the global and/or regional levels should also take note of the principles and notions of gender responsiveness embraced by grassroots mobilizations (some of which are led by women and marginalized communities) that have long thrived in the environment and development realms, particularly in the developing world. For instance, Feminist Participatory Action Research (FPAR) projects led by grassroots women's organizations in the Indo-Pacific countries such as Bangladesh, India, Indonesia, Nepal, Papua New Guinea, Vietnam, the Philippines, and Thailand have helped not only generate much-needed gender-disaggregated data on climate change impacts, but also implement several climate mitigation and adaptation measures such as livelihood diversification and disaster risk reduction ("Climate Justice"). Such activities have opened up spaces, traditionally considered suited only for men, for women. Furthermore, the agency exerted by women at the local level, such as in the case of extractive activities (linked with critical minerals required for energy transitions), should be recognized for it to have a transformational impact at higher levels of decision-making (Mang-Benza).

As climate mitigation and energy transitions are increasingly being prioritized by countries of the Indo-Pacific region, the push for a gender-inclusive just transition would further consolidate climate and gender justice, an indispensable human security goal for the region.

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EXPERT COMMENTARY

Impact of Deep-Sea Mining on Australia's Relationships in the Pacific

Elizabeth Morison

Climate ambition has become a defining element of international discussions on climate change. As countries position themselves to decarbonise and keep up with international obligations like the Paris Agreement, the spotlight has shifted towards infrastructure that will power low carbon economies. Critical minerals like cobalt, manganese, nickel, zinc, and copper are essential components of the suite of new technologies (like solar panels, wind turbines, batteries, and electric vehicles) underpinning this future.

As a result, recent years have seen a global race to secure access to and supply of these critical minerals. Critical minerals and rare earth metals are unevenly concentrated and distributed around the world; and the Indo-Pacific region is home to the world's largest deposits, at the bottom of the ocean in the Clarion-Clipperton Zone (CCZ) (US Dept of Commerce, National Oceanic and Atmospheric Administration). The CCZ seabed is covered with polymetallic nodules comprised of cobalt, manganese, nickel, zinc and copper, making the Indo-Pacific a global target for deep-sea mining operations (Davies). More than a quarter (27%) of the CCZ is currently under exploration contract (The Metals Company) under 31 exploration licences (International Seabed Authority).

The critical minerals industry is steeped in controversy due to environmental and governance concerns around the management of deep-sea resources. Sea floor ecosystems have limited resilience and capacity for recovery (Jones et al.), and sound impacts from deep-sea mining impair the echolocation signals of whales and other marine mammals (Thompson et al.). Under the United Nations Convention on the Law of the Sea (UNCLOS), governance of deep-sea resources rests with the United Nations International Seabed Authority (UN ISA). The UN ISA operates as a custodian and regulator of international deep-sea resources. Civil society groups have called for an independent

review into the conflict that arises between these custodian and regulator responsibilities (Save the High Seas).

In recognition of its management responsibilities, the UN ISA has been developing deep-sea mining regulations, the ISA Mining Code. In 2021, Nauru triggered a clause – the "two-year rule" – in the UNCLOS to expedite the development of rules that allow mining in the deep-sea (International Institute of Sustainable Development), requiring that the ISA Mining Code be formalised by June 2023. However, negotiations among the ISA Council were unsuccessful, and the deadline passed. At the conclusion of the negotiations, the ISA Council "expressed its intention to continue the work on the exploitation regulations with a view to adopting them during the 30th session in 2025" (International Seabed Authority). As a consequence of missing the deadline, the ISA is now obligated to consider applications for mining licences, before a formal Mining Code is in operation. In the absence of these regulations, Indo-Pacific countries–particularly Pacific Islands with complex domestic and geopolitical circumstances–will need to weigh up climate and environment priorities before moving forward.

Many think that the Pacific Island nations should be empowered to earn wealth from critical resources in line with development aspirations. To date, Nauru, Tonga, Kiribati and the Cook Islands have all sponsored deep-sea mining projects (Readfearn).

Others raise concern about the environmental impacts of deep-sea mining and would prefer a precautionary, sustainable approach that reduces the impact of the industry as it grows. Some have also warned about the potential for neo-colonialism and threats to cultural connections to the oceans (Faa). The primary concern is that not enough is known about the environmental impacts of deep-sea mining. The international community has now agreed on the High Seas Treaty to protect 30% of the seas by 2030 (United Nations) and Palau has called for a suspension of deep-sea mining until 2030. The Federated States of Micronesia, Samoa, Fiji, Vanuatu and Palau have each called for a

moratorium on deep-sea mining (Clark), backed up by some of the world's largest technology companies, including Google, BMW, Volvo and Samsung's battery company (Reuters).

Australia's position on deep-sea mining in the Pacific is unclear. Australia has a long and problematic history of resource exploitation in the Indo-Pacific region including wood (Kadi, Heinz), and seafood (Mounter, McKillop). Australian companies have also been involved in major resource extraction scandals in the Pacific. The Broken Hill Proprietary Company (BHP), over 30 years of operation up until 2013, discharged 70 million tonnes of untreated mining waste per year into the Ok Tedi River in Papua New Guinea (Davis), with devastating environmental impacts. The Australian Secret Intelligence Service also spied on East Timor in the mid-2000s to inform negotiations for gas and oil fields in the Timor Gap (Knaus).

Despite this context, Australia has some investment in deep-sea mining in the CCZ, and may be positioning itself to be on the front foot for a possible critical minerals industry boom. Its national government science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO), has entered into a AUD$1.5 million partnership of just under USD 1 million with Canadian company The Metals Company (TMC), (Dawkins) poised to be among the first recipients of deep-sea minerals mining licences in July this year. TMC has the support of Nauru, Tonga and Kiribati.

While CSIRO, in its partnership with TMC, claims to be focused on providing scientific support on ecosystem-based management and risk assessments (Dawkins), there are limited transparency and accountability mechanisms imposed by the UN ISA to ensure that this is the case (Blanchard et al.). On deep-sea mining, a spokesperson for Australian Minister for Industry and Science, Ed Husic, said, "Decisions on the research the organisation [CSIRO] conducts, including individual research projects, are made at arms-length from government." (Readfearn). At present, there are limited avenues to challenge this claim.

At the same time, the Labor Party, which was elected into government in May 2022, has released its Draft 2023 National Platform, which states that "Labor will ensure the Australian Government leads ambitious international efforts for global agreements on… a moratorium on deep-sea mining in international waters" (Labor). While it is important to note that this draft statement is not finalised, it indicates that the Australian Government is considering taking a position against deep sea mining.

Investment in the deep-sea critical minerals industry could be an opportunity to conveniently rebrand Australia's climate action and resources industry on the world stage. Under the nine years of the previous Coalition Government, Australia received the "colossal fossil" award (Climate Action Network International). Australia is also known for its poor regulation of extractive industries, especially fossil fuels, which it subsidises to a value of more than USD 7 billion every year (Campbell et al.). On the other hand, if Australia were to take the position of supporting a moratorium on deep-sea mining, it could go a long way to recast Australia's damaged reputation regarding resource extraction in the Pacific.

The Australian Government has indicated a shift towards climate diplomacy, including a bid to co-host the United Nations climate conference COP31 in 2026 in partnership with the Pacific (Wong, Bowen and Conroy). Australia regularly frames "our Pacific neighbours" as one entity (Albanese). However, there are 15 Pacific Island nations, and many more ideas about how to manage these shared critical minerals, and the varied marine environments. Partnership with a country that supports deep-sea mining could ostracise other Pacific Island nations with social and environmental priorities. Partnership with a country that supports a moratorium on deep-sea mining could put pressure on Australia's relationships with Pacific counties that wish to develop critical minerals industries to grow their economies. Australia's decision of which country to approach to partner with for COP31 could be revealing of its underlying strategy going forward.

The deep-sea critical minerals industry represents a possible divergence of climate and environment priorities where these interests have otherwise been intertwined. The demand for critical minerals in

the energy transition is real and urgent for the expansion of renewable energy, but deep-sea mining could cause irreparable damage to both the environment and Australia's relationships in the Indo-Pacific.

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ARTICLES

South-led Governance for a Southern Commodity: The Case for Indonesian and Indian Leadership in Palm Oil Sustainability Transitions

Dr Helena Varkkey and Dr Shofwan Choiruzzad

Abstract

Palm oil is the cheapest, most produced, and most consumed vegetable oil worldwide. It is produced in the global South and, in many of these countries, has been framed as a 'golden crop' bringing development and prosperity to rural areas where the crop is cultivated. However, the expansion and intensification of palm oil have been linked to many environmental and social issues. Concern over these issues has largely stemmed from consumers in the global North, resulting in Northern-led policies (e.g. the EU's RED II), certification standards (RSPO), and other forms of governance to accelerate and guide the sustainability transition of the sector. This paper questions if the South should continue to be norm takers (or norm responders), and the North norm entrepreneurs of palm oil sustainability transitions. Indonesia is the world's largest producer and exporter of palm oil, while India is the world's largest importer and consumer. While many producers and governments in the South are motivated to adopt Northern mechanisms to maintain their market share, there remain high levels of resistance as the mechanisms are perceived to lack cognisance of uniquely Southern concerns about development and survival. This paper argues that leadership provided by Indonesia and India may be a more successful path forward for sustainability transitions in palm oil for the benefit of the global palm oil complex.

Keywords: palm oil, Indonesia, India, sustainability governance, sustainability norms, South-South relations,

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Palm Oil as a Uniquely 'Southern' Crop

Oil palm grows well in areas having an annual rainfall of between 1780–2280 mm and a temperature range of 24–30°C. Due to this, the oil palm can only grow well within a narrow tropical band of about sixteen degrees North and South of the equator, where conditions are constantly hot and humid (Corley and Tinker). The oil palm was first cultivated to produce palm oil for commercial purposes in equatorial West Africa in the 18th and 19th centuries (Robins).

In 1848, Dutch colonisers brought four West African palms to Indonesia and planted them in Buitenzorg (now Bogor) Botanical Gardens on the island of Java. Indonesia's oil palm frontier began from the Dutch core commercial plantation belt in North Sumatera in 1911. It gradually extended into surrounding areas close to existing processing facilities like Riau in South Sumatera. Indonesian palms were eventually brought to Malaya (now Malaysia), where the crop was more intensely cultivated. During the 1980s rubber price crash, Malaysia's lucrative returns from palm oil provided the impetus for the Indonesian government to systematically and strategically expand the cultivation of this crop. Palm oil smallholdings and commercial plantations soon spread to the outer Indonesian islands of Kalimantan, Sulawesi, and West Papua. In 2008, Indonesia overtook Malaysia as the world's largest palm oil producer and has held this position ever since (Varkkey, *The Haze Problem in Southeast Asia - Palm Oil and Patronage*). Today, Indonesia produces about 59% of the world's palm oil, followed by Malaysia (24%) and Thailand (4%) (Foreign Agricultural Service USDA).

India is the world's largest importer and consumer of palm oil, followed by China and the European Union (IndexMundi). It imports most of its palm oil from Indonesia (supplying about 80% of India's palm oil), followed by Malaysia (Jadhav and Varghese). As a developing country with a large proportion of its population classified as poor, affordable palm oil has become the primary edible oil source for the country. About 90% of imported palm oil is used for cooking oil and other edible products, with the remaining 10% going towards non-food uses like cosmetics, detergents, and

biodiesel (Schleifer, "Private Governance Undermined: India and the Roundtable on Sustainable Palm Oil"). India's demand for palm oil is set to double by 2030 (Sagar et al.).

With Indonesia being the largest producer of palm oil and India being the largest consumer of the commodity, palm oil is a commodity squarely rooted in the global South. However, concerns about environmental and social sustainability have caught the attention of actors in the global North. While this is understandable due to the planetary nature of the environmental impact of the industry, such as deforestation, this has led to the development of Northern-led policies and certification standards imposed upon Southern producers of the crop who wish to continue exporting palm oil to Northern markets. As expected, the success of such initiatives is limited, partly due to the resistance and mixed responses from many actors in the producing countries. This paper explores the problems arising from such a situation where the global North acts as norm entrepreneurs while the South remains norm takers of palm oil sustainability transitions. It argues that governance leadership by palm oil's largest producer and consumer states may provide a more successful path forward for the sustainability of the global palm oil complex. This article does acknowledge that there are social and environmental problems caused by the palm oil industry, but it argues that South-led sustainability governance—which adequately recognises the unique situation and trade-offs faced by Southern countries, as well as the role and responsibility of the North in shaping the current climate crisis and the limited choices of developing countries—will potentially be a more effective driver for a sustainability transition.

Socio-Environmental Issues in the Palm Oil Sector

Palm oil comes from the fruit of the oil palm (*Elaeis guineensis*), which is extracted by cooking and compressing it. It is extremely efficient in terms of land use: only 0.26 hectares of planted land is needed to produce a tonne of palm oil. This is much less than other popular oil crops like rapeseed (1.25 hectares), sunflower (1.43 hectares), and soybean (2 hectares). Hence, palm oil provides 35% of the global supply of vegetable oil on less than 10% of the world's oil cropland (IUCN Oil Palm

Task Force 2018). This, together with low mechanisation and cheap labour, has made palm oil the cheapest vegetable oil. Its chemical and physical stability also makes it suitable for use in a wide range of food products, cosmetics, pharmaceuticals, oleochemicals, and biofuels (Varkkey). A WWF report estimated that it is used in about 50% of all packaged products in supermarkets (WWF, n.d.). It is an important source of oils and fats for a large proportion of the global population, and it is projected that global demand for palm oil will increase at a rate of 1.7% yearly until 2050 (IUCN Oil Palm Task Force 2018).

The historically increasing global demand for palm oil has heightened the demand for land to cultivate palm oil. Hence, the palm oil sector has long been associated with unsustainable deforestation. Vijay (Vijay et al.) examined the recent history (1989-2013) of expansion in the oil palm plantation area and the degree to which it was associated with deforestation. In Indonesia, there was a 91.7% increase in oil palm planted area during this time, 53.8% of which came from deforestation. Similar rates of deforestation were found in Malaysia. This has also increased human-wildlife conflicts and threatened vulnerable species living in these areas (Yaap et al.). Miettinen et al. (Miettinen et al.) furthermore found that 73% of all industrial plantations on peatlands in Indonesia and Malaysia are oil palm plantations. The expansion of palm oil on these carbon-rich peatlands in Indonesia and Malaysia has also accelerated carbon release into the atmosphere. It has also increased the frequency and intensity of peat fires that pollute the air locally and across the region (Varkkey, *The Haze Problem in Southeast Asia - Palm Oil and Patronage*). The situation is most severe in Indonesia. Almost annually during the dry season, millions of Indonesians living close to the fires are exposed to toxic smoke known as haze. A recent study on the 2015 haze episode estimated 91,600 excess deaths from haze in Indonesia (Koplitz et al.). Unsustainable practices on palm oil plantations in Indonesia and Malaysia have also been found to have increased flood risk over time (Lupascu et al.) and caused water stress in surrounding communities (Miller et al.).

Palm oil expansion has also been linked to land conflicts resulting in the displacement of natives and consequent loss of livelihoods. Arbitrary land licensing procedures and piecemeal recognition of native customary land rights have resulted in commercial palm oil plantations being granted concession permits despite contestations by locals (Cramb; Gellert). In Indonesia, some of these land conflicts also coincide with government transmigration programmes to provide workers for plantations. In such cases, the more educated and skilled migrants (compared to the locals) accrue the most employment benefits, leading to further conflicts between locals and migrants (Obidzinski et al.; Santika et al.). There have also been highly publicised reports of labour abuses on plantations (Mason and McDowell), particularly on forced and child labour and the poor treatment of women labourers.

It cannot be denied that sustainability is a major issue in the palm oil sector and that the sector should transition towards more sustainable forms of production. However, this paper argues that the shaping of governance mechanisms in this sector is unfavourable and incompatible with the global South. This is especially important because palm oil production and most of its consumption occur in this part of the world, in the Global South. The following section traces the development of the governance of sustainability transitions in the palm oil sector driven by actors in the Global North, from how socio-environmental issues in producer countries caught the attention of Northern sustainability-conscious consumers to how such consumer pressures gave rise to specific Northern-based policies and mechanisms to govern sustainability transitions in the palm oil sector. Importantly, it shows the limits to the effectiveness of these mechanisms without the buy-in from producer countries in the South.

Northern-Led Sustainability Governance Mechanisms

In the early 2000s, Northern-based environmental non-governmental organisations began to organise campaigns to raise awareness about unsustainable practices within the palm oil industry. Several major palm oil buyers, like Burger King, Unilever, and Nestle, were pressured to cancel contracts

with their suppliers (Varkkey, *The Haze Problem in Southeast Asia - Palm Oil and Patronage*). These NGOs also encouraged (mainly Northern) consumers to boycott products containing palm oil. For example, in 2010, Greenpeace spearheaded a campaign urging consumers to boycott 'Killer' Kit Kat and other Nestle products containing palm oil. In 2018, Greenpeace released an advertisement called 'Rang Tan', highlighting the '25 orangutans we lose every day' to palm oil-linked deforestation (Greenpeace). The same year, Iceland, a major supermarket chain in the UK, announced that it would ban palm oil in its own-brand products by the end of the year.

Over time, major environmental NGOs like Greenpeace and WWF have shifted their stance from 'anti-palm oil' to 'pro-sustainable palm oil'. This came through the understanding of palm oil's key position as the world's most efficient vegetable oil. A boycott or major shift away from palm oil would result in a shift of demand to other vegetable oil crops, which are less efficient. This would merely drive deforestation elsewhere, and likely at an accelerated pace. For example, WWF launched its first Palm Oil Buyers Scorecard in 2009 to assess manufacturers, retailers, food service and hospitality companies on their commitments and actions in favour of sustainable palm oil (WWF). However, earlier campaigns had already drastically soiled the reputation of palm oil among Northern consumers, with many products highlighting being 'palm oil-free' as a unique selling point to attract buyers.

WWF also spearheaded the establishment of the Roundtable of Sustainable Palm Oil (RSPO) in 2004, along with Unilever, Migros (a supermarket chain based in Switzerland), AAK (an oils and fats processor in Sweden), and the Malaysian Palm Oil Association. Following a 'roundtable' format, RSPO's members consist of oil palm producers, processors or traders, consumer goods manufacturers, retailers, banks or investors, and NGOs who collectively develop and implement global standards for sustainable palm oil. RSPO's environmental and social Principles and Criteria aim to help minimise the negative impact of palm oil cultivation on the environment and communities in palm oil-producing regions (RSPO, *RSPO - About*). Through a third-party auditing

and monitoring system, companies must comply with these P&Cs to qualify for Certified Sustainable Palm Oil (CSPO) status (Pacheco et al.).

The European Union has also announced renewables, deforestation, and supply chain regulations, which may delimit access to European markets. A key example is the EU Renewable Energy Directive II (EU RED II) announced in December 2018, which followed a European Parliament vote on the issue. The EU RED II rules that biofuels derived from high-risk indirect land-use change (significant expansion of the production area into land with high carbon stock) should freeze at 2019 levels and phase out by 2030 unless specific batches are certified as low-risk. EU calculations quantify palm oil as having 45% greenhouse gas savings, which overshoots the EU's low-risk threshold of 65% (recently increased from 35%). This almost automatically disqualifies palm oil as a biofuel feedstock for the EU's renewable energy calculations (Meredith; Oosterveer).

Mixed Responses and Resistance from the South

The introduction of sustainability standards by actors in the Global North can be understood as a form of norm-building, in which an actor or group of actors, alternatively called "norm entrepreneurs" or "norm makers", actively build a set of appropriate or desirable behaviour for the international community ("norm") and then diffuse it to other actors globally after successfully achieving enough acceptance (Finnemore and Sikkink; Jinnah; Elgstrom). While early scholars of norms diffusion tend to see the promoted norms as "universal" or "international," as Acharya had criticised (Acharya), later studies put more attention on the contestation or negotiation happening throughout this process (Elgstrom; Jinnah; Acharya). In this context, we can understand the responses of the actors in the Global South, such as the Indonesian government and the palm oil producers, as part of this contestation. Rather than merely playing the role of "norm accepter" passively socialised to the norm of sustainability standards, they are responding as "norm shakers" ("actors who challenge the applicability of the existing norms"), "norm resister" ("actors who resist the norm-making role of other actors"), and even "norm-maker" ("actors who introduce, advocate the

institutionalisation, and influence how established norms change over time") by creating a new alternative norm in the form of alternative sustainability standards (Jinnah).

The Indonesian government responded harshly to NGO campaigns on the negative socio-environmental impacts of palm oil, as well as RED II. While not clearly identifying the actors it sees as responsible, the Indonesian government publicly accused that there is a continuous *'kampanye hitam'* (black campaign) by foreign agents to bring down Indonesia's palm oil industry. In public statements, government officials frequently mentioned that such black campaigns were orchestrated not to save the environment or the people but motivated by the interests of rival vegetable oil producers (including the EU and the US). In 2019, in a controversial move during the haze season, Indonesia's Ministry of Communication and Information launched the public relations campaign' *Sawit Baik'* (Good Oil Palm) to raise awareness and combat negative publicity in the sector. In 2020, the Malaysian government and the Malaysian Palm Oil Council (MPOC) launched a *'Sawit Anugerah Tuhan'* (Palm Oil – God's Gift) campaign 2020 with similar objectives to Indonesia's campaign.

On the certification front, there have been mixed messages. Major palm oil producers in Indonesia and Malaysia have obtained RSPO certification. The total RSPO-certified land area in both countries is steadily increasing, with 14.5% and 20% of Indonesian and Malaysian plantation areas certified, respectively. However, the Indonesian Palm Oil Association, GAPKI (*Gabungan Pengusaha Kelapa Sawit Indonesia*), withdrew its membership from RSPO in 2011 (Reuters Staff, "UPDATE 1-Indonesian Palm Oil Association Quits RSPO Membership"). Shortly after, Indonesia introduced its own certification scheme, the Indonesian Sustainable Palm Oil (ISPO), with Malaysian following suit with the MSPO (Malaysian Sustainable Palm Oil) in 2014. This was in response to concerns from both countries that RSPO regulations were too strict and did not adequately consider the needs of smallholders.

Indonesia and Malaysia harshly derided the European Parliament's vote to indirectly limit the import of palm oil by 2030, with Indonesia describing it as a protectionist move and Malaysia calling it 'crop apartheid' (Reuters Staff, "European Move to Ban Palm Oil from Biofuels Is 'crop Apartheid' - Malaysia"). When the EU RED II policy came into being, both countries argued that the EU RED II violates the WTO's principle of non-discrimination (Arief et al.) and has the potential to damage the reputation of palm oil in non-biofuel EU markets (Kurniaty). The WTO's basic free trade tenets are understood such that if a foreign product looks like a domestic product, it should not be taxed or sanctioned differently from the latter. In this case, rapeseed oil (a locally produced oil in Europe) and palm oil are virtually identical in terms of functions and physical characteristics (Erixon and Abbott). Both countries coordinated official requests for consultation with the WTO Dispute Settlement Body over 'certain measures concerning palm oil and oil palm crop-based biofuels' in relation to the EU RED II. Indonesia submitted its request in December 2019, with a panel being formed in November 2020, and Malaysia reserving its right to participate in the proceedings as a third party. Malaysia also submitted its own official request for WTO consultation in early 2021.

Southern palm oil producers' defensive and non-cooperative responses to the sustainability governance mechanisms developed and applied by Northern consumer states in this sector should not be surprising. Firstly, despite considerable efforts by producer firms in the South to obtain RSPO certification, the take up of RSPO-certified palm oil among buyers has been hovering at only 50% (Nesadurai), which means that about half of the sustainable palm oil produced cannot be sold at a premium – an indication that demand for sustainable palm oil may only be lip service. Taken together with the EU RED II, which further shifts goalposts, it does seem that Northern consumers and their governments do not take Southern efforts, towards sustainability transitions in the palm oil sector, seriously.

How Sustainability Looks Like in the South

Within the palm oil-producing countries of the Global South, palm oil is known as the 'golden crop'. It is credited with bringing development and modernity to rural areas and lifting millions out of poverty. In Indonesia, the palm oil sector employs about 20 million Indonesians directly and indirectly. Palm oil is Indonesia's largest agricultural export and contributes 4-7% of the Indonesian GDP annually (Varkkey et al.). It has been identified as a strategic sector at the presidential level, with various administrations creating special taskforces to oversee industry sustainability and reform (Choiruzzad et al.). Palm oil even figures prominently on the 1993 issue of the Indonesian IDR1,000 coin, its highest coin denomination.

As a developing country, the focus and priority placed on development are expected. While countries like Indonesia have acknowledged the importance of developing sustainably, economic development remains the priority. Therefore, when faced with external (Northern) criticisms of important sources of income and development, these criticisms are viewed as coming from countries which are already developed and with little understanding of the very real challenges associated with development and survival.

The producer countries' responses towards sustainability standards, such as the RSPO, are overshadowed and further complicated by suspicion towards an alleged 'trade war' waged by powerful and rich developed countries. Government officials and businesses share a popular perception that such sustainability standards were imposed towards palm oil to curtail its competitiveness (Choiruzzad). There is a sense of postcolonial trauma, which makes policymakers and politicians tend to see criticisms from developed countries on the palm oil industry not as a genuine expression of environmental concern but as another case of bullying from their former colonial rulers. It is especially despised because these policymakers, especially those in the Ministry of Foreign Affairs and the Ministry of Trade, witnessed that the same powerful other is often inconsistent in their environmental or trade commitments. In this context, boycotts and bans are

viewed not as motivators for sustainability transitions but as potential tools of apartheid – stopping development in its tracks.

Such sentiments can be traced back to responses from the South to European timber boycotts in the 1990s. Mahathir Mohamed, former Malaysian Prime Minister, called out what he saw as a new form of colonialism at the United Nations Conference on Earth and Development (UNCED) held in Rio de Janeiro in 1992: '*most developed countries ... they clear-felled their forests ... Yet we hear from the rich, proposals which would result in stopping the development of poor countries in order to reduce pollution ... This is the same as telling these poor countries that they must continue to be poor because their forests and other resources are more precious than themselves ... Denying them their own resources will impoverish them and retard their development… As colonies we were exploited. Now as independent nations we are to be equally exploited*' (Mohamed).

Malaysia has identified its palm oil as 'sustainable since 1917' (Varkkey, *The Haze Problem in Southeast Asia - Palm Oil and Patronage*), based on the fact that the sector has flourished since Malaysia's first commercial plantation was established in 1917 in Tennameram Estate, Selangor. Both countries have also developed extensive sustainability standards under the ISPO and MSPO schemes. In contrast to the RSPO, these national schemes rely on a jurisdictional approach to national government regulations (Oosterveer). Smallholders benefit from government assistance to achieve these mandatory requirements (Pacheco et al.). Focusing on inclusiveness and livelihoods, these schemes have been described as 'lifting the floor' for sustainability standards and not just the ceiling – like the RSPO.

India is, of course, also a developing country, facing similar pressures of development and survival. As the world's largest palm oil consumer, India is on RSPO's priority list of countries, and RSPO has been actively engaging with market players here. However, the companies operating in the Indian market show little interest in the RSPO, with only eight companies operating in India having

obtained certification (Schleifer, "Private Governance Undermined: India and the Roundtable on Sustainable Palm Oil"). Schleifer (2016) points out how in India, around 89% of palm oil is sold unpackaged and unbranded (mainly as cooking oil), while only 11% is sold as branded cooking oil or as an ingredient in branded products. Hence, a sustainability model based on brand association will not work in a market like India. The low importance of brands makes it very difficult for the RSPO to establish a presence in this market, even if key brands (begin to) commit to sustainability agendas. Hence, in the main palm oil consumer state, any sustainability transition will likely look very different from what the North envisages.

Can the South be Sustainability Leaders? Southern Distrust and the Importance of Agency and Recognition

With development becoming the priority of countries such as India and Indonesia, it is understandable that many are sceptical of the notion that the South can be sustainability leaders. This is especially true in Europe, where the populace and policymakers see the EU as *the* global champion in environmental issues (Kilian and Elgström).

Aligned with the EU's own conception that it is a green leader and champion of climate change issues, the popular view also sees Europe as a relatively responsible actor in protecting the environment. In a 2007 Eurobarometer study, 43% of European respondents thought that biodiversity loss was a *very* serious problem in their country, while 69% thought it was a *very* serious *global* problem (Flash Eurobarometer 219). The pattern is quite similar to the 2015 results, which reported that 91% of respondents think that the decline and possible extinction of animals, plants, natural habitats and ecosystems is a serious global issue, while just over three quarters (76%) perceive it as a serious problem in their country (Special Eurobarometer 436). The Eurobarometer Survey on the Attitudes of European Citizens towards the Environment found that the environment 'has an indisputable importance in the lives of Europeans', as 96% of the respondents express that protecting the environment is important for them personally (Special Eurobarometer 295). The survey results

indicate that Europeans tend to believe that environmental problems occur more frequently outside their own country (and region) and that environmental governance in their own country or region is relatively better than in many other parts of the world.

A self-conception as a green leader or an environmental champion that projects and diffuses global environmental norms is not a bad thing in itself. It is even desperately needed at this time of climate crisis. However, in many cases, such well-intended self-conception or initiatives often become counterproductive when they neglect or undermine the agency of others.

Such a situation is nothing new and not limited to palm oil. Historically, the rise of environmental awareness in the North coincided with the period of decolonisation in the South. As colonisation was seen as an imposition of political and economic control aimed at exploiting the resource-rich South and led to underdevelopment in the South, many newly independent countries see economic development as among the *raison d'etre* of their state. Indonesia, for example, put '*memajukan kesejahteraan umum*' (improving the people's welfare) as one of the objectives of the establishment of the Republic of Indonesia. Because of this, when environmental issues emerged at the centre of international political discourse, promoted by actors in the North, which for centuries had exploited the riches of the South without any consideration of the environmental impact, many developing countries sceptically perceived this as imperialist designs to alter the trajectory of growth of their former colonies (Srivastava). The debate and divide between the North and the South were temporarily managed by acknowledging the importance of both development and environmental sustainability through the concept of 'sustainable development' and 'common but differentiated responsibilities' (Ward; Srivastava). Nevertheless, the tensions between North-South or developed-developing countries continues in the subsequent climate negotiations, in which the South and the North compete to push different interpretation and operationalisation of the concepts, including the categorisation of developed and developing countries (Jinnah).

This competing interpretation of concepts and differing prioritisation in the complex trade-off between development and environment, in the context of postcolonial international relations, is the crux of the matter in the international politics of the environment. This is, of course, also visible in the context of the palm oil controversy. The responses of developing countries—especially producing countries such as Indonesia and Malaysia—towards North-based governance initiatives to push for more responsible and sustainable business practices in the palm oil sector show such a situation.

When the leaders of these two largest palm oil-producing countries met in February 2021, the palm oil issue shaped a huge part of the meeting. The meeting was followed up by a press conference, in which the Indonesian President and the Malaysian Prime Minister reiterated their commitments to fight against, what the two leaders consider, an organised anti-palm oil campaign against the multilateral commitments (Karmini). This reflects the general distrust towards the sincerity of North-based environmental governance already present since the 1960s (Srivastava pp. 102).

The factors sustaining such distrust are complex and not monolithic. Competitions among social forces matter at different scales of governance. The role of the palm oil industry does matter (Choiruzzad), as well as the competition between different groups at local, national, and global levels (Choiruzzad et al.). However, the lack of recognition of the agency of the South, as well as the lack of recognition that it can be a leader in environmental initiatives in its own right, is also one important aspect of why such distrusts prevail. The usual story is that the South/developing countries are positioned as norm takers while the North is positioned as norm entrepreneurs.

Recognition of agency matters not only in the international negotiations and platforms but also in the initiatives that emerged from non-state actors, such as RSPO. While RSPO put its secretariat in Kuala Lumpur and put Malaysian companies as among the founders of the initiative, many actors in the South—especially government and companies, and some segments of the smallholders—view

this as mere tokenism. RSPO is perceived as a North-based initiative made in, by, and for European interests. Among the most vocal critics against RSPO are the GAPKI (Gabungan Pengusaha Kelapa Sawit Indonesia, the Indonesian Palm Oil Association), which represents companies, and APKASINDO (Asosiasi Petani Kelapa Sawit Indonesia, the Oil Palm Smallholders' Association), which represents some segments of smallholders. It must be noted, though, that companies and smallholders are not monolithic entities. Some groups, such as the SPKS (Serikat Petani Kelapa Sawit, Oil Palm Smallholders Union) and FORTASBI (Sustainable Oil Palm Farmers Forum, Forum Petani Sawit Berkelanjutan Indonesia) find the opportunity in RSPO to give them a better position in smallholders-companies relationship. However, critics have a closer relationship with the policymakers and are thus more influential.

The distrust grows as the RSPO continue to upgrade its standards following pressures from NGOs. An important milestone for this was the establishment of RSPO's Compensation Task Force in 2011. The members from producer backgrounds rejected the proposal, but the task force was established anyway due to the uncompromising pressure from NGO members. Such a situation leaves a bad taste in the producers' mouths, which see that RSPO is increasingly dominated by NGOs and no longer truly a multistakeholder platform. Such an impression becomes stronger when the NGOs, who are also members of RSPO, criticised RSPO in public for not doing enough.

Another complaint by the producers is the perception that there is a tendency for 'moving the goalposts.' They argue that they have tried their best to comply with the standard and make enough sacrifices, but when they can fulfil such a standard, the standard or its interpretation is modified. According to the producers, RSPO's General Assembly frequently stepped beyond its mandate by forcing votes for adjustments to the P&C, which according to the producers would lead to diminishing credibility (RSPO, *Roundtable on Sustainable Palm Oil 7 Th General Assembly (GA7)- Approved at GA8*). The producers also lamented that the NGOs are not being helpful by highlighting

failures and not appreciating the achievements of the companies to uphold the sustainability standards (RSPO, *Roundtable on Sustainable Palm Oil 6 Th General Assembly (GA7)-Approved at GA7*).

But the strongest discontent among producers is the view that non-producer members, mostly based in the global North, shift the burdens to the producers in the South. As standards continuously become more stringent, the associated costs to achieve such standards are also increasing, and only the producers in the South are paying for this. With this concern in mind, the producer once proposed that the audit, certification, and verification costs should be shared among stakeholders in the palm oil value chain (RSPO, *Roundtable on Sustainable Palm Oil 3 Rd General Assembly (GA3)-Approved at GA4*). Not only being rejected, but the producers are also disappointed because the Chairman of the General Assembly was not acting neutral by explicitly stating his rejection of the proposal, which he saw as a violation of the institution's Antitrust Guideline (RSPO, "EB 04-06: Minutes of Executive Board Meeting").

For many producers, the non-producer members (mostly from the North) are not simply irresponsible by demanding the relatively poorer producers bear sustainability costs. For the producers, this is seen clearly in the low uptake of the Certified Sustainable Palm Oil (CSPO). Although producers have paid huge costs to make CSPO, only around 50% of them are absorbed by the market every year. The expected premiums or sales also did not come because of the unwillingness of the buyers in the North to buy CSPO. One media report relayed this by saying that the world produces lots of sustainable palm oil, but not many people are buying it (Raghu). Looking at this statistic, the producers accused downstream companies in the North of being hypocritical because they cooperate with the NGOs to continuously tighten the standards but do not want to cut their profits by buying certified palm oil. According to this accusation, the downstream companies support the NGO and the stricter standards not because they care about sustainability but only to save their own image to

appease their North-based consumer base. GAPKI finally decided to exit the RSPO in 2011, while its Malaysian counterpart, the MPOA (Malaysian Palm Oil Association), had threatened to do so but retained its membership (Adnan). It must be noted, though, that many GAPKI members (palm oil companies) retain their RSPO membership individually.

Agency matters. The relatively dominant role of the North/Europe in shaping the discussions on the sustainability of palm oil triggered near-instinctual resistance from the South, as it happened on other issues related to development. Furthermore, it also does not fit with the reality of the palm oil economy. The commodity is produced in the South and the largest consumers are also in the South. It is a sector that provides the opportunity for the South to prove that it can develop its own sustainability standards if those at both ends of the supply chain (mostly in the South) and those affected by the industry can engage creatively and responsibly.

Going Beyond Reactionary: South-South Leadership in Oil Palm Sustainability Transitions

The notion and implementation of the South taking a leadership role in addressing environmental issues is not a novel concept. Many studies have highlighted how the South are not merely norm takers but also norm makers (and shakers) in various environmental issues (Ward; Srivistava; Jinnah). Recent initiatives such as the Trilateral Alliance between three countries with the largest rainforests (Brazil, Indonesia, and Congo) also show that when the South work together in areas where they have the leverage, it can successfully insist on its agency and leadership (Hanbury).

The outcome reached during the 27th Conference of Parties of the United Nations Climate Change Conference (COP27) in November 2022 can also be seen as a victory, at least partially, for the South. The loss and damage concept refers to 'the negative effects of climate change that we have not been able to avoid through emissions reductions (mitigation) and that people have not been able to cope with or adapt to' (Verchick 3), is a concept pushed by the South despite resistance from the North. Developed countries such as the US, and in the EU, had insisted that rather than establishing a

separate discussion or funding mechanism related to climate-related disasters, countries can rely on Hyogo and Sendai frameworks on Disaster Risk Reduction. Looking at this move as the North's strategy to evade responsibility, the South frequently invoke the principles of the 'no-harm rule' and 'polluter pays principle' and argue that since developed countries have contributed more to climate change than developing and low-income ones, developed countries should pay more to reduce risks in the South. Developing countries argue that including climate-related disaster merely under the frameworks of Hyogo and Sendai ignores the North's responsibility and presents it as philanthropy. With the persistent campaign, the South gradually won the recognition of the concept through the Warsaw International Mechanism for Loss and Damage and its incorporation into Article 8 of the Paris Agreement (Verchick). The last achievement was the breakthrough agreement to provide 'loss and damage' funding for vulnerable countries hit hard by climate disasters, agreed upon at COP27 (UN Climate Change).

However, in the palm oil sector, the South, which dominates the production and market for the commodity, is acting merely as a norm taker or norm responder. The major initiatives to govern sustainability came from the North, while the South is responding to them, often in an ambiguous manner. For example, the ISPO and MSPO, developed respectively by Indonesia and Malaysia, were more of a reaction towards the North-initiated RSPO. Many observers see Indonesia trying to develop the ISPO as rival governance to reclaim the governance of sustainability in the palm oil sector (Hospes). However, it is still pretty much shaped by RSPO since the ISPO copied many aspects of the principles and requirements for sustainability established by the RSPO, but with some modifications. Some Indonesian observers even called the ISPO a 'counterfeit RSPO product' (Christiawan). While some observers view ISPO as an attempt to 'challenge the interventions from the North' (Hospes), it does not appear to be successful.

Another reaction to the reclaim initiative is the establishment of the Council of Palm Oil Producing Countries (CPOPC), which aims to develop a bloc of producing countries that can have stronger

leverage towards the North in shaping palm oil governance. This is the 'classic' Southern strategy of producer cartel-building by leveraging the fact that they legally control the ownership of many strategic natural resources, which were exploited for the interests of the North since the colonial period. OPEC is one prominent example of this. However, unlike OPEC, since only two producers dominate palm oil production, Indonesia and Malaysia, not many other countries feel the urgency of being involved. Indonesia and Malaysia are also often in competition for the palm oil market, further hampering policy coordination through CPOPC.

Table 1: Initiatives by Indonesia to Take Back the Driving Seat in Palm Oil Sustainability Governance

Initiative	Strategy	Basic assumption	Actor Involved	Challenges
ISPO	Developing rival governance	Trade War: Palm oil becomes the target of a black campaign from rival vegetable oil producers (EU, US) through North-based sustainability initiatives such as RSPO. Indonesia needs to develop its own sustainability certification which is more appropriate for the Indonesian context.	Government of Indonesia	Many in the market consider ISPO as less legitimate.
CPOPC	Cartel-building	Trade War: Palm oil, as the strategic commodity of developing countries, is attacked by rival vegetable oil producers (EU, US) to hinder the development trajectories of developing countries. Responding to this, producing countries must coordinate their actions.	Governments of producing countries	Lack of enthusiasm; coordination problem since Indonesia and Malaysia are also competitors
Initiating the proposal to establish Voluntary Guidelines for Sustainable Vegetable Oils in Support of SDGs	Enlargement of the playing field	Trade War: Palm oil, as the strategic commodity of developing countries, is attacked by rival vegetable oil producers (EU, US) to hinder the development trajectories of developing countries. Palm Oil is	Government of Indonesia	The impact is still unclear since the process is still ongoing.

in FAO's Committee on Commodity Problems.		unfairly constrained by multiple sustainability governance, while other vegetable oils are not facing such scrutiny because the producers are powerful Northern countries.		

Another significant initiative involves more than just a defensive stance; it encompasses what the Indonesian government considers a 'counter-attack' against the so-called black campaign targeting palm oil. The narrative behind the initiative goes like this: despite being more competitive and taking less land to produce more (and thus having a smaller environmental impact compared to rival vegetable oils), palm oil is unfairly scrutinised. As a result, palm oil is heavily governed by many sustainability mechanisms, threatening its competitiveness. To level the playing field, Indonesia must ensure rival vegetable oils are also constrained by similar sustainability mechanisms. The Republic of Indonesia officially proposed the IGG (Intergovernmental Group) on Oilseeds, Oils and Fats to formulate voluntary guidelines on vegetable oils in support of the Sustainable Development Goals (SDGs) during the 72nd Session of the Committee on Commodity Problems (CCP), held on 26-28 September 2018. The result is still unclear as this is an ongoing process.

It is important to note that the different strategies are driven by a single basic assumption that there is an ongoing trade war against palm oil. This assumption grows from the distrust of sustainability initiatives established by developed countries, which also happened to be rival vegetable oil producers. By understanding this, we can comprehend why palm oil sustainability initiatives developed and/or dominated by Northern actors will not work effectively. However, the suspicion, and sometimes obsession, regarding the existence of a trade war can hinder the effectiveness of responses from producing countries or their initiatives aimed at reclaiming sustainability governance. The situation is undoubtedly more complex than that.

Way Forward for South-led Governance for Palm Oil

Against this backdrop, South-led sustainability governance, which adequately recognises the unique situation and trade-offs faced by Southern countries, as well as the role and responsibility of the North in shaping the current climate crisis and the limited choices of the developing countries, will potentially be a more effective driver for a sustainability transition. An initiative developed by producers and consumers in the South could alleviate the distrust and make a more reliable sustainability mechanism. This increased agency may also increase the motivation and interest in sustainability in markets like India, which is currently limited and slow.

Indonesia (and Malaysia) and India, the largest producers and consumers of palm oil, can lead such an initiative. India and Indonesia can start by establishing a bilateral multistakeholder consultation platform which discusses how the producers and consumers of palm oil can genuinely balance development and socio-environmental concerns. Such a platform must include underrepresented groups with a stake in the palm oil economy, from smallholders to workers to poor households. Based on the recommendation, a mechanism to improve sustainability in the industry can be proposed by focusing more on empowerment rather than standard-making. India and Indonesia can push for a fund for sustainability or use part of the forest alliance financing to support smallholders and vulnerable groups along the palm oil supply chain.

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Can Small Modular Reactors and Floating Nuclear Power Plants Become an Innovative Option for Sustainable Indo-Pacific?

Shwe Yee Oo

Abstract

The driving factor of the Indo-Pacific region's economic growth is energy. The region's energy sector is primarily traditional energy-based and import-dependent even though a few countries have nuclear in their energy mix. The current Russia-Ukraine conflict also impacts the region's sustainable and affordable energy goals in many dimensions. In the post-pandemic era, countries need to kickstart delayed economic growth and sustainable goals. That being said, it is difficult for countries to figure out how to maintain healthy cooperation in the region. Indo-Pacific countries are setting their own pace towards ambitious sustainable development goals. Therefore, countries could be classified as faster, slower, lagging behind, or advancing forward. To reduce the development gap, some countries are considering Small Modular Reactors (SMRs) and Floating Nuclear Power Plants (FNPP) as a solution. While others are concerned that nuclear expansion could be an added threat to the region's existing security challenges. Nuclear energy is a double-edged sword. It can provoke challenges as well as benefits. Therefore, nuclear energy could be an area of cooperation in terms of sustainable innovation.

Keywords: SMR, FNPP, advanced nuclear technologies, energy insecurity, climate change, Indo Pacific

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Introduction

The Indo-Pacific region is an active geopolitical region. The region covers several sub-regions—including East and Northeast Asia, Southeast Asia, South and Southwest Asia, and the Pacific—all with their own dynamics, governance mechanisms, power relationship patterns, and threats which can sometimes converge. Despite differences in conceptualisations of the geographic contours of the Indo-Pacific, countries in the region face common challenges—such as human trafficking, maritime insecurity, oceanic degradation, climate change, and energy insecurity, among others—that hampers sustainable development. This paper looks at energy insecurity as a regional problem focusing on how the emergence of advanced nuclear technologies is impacting the sustainability discourse.

Important Role of Energy

Economic development is considered the foundation for other important developments such as social, health, education, and science, and is crucial for a country to become a global leading power. Economic growth is typically measured by the increase in the quantity of goods and services produced in an economy. This growth leads to an increase in wages and allows society to raise its consumption levels of goods and services, leading to more production. The production process requires four essential factors: land, labour, capital, and entrepreneurship, with land including all natural resources such as water, oil, earth minerals, coal, gas, and forests. Energy, as one of the primary ingredients of economic growth, is crucial for countries, both developed and developing, to achieve continuous development and compete for the position of world leader.

Energy is crucial for modern life as it is required for daily activities and modern development. The energy consumption has risen since the mid-19th century when internal combustion engines and electric power lines were invented. This led to accelerated industrialisation which relied on

conventional energy sources such as coal. Industrialisation first began in Great Britain followed by France, Germany, before spreading to other Western countries. The energy consumption of Western Europe in the mid-19th century rose from around 100 Mtoe to 340 Mtoe by the early 20th century. In Central and Eastern Europe, the consumption went up from about 80 Mtoe in 1850 to 208 Mtoe in 1900. America's energy consumption skyrocketed after World War II, leading to economic development through industrialisation and increased productivity.

Following the end of World War II, the Indo-Pacific region underwent extensive political reforms as part of the decolonisation process, including the establishment of independent political systems and governments. While some countries were successful in establishing stable governance systems that led to justice, stability, and economic development, others faced challenges in this regard. The political landscape of the region has been complex and challenging in many parts. Nonetheless, the demand for energy in the region's countries is growing at the same pace as the drive for economic growth, regardless of whether they are politically stable or unstable, developed or underdeveloped, geographically large or small, and democratic or non-democratic. Thus, the development in the Indo-Pacific region is as prominent as in other parts of the world.

The motivation behind maintaining or attaining economic development, infrastructure development, advanced technologies, health care, education, efficient social care, other important scientific/non-scientific inventions, and the intent to increase military capabilities are currently driving up the region's energy needs. The energy consumption has constantly been rising from 207.66 exajoules in 2011 to 272.45 exajoules in 2021 (1 Watt = 1 Joule/second). Energy consumption in the region is not likely to flatten in the near future. For a lot of developing countries in the region, ever-growing energy needs easily turn to energy insecurity because of insufficient supply in the face of massive demand.

Also, the energy demand and supply are often affected by other external factors such as global politics, competition between superpowers, and economic recessions. The impact of the Russia-Ukraine conflict on the world's energy market is a vivid example at the moment. Energy prices jumped after the invasion, reaching a 20% increase for five months straight. The IEA says high fuel costs account for 90% of the rise in average costs for electricity generation worldwide. The energy crisis has affected 70 million people who recently gained electricity access to no longer afford it. The risks of energy insecurity have become more prominent each time outside factors affect the energy market.

Energy Insecurity in Indo-Pacific Sub-Regions

The International Energy Agency defines energy security as:

> *"The uninterrupted availability of energy sources at an affordable price…long-term energy security has to deal with timely investments in energy to supply in line with economic development and environmental needs…and short-term energy security focuses on the ability of a given energy system to react promptly to sudden changes in the supply-demand balance".*

For a household, energy security can generally be defined as the ability to meet its energy needs regardless of disturbing factors.

Thus, energy insecurity can be understood as an interrupted availability of energy sources and an inability to provide households with their energy needs. In the Indo-Pacific, both developed and developing economies are experiencing energy insecurity in a similar way, albeit with some differences. Some countries' energy insecurity is rooted in the imports of energy, some in exports, some in demand, and some in supply. Though, the unavailability of energy sources, or 'energy

insufficiency', is making countries have the same worries and concerns affecting their economic and social systems.

The Indo-Pacific region covers many different sub-regions including: 1. East and Northeast Asia, 2. Southeast Asia, 3. South and Southwest Asia, and 4. Pacific. Countries in the region may be geographically, politically and culturally different but share similar "concerns over energy security" amid current global challenges. In East and Northeast Asia, China, Japan, and South Korea (as well as North Korea) are major players. East and Northeast Asia region is the only sub-region in the Indo-Pacific where all major players possess nuclear technologies. Nevertheless, each country encounters their own energy issues.

China has been facing power shortages until recently and emergency power-rationing policies that were put in place in 2021 are still in effect. During the current post-pandemic economic recovery, the country's power consumption has increased significantly, but the power supply has been unable to keep up with the surge. The shortages in power supply are attributed to a number of factors, such as floods in China's primary coal-producing region, the rising demand of Chinese goods due to the relaxation of pandemic restrictions, conflicting energy policies, and market distortions including power rationing and price controls have also contributed to energy shortage. On the other hand, China is striving for keeping its commitment of achieving its own carbon neutrality target. In September 2020, President Xi declared that China would aim to have carbon emissions peak prior to 2030, followed by carbon neutrality by 2060. China's emission reduction targets are a crucial aspect of global efforts to mitigate global warming to 1.5 degree as China is the world's largest energy consumer and carbon emitter. China, in fact, is encountering a dilemma between energy sufficiency and carbon neutrality.

Japan and South Korea are encountering energy issues totally different, yet equally concerning, from those faced by China. Japan, one of the most developed countries in Asia, is relying on a vulnerable

supply structure of energy. Due to lack of natural resources, Japan relies on imports for 94% of its primary energy supply. Japan is mainly dependent on oil, gas, and coal. Despite energy diversification and energy efficiency in Japan, oil still accounts for 40% of Japan's primary energy supply. Japan imports crude oil from the Middle East, coal from Australia and LNG from Asia, Australia, Russia, and the Middle East. Japan, at the same time, is facing difficulties improving renewables as infrastructures is being damaged by weather and natural disasters. South Korea is also facing similar issues as it relies heavily on fossil fuels. South Korea is ranked as the world fourth-largest importer of LNG in the world after Japan, EU, and China. Korea, like Japan, has no proven oil reserves, and the coal supply in the country is insufficient and of low-quality. In Korea, industries are the major consumers of final energy and Korea needs to find an alternative solution to maintain production. Regarding climate effects caused by carbon emission, Japan and Korea will have to establish effective future energy plans to reduce emissions in line with the Paris Agreement.

Southeast Asia, home to more than 622 million people, has the world's third-largest labour force behind China and India. Despite the pandemic and other instabilities in the region, ASEAN remains an attractive destination for investments. The region's growing economy together with its ever-increasing population is driving up the region's energy requirements. Another major issue is that 20% of its population (134 million people) do not have access to electricity. The lack of accessible electricity in the least developed countries–such as Myanmar, Laos, and Cambodia, and the isolated location of certain islands in the Philippines and Indonesia–account for much of the region's electricity issue. The region is mainly relying on coal for its energy. It is estimated that coal will rise in the region's energy mix and would account for up to 50% of power generation by 2035. Coal, for ASEAN, is a reliable and affordable energy source even though it is very polluting. Large utilities companies are not interested in developing renewables as they prefer sizable returns. Thus, ASEAN, like the countries in East and Northeast Asia, needs a solution to deal with its electricity and carbon issues.

Pacific Island countries, when it comes to energy security, are facing specific challenges. Pacific Island countries depend on imported fuels for electricity and transportation. Like some other regions mentioned above, the remoteness and size of island countries are resulting in little access to electricity, and high energy prices. Pacific Island countries are currently developing renewable energy projects to increase access to reliable and clean energy with assistance from the United Nations Industrial Development Organization. Although, the absence of effective policies that facilitate the progress and use of renewable energy technologies is hindering the development of renewables. On the other hand, Pacific island nations are under the threat of global warming and serious climate change. A large numbers of islands are at an elevation slightly higher than the sea level. At the current pace of sea level rising due to global warming, island countries will face flooding, coastal erosion, and storms in the near future. To cope with the issue, island countries as well as the regional community need to work together and find a cooperative solution. Australia and New Zealand are no exception. Both countries depend heavily on fossil fuels, particularly coal. Moreover, they are struggling to deliver consistent and affordable energy at a satisfactory level, and therefore the countries also should seek innovative solutions.

South Asia is another interesting story. Bangladesh is facing energy insufficiency and the country is dependent on coal and imported natural gas. The country is one of the world's poorest and most densely populated countries. It has limited energy reserves—only small amounts of oil, coal and countable natural gas reserves—and about 93% of power generating thermal plants are gas-based. In addition to the energy scarcity, the country is also considered one of the most impacted countries by climate change. Natural disasters and environmental challenges have put the livelihood of people in Bangladesh, who mainly rely on agriculture, at risk.

In Iran and Pakistan, people have had power shortages due to the insufficient fuel at power plants. Critics have said that energy insufficiencies in these countries are due to mismanagement of

administrative bodies and a lack of enabling energy policies. Like countries in other sub-regions, the countries in South Asia are dependent on fossil fuels, especially oil and gas. Regarding renewables, both countries have the potential to develop solar energy but renewables are still underdeveloped due to little interest by investors and the need for fiscal support.

Home to 1.3 billion people, India stands as one of the biggest markets and consumer bases globally. India is the third largest energy consumer after the United States and China. India's domestic natural gas production has fallen since 2013, and the country currently has to rely on imported gas due to the increasing demand for power. India's oil demand is also rising and it has to increase imports as domestic production is stagnant. Coal production in India remains key to the power sector as over 70% of power generation is coal-based. India is the world's third largest producer of hard coal and demand is estimated to rise up to 772 million tonnes by 2040. In India, inequalities are also a major issue when it comes to energy access. A census indicates that 77 million households still use kerosene and 44% of households lack access to electricity. Despite India's attempts to implement various programs and initiatives to tackle energy poverty, there were logistical problems and inadequate implementation issues. India has recognized the risk of energy insecurity and potential shortages in the near future and is taking steps to address it by investing in the development of renewables and nuclear. India has been working on indigenous nuclear technologies including reactors and submarines. An added benefit would arise if India ever thinks of investing in the development of SMR technologies along with other renewable projects.

Sustainable Development and Energy

The Sustainable Development Goals (SDGs) were adopted in 2015 by the United Nations as a global appeal to safeguard the planet and secure peace and prosperity by 2030. There are seventeen SDGs and it is considered that the action in one area will impact outcomes in others and that development must balance social, economic, and environmental sustainability. The seventeen SDGs include - 1.

No Poverty, 2. Zero Hunger, 3. Good Health and Well-being, 4. Quality Education, 5. Gender Equality, 6. Clean Water and Sanitation, 7. Affordable and Clean Energy, 8. Decent Work and Economic Growth, 9. Industry, Innovation and Infrastructure, 10. Reduced Inequality, 11. Sustainable Cities and Communities, 12. Responsible Consumption and Production, 13. Climate Action, 14. Life Below Water, 15. Life on Land, 16. Peace and Justice Strong Institutions, 17. Partnerships to achieve the Goal.

In a world without energy, people would not be able to work efficiently, live comfortably, or access information instantly. Cooking and chores would take a long time and consequently, girls and women would get over-burdened. Industries would not be running and innovations would never take place. Insufficient access to electricity results in inadequate healthcare and delays in establishing sustainable cities. A lack of energy access will lead to poor living standards and increase the number of people living below the poverty line. Unregulated use of energy and excessive production of fossil fuels contribute to climate change, amplifying its impacts on both terrestrial and aquatic ecosystems. Ultimately, energy insecurity undermines peace. It is obvious that all seventeen goals are interrelated and influenced by energy insecurity.

The seventeenth goal of sustainable development, Partnership, is crucial towards achieving sustainability, and every country will have to pool their technology, creativity, human and financial resources. For the countries in the Indo-Pacific region, operative cooperation and partnership should be in place more than ever to deal with energy insecurity because most of the countries share the same concerns of energy poverty and climate change.

SMR and FNPP: Advanced Nuclear Technologies

An innovative solution that the paper would be recommending and discussing to cope with the above-mentioned challenges is the Small Modular Reactor (SMR) and Floating Nuclear Power Plant (FNPP) technologies. SMR and FNPP are advanced nuclear technologies being developed,

promoted, and marketed currently by the United States, China, and Russia. China and Russia, countries that already have operational SMR/FNPP deployed.

SMRs are advanced nuclear reactors that have 50 MW to 300 MW power capacity per unit which is about one-third of the generating capacity of traditional nuclear power plants. Small modular reactors are physically as small as a fraction of the size of a conventional nuclear plant and are designed for factory-made mass production purposes. Floating Nuclear Power Plants are nuclear plants with one or more nuclear reactors on a platform at sea. SMRs on a ship or a mobile platform at sea can be called an FNPP. Both SMRs and FNPP possess mobility, SMRs on land and FNPP in the water.

As nuclear energy is classified as clean energy, SMRs and FNPPs can become a reliable solution for the fragile Indo-Pacific region without having any accumulated impacts on the environment and climate like other fossil fuels-based solutions. Moreover, nuclear energy is more stable than other renewables that have challenges of intermittency due to weather conditions. Another advantage of SMRs and FNPPs is that they can generate more power within a limited space unlike some renewable projects such as solar plants. For energy-poor or latecomer countries in the Indo-Pacific, SMR and FNPP technologies will help boost their development.

Small modular reactor technologies are not totally new. The development of those technologies can be traced back to the 1950s when the United States and the Soviet Union both invented small reactors for military purposes. Today, the technologies are under research and development for efficient civilian use in power generation. There are various SMR/FNPP technologies currently being developed. Depending on the size, design, features and cooling types, these technologies are diverse and significant. Examples of SMR/FNPP technologies include - 1. Integral pressurised water reactors, 2. High temperature gas-cooled reactors, 3. Molten salt reactors, 4. Liquid metal cooled reactors, 5. Solid state or heat pipe reactors, 6. Sodium-cooled fast-neutron reactors, and 7. Lead-

cooled fast-neutron reactors. IAEA's Advanced Reactor Information System (ARIS) lists over seventy types of conceptual, developed and deployed SMRs.

Dr. Jor-Shan Choi listed SMR technologies being developed or deployed in the Indo-Pacific as follows. (Russia is included in the list as it is having nuclear cooperation with a few countries in the Indo-Pacific.)

Country	Type	Status
China	**High Temperature Reactor**	**Connected to the grid, one reactor operational out of two.**
	Floating Nuclear Power Plant	Under construction
	Integral Pressurized Water Reactor	Under construction
	Molten Salt Reactor	Prototype testing
	Pressurized Water Reactor	Research and Development
	Molten Salt Reactor	Research and Development
Japan	Boiling Water Reactor	Research and Development
	High Temperature Reactor	Research and Development
Russia	Integral Pressurized Water Reactor	Installed
	Floating Nuclear Power Plant	**Operational**
South Korea	Pressurized Water Reactor	Research and Development (Jointly with Saudi Arabia)
	Floating Nuclear Power Plant	Research and Development
United States	Integral Pressurized Water Reactor	Design reviewed. First commercial plant is expected in 2027.
	High Temperature Reactor	Construction is expected to begin in 2025.
	Molten Salt Reactor	Research and Development (Jointly with Indonesia)
India	Small thorium-based high temperature gas-cooled reactors (STGRs) of 20-40 MW sizes	Research and Development
Pakistan	N.A	Pakistan seems to be interested in SMR technology. However, no further information can be confirmed.

Interestingly, countries in the South East Asia and South Asia, despite the lack of technology and capacity, reveal an interest in traditional as well as advanced nuclear technology, and are enthusiastically cooperating with nuclear technology developer countries.

Country	Partnership/Cooperation	Status
Vietnam	United States	IAEA considers Vietnam ready to develop nuclear energy for power generation.
Philippines	United States, South Korea, Russia	Congress amending legislative and regulatory frameworks on nuclear safety, security, and safeguards.
Thailand	United States, China	Developing a policy and regulatory regime since 2007.
Indonesia	South Korea, France, China, Russia	IAEA considers Indonesia ready to develop nuclear energy for power generation. Regionally, Malaysia and Indonesia are cooperating through a memorandum of understanding.
Malaysia	United States	Implemented the provisions of the IAEA Code of Conduct on the Safety and Security of Radioactive Sources, as well as the Supplementary Guidance on the Import and Export of Radioactive Sources. Organizing domestic training programs on radiological security, developing a disposal facility using the borehole technology.
Cambodia	Russia, China	Having asked the International Atomic Energy Agency (IAEA) for assistance in drafting laws on nuclear safety and radiation, environmental protection and controlling radioactive waste.
Myanmar	ROSATOM Russia	Establishing of Nuclear Research Center, organizing trainings with IAEA experts*
Singapore	N.A Singapore is still considering nuclear for its energy transition.	More than 300 Singaporean experts and fellows are trained through IAEA support in radiation medicine and health, radiation safety, nuclear security, isotope hydrology and nuclear technology applied to industry in the areas of materials testing and characterization. Experts are sharing knowledge and expertise with neighbouring countries.
Laos	Russia	Signed an MOU for cooperation in 2016. No further information available on the development.
Sri Lanka	Russia	Submitted a self-evaluation report to the International Atomic Energy Agency (IAEA) in 2022
Bangladesh	Russia	Completed the installation of the reactor pressure vessel at Bangladesh's first atomic power plant.

*Interviewed a Burmese government staff by the author

The receiver countries (of nuclear technology) mentioned above are newcomers to the nuclear world due to energy security and/or energy transition. Countries are keen to engage in cooperation for the development of both traditional nuclear power plants as well as advanced nuclear technologies. The major limitation for impactful cooperation is the readiness of regulations and safety measures to implement nuclear reactors and power plants.

For SMR developer countries, according to the list above, it is obvious that the technologies are mostly in the research and development stage. For the United States, two out of three are at the licensing stage and expecting to begin the construction of commercial plants soon. For all other countries interested in SMRs, there are delays in approving the adoption of SMR technologies or implementing regulations. The reasons behind the delays, as well as the challenges that small modular reactors and floating nuclear power plants impose, will be discussed in the following section.

Cost Benefit Analysis of SMR Technologies

SMR/FNPP technologies are generally considered promising, innovative, and reliable while discussing the future of global energy requirements. They are clean, high capacity, durable and suitable for any geographic location. In addition, advanced nuclear technologies can be the solution to climate issues, inequalities, and energy poverty in a lot of Indo-Pacific countries.

There are numerous technical advantages. SMRs are compact and can pack a lot of energy with very little footprint, unlike other renewables projects and traditional nuclear power plants. For comparison, to generate 1,000 MWe of electricity, an SMR plant would need less than 1% of the land that a solar, wind or hydropower project would need to generate the same amount of power. The modular design allows for individual parts to be factory-made, then assembled, and later transported to operating sites, making it cost and time effective. For investor companies, the modular design allows them to begin production of a single module and later expand later, as per demand.

SMR designs include passive safety features that can shut off and cool down the reactor during abnormal conditions. In case of accidents, SMR power plants will not need computerised or human intervention to control the temperature of the core. Thus, it can be said that SMRs are safer than conventional nuclear power plants. Another advantage of SMRs is that they require refuelling less frequently. Traditional nuclear plants need refuelling every one or two years while SMRs need to be refuelled every three to seven years. In some designs, SMRs are made to function for up to 30 years without refuelling. There are also some other designs allowing SMRs to reuse and recycle spent fuel.

For developing countries, SMRs will be a sustainable option for providing better and more reliable energy while reducing carbon emission and adverse climate impacts. SMRs are suitable for remote areas where infrastructure remains under-developed, sites with limited water and acreage, and small economies with low energy needs and smaller grids. Moreover, SMR technology is appropriate for unique industrial applications as it can offer the possibility to process desalination with the heat it produces while generating electricity. So, SMRs, when fully developed, will have two applications, that generates electricity and heat at the same time.

Most importantly, SMRs have a distinct advantage of preventing proliferation due to facility protection systems being applied in new SMR designs. Most SMRs are designed to be built below grade for safety and security enhancement, addressing vulnerabilities arising from natural disasters and sabotage scenarios. To minimise risks in handling nuclear materials, small modular reactors are tailored to be fabricated and fuelled in a factory, and then sealed and transported to the site for power generation, and returned to the factory upon life cycle completion.

Nevertheless, authorising bodies in many developer-countries are delaying approvals and taking a lot of time to issue licenses due to debates over the credibility of advanced nuclear technologies. The advantages of SMR technologies seem very reassuring but the disadvantages are also prominent.

It is argued that SMRs are not affordable, and are deemed expensive due to their inability to achieve economies of scale. In order to do so, manufacturing facilities need to produce thousands of SMRs along with plans and projects for thousands more. This necessitate a substantial demand in the market, with hundreds of consecutive orders to facilitate large-scale production. SMRs are still in the developing stage and not yet proven. It is quite a financial risk to mass-manufacture unproven SMRs without ensured demand from the market. Without economy of scale and mass production, mass-deployment of SMRs remains impossible.

Even though SMRs are technologically safe and have strategic non-proliferation capacity, the supply chain and wastes still require significant defence measures to prevent terrorists, and others, from abusing radioactive materials. Supplementary costs (security, transportation, etc.) will be applicable when SMRs are deployed in remote areas. All in all, there is no centralised nuclear waste repository and thus the concept of returning used reactors to the processing sites for decommissioning seems unrealistic. Furthermore, unexpected failures or design errors in built-in modular reactors and their displaceability can also impose security threats. There are questions raised over the guarantee of the quality of factory-made small modular reactors and consequences in case of errors in manufacturing.

It is also argued that SMRs cannot contribute to the provision of affordable energy due to its costs in larger projects. The price par SMR may beat the overnight capital cost of a traditional nuclear power plant but the total capital costs for a fleet of SMRs will not help lower the energy price per kilowatt for purchasers. Basically, nuclear reactors, whether big or small, have high fixed capital costs and low variable costs for fuel and maintenance and thus they are unsuitable for fluctuating demands. In large nuclear reactors, the high fixed capital costs are spread out over large number of kilowatt hours which can make each KWh cheaper. Although, in SMRs, as they are made to provide small or variable demand, the price of energy per KWh as well as the operational costs will be raised due to the operation at partial load.

The Benefits of Cooperation

SMR/FNPP technologies are still at the research and development stage, under debate, and not yet fully proven. Undeniably, SMRs have the potential to become a solution to the world's energy insufficiency and climate change. Thus, cooperation on advanced nuclear technologies is in the best interests of Indo-Pacific countries. There are currently about 70 different SMR/FNPP technologies and they still have several imperfections. Developer-countries of these technologies are competing, and no specific SMR technology is yet considered as the most appropriate. As long as countries cannot achieve an agreement to work on the development of a particular SMR technology, neither economy-of-scale or mass deployment is possible.

Regarding legal framework and regulations, a number of countries are not ready to adopt advanced nuclear technologies. Most non-nuclear-power countries are unfamiliar with setting up necessary policies, rules and regulations for advanced nuclear technologies. Even for countries with nuclear power, additional regulations and mandates are required. Also, the International Energy Agency still needs to work on the study of advanced nuclear technologies to make sure the regulatory framework they establish for SMRs covers every feasible complexity. In such a case, sharing knowledge, information and expertise among countries will help smoothen the regulatory process.

Can SMRs and FNPPs become an Innovative Option to build a Sustainable Indo-Pacific?

Given the information about SMRs and FNPPs and the debate over them, it can be assumed that advanced nuclear technologies can be an innovative option to build future sustainability in the region if there is effective cooperation among the interested parties.

There is a speedy escalation of country-specific energy needs and demands in the Indo-Pacific region. Some countries need to diversify energy sources while others need to replace old power plants with efficient, new-generation power plants to provide reliable energy. On the other hand, carbon emission reduction commitments are a pressure point for countries in the region. There is no

shortcut to reduce carbon emission except to increase the portion of clean energy in the mix. SMRs and FNPPs can help nations cope with these issues to a certain extent. This provides other renewable energy projects with longer timelines to develop and become profitable.

Inequalities due to energy poverty can also be addressed through advanced nuclear technologies. Households with better electricity access will allow women and girls to spend less time completing chores and more time for education. The electricity will also grant access to advanced information technology for individuals to enhance access of information. Innovations and production will witness an uptick once there is sufficient power. Scientific advancement and technologies will continue to evolve, leading to the generation of more sophisticated inventions.

In the Indo-Pacific, a few countries are halfway to the development of advanced nuclear technologies while the majority are just beginning to consider the technologies as an option. When it comes to cooperation among countries at different economic or technological development stages, there will definitely be developer-countries and receiver-countries. The question arises: "What kind of benefits will the developer-countries achieve in cooperating with less developed/developing receiver-countries?" The technology-developer countries will receive access to a wider market in technology-receiving countries. Thinking practically, every country cannot manufacture small modular reactors within a short cooperation time, except for developer-countries. Developer countries can not only help and share their knowhow, but also assist in setting up regulatory guidelines and platforms for further trade agreements of SMRs.

No country can afford to neglect the, short or long term, effects of climate change. Even if a country manages to meet carbon neutrality standards, it cannot avoid the impacts of climate change which eventually is the result of other carbon emitting countries. Countries in the Indo-Pacific region should consider the domino effects of climate change and choose to assist each other via cooperation, especially in the development of an innovative solution for sustainability.

Conclusion

In brief, countries in the Indo-Pacific, facing energy insecurity in their own unique way, should consider advanced nuclear technologies as an alternative to diversify energy sources. Regarding the urgency to address energy insufficiency issues and global warming, the region truly needs to cooperate in developing SMR/FNPP technologies. The only important thing is that the countries will have to agree upon what specific SMR technology/technologies to develop so that the region could avoid the delay in establishing successful SMR deployment. Peter Kropotkin, Russian philosopher, historian and scientist, once said, "Competition is the law of the Jungle, but Cooperation is the law of Civilization". SMRs and FNPPs, as advanced nuclear technologies that will leave their mark on our historical timeline, serve as a testament to the elevated level of civilization we have achieved where cooperation triumphs over the law of the jungle and paves the way for progress.

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India and the Indo-Pacific: Harnessing the Blue Economy Potential

Oorja Tapan

Abstract

An emerging region of geostrategic importance, the Indo-Pacific is driven by competing interests of major powers, each with its individual set of geopolitical and geoeconomic ambitions. The geoeconomics will be subject to an emerging politics over resources like rare earth metals, hydrocarbon mining, fisheries, trade and commerce through regional chokepoints, infrastructure build-up for ports and tourism, etc. In the coming decades, such a geoeconomic tussle amongst the littoral countries of the Indo-Pacific will be dominated by strategic competition in the region's blue economy and a quest for maritime security. It is postulated by several international organisations that a healthy ocean can help integrate 'economics with environmental sustainability', thereby supporting productive ecosystems. For a healthy and sustainable maritime economy, environmental concerns of overfishing, marine pollution, coral bleaching, acidification and other concerns need to be managed by littoral nations putting aside their geopolitical tensions. The Indian Ocean Region (IOR) presents a distinctive opportunity to develop a Blue Economy Framework aiming for blue growth, through the three pillars of security, sustainability and business profitability.

A sustainable and resilient blue economy in the Indo-Pacific will not only take care of geoeconomic interests and environmental concerns but also provide an accessible opportunity for littoral states in the region to collaborate in a multilateral setting. India has undertaken several blue economy initiatives like the Draft National Policy Framework on Blue Economy, Indo-Pacific Oceans Initiative, SAGAR doctrine, SAGARMALA Programme, and the Indian Ocean Rim Association, etc. All these initiatives belong to the larger umbrella of multilateral and minilateral cooperation in the Indo-Pacific region for maritime connectivity and economic growth. Major components of such schemes are maritime security and a sustainable blue economy. However, many challenges remain like lack of blue-green infrastructure, climate change, rising geostrategic competition in the Indo-Pacific due to US-China rivalry and regional tensions amidst China, Japan, India, Australia and others, reduced maritime security due to piracy, and resource competition between great powers. India needs to channelise the growing blue economy initiatives–capitalizing on both existing ones as well as creating new fora to build regional and multilateral consensus on maritime cooperation, security and stability over the seas, freedom of navigation, and preservation of marine resources.

KEYWORDS

Indo-Pacific, Blue Economy, Geoeconomics, Maritime security, Sustainability, blue growth

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Introduction

A new archetype for development of marine resources and coastal management is the concept of blue economy–crucial field of academic scrutiny encompassing the economic activities depending on the seas. It is postulated that a healthy ocean can help integrate "economics with environmental sustainability", thereby supporting productive ecosystems (Attri and Muller, 25). There are multiple and overlapping definitions of Blue Economy (BE). The World Bank emphasises the notion of "sustainable use of ocean resources"; the Organisation for Economic Cooperation and Development (OECD) defines the ocean economy as the "sum of economic activities of ocean-based industries combined with the resources supplied by marine ecosystems"; and the World Economic Forum also relates the importance of a sustainable blue economy with blue finance to achieve Agenda 2030 of the Sustainable Development Goals (SDG), specifically Goal 14 "Life Under Water". Clearly, the potential for blue economy creates plausible zones for strategic competition between nation-states over resources like hydrocarbons, rare earth metals, fisheries, port infrastructure and other ocean resources for food, energy and tourism. However, across the Asian and African littorals, oceans and marine resources should not be an arena of confrontation between nations, but they must serve mankind through "blue growth", thereby generating economic growth and multilateral cooperation for the global commons. Blue growth entails the long-term strategy to aid sustainable use of marine and maritime sectors as a whole.

The Indian Ocean Region (IOR) presents a distinctive opportunity to develop a Blue Economy aiming for blue growth, through three pillars of security, sustainability and business profitability. The "Indo-Pacific" as a geopolitical concept has grown in importance in the 21st century in terms of politics, strategy, and economy. The "Pivot to Asia" outlook by the U.S. is required due to the complex interplay of interstate relations as a result of transfer of power from the west to the east (the geopolitical centre shifting from Eurocentric politics to a new Asian Century), the emergence of China, India, and other Asian nations that have shown outstanding economic growth and diplomatic

influence in world affairs. Also, with the surge in China's expansionist foreign and economic policies (the Belt and Road Initiative and China's Wolf-warrior diplomatic tactics); the search for major players, for a balance of power, in the Indo-Pacific has also accelerated.

India requires a well-thought-out Indo-Pacific strategy to successfully manage the competitive and contested Indian Ocean Region (IOR) amidst the Sino-India rivalry with the Chinese 'String of pearls' strategy (as propounded by the US firm Booz Allen Hamilton in 2005) of building up naval bases in the IOR encircling India. This is fundamental to capitalize on economic opportunity while maintaining maritime security in the region. In this context, it is necessary for India to leverage the blue economy's potential as one of the drivers of economic growth in order to increase South Asia's strategic and diplomatic clout in the Indo-Pacific region. It is crucial to build regional consensus on maritime security and cooperation, but it also depends on maintaining stability and security on and over the seas, freedom of navigation, unhindered legal commerce, protection and maintenance of marine resources, and a sustainable and responsible fishery framework.

The Indo-Pacific and India

The Indo-Pacific covers diverse sub-regions comprising of South Asia, Southeast Asia and the littoral countries of the Indian Ocean. The vast Indo-Pacific region consists of at least 38 countries, is home to more than 64% of the world's population, shares 44% of the world surface area, and accounts for 62% of the global GDP with more than 50% of global trade traversing its waters (Prabhir). India's definition of the Indo-Pacific region extends from the western coast of North America to the eastern shores of Africa. As part of its advancements in the east under the Look East Policy, now known as the Act East Policy, India has developed its 'foreign and economic policy vision' for the Indo-Pacific region.

A new region of geostrategic significance is coming to the forefront, propelled by the shared interests of several powers, each pursuing its distinctive geopolitical and geo-economic goals. In the coming

decades, politics over resources will be dominated by strategic competition in the region's maritime and blue economy. The current diffused power distribution in a post-pandemic world order is witnessing a constant geopolitical churn amidst US-China rivalry, the Russia-Ukraine war, lack of supply-chain resilience and rising competition over limited resources. Especially since the pandemic, nations are seeking to go beyond unipolar or bipolar dynamics (US and China) of uncertainty and supply chain risks. (Bhaskar)

Former Japanese Prime Minister Shinzo Abe committed his nation to a 'free and open Indo-Pacific' (FOIP) vision in 2016 and former US President Donald Trump reaffirmed the FOIP strategy in 2017, with the goal of "safeguarding freedom for shared prosperity and rule of law". In India and Australia, the Indo-Pacific is basically considered as a prescriptive framing; with the pandemic [and India's border clashes with China in 2020] now clearly coaxing them to be more assertive now. And in the Association of Southeast Asian Nations (ASEAN), it is viewed as an "outlook" with a strong withdrawal from the China containment logic; thus, prefaced on "ASEAN Centrality" and equidistance from the US and China. Likewise, Germany and France have charted their Indo-Pacific strategies stressing middle-power co-operation on issues of climate change and regional governance. Pacific Island states have been most reluctant with the FOIP concept, which clearly demarcates a strategic choice between China and others (Wallis et al.).

Prime Minister Narendra Modi articulated India's Indo-Pacific conception as the SAGAR doctrine — 'Security and Growth for All in the Region', an aspiration that hinges on warranting prosperity for all stakeholder nations, governed by rules with freedom of navigation (Ministry of External Affairs of India). India announced the Indo-Pacific Oceans' Initiative (IPOI) in 2019 at the East Asia Summit in Bangkok to support a rules-based regional architecture built around seven pillars: maritime resources, capacity building and resource sharing, maritime ecology, disaster risk reduction and management, science, technology and academic cooperation, trade, connectivity,

maritime transport and maritime security. IPOI; going beyond traditional security threats and geostrategic concerns; is anchored in India's 'Act East' (focusing on the Eastern Indian Ocean and the Western Pacific) and 'Act West' (emphasizing on the Western Indian Ocean) policies (Saha and Mishra). It also incorporates environmental, economic and technology related challenges in the maritime domain.

India has collaborated with likeminded countries in the region having common goals and shared values — from the Pacific Islands to the archipelagos of the western Indian Ocean and off the eastern coast of Africa to arrangements like the Quadrilateral Security Dialogue (QUAD) with the US, Australia and Japan, the Supply Chain Resilience Initiative (SCRI) with Japan and Australia as partakers, and the India-France-Australia, the India-Indonesia-Australia, and India-Japan-US trilateral networks (Bhaskar). These are all reliable indicators of collaboration, which shall be cemented further in the post-pandemic world. Despite India's emphasis on creating tangible security and strategic alliances in the Indo-Pacific, discussions about the region's economic prospects have, in comparison, received little attention. However, building infrastructure and connectivity for a thriving "blue economy"—which is essential to the country's higher growth trajectory and post-COVID-19 economic recovery—is in line with India's tactical priority of ensuring peace, security, and prosperity in the region (as espoused through IPOI).

The Concept of Blue Economy and its Contours -

In simplistic terms, a Blue Economy is about oceans, water bodies and the resources they hold. A Blue Economy would be the aggregate of economic activities involving marine resources. The term "ocean economy" denotes the "dissociating of socio-economic development from ecological degradation". Hence, here, "optimisation of natural maritime resources within conservation parameters becomes principal" (Mohanty et al.). Colgan (38) has described the coastal economy as "all economic activity in the coastal region, and is therefore the summation of wages, output and employment in the region. Part of the coastal economy is the ocean economy, but the coastal

economy includes a wider set of economic activities." While, a marine economy is "horizontally integrated cluster industries which contain sectors like commercial seafood, marine science and technology, marine transportation, coastal tourism and recreation, marine infrastructure meant for a common market for the end products, using common technology or labour force skills" (Georgianna and Amaral).

The Economist Intelligence Unit in 2015 explicated that blue economy is synonymous to "greening of the ocean economy; a shift from the old, "brown" business-as-usual development model where oceans are perceived as a means of free resource extraction and waste dumping". A sizable portion of India's BE is made up of deep-sea extraction, offshore oil and gas, and fishing. India must take advantage of the vast potential of the ocean's natural resources, which can spur the economic growth of the country.

The majority of the nation's energy and gas are imported via sea routes; by the year 2025, it is expected that this need will grow exponentially. Only 1.5 million of the 2.3 million square kilometres of the EEZ that are accessible to India have been surveyed, and this includes both the Arabian Sea and the Bay of Bengal. According to the Indian Ocean Rim Association (IORA) Charter, although the region is not yet a pivot of Global Value Chains (GVC) oriented trade—the kind that drove the East Asian tigers' industrial success—trade in parts and components is rising in the Indian Ocean region (Jaishankar).

The central thesis of BE is that switching to a more sustainable economic model, encouraging a variety of developmental activity, such as the production of green energy, supporting ecotourism, fostering sustainable fisheries and transportation, etc., can improve the ecological well-being of coastal ecosystems. Coming to the Indo-Pacific, the region's governments have struggled to steer the tension between conservation and economics (Singh, 2021); despite a declared commitment to blue growth. Under the weight of populism, policymakers more frequently try to prioritise growth, which

they see as the drive for national development. People who work on social and environmental problems claim that the focus on "blue economic growth" has made it possible for the "usurpation" of public resources for private gain. The goal of this "anti-politics" is to keep social and environmental problems outside of BE's purview. (Barbesgaard).

There are scholars who justify the delinking of growth from the conception of Blue Economy —that is, to aim for 'de-growth' (Ghosh). Those in favour contend that efforts to maintain present rates of economic growth are having a negative impact on the environment. Environmentalists claim that the integrity of ocean systems is being compromised by an obsession with profits, in addition to the way that rapid development has hurt the cause of conservation. The haste "to equate consumerism with modernity" has undermined attempts to close the gap between development and conservation. (Singh).

The Blue Economy is made up of a colossal array of economic activities pertaining to the sustainable development of resources in the oceans, water bodies, coastal regions, and associated rivers in a way that guarantees inclusion, innovation, equity, and modern technology. Small Island Developing States (SIDS), experts, governments, international organizations, and media frequently use the phrase "blue economy," which is more recent and "subtly differentiated from the "ocean economy" in terms of nuance and emphasis." (Bhatia). Blue Economy was declared as a special focus area at the 14th IORA Ministerial Meeting in Perth. Its potential was evaluated for "generating employment, food security, poverty alleviation and for ensuring sustainability in economic models in the Indian Ocean". The conclusion of the first Ministerial Conference on the Blue Economy organised by IORA, held in Mauritius in 2015, called for harnessing maritime resources to promote economic development while maintaining sustainability. The Jakarta Concord and Action Plan (2017-21) led to the creation of the Working Group on Blue Economy. The latest December 2020 IORA Council of Ministers Meeting, hosted by the UAE, noted the cooperation possibilities in this sector especially

related to areas of fishing, shipping, tourism, disaster management and maritime safety and security. The Blue Economy has become a significant theme in recent years, and New Delhi is deeply committed to the success of the IORA (previously known as IOR-ARC).

India's Blue Economy Initiatives in the Indo-Pacific

The Prime Minister combined the security and development aspects in the announcement of the Indo-Pacific Oceans' Initiative (IPOI) and the SAGAR (Security and Growth for All in the Region) concept, which spans the entire Indo-Pacific region. (Gateway House). Support for a suitable framework for the advancement of the blue economy was also pronounced; it was premised on India's ambitious Sagarmala Programme, a USD 120 billion project to upgrade the nation's coastal and maritime infrastructure. This also took into account the security and development aspects of the blue economy, such as connectivity, port-linked industrialization, port modernization, and coastal community development. (Bhatia). Since then, India has taken the initiative to expand its collaboration with South Asian neighbours, ASEAN, BRICS, African partners, Australia, and Japan focussed on Blue Economy. The role of Indian think tanks like Research and Information System for Developing Countries (RIS), Observer Research Foundation (ORF), Vivekananda International Foundation (VIF), National Maritime Foundation (NMF), and Gateway House to boost public awareness about the issues involved in the research on blue economy has been crucial. NITI Aayog undertook a wide-ranging multi-sectoral study of maritime issues together with the Blue Economy.

An illustrative example is the significant role played by the Federation of Indian Chambers of Commerce and Industry (FICCI), a prominent national business chamber, in promoting awareness about the Blue Economy among its extensive corporate membership.. It conducted a number of business meetings in coastal India in recent years and kept in touch with allies abroad to support BE partnerships and projects, including Norway, France, Germany, and the EU (Bhatia). Indian venture capitalists and social enterprises have independently seized local opportunities, despite the fact that Indian business has not actively developed a company-specific plan for the Blue Economy. For

example, in 2017 Aavishkar-Intellicap Group, an Indian-origin, Singapore-based social impact venture fund, completed a USD 2 million investment in a fishing community in Sumbawa Island in the strategically vital Lesser Sunda region of Indonesia (Kripalani).

Business and strategic communities are now cooperating to seriously explore the economic potential (Bhatia). The most recent example of such fruitful deliberations was during October 2020-January 2021 on economic gains out of blue growth, when a series of six dialogue gatherings with the theme 'Quadrilateral Virtual Series on Blue Economy – India's Pathway to Sustainable, Secure and Resilient Economy' were hosted together by National Maritime Foundation (NMF), The Energy and Resources Institute (TERI), FICCI, and Konrad Adenauer Stiftung (KAS), comprising of a huge number of domain experts (Gateway House). A significant venue for advancing various aspects of regional cooperation is the Conclave of IOR's Defence Ministers, which is sponsored by the Ministry of Defence and the Ministry of External Affairs of India. (Bhatia). By raising investments in infrastructure construction, financing and human resource development, ocean governance structures, and other blue growth initiatives, the conventional blue economy sectors of shipping, fisheries and aquaculture, port development, etc., may be utilised to their fullest potential. (Gateway House).

In 2015, when the Sagarmala Program was launched, PM Modi repeated that "investing in the maritime industry is an investment not only in one's own future but also in the future of the earth and future generations" (Prime Minister's inaugural speech). In January 2021, at the formal inauguration of the Kochi-Mangaluru gas pipeline for the country, he gave a revised perspective on the blue economy and stated, "Blue Economy is going to be an important source of 'Atmanirbhar Bharat'." The IORA can advance this one-lane of regional cooperation and conservation to advanced levels of multisectoral collaboration through self-reliance and interdependence.

The Indian Ocean is home to major choke points and sea-lanes which are critical to global trade, linking major centres of the international economy in the North Atlantic and Asia-Pacific — 90,000 commercial shipping vessels form the backbone of international goods trade; and about 40% of the world's oil supply travels through strategic choke points of the Indian Ocean, also being a crucial source of mineral and fishing resources (Bhaskar). The blue economy has a 4.1% share in India's GDP, with enormous potential for growth (Prime Minister's speech). In addition, PM Modi compared the ocean economy to the blue chakra (wheel) in the Indian emblem to highlight its importance. By 2025, it is anticipated that the Indian Ocean will contribute about 20% of the world's GDP. (World Economic Forum). India's contribution to the expanding Indian Ocean economy will depend on its ability to manage geopolitical tensions, lower trade and investment barriers, enhanced port quality and logistics, and strengthened regional economic governance.

"ASEAN Centrality" of India's Indo-Pacific vision can consolidate deeper ties between India and the East Asian economies at bilateral and minilateral levels, irrespective of its non-engagement on multilateral platforms like the Regional Comprehensive Economic Partnership (RCEP) or Asia-Pacific Economic Cooperation (APEC) forum (Singh). India and the ASEAN region constitute one-fourth of the global population and their combined GDP has been estimated at over USD 3.8 trillion (Prime Minister's Address at 17th ASEAN Summit). India should think about assuming a determined role of leader in minilateral organisations like the Mekong-Ganga Cooperation and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), both of which include ASEAN member states. The significance of BE, Indo-Pacific, maritime security etc. can also be gauged by the fact that in August 2021, Prime Minister Narendra Modi chaired a debate, themed, 'Enhancing Maritime Security — A Case for International Cooperation' (The Hindu). The UNSC accepted a 'Presidential [India's] Statement' which reiterated that the United Nations Convention on the Law of the Sea (UNCLOS) establishes the legal framework for maritime activities (Prime Minister's Speech at the UNSC 2021).

PM Modi delineated a five-principle framework for the UNSC debate on Maritime Security in 2021. The first was eliminating barriers to maritime trade along with honouring the rights of the seafarers of other countries. Second, maritime disputes "should be resolved peacefully in accordance with international law"; for example, the way India resolved its boundary dispute with Bangladesh with maturity probably hinting that the same is required in the South China Sea where China has unilaterally enforced its claims over disputed waters and militarised islands. This was extremely crucial for endorsing mutual trust and ensuring global peace and stability. India reaffirmed the Shangri la spirit of a common rules-based order for the region here. The third principle proposed was that countries should come together to tackle maritime threats from natural disasters and non-state actors. India's role of a net security provider in the IO was pointed out in this context. Fourth, the maritime environment needs to be protected, highlighting pollution from oil spills and plastic waste. And lastly, PM Modi called for responsible maritime connectivity, required to boost maritime trade, with the development of global norms and standards (Prime Minister's Speech at the UNSC).

Such political and diplomatic attention on maritime security and blue economy highlight the relevance of a sustainable ocean economy in the era of global climate change. From such 'global to local approaches', nation-states will be able to enhance resilience of local indigenous communities as well as protect marine resources for inclusive development. However, geopolitical competition in the Indo-Pacific realm for regional and global primacy between major powers will inhibit multilateral cooperation over blue growth initiatives and this becomes the most important challenge for the Blue Economy Vision.

Challenges faced by the Vision of Blue Economy in the Indo-Pacific-

As Admiral Alfred T. Mahan rightly said, "Whoever accomplishes maritime supremacy in the Indian Ocean, would be a major player on the global scene" (Mahan). At the Shangri La Dialogue on 1 June 2018 in Singapore, India reaffirmed its key role in maritime security and cooperation, thus, committing to strengthen 'the Indo-Pacific Blue Economy'. Much has already been undertaken in

shaping the foreign policy, but the economic and environmental policy lags behind. A recent study of blue projects in Africa concluded that even as local governments sought to pursue marine development projects, coastal communities were majorly neglected (Yarwood). Famous examples being the progress of infrastructure-buildup at Kenya's Lamu port culminated in large-scale destruction of the habitat that the Kenyan government chose, seemingly, to overlook. The governments of Sudan, South Africa, Tanzania, and Mozambique did not include ecological and sociocultural issues in their BE plans either.

The key problem with BE is resources regulation, in particular, of ocean fisheries, wildlife, and seabed resources (Singh). Administrations have allowed fishing communities significant power to exploit fisheries in most of South Asia, the African coast, and the Western Pacific, which has resulted in both licenced and unlicensed fishing. Fish stocks have considerably decreased as a result of states encouraging artisanal fishermen to switch to mechanised fishing. (United Nations Conference on Trade and Development-UNCTAD). In light of such facts, the maritime ecosystem has been harmed by destructive fishing techniques like bottom trawling and seine net fishing. Similarly condemned for its emphasis on "resource abuse, and commercialization of open-access water bodies, and deep-sea fishing," India has also presented a draught fisheries bill. (Singh). Fishers' unions opposed the draft policy, calling it "production-driven, and based on capital investments". (Department of Fisheries of India) Marine pollution is another issue impacting the ecology of sensitive areas. Not only do freight and feeder ships' discharges of oil and residue contaminate the environment, but also an enormous amount of synthetic waste made on land is dumped at sea. (Singh). Due to the pandemic, masses of medical waste, particularly face masks, have been dumped into the ocean. Microplastics released in large quantities into the marine ecosystem are predicted to have negative effects on marine flora and fauna. (Selvakumar et al.).

Ocean governance has been inadequate in significant portions of the eastern and western Indian Ocean littorals, and "South Asia struggles with regulation and ocean finance" (Singh). Marine debris, one of the less talked about issues on the BE agenda, has recently come to light as a worrying problem and it has been made more complex by climate change. The oceans have had to handle the escalating uses from various sources, like the extractive industries, along with acidification, hypoxia, and chemical pollution; according to some estimates, for example, 8 million tonnes of plastic end up in the oceans every year. (United Nations Environment Program). However, the development of ports and resource exploitation remain the primary concerns of Asian states. The centrepiece of New Delhi's BE initiative, the Sagarmala project in India, places more emphasis on building infrastructure than on sustainable growth (Iyer). A recently announced "deep sea mission" appears to be intended to promote deep-sea mining at the expense of marine protection.

Certainly, there are opposing features in the drafting process of the Draft Blue Economy Policy Framework. Such blue laws must, on the one hand, encourage investments in new ocean economic sectors, generating new commercial opportunities, infrastructure, and jobs. On the other hand, BE policies must protect the current marine ecosystems and reduce overfishing, pollution, and habitat destruction. The Maldives serves as a good illustration of this conundrum. The Maldivian government made the decision to invest in high-end beach tourism in 2016, as it started to expand economic possibilities through a "Blue Model," reclaiming land to erect hotels on some of the nation's numerous coral atolls. During this time, there was a serious coral bleaching event brought on by the El Nino phenomenon, which spread warm water across the oceans. (The Guardian). The Maldives government changed its priorities to emphasise environmental protection in response to complaints from local organizations, even managing to save some coral reefs that had been damaged. The Great Barrier Reef was considered to be an endangered natural site by UNESCO's World Heritage Committee in July 2021. Committee members noted that the Australian government was

unable to prevent mass coral bleaching events because of increasing ocean temperatures and global warming (Singh).

The idea of 'Blue Economy' is still an emerging concept, intended at livelihood generation and building resilience against climate change and its affiliated environment challenges, encourages the use of seas for inclusive growth and sustainable development (International Union for Conservation and Nature). Indian Ocean Region's (IOR) contribution to global GDP has substantially risen from the past century; "yet only three IOR countries—i.e., Australia, Singapore and United Arab Emirates—are counted among the top 20 nations with highest per capita Gross National Income" (World Bank). If nations (especially those in the Indo-Pacific) look at the oceans as "shared development spaces", the concepts of "marine economy", "coastal economy" or "blue economy" etc. are at a nascent stage. The need for stronger regional cooperation which enables them to unlock the potential of the blue economy in a more sustainable way is driven by the growing competition among the IOR nations over marine resources for their development.

Due to a lack of ocean literacy, many Asian and African countries have not made investments in a skilled workforce to carry out BE initiatives. Additionally, there is lacklustre technical advancement and innovation in key industries, and infrequent field testing of BE models (Singh). Due to the lack of clarity among states on the overall definition of the Indo-Pacific, the advantages of trade, tariff reduction, and investment models have not been as thoroughly examined and studied. Consequently, the study on statistical models that evaluate the components of "blue growth" is still in its infancy. This is partially explained by the fact that national administrations are still developing their ideas about the Indo-Pacific and related components of the blue economy.

Successes, Limitations and the Road Ahead

The conception of 'Blue Economy Model as a Regenerating Model' and not a recycling one was first pronounced by Gunter Pauli in 2010 (Pauli). It was later deliberated at the United Nations

Conference on Sustainable Development, Rio+20 in 2012. Numerous IORA states have pushed for improved BE governance and increased collaboration ever since it was first proposed. For its part, Bangladesh was the first nation to hold a significant conference in 2014 that placed a strong emphasis on a Bay of Bengal partnership for the Blue Economy. As a result of Prime Minister Narendra Modi's SAGAR Doctrine, which focuses on the preservation of shared marine spaces, BE has since taken centre stage in India's strategic vision. Future shipping and transit in the Indian Ocean (IO) will be significantly impacted by China's Belt and Road Initiative's (BRI) component known as the Maritime Silk Road Initiative (MSRI).

Major oil producers in the northwest corner of the Indian Ocean, natural chokepoints like the Strait of Malacca and the Strait of Hormuz, and a sharp rise in piracy near the Horn of Africa (especially Somalia) have all resulted in various combat operations from the US, India, and the EU, with other IOR countries like Seychelles and Bahrain contributing their national ports for the operation (Tapan). The port infrastructure of the Indo-Pacific area varies depending on the region, though. As an illustration, only three ports—Singapore, the United Arab Emirates, and Malaysia's Port Kelang—handle bulk of the cargo in the Indian Ocean (UNCTAD). To maintain the base required for shipping and transportation, investment in port expansion and improvement will continue to be a significant problem; this is where India's SAGARMALA scheme for building maritime infrastructure comes in. Communication, logistics, and supply chain problems brought on by underdeveloped "blue assets" may delay trade and impede trade integration. Additionally, the Sino-Indian rivalry for regional supremacy has prompted both countries to engage in transportation infrastructure projects, but this has also resulted in some regional fragmentation and restricted cross-border cooperation.

Blue Economy has the capacity to be used for deep-sea mining in the Indian Ocean in addition to energy supplies. India recently began a Deep Ocean Mission to search for polymetallic nodules and other resources of this kind because the oceanic crust is a potential source of metals like nickel,

cobalt, copper, and manganese. There are still only a few commercial-scale mining operations which is hampered by a number of technical issues, including expensive and complex infrastructure. The proliferation of BE initiatives is obstructed by overfishing, IUU fishing, and other problems, and the majority of environmental organisations are actively campaigning against many potential BE industries. Despite some attempts at international cooperation (such as the Indian Ocean Tuna Commission), the creation of Marine Protected Areas (MPAs), etc., constrained government capabilities, relatively new, understudied industry approaches like aquaculture, etc., and competing interests can impede sustainable "blue growth" (Tapan).

Ecotourism has been embraced as a means of funding conservation studies, safeguarding vulnerable ecosystems, and supporting the development of underdeveloped nations. As a result, many IO SIDS, including the Maldives and Mauritius, have hailed ecotourism as a component of their economic development strategy. However, ecotourism is also becoming unsustainable due to rising marine pollution, overstretched and stressed marine assets and habitats. Calls have been made for promoting a more reinvigorated variety of "sustainable tourism"; albeit with confusion in interpreting both "ecotourism" and "sustainable tourism" as environmentally more viable.

This is not to say that BE success tales have not been documented. SIDS in the Indian Ocean have demonstrated their capacity to use ocean resources sustainably while fostering social inclusion, employment creation, and economic growth, as well as the recovery of ocean ecosystems. For instance, Seychelles successfully negotiated the first-ever debt restructuring for climate resilience and launched a trailblazing sovereign blue bond. (Sustainable Development Goals Hub). A plan to bolster aquaculture, marine biotechnology, and renewable energy while consolidating tourism, seaports, and fishing industries has also been revealed by Mauritius. But for the overwhelming majority of Indian Ocean and Pacific states, the "Blue Economy" remains an unrealized dream with

unrealized potential, necessitating urgent and thorough government attention in addition to maritime security.

Brahma Chellaney warns, *"[t]here is a danger that interstate conflict in the IOR in the coming years could be driven by competition not so much over political influence as over scarce resources"* (Chellaney). In order to guarantee sustainable administration of marine resources, it is therefore immediately necessary to handle regional stability and the numerous stressors on resources brought on by global warming and environmental degradation. Despite ongoing research, the biodiversity of the Indian Ocean is still largely unknown and this impacts the precision of research models used to guide conservation endeavours, ocean regulation and governance, and circular economy initiatives. Over 40% of the world's offshore oil comes from the Indian Ocean, and heavy-in-minerals beach sands are currently mined in India, Indonesia, Sri Lanka, South Africa, and Thailand (Keesing). The area also undergoes exploitation from fishing fleets of non-Indian Ocean countries (especially South Korea, Russia, Japan, and Taiwan) adding to the pressure exerted by countries within the region (Wafar et al.). As a result of mangroves being harvested for fish traps, firewood, animal feed, pulp production, and construction material, numerous mangrove habitats have already been destroyed. Additionally, trawling, dredging, and sediment loading are linked to the decline of seagrass habitat. (Wafar et al.). Further research is also required on supplementary threats to biodiversity from various blue economy approaches.

Environmental considerations are also of utmost importance when engaging in certain "blue growth" activities, such as mineral extraction from the seafloor. Although certain guidelines have been published in this area by subject matter experts, there hasn't been much significant research and it's currently unclear on how to reduce the detrimental effects of many such resource exploitation activities. To practise and promote balanced, sustainable development of "blue economy" activities, collaboration must exist between environmentalists, trade analysts, policy-makers, and the private

sector (Tapan). Additionally, because BE and the Indo-Pacific both represent emerging concepts, a more thorough and in-depth analysis is needed to eliminate abstruse and redundant terminologies, and to introduce distinct, defined concepts that will allow for the conducting of research in a more coherent manner.

Only strong social infrastructure (education and health) and economic development in sectors like power, water and transport in the Indo-Pacific region can restore economic growth. India should give special consideration to creating a Ministry of the Blue Economy with an operational institutional framework for seamless coordination and supervision. (Blue Economy Vision 2025). This will bring together under a single umbrella all aspects of a blue economy, including security, connectivity, naval acquisitions, maritime commerce, energy requirements, transportation, fisheries, and marine exploration (Singh).

Conclusion

The principles of BE—protecting the marine environment, promoting marine-led economic development, and enhancing maritime security in all national and regional indicators—are clearly going to have a significant impact on regional foreign policy in the decades to come. Therefore, the concept holds specific significance to the Indo-Pacific since the region is defined by "maritime regionalism", in quest of similar geopolitical aims. The Indo-Pacific littoral nations are currently united by a variety of bilateral and multilateral mechanisms. However, they have a narrow scope and don't include every relevant stakeholder. The IORA, for example, is the most exhaustive arrangement that unites the entire area under one forum, comprising 21 member states and numerous global economic and military powers. India, together with the recent two chairs of IORA- Bangladesh and Sri Lanka- should consider holding a comprehensive Regional Conference on the 'Business Perspectives of the Blue Economy' to further the vision of inclusive development via the Indian Ocean sustainability.

However, the IOR and the Indo-Pacific region's efforts to handle issues like food security, biodiversity conservation, and ecosystem management are hampered by the lack of cogent governance tools in the current architecture. The varying political, economic, geographic, and cultural characteristics of the region's countries have so far stymied the growth of regional institutions. The community of coastal states will need to work closely with other stakeholders, including the business sector, non-governmental organizations, the scientific community, and local communities, to achieve blue economy objectives. (Roy).

The rising great power rivalry between the United States and China must be monitored in the Indo-Pacific area. Many middle powers like Australia, Japan, the UK and ASEAN nations find themselves in a muddle of geostrategic competition and struggle for a potential balance of power. As a rising power, India needs to supplement its own blue economy initiatives in the larger geoeconomics of the region to facilitate cooperation amidst the ensuing power struggle. As a major Indian Ocean littoral state, India needs to balance both the geopolitics and geoeconomics of the region. In this regard, a sustainable blue economy provides a way forward to preserve security and stability in the turbulent seas of the Indo-Pacific.

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Towards a Sustainable Bay of Bengal Region: A Divergence from Regional Security to Human-Environment Sustainability Approach

Dr. Marufa Akter and Subaita Fairooz

Abstract

States have often focused on traditional security issues to preserve regional security. This paper highlights the main causes and consequences of climate change and global warming in the Bay of Bengal region and its littoral states. It also provides evidence of how climate change transcends state boundaries to give rise to insecurities. The objective of this paper is twofold: first, to redefine regional security for the states in this region, and second, to (re)define sustainability in the era of climate change. The study is qualitative, and secondary data has been collected from various sources. Due to climate change, vulnerable communities living in the littoral states will continue to suffer greatly if human security issues are not considered. What is needed today is a shift from economic development that ignores environmental issues and a regional security mechanism that discounts human experiences in favour of a governance structure that explores new sustainable development practices and improves the adaptive capabilities of vulnerable communities. The study concludes by providing policy recommendations particularly the need to develop a regional governance structure founded on normative principles of protecting lives and livelihoods of vulnerable individuals and the environment that sustains them.

Key Words: Traditional security, non-traditional security, human security, Bay of Bengal, human-environment nexus, sustainable development

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Introduction

For the purposes of this paper, non-traditional security threats are characterized as those that cannot be tackled through military force only. The term non-traditional security threats encompass a burgeoning number of international issues, such as transnational crimes, environmental degradation, global pandemic, and refugee crises among several others. While each of these issues deserves further investigation, the main concern of this paper is climate change and the national security threats resulting from it.

Even though climate change poses significant national security challenges, states in the Indo-Pacific, especially in the Bay of Bengal region, are concerned more with the improvement of their respective states' military and economic capacities. The Bay of Bengal Initiative for Multisectoral and Technical Cooperation (BIMSTEC) is an initiative that looks at regional integration as an engine of economic growth and means of strengthening the international competitiveness of the member states. We define the Bay of Bengal region as one that includes the member states of BIMSTEC but also states, like China, that have vested economic and military interest in the region. The states in the region focus on economic development but this is too narrow because unsustainable development comes at a detriment to the environment due to the depletion of natural resources, emission of harmful greenhouse gasses, and unplanned urbanization, among others. Not only that, but it is narrow because states look towards domestic solutions for security threats when climate change requires combined regional action (Chaturvedi and Sakhuja). Moreover, a weak regional governance structure and, internal and external political struggles between the countries in the region have resulted in abject neglect of the most vulnerable populations, who are now set to face the full brunt of the impact of climate change. For the purposes of this paper, the states affected by environmental changes in the Bay of Bengal will be the main units of analysis. These include the seven BIMSTEC member states (Bangladesh, India, Myanmar, Thailand, Bhutan, Nepal and Sri Lanka) and also China given its rich economic and political ties with both South and Southeast Asia.

Climate change is an observable phenomenon in the Bay of Bengal. In the last 45 years, there has been an increase in sea surface temperature from 0.2 degree Celsius to 0.3 degree Celsius with a projected increase from 2 degree Celsius to 3.5 degree Celsius by the end of the 21st century (Rajalakshmi and Achyuthan). A warming of sea surface temperature indicates an increase in sea levels and by 2050 the sea level is expected to rise 37 cm (Rajalakshmi and Achythan). As further evidence in the paper will show, these are not the only climate change-related events posing a risk to the region. Despite several warnings from climate change experts and environmental science scholars, environmental security in the Bay of Bengal region has rarely been on the agenda of the states, particularly how ecological security may be achieved through regional cooperation and governance. Only recently have the countries begun to explore the marine resources needed for development, which caused the advent of the blue water economy, and moved towards regional cooperation to improve maritime security (Pattanaik). Since the end of the Cold War with the collapse of the former Soviet Union, regional security is now beginning to take a different form.

Regional organizations, like the European Union (EU), have brought to the forefront the preservation of the environment as a means to strengthen the European countries' economies and preserve their natural capital. The EU Green Deal, for instance, lays out plans on how to reduce the emission of greenhouse gases by 2050 and to decouple economic growth from resource usage (European Commission). Furthermore, the document lays out the importance of protecting individuals from any harm caused by environmental factors while ensuring the transition is inclusive and just (European Commission). The EU's commitment to sustainable development was legitimised because of the politically and ecologically motivated framing of the EU Green Deal disseminated through the European Commission (EC) and various media channels (Ecket and Kovalevska). As discourse surrounding a particular policy issue grows, it allows the formation of an epistemic community (or cognitive community) (Rittberger et al.). These communities are characterized by professionals from different backgrounds producing relevant policies and knowledge on complex and technical issues

(Haas). Such a legitimate policy initiative regarding the environment has yet to materialize in the case of the Bay of Bengal region and therefore, the region lacks a robust cognitive community. BIMSTEC should be the natural platform for the negotiation and formulation of such a plan to protect the environment and the vulnerable population since one of the 13 sectors under its policy objective is environment and disaster management. However, since its inception in 2018, no such initiative has been taken by the organization. Instead, what has materialized is once again traditional concerns about economic development as signified by the BIMSTEC Free Trade Area Framework Agreement (BFTAFA).

A narrow focus on economic development and military issues is detrimental to the environment and the vulnerable population that inhabits the coastal areas of the Bay of Bengal. Therefore, this paper will highlight the main climate change issues and their impact on the Bay of Bengal and its littoral states. It will also provide evidence of how climate change transcends state boundaries to give rise to insecurities. The main objective of this paper is twofold. First, to redefine what regional security should mean for the states in this region given that we are in an era of climate change. Second, to (re)define sustainability to forge a path where we bring the human-environment synergy into states' security agendas. As such, the study will adopt the security concept as redefined by Sanjay Chaturvedi and Vijay Sakhuja (2015) while also incorporating Mahbub ul Haque's human security concept. The paper also argues that states' conception of national security in terms of their own economic development is outdated and too narrow because climate change requires regional cooperation not only to protect the environment but also to address adverse impacts on the lives of the people. The member countries have yet to materialize the human-environment sustainability approach in the region.

This is a qualitative case study of the Bay of Bengal and its littoral states. It proceeds by first mapping out the Bay of Bengal region, including its ecological aspects. It then outlines the theoretical framework which defines what regional security is in a traditional sense as opposed to

how it should be defined. Then we turn to the regional security challenges that are faced by this region and the gaps that exist in the ecological governance structure. Finally, we conclude by providing a solution for improving ecological governance and sustainability by bringing human-environment synergy into mainstream security discourse.

Mapping the Bay of Bengal: Geographical, Ecological, and State Relationship

Geographical and Ecological Mapping

The Bay of Bengal connects important Southeast Asian countries like Myanmar, Indonesia, Thailand to the Andaman Sea, and Malacca Straits. As the Malacca Straits open to the South China Sea, East Asian countries like China and Japan also have vested strategic interests of ensuring of international trade passes smoothly through the region. In the north lies Bangladesh, one the world's largest delta, and the large rivers of Ganges, Brahmaputra, and Meghna all flow out into the Bay. The rivers of Bangladesh form a natural and rare 'mountain to sea' ecosystem because of the connections they create between the Bay and the landlocked states of Nepal and Bhutan, and the North Eastern states of India (Dutta). The Bay of Bengal is the largest bay in the world stretching over almost 2.2 million square kilometres.

Furthermore, it sustains rich aquatic and terrestrial wildlife as well as vegetation in (for example) the Sundarbans mangrove forest which spans part of Bangladesh, India, and Myanmar. Therefore, geographically, the Bay connects the countries along its coastlines and its littorals to form a solid maritime sub-region through both economic activities and ecological importance. As such any climatic and ecological issues arising in the Bay of Bengal will have a widespread and devastating effect on the inhabitants of the littoral states of South Asia and Southeast Asia. During colonial times, the Bay allowed the nations to foster close relations: cultural cosmopolitanism flourished, and the economic activities and military movement resulted in the nations becoming closely knit. However, as the colonial bonds tying these countries began to break apart, the Asian region was

divided into the Eastern half, known as Southeast Asia, and the Western half—South Asia (Agarwala and Saha).

Still, through the years there are various reasons for the Bay of Bengal to have retained its importance. The first is that it sustains 37% of Asia's population (Brewster, 2014). Second, due to the Bay's strategic location, together with the Malacca Strait, it is used for one-third of the global trade and transporting 82% of China's oil imports (Brewster). In 2016, BIMSTEC accounted for $2.7 trillion in GDP; the region sustained a global population of 21%, and contributed to 7% of intra-regional trade (Kelegama). The possible consequence of such a reality is that two of Asia's rising powers—China and India—compete for greater control over the 'energy resources, shipping lanes, and cultural influence in the region' (Agarwala and Saha, 1). Other scholars also agree on how the Bay of Bengal being situated in the Indian Ocean and the rise of India as a major power in South Asia puts the Bay at the epicentre of power struggles and conflicts of the future (Kaplan, 2010). The other reality, more salient in this particular paper, is how climate change is likely to impact the lives of the vast majority of vulnerable individuals living in densely populated coastal areas in and around the Bay (Amrith). The issue of climate change is compounded through developmental and economic activities, and so it has rightfully emerged as a significant concern in world politics and economics along with regional security and stability because of the transboundary nature of the problem. Therefore, it is imperative to look beyond the traditional security concerns that the states in this region have often intensely focused on (primarily stemming from bi-lateral contentious issues) to non-traditional security concerns that are equally important to the states' survival.

Problematizing States' Relationships

Realist scholars like John Mearsheimer (2001), Kenneth Waltz (2000), and John Kirshner (2010) have often focused on states like the United States, Russia, and China when discussing great power rivalries and traditional threats to national security. South Asia and Southeast Asia have long been

ignored by traditional theories of international relations, like realism because national security threats are not characterized by great power rivalries. Instead, the security issues in these regions are more nuanced and specific to the region itself. Much of the rivalry between the states arose out of the artificial demarcation between states that occurred during colonial times. However, over the years, several other security issues, like territorial disputes which emerged due to colonial decisions, continue to impact adversely bilateral relations. For instance, the constant fighting between India and Pakistan in the Kashmir region often heightens the tension between the two states. Similarly, the 1971 Independence War between Bangladesh, India, and Pakistan is a historical grievance. The massacre of Rohingya refugees in Myanmar, and their subsequent exodus to Bangladesh in 2017, seems to have had an impact on the relations between the two states. Even though the international community has pressured Myanmar to try to solve the Rohingya issue more constructively, the state has not reacted favourably, resulting in a growing distrust between Myanmar and Bangladesh (Banerjee).

Currently, there are also ongoing challenges regarding the natural waterways of Asia. South Asian countries receive most of the water from the Ganges-Brahmaputra-Meghna river basin (Akter, 2016). However, the sharing of the Brahmaputra's water involves not only Bhutan, India, and Bangladesh but also includes China as a part of this river basin.

The main point about these forms of non-traditional security issues is that they directly impact the lives of people. Nearly 451 million people depend on these rivers directly or indirectly as a source of fresh water to survive (Mirza and Ahmed). With the rising demand for water due to climate change pressures (which will be discussed more broadly in subsequent sections), countries tend to divert water for their needs despite bilateral agreements between them (Akter).

Most analyses are focused on the bilateral relations between states and how the rivalries between particular states impact traditional and non-traditional security in South Asia and Southeast Asia

(Buzan; Khan; Khan; Rabie & Haasan). This paper attempts to look beyond the South, Southeast, and East Asia dichotomy because states from each of these regions have a vested interest in the Bay of Bengal and the large marine ecosystem that it sustains, as do the vulnerable populations living there. Hence, in talking about state rivalries in the Bay of Bengal region, one also needs to take into consideration the hegemonic tussle between India and China. Ultimately these forms of rivalry make it increasingly difficult to create a governance structure that can bring about sustainable development by responsibly using scarce natural resources.

The reason why the Bay of Bengal is beginning to gain more salience in geopolitics is that China is beginning to look for alternatives to the Malacca Straits (Samaranayake). Recently, China has amped up its economic relations with the littorals of the Bay of Bengal, especially Bangladesh and Myanmar, in the form of infrastructure developments, like the Myanmar-China Gas Pipeline. The China-India rivalry in the Bay of Bengal also manifests itself in Burma because it can grant access to the Bay for both countries to develop their landlocked areas (Samaranayake).

However, in all this geopolitical humdrum and distrust between these states, the effects of climate change on the ecology are greatly ignored.

While the 'mapping' of the Bay has generally been concerned with the 'physical-material-resource geographies,' what is also of paramount interest today is to explore the 'details of human-ecological-cultural geographies' (Chaturvedi and Sakhuja, 21) to determine the kind of challenges climate change poses to the people of this region. However, the trans-border nature of climate change now poses a serious challenge to long-held notions of what security means to the states in the Bay of Bengal region. As Chaturvedi and Sakhuja aptly put it, if nations as described by Benedict Anderson, are just imagined communities, then what is now needed is a 'different set of imaginations' which go beyond the state or national boundaries and aims to alleviate the negative impacts of climate change within the human security paradigm (Chaturvedi and Sakhuja, 19). If left unchecked, human

insecurity can threaten national security through protests and civil unrest (Chaturvedi and Sakhuja). As Kanti Bajpai notes, the importance of human security studies is derived from the fact that the mapping done by neo-realist or statist viewpoints is   inadequate; hence, "a human security audit, done systematically and rigorously" will allow the mapping of a vast area of human experience that at present remains unmapped (Chaturvedi and Sakhuja, 214-15).

Evidence and Impact of Climate Change in the Bay of Bengal

To understand the importance of sustainable development this section will delve into the evidence of the immediate existential threat climate change poses and its impacts in this region. The United Nations Environment Program (UNEP) identifies climate change as a 'threat multiplier' worsening fragile situations with the potential to cause social friction and violent uprisings. It can potentially aggravate human security brought on by poverty and deficient institutions, increase community hostilities, and reduce access to resources (UN General Assembly). As Zhang et al. (2019) aptly put it, climate change should be considered one of the factors among several others with the potential to cause violence, conflict, and migration.

The Intergovernmental Panel on Climate Change (IPCC) 2015 report stated how the increased emission of greenhouse gasses like carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and other gasses have caused global warming and extreme weather conditions like droughts, irregular rainfall patterns, floods, including the melting of the Himalayan glaciers, floods, and sea level rise. Even a moderate rise in temperature could adversely affect the environment (Roy and Haider; Stern). An increase in temperatures will tentatively lead to greater stratification thereby reducing the flow of nutrients to the surface of the Bay and reducing its productivity. Climatic disasters not only threaten to displace people from their homes but can cause fatalities of staggering magnitudes for countries in this region.

The sea-level rise is expected to be from 0.5 meters to 1.7 meters and this will undoubtedly increase the depth, area, and wave height of the floods in coastal areas of Bangladesh (Kay, Caesar, and

Janes). Following the intensity of floods in the Bay of Bengal region, particularly in the Ganga-Brahmaputra basin increases, it is projected that almost 125 million people will become homeless, out of which 75 million would be from Bangladesh; another 70-80 million migrants from Bangladesh will become climate refugees in India (Arefin; Sharalaya). This may intensify the bi-lateral relationship between the countries in the region and lead to conflict (Mehta and Kumar). A statistical demonstration of this phenomenon has been shown by Schleussner et al. (2016) through the analysis of the rate of armed conflict and climate-related disasters. The correlation between armed conflict and climate-related disasters are relatively high in societies where tensions between ethnic communities persist and the probability of armed conflicts occurring increases. Both Bangladesh and India have large ethnically diverse communities, conflict-ridden areas, and climate-vulnerable zones, making them high-risk countries for violent uprisings (Mehta, Kumar, and Lal). As Gleditsch, Nordas, and Salehyan (2007) observed, whether or not a violent uprising will occur and the extent of human migration, will both depend on the level of environmental degradation. It will further depend on equity and vulnerability levels and the adaptive capacities of the communities (Chaturvedi and Sakhuja).

Beyond violent extremism and conflicts driven by human migration, people's health will also suffer. This is due to water, air, and land pollution which are the main purveyors of various diseases, and give rise to food and water scarcity, malnutrition, displacement of people and bring changes to their livelihoods (Haque, Yamamoto, Malik and Sauerborn; Kabir, Rahman, Smith, Lusha, and Milton; Nahar et al.). Water scarcity is an issue that can have several different security implications because at present the bilateral relations between India and Bangladesh suffer due to water availability issues in the Ganges-Brahmaputra-Meghna river basins. Both countries support large agrarian societies and so are heavily reliant on the sufficient flow of water. Climate change pressures threaten to worsen the situation and put people's livelihoods at risk.

At the same time, fisheries that grew in the Bay of Bengal are at risk of being severely depleted; species that were once in abundance have disappeared; and those at the top of the food chain, like sharks, croaker, and rays, have been hit the hardest (Ghosh and Lobo). This will impact the livelihood of fishermen in this region who are some of the poorest in the world. For example, 61% of India's fishermen live below the poverty line, yet the percentage of people dependent on the revenue generated through fishing is likely to go up in the coming years (Ghosh and Lobo). In addition, many of the security problems persisting in the Bay of Bengal region are (a) the freedom to navigate through the Bay and the Malacca Strait; (b) maritime boundary disputes regarding states' access to energy resources; (c) separatist insurgencies in almost all the littoral states; (d) piracy, smuggling, and trafficking; and (d) natural disasters, like tsunamis, cyclones, and anthropogenic problems resulting in sea level rise (Brewster). Most, if not all, of these are human security concerns.

It is not possible for a single state in the region to tackle all of these multi-faceted challenges, hence a concerted effort among them will determine the extent of climate change. Unless environmental security is taken into consideration, states will be unable to protect their national security. Moreover, the movement of climate refugees will threaten different types of human security by giving rise to, for example, increased smuggling, trafficking, and the movement of illegal drugs. In a study of West African states, it was found that the effects of climate change created and exacerbated the issues which allow organized criminal networks to continue operating (Seiyefa). Therefore, it is not farfetched to propose such a result may also become visible in the Bay of Bengal region. If the Bay is able to support and sustain robust economic activity even for large and powerful states like China, its degradation can have more severe devastating impacts on vulnerable populations. For example, when the earthquake-induced tsunami hit the Indian Ocean in 2004, 300,000 people were killed and almost 5 million were displaced (Chaturvedi and Sakhuja). A vast majority of the lives lost and 12% of economic damage occurred in the coastal regions of Bangladesh, Indonesia, India, Maldives, Myanmar, Sri Lanka, and Thailand.

The responsibility to preserve environmental security and hence human security falls on all the states with a vested interest in the Bay of Bengal. For instance, Bangladesh discovered 17 to 103 trillion cubic feet of ice-like hydrate deposits which contain large amounts of natural gas, an important source of energy for the country, in the Bay of Bengal (Sajid and Siddiqui). The Bay as a source of natural resources is not a new concept given how India and Myanmar have been tapping into them for a couple of decades now. With the growing importance of the Bay and the region, there is now a greater possibility for new infrastructure to be developed in order to make use of these resources. Whether these will be sustainably harvested, is an issue rarely discussed by and between the states. States need to look forward to new adaptive strategies through coordination with each other to build resilience among vulnerable communities and increase their adaptive capacities (MacPherson). Climate change threats could create an opportunity for the states in the Bay of Bengal region to be able to move beyond the traditional concept of security paradigm and benefit from each other on matters of human security thereby strengthening regional security.

Redefining the Concept of Regional Security

The Regional Security Complex Theory was first proposed by Barry Buzan (1991) and further developed by Buzan and Ole Waever (2003). The theory suggests that regional sub-systems are important objects of security analysis and provide an analytical framework to deal with them (Buzan, 2000). The focus of the theory has solely been on the state, and its political and military sectors, as being the primary source for security relations. One of the main contributions of this theory is that it brings to the forefront the importance of the regional level in international security studies and offsets the neorealist viewpoints which tend to largely focus on the power structure at the system level (Buzan). Buzan and Waever define regional security complex as: "a set of units whose major processes of securitization, desecuritization, or both, are so interlinked that their security problems cannot reasonably be analyzed or resolved apart from one another" (Buzan and Waever, 44). The fundamental logic of the theory stems from how states in the global system face security

interdependence but given how political and military threats tend to travel with relative ease over shorter distances than longer ones, states' insecurity is connected to geographical proximity (Buzan). The regional security dynamics gets more complicated as they are often affected by historical factors, such as colonial legacies, hostilities between states, or common cultural and traditional factors. Often regional security complexes highlight rivalry between states and the struggle for power among the major powers in the region, which are then influenced by external power dynamics (Brewster). Regional security complexes in South Asia, Southeast Asia, Middle East, and in Europe have often been studied separately (Buzan, 1983; Buzan and Rizvi et al; Buzan; Buzan and Waever; Waever et al.). In the case of the Bay of Bengal region, applying the regional security complex theory means taking into account all the states with vested interests in the Bay and moving beyond the regional boundary or identity of South, Southeast, and East Asia. This has begun with the inception of BIMSTEC but needs to become more active in the environmental arena.

Some scholars prefer to place environmental problems within the traditional national security framework whereby the military is seen as the main provider of security to the environment due to its organizational capabilities (Butts). As Chaturvedi and Sakhuja (2015) posit, it will be difficult to completely dispel this dominant narrative or to deny the close linkage between security and a state's armed forces. At the same time, though, the traditional roles of the military can be transformed to address climate-related non-traditional security threats. Nevertheless, other scholars strongly argue that what is needed is to locate environmental security in the wider framework of human security mainly because state-centric approaches to security are inadequate and issues such as equity and impacts, are not stopped by state lines (Dalby). Indeed, involving the military in such issues tends to blur the lines between geopolitical security and human security which can result in states becoming more hostile and suspicious of each other. Regional cooperation between states tailored towards ameliorating the negative impacts of climate change needs to be further explored.

Geography as a fixed stage upon which a struggle for power between states takes place no longer holds merit in climate change because anthropogenic causes of environmental degradation do not abide by the demarcated state lines   (Chaturvedi and Sakhuja). The ecosystem of the Bay of Bengal transcends state boundaries thereby calling for regional and sub-regional cooperation and a shift in an outdated view of 'geography' and 'politics' is much needed (Chaturvedi and Sakhuja). Security discourses focus almost solely on the most traditional national security concerns, particularly how environmental degradation can trigger conflict between states (Homer-Dixon; Myers). But a far more probable outcome of environmental-induced security issues will not be so direct but rather more multifarious (Lowi and Shaw). There is also a lack of understanding of how its effects can cause internal problems. The Syrian War is a prime example of how anthropogenic climate change-induced drought fuelled the unrest in Syria, leading to a full-blown civil war (Selby, Dahi, Frohlich, and Hulme). For a politically volatile region like the Bay of Bengal, its preservation is of utmost importance. However, the more imminent issue is how climate change can devastate the 1.4 billion people who live in the coastline of the Bay of Bengal (Xavier and Baruah).

What has almost always slipped under the radar in terms of non-traditional security discourses are 'considerations of equity, differential vulnerability' and the different 'adaptive capacity' of the various communities in the Bay of Bengal region (Chaturvedi and Sakhuja,15). Undoubtedly, the different climate change-induced challenges will affect different communities to different proportions depending on their adaptive capacities. At the same time, communities or groups may react in different ways to the change, hence the dynamics between them will be negatively affected and complicate the decision-making process on how to adapt to the change (O'Brien and Leichenko). Moreover, there are great economic differences between the countries and within them as well, which means it will be difficult to maintain equity if the ground reality of these communities is not correctly understood.

As Amartya Sen (2009) posited, 'the impact of the environment on human lives must be among the principal considerations in assessing the value of the environment.' Moreover, in the pursuit of development, human activities may cause destruction to the environment, however, humans are still capable of improving and enhancing their environment (Sen). Other scholars like Timothy Doyle (2005) have argued that the view of the environment as something that is just 'out there' ends up alienating the inhabitants of that area and it is problematic to privilege nature over the communities it sustains. By evolving the term environment also to include human-centric concerns will allow for it to hold more significance to the millions of people who live in this large marine ecosystem (Bavinck and Salagarama). Not bringing communities into the regional security paradigm puts those vulnerable and marginalized communities at a greater risk which can be a reason for further regional conflict as discussed previously.

Regional Governance: The Path to Sustainable Development

This paper argues that sustainable development can mitigate the impacts of climate change and turn it into an economic opportunity only if states are willing to create a governance structure whereupon they discuss and negotiate possible solutions. Rittberger and his colleagues (2006) created a model of three conditions: Problem, Cognitive and Hegemonic conditions (Andreatta and Archibugi) which would be necessary to create an international organization. In an anarchic world system, international organizations appear to be the best platform upon which to negotiate such solutions.

The conditions that Rittberger et al. (2006) have formulated do exist in the Bay of Bengal region, however, there are some caveats to them. To begin, the problem condition is emphasized to be "complex interdependencies among states that lead to further cooperation" (Akter, 8). There is not only a heavy dependency between the states in the region but also on the Bay itself. So even if larger states like China and India tend to ignore concerns from weaker states in the region, environmental degradation of the coastlines and the Bay itself puts pressure on these countries to react. Even if the people of particular states are not directly impacted, there will be a strain on their economic

development. As postulated by Rittberger et al. (2006) when states have a common interest and the expected benefits from regional cooperation far outweigh the potential costs it gives them the incentive to cooperate with each other. In this instance, the states have more to gain from a regional governance structure to mitigate environmental degradation.

The second condition—the presence of a cognitive community—is in line with what this paper has argued thus far. By incorporating environmental security in the broader human security concept and by analysing the impact climate change has on the lives of the people in the Bay of Bengal region, a strong cognitive community can be built up. This cognitive community, Rittberger and his colleagues (2006) argue, can help the states realize the importance of solving a particular issue together and will also lobby for this particular viewpoint. Just like the League of Nations was created out of "a conscious community of nations" that wanted to uphold certain values and norms of a peaceful world, regional cooperation can also be brought about in this particular manner (Akter, 10). However, even though there are other empirical evidences to support the existence of cognitive communities that can and do bring about cooperation between states, such a community has not been able to achieve much in terms of cooperation in the Bay of Bengal region. National and transnational NGOs and climate initiatives have pressurised the governments to be proactive in mitigating climatic disasters and the recent United Nations Climate Change Conference in 2022 also reiterated these issues. A cognitive community of other stakeholders, like policy advocacy groups, think-tanks, NGOs and the grassroots people are of paramount importance to keep the pressure on the pulse of the issue.

The third condition was borrowed from the neo-realist conceptualization of hegemony. Once the hegemon becomes willing to accept the relative gains of other states and absolute gains for itself, cooperation strategies begin to materialize (Akter). If one looks at the South Asian region it is easy to see that India would automatically assume the role of the hegemon. Similarly, for Southeast and East Asia, China emerges as the regional hegemon. However, when one looks at the Bay of Bengal

region, the presence of two potential hegemons creates a conflict if one tries to analyse it from the perspective of relative gains and absolute gains. If neo-realist viewpoints are accepted here, then neither of the two states would want to assume the position of the hegemon if there is no absolute gain. It is not surprising, therefore, to conclude why there has been no regional cooperation in the Bay of Bengal region if one is to accept the explanatory model of Rittberger et al. (2006). Moreover, even on a smaller scale, such as sharing the water in the Ganges-Brahmaputra-Meghna river basin, India has shown differential attitudes towards Bangladesh, Bhutan, and Nepal and indicated an unwillingness for a multilateral cooperation, opting instead for bilateral agreements. Nevertheless, this paper will argue that regional governance is still possible in the Bay of Bengal without the presence of a hegemon and in spite of the rivalry that exists between the two largest nations with vested interests in the region.

When talking about global governance, Zurn (2018) suggested that the global governance system has three layers that are interlinked. The first is composed of normative principles; the second is the presence of a vast number of institutions; and the third is composed of the different authorities that are acting in the system and how they lend to the legitimacy of the governance system. Even though Zurn (2018) used the global governance structure for his explanatory purposes, these layers can also be found in the case of regional governance.

To begin with the normative principle, states in a regional governance system would likely have conditional sovereignty, as we see in the case of the European Union for example. Moreover, there are other societal actors or stakeholders who have the ability to address international authorities, including states themselves. The normative principle is also based on the idea of the common good for the entire region which would inexplicably make it important to states and make it more acceptable for them to make sovereignty more conditional. In the era of climate change, the common good would be to try and mitigate the effects on vulnerable individuals and the economy as a whole. If an international authority could exist with state and non-state actors respecting those obligations

that do not align with their specific state's interest, then the global system would not be anarchical (Zurn). Climate change which does not respect state boundaries appears to be the best test case for this normative principle of the common good.

Nevertheless, states need to recognize this real and pre-emptive problem and currently it appears as though there is no strong normative principle in terms of environmental security or human security in the Bay of Bengal region specifically. For regional governance to evolve and flourish, a normative principle based on the common good is of the utmost importance, and beyond that, the an urgent need to understand that the Bay of Bengal requires cooperation from a greater number of states. Rittberger et.al (2006) argument for the presence of a cognitive community are also relevant to push forward this agenda mainly by non-state actors who are the main stakeholders. It is also important for climate activists and scholars to push this agenda as a top priority and allow for this norm of environmental protection and concern for human security to become a reality in the Bay of Bengal region. Currently, economic development by any and all means is the main prerogative even though it is causing the depletion of natural resources and other anthropogenic forms of climate change.

The second layer of regional governance is made up of a vast set of very specific institutions. In the Bay of Bengal region, there is no one regional organization to coordinate the cooperation between all the states specifically for the purposes of mitigating environmental degradation, increasing communities' adaptive capabilities, and protecting those vulnerable individuals' lives and livelihoods. BIMSTEC is currently the only organization with the mandate that can allow it to make environmental policies. However, there is one main problem with this organization: China is not a party which means any agreements formulated by the institution do not hold any obligations for the state. Other forms of institutions are the International Tribunal of the Law of the Sea, the International Court of Justice, and the Annex VII of the UN Convention on the Law of the Sea which allows for arbitration. None of these institutions, though, make any claims about   environmental security.

Another reason why regional institutions are important is that it is the best way to circumvent Rittberger and his colleagues' (2006) requirements of a hegemonic condition to have regional governance. Once institutions are established in the form of multilateral treaties or agreements, it would become binding on the states. Or, at the very least, help to maintain dialogue and cooperation in the area of human security and environmental security. As such, states would then not be concerned with whether they have achieved absolute gains. These forms of regional cooperation are not new for states in this region. The Association of South East Asian Nations (ASEAN) created the ASEAN Defense Ministers' Meeting (ADMM) and expanded it to ADMM Plus 8 with the inclusion of Australia, China, India, Japan, New Zealand, Russia, South Korea, and the United States. These states decided to cooperate practically in humanitarian and disaster relief spheres; to maintain maritime security, counter-terrorism, and peacekeeping among others (Chaturvedi and Sakhuja). Institutions further allow for disaster management and relief, reducing the risks of climatic disasters and their impact on vulnerable populations; the sharing of research, innovation, and technology; and also awareness-raising campaigns. The ASEAN countries have adopted the Declaration of ASEAN Concord I and II and instituted Mutual Assistance on Natural Disasters in the area of sharing knowledge, providing relief, and disaster management to allow ASEAN countries to aid each other in the time of disaster. In the case of the South Asian Association for Regional Cooperation, there exists the South Asian Co-operative Environment Program (SACEP) which has so far been important for creating projects and programs that promote education on the environment; the creation of environmental legislation, biodiversity management, the protection of coastal regions, and much more. What these indicate is that regional institutions do and can exist but it is the dichotomy of the different regions that need to be overcome for there to be a solid governance structure unique to the Bay of Bengal.

Lastly, Zurn (2018) hypothesized the interplay of different authorities in the global governance structure. In a more regional context, there exists spheres of authority: those states that are in China's

sphere of authority and those in India's. Zurn (2018) further asserts that the meta-authorities that exist in global governance like the hegemons or the G7/G20 countries are rather weak and also exclusive causing the governance structure to have legitimation problems. Indeed, if the hegemons in this case, India and China, were able to dominate the climate change forums and negotiations, the regional governance would suffer from a crisis of legitimacy because smaller states would be reluctant to fully participate. In worse cases, the interests of smaller states will be passed over in favour of the interests of the more dominant states which would defeat the purpose of attempting to preserve the lives and livelihoods of vulnerable communities. Therefore, in creating this regional governance structure what is important is to avoid this form of crisis of legitimacy by bringing to the forefront the struggles of the vulnerable communities and forging a path of sustainable development, even if they run counter to state interest.

Conclusion

The littorals of the Bay of Bengal and other states, like China, with a vested interest in the region are currently on the frontline of both climate change and biodiversity crises. The lives and livelihoods of vulnerable communities are at stake as well as future economic development of the region. There are all forms of threats that these countries are exposed to if environmental security is not maintained. The next couple of years, it is imperative to place climate at the centre of any national and regional agendas to combat the growing threats to the lives and livelihoods of millions of people. Human security is inextricably tied to the protection of the environment which is why it is important to rethink regional security and reconceptualise it to also include human and environmental security from non-traditional security issues.

This paper has argued in the favour of a regional governance structure to promote sustainable development and to ensure that states value its natural assets, become transparent, and meet their obligations. At the same time, regional governance structures can also have problems within them. It is important, therefore, to have a strong normative principle promoted by a regional organization(s)

and/or national organization which strives for the common good and is advocated for by a cognitive community of states and non-state actors. Moreover, the governance structure should not suffer from a crisis of legitimacy brought on by the domination of the more powerful states over the weaker ones but rather promote a regional vision for rewilding the environmental resources. There should be a proper platform whereby the concerns of all states can be negotiated, and voiceless vulnerable people's concerns will be accepted when drafting solutions to the climate change problem. It is only through the existence of a proper regional governance structure will it be possible to bring about sustainable development in the Bay of Bengal region.

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Climate-Induced Migration and Refugees in Understanding Sustainable Development in the Indo-Pacific

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Abstract

Climate Change is one of the many accepted realities of the 21st century and the most dynamic and evolving one. The link between climate change and human mobility is complex as it is aligned with different social, environmental, economic, cultural and political factors. The adverse impacts of climate change—such as sea-level rise, floods, drought and storms—are displacing millions of people, hindering sustainable development. These displacements create multifaceted impacts on people and their livelihoods by changing their way of living, causing stress, uncertainty and, in the worst cases, loss of lives and property. There is insufficient global data to make a perfect assessment, but one of the estimations records it to be approximately 255 million people. In 2019 alone, 23.4 million people (IOM) from 140 countries were displaced, and the Pacific was one of the worst hit. As the Indo-Pacific region gains increasing importance, a greater number of nations will be engaged in the area, making the study of climate-induced migration increasingly important. SDG 13 speaks of Climate Action, and Climate Refugees are very much part of this discourse. The research would make a modest attempt to list climate-induced vulnerabilities in the Indo-Pacific with major hotspots. What are the coping mechanisms adopted by these states, what type of support is available with international agencies and how states in the Indo-Pacific region can utilize the available mechanisms to mitigate challenges emanating from climate-induced migration leading to sustainable development are some of the crucial questions the paper would attempt to answer.

Keywords: Climate Refugees, Sustainable Development Goals, Climate Action, Refugee Law

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Our planet is changing due to rising temperatures, extreme weather events and melting ice caps. The effects of climate change are becoming increasingly evident through displacing people, forcing them to leave their homes for survival. Climate refugees are individuals who are forced to flee their homes and communities due to the adverse impacts of climate change. These impacts can manifest in various ways, from devastating floods to prolonged droughts from rising sea levels to food shortages. For example, hurricane Headers was a category for the hurricane that ravaged parts of Central America in Guatemala, Honduras and El Salvador. People lost their homes, their livelihoods and even access to drinking water. They had no choice but to cross borders into neighbouring countries and beyond. Kiribati is an island country in the central Pacific Ocean and it may become the first country to be submerged by rising sea levels caused by climate change. Over one billion people are at risk of becoming climate refugees, that is approximately 10% of the world's population. In the coming years climate change could force hundreds of millions of people to leave their homes. The poorest regions of the world would be the most affected. Many of these climate migrants will cross borders and continents but it is anticipated the majority will move much shorter distances and stay within their own countries' families who have lost their homes or are sleeping on the roadside. Dina Ionesco, the Head of the Migration, Environment and Climate Change (MECC) Division at the UN Migration Agency (IOM), says that "in 2018 alone, 17.2 million new displacements associated with disasters in 148 countries and territories were recorded (IDMC) and drought displaced 764,000 people in Somalia, Afghanistan and several other countries" (Ionesc). Without assuring sustainable development for all, making SDG inclusive of those affected by climate change, there is no possibility of realising the fulfilment of refugees.

The concept of sustainable development is perhaps one of the most used terminologies in the 21st century, though the debate began in the 20th century. There is an amount of refinement, amalgamation and inclusion of several components that have led to the present-day understanding of sustainable development. The idea of Sustainable Development Goals (SDG) has become universal and at least

has given a route map for nations to achieve. Though the states are pushing the goals from their side to achieve, it has not fetched the expected results. One such important goal in the SDG has been Climate Action. So far, climate action has been spoken about from the perspective of what is happening to (and what would happen to) nation-states rather than what would happen to individuals who will be refugees, displaced and stateless due to climate-related issues. The UN 2030 Agenda has been at the forefront of reviewing the migration process and includes all aspects of migration. These aspects have been taken into consideration due to hard-hitting facts mentioned above and many more, including countries like Bangladesh, which projects nearly 200,000 people homeless due to flooding. "Leave no one behind" has been the guiding principle and slogan of the 2030 agenda of SDG. Perhaps, the only way this can be realised is to make the SGD inclusive by including the marginalised poor and migrants and all forms of refugees.

Debating Climate Refugees

Twentieth-century geopolitics had a significant influence on the thoughts of refugees and displaced people after the Second World War. The states were made to think of people who were made homeless and stateless due to the destruction caused by the war beyond human imagination. One can also pitch the idea of such a thought as Eurocentric. This can be said for the simple reason that Europe has never seen others' problems as its problem but its problem as everyone's problem. Perhaps this made the United Nations (UN) think of it largely from the rights perspective, as Europe always pushed the idea of individual rights. 1948 is also extremely significant as the UN proclaimed the Universal Declaration of Human Rights. The significance is in the legal document that was produced, which accepted that "everyone has the right to seek and to enjoy in other countries asylum from persecution", stated in the United Nations General Assembly, 1948, Article 14.

Regarding the status of the refugees, the 1951 convention became significant as the world witnessed a massive influx of refugees from one region to the other. There was a significant forced migration

due to the outcomes of the world war. There was ongoing war in the Korean peninsula. There was massive pressure on the United Nations to formulate a universally accepted definition for the refugees. The convention defined Refugees as "someone who is unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion." (UNHCR). The definition given has been universally accepted even today. However, a few modifications have come from time to time. With this, the Refugee Convention at least established an accepted international refugee regime where most of the countries were convinced and became party to it. Several of them opted to be out as they found it to be a burden, including that of India. India felt it was not possible to take care of refugees who came from elsewhere as the country was dealing with the repercussions of partition.

Due to the securitized part of the definition, the current topic under discussion on climate refugees has found massive resistance and negligence. One cannot call the definition as narrow as it has served its purpose throughout times of crisis to a large extent, though some scholars may differ on this note. However, one can continue to argue for the case of environmental changes, natural disasters and natural calamities as some of the oldest problems of humanity which have led to massive changes in civilizations. There could have been a possible space for the expansion of the definition beyond wars and persecution. This can be called a limitation, but the need of the hour immediately after the world war was the resettlement of displaced people. Legal documents should always be living documents, allowing for changes and newer developments to be accommodated. The term environmental refugees did not find traction for a long time as people found it to be vague and considered it temporary. Many scholars even felt it was very much within the capacity of individual states to handle it efficiently. The severity was not felt much across major parts of the developed world; hence, there was no discussion. Some scholars, including Lester Brown, El-Hinnawi and Jacobson, published works, and at least a discussion began on a less-spoken topic. The

work of Hinnawi found much acceptance among scholarly and policy-making circles as it provided a formal definition for the concept of environmental refugees. Hinnawi further added several typologies relating to environmentally motivated migrants. Though there was much resistance to such typology, for most scholars, Hinnawi is a starting point in understanding environmental refugees. Scholars like Jacobson, working on the African Sahel region, enhanced the definition by bringing data into academic circles.

Jacobson opines:

The rising number of environmental refugees is the best available measure of changes in the earth's physical conditions. The degradation of agricultural land is currently displacing more people than any other form of environmental deterioration. The gradual poisoning of land and water by toxic wastes and the effects of natural disasters made worse by human activities are also adding to the ranks of environmental refugees. But in the next century, rising seas as a result of global warming could become the major threat to habitability.(Jacobson)

Few scholars tried to fill in the gap left by Hinnawi and others in addressing the speed at which the climate refugees concept took turns. Frank Biermann and Ingrid Boas expanded and produced a definition stating:

"people who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their natural environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity." (Biermann and Boas 291-300)

Climate hazards lead to droughts and deforestation, pushing people out of their country and being called environmental refugees. This is also a scenario where the right to repatriation is not possible,

and refoulement is unthinkable as the situation is entirely different from that of a refugee prescribed so far by the law. Environmental disruptions, much ever we relate it to happening naturally, invariably revolve around human intervention/abuse/experiment against nature. To say it plainly, it is human-made. It ends up being human versus human, leading to a person becoming an environmental refugee. There are also temporary displacements due to monsoons/earthquakes etc. classic example of this has been the case of Bangladesh, where enclaves submerge in the monsoon and appear in the summer. Bangladesh, being a lower riparian state, has very little choice to mitigate. There are also other cases to mention, including the sea level rise in countries like Maldives. Maldives would be a classic example of pushing millions into becoming prospective environmental refugees.

Climate Refugees – A Reality yet in Denial

There were also efforts made to use the term 'Environmentally Displaced Persons (EDPs)' as the cause of pushing the Environmental Refugees to get caught in the legal battle was unacceptable. More than the emotional appeal through the usage of the term environmental refugees, there was a necessity to address the cause of the affected population. It is at this time that the United Nations High Commissioner for Refugees (UNHCR) released data which indicated that not less than 21.5 million people were affected between the years 2008-16 due to climate-related issues. With more and more data flowing and pollution levels rising, the indication was clear that the numbers would further go up and push nation-states to the brink. It is been more than three decades, and there have been intense discussions regarding rising sea levels. The number of people affected by the above phenomenon is also rising rapidly. There have been an estimated 260 million in a vulnerable position due to the rise in sea levels. There is an estimated situation that more than 17% of Bangladesh (WEF) may be underwater by 2050, according to one of the reports leading to more than 20 million people displaced. Another study (WEF) shows that there would be not less than 1.2 billion people all over the world be displaced due to climate change. Scholars occasionally face challenges when

advocating for the concept of Climate Refugees because of the associated responsibilities that come with the term "refugee." One of the major problems being discussed regarding Environmental refugees is that "normal" refugees, according to the definition established, would return to their homeland/country. Whereas in the case of Climate Refugees, this might not be a possibility. If the very understanding of refugee status is to anticipate the return of normalcy in the country where there has been fear of persecution and the refugees have the right to return. In the case of Climate Refugees, it seems to be going the other way. Some scholars even feel that it dilutes the present idea of a refugee if Climate Refugees are included as a category. This might work as one of the issues for the host community. The usage of the term environmental migrants instead of Refugees, even by UNHCR, has only further delayed the cause of the climate refugees.

The work towards creating a legal framework to enable climate refugees has been a setback for a long time. Everything is not as gloomy as it has been spoken about. There was some hope when John Kerry, former US Secretary of State, used the term Climate Refugees in one of his speeches. One may feel surprised by the importance attached to an utterance by the United States (US). The US acknowledging the phenomena is still considered very important as many countries across the world still see that as a validation. In addition, the US still has a greater influence on narratives and agenda-setting. Following the US, if many world leaders utter the word Climate refugees, it may sanctify the term and may lead to a conducive scenario for the millions of people calling themselves Climate Refugees. Unfortunately, the scenario turned the other way around once the Republicans assumed power in the US and pulled out of the Paris Agreement made through COP 21. This setback in the debate on Climate Refugees is felt even now. The US has not shown keenness since then to speak on the Climate Refugees. There was hope when Biden signed Executive Order (CLS) on 9 February 2021 to resettle refugees and plan for understanding the impact of climate change on migration. The effort was to see how US foreign assistance could mitigate the impacts of climate change resulting in direct or indirect migration by collaboratively working with other countries, NGOs and International

Organisations. The news reports in October 2022 reported disappointment by several observers and scholars on Climate Migration as the report by Biden to Congress on refugee admission had minimal mention regarding climate change (Watson)

The global consensus required for mobilising nation-states regarding Climate Refugees requires concerted efforts. No leadership is provided by any of the major powers regarding discussing Climate Refugees. The greatest polluters have not made any commitments towards climate refugees. It is strange and surprising that all of these states are constantly invoking SDGs at every possible level, least realising that without consensus-building and a solution to the Climate Refugee problem, there would not be any success concerning the SDGs. There seems to be some denial for the sake of escaping responsibilities by nation-states towards Climate Refugees. This uncertainty has done greater injustice to the affected people.

Limitations of available legal protection for Climate Refugees

As discussed above, with the remaining issue of climate change affecting a larger section of the population, there seems to be a legal issue in terms of dealing with the word refugee. The people affected do not fulfil the legal requirement of the term as propounded in the 1951 Refugee Convention. The protection extended to the people recognised under the convention has not been a possibility for these people. The main criteria and requirement being fear of persecution arising out of political situation is the first stumbling block. The natural causes are still not considered as a possible criteria. Unlike the political persecution, in the case of climate related migration, states are the stakeholders and would not want to lose their population, and want to adapt certain methods and criteria to mitigate the problem. In the political persecution, the state is not involved and it is the process of moving away from one state to the other under a certain type of protection to escape the persecution. There are scholars warning about the delay in arriving at positive conclusions regarding the settlement of Climate Refugees as they are exposed to extreme weather events/conditions, which include sea-level rise and droughts, which would perhaps be a greater crisis for humanity by 2050.

The report titled Citizen's Guide to Climate Refugees also resonates with the same and cautions against the eventualities to come (FOTE). The one other convention that made an effort to address displaced persons beyond the 1951 convention was the African Accord of 1969. The Organisation of African Unity (OAU) Convention tried to expand the scope of protection given under the 1951 convention by expanding the scope of refugees.

> The term "refugee" shall also apply to every person who, owing to external aggression, occupation, foreign domination or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality.(UNHCR)

The effort made by OAU was seen more as a problem of Africa, and it was not given so much importance. Unfortunately, the definition could not include protection for climate refugees. The next effort was through the Cartagena Declaration of 1984. The necessity was to address the massive inflow of refugees in the Central American area. By acknowledging the 1951 Convention, 1967 Protocol and subsequent OAU Convention of 1969, the Cartagena Declaration of 1984 at least used a statement which could at least accommodate displaced persons beyond the fear of persecution in the form of 'other circumstances which have seriously disturbed public order'. Though scholars may argue that the statement still has to be read from the perspective of the overall security scenario, at least there is an open window to argue and accommodate climate refugees. The greater limitation of the Cartagena Declaration of 1984 is that it is not binding like the other conventions discussed previously. They are just aspirational guidelines to incorporate in domestic law and use as a best practice by other stakeholders involved. The Declaration expanded the scope as below.

> To reiterate that in view of the experience gained from the massive flows of refugees in the Central American area, it is necessary to consider enlarging the concept of a refugee, bearing in mind, as far as appropriate and in the light of the

situation prevailing in the region, the precedent of the OAU Convention (article 1, paragraph 2) and the doctrine employed in the reports of the Inter-American Commission on Human Rights. Hence, the definition or concept of a refugee to be recommended for use in the region is one which, in addition to containing the elements of the 1951 Convention and the 1967 Protocol, includes among refugees persons who have fled their country because their lives, safety or freedom have been threatened by generalized violence, foreign aggression, internal conflicts, massive violation of human rights or other circumstances which have seriously disturbed public order (UNHCR)

Repeatedly, states have been making efforts to arrive at a consensus and find solutions for climate-induced migration. For example, as early as 2010, the COP 16 of UNFCCC agreed to the Cancun Adaptation framework. The framework called for measures to enhance cooperation, coordination, and understanding of climate-induced migration and displacement (UNFCCC). From IPCC 2014, Fifth Assessment Report of the Intergovernmental Panel on Climate Change, to the recent AR6 Synthesis Report: Climate Change 2023, all have discussed measures to adapt to climate change.

When there are no legally binding documents, and nothing pressurises states across the world to look at the climate refugee status as binding, there are possibilities that states will react according to their convenience. But, this situation will not help the cause of climate refugees. Without an international treaty accepted by all stakeholders subsequently promulgated, signed, and ratified, there is no guarantee for climate refugees that they would be accepted and accommodated elsewhere than their territories. History is full of instances where states have flouted non-binding agreements. This situation further pushes us to think about the commitment of states and their intention towards such large communities worldwide that are already affected and millions more waiting in the hope of shelter and care.

Threats other than the Sea level Rise-Geopolitics?

People worldwide, not extensively familiar with discussions on climate refugees, commonly perceive that the challenges faced by climate refugees are primarily or solely a result of rising sea levels. This is also perhaps due to popular media coverage of states like Maldives or Bangladesh. Unfortunately, even the discourse on climate change on many occasions also leads to the same debate. This is attributed to the broader geopolitical considerations that states engage in when either acknowledging or disregarding situations related to climate change. Several scholars have tried establishing that one of the most impelling reasons for entire communities to migrate is climate change (Williams)

The droughts are also an outcome of climate change, due to which a large section of the population from the Horn of Africa has seen an increase in migration (IOM). Some opine that these are some of the worst droughts caused by climate change, not just in the Horn of Africa but also in East Africa, where the population is prone to land degradation, flash floods, and desertification. Not much has been done in the case of the Africans. In 2022 alone, more than one million people were displaced due to droughts in Somalia. The outcome of this sort of climate change pushing them to become refugees has a food crisis angle as well. The repercussions of droughts have resulted in a significant shortage of food and malnutrition, compelling millions to consume the bare minimum and migrate to nearby areas, with the hope of eventually returning to their homeland. On many occasions, this hope has been permanently extinguished as many places have become inhabitable (Docherty and Giannini), and there is no question of return.

The geopolitics of nation-states enters the scenario when several states resist the mobility of people and fear migrants arriving due to climate-related issues. The distinction between regular migration and climate-induced is not clear when governments don't take proactive measures to relocate their populations affected by climate change scenarios. If there are geopolitical issues between the country of origin of the climate victim and the host country the migrants aspire to go to, then the life of the climate refugees becomes miserable. Secondly, there are situations where the condition of climate

refugees is exacerbated by geopolitical rivalries between states, especially when the state with geographical advantages exploits the circumstances. The destabilising effect of such a scenario is witnessed between India and China. The geographical advantage China has due to its status as an upper riparian state is visible. Several scholars argue that the climate refugee scenario can be used by non-state actors as an excuse to push extremist elements to different territories where they want to operate. This cannot be ruled out as such preparations from the states are need of the hour. The world has witnessed terrorism in all its manifestations and has decided to consider it as one of the most pressing issues for states to consider. The nation-states still have a choice to either hype the security-related issues arising out of climate refugees or take a humanitarian position to scrutinise the incoming population through available measures and not avoid it with a peripheral excuse.

The Sea Level Rise Issue and Climate Refugees

Climate change has impacted many factors for several decades but was noticed more earnestly in the last two decades, including the melting of glaciers and ice caps leading to sea level rise. The outcomes of such occurrences are not limited to threatening the populace and places around the sea but also several river deltas due to the subsidence of land adjacent to water bodies. This is largely observed in Bangladesh along the Ganges-Brahmaputra delta. Some of the estimated subsidence during the last 100 years in coastal areas in some of the major cities in the Global South includes ~4.4 m in eastern Tokyo, ~2.6 m in Shanghai, and ~1.6 m in Bangkok (Syvitski et al.) The loss of ice in the Greenland and Antarctica is also alarming at the rate at which they occur. There is an estimation of sea level rise by 1.4 feet even with very low emissions by 2100 (IPCC). In contrast, there would be a rise of 2.8 feet by the same period if there is high emission. If the sea level rise is caused by rapid urbanisation and industrialisation, the same phenomena will hamper urbanisation and industrialisation by some of the major powers. This would directly have a proportionate effect on the economic condition of the concerned states, leading to greater issues of food security, human security, and territorial security. Several states are planning to relocate several financial hubs and

cities to the heartlands and then from the coastal region. Indonesia announced plans to move its capital from Jakarta to east Kalimantan partly due to climate change.

Extreme weather conditions aggravated through ill-conceived policies against sustainable development will further push people to prepare for indiscriminate migration. The most affected would be the smaller island states in the Indo-Pacific which have been earnestly appealing to the rest of the world to look at their situation. They have no place to go, and they are not geopolitically significant enough to make noise at international forums regarding the existential threat arising out of climate change. Kiribati and Tuvalu have at least come as part of discussions in some forums in recent times. Thanks to social media pushing some mainstream media to cover such extreme situations. Though the learned population about climate change has been battling with international agencies and states worldwide, the people in Kiribati would not want to call themselves Climate refugees. In an interview with *The Guardian*, the then-President of Kiribati, Anote Tong, who was President for more than 12 years, mentioned:

> I have never encouraged the status of our people being refugees … We have to acknowledge the reality that with the rising sea, the land area available for our populations will be considerably reduced, and we cannot accommodate all of them, so some of them have to go somewhere, but not as refugees (Randall)

This argument from Tong has valid reasons. One, the very word Climate Refugee is still not legally valid in international law as stakeholders have not reached a consensus on the terminology. This would create a precarious situation for the people affected. Secondly, the word refugees not so positive connotations so far in different parts of the world. The condition of refugees in recent times from Syria to the Philippines has not been great. The problem of host communities and the indifference of receiving countries make the population affected feel more of a burden. This would aggravate the already pathetic condition they have endured. Thirdly, the fear of no return to their homeland, unlike the fear of persecution, which largely guarantees the right to return, might not be a

possibility in the case of climate refugees. This is due to the pace at which climate change affects the world. Lastly, the fear of being stateless forever has also been a major factor in the resistance exhibited to be called Climate Refugees. The stateless condition is the loss of home forever, and the population of these affected islands would want some mitigation and adaptation to avoid such a situation. This would not render them home and stateless simultaneously. States like Maldives are looking for options available in the region itself. So far, there seems to be no great success. The sea level rise not only destroys the livelihoods but also deprives the population of certain basic necessities. The case of Bangladesh has found traction due to the involvement of European states like the Netherlands in helping them build resilience against sea level rise and climate-related issues. Bangladesh is also a major victim of seasonal migration, which, over a period of time, may become a permanent one. The economic and social hardship of the population facing such a situation in Bangladesh concerns humanity. There are extreme conditions witnessed due to climate-related issues pushing people to become climate refugees in the Horn of Africa and Bangladesh. If Bangladesh suffers from extreme floods, the Horn of Africa suffers from extreme drought. The staggering number of people suffering from such extreme conditions in Bangladesh is leading to illegal cross-border movement to India at times estimated to be one million yearly. (Bose and Lunstrum)

Sea level rise is not just a climate change-related issue, nor does it stop there. In a politically charged world debating the rule of law and international law, sea level rise creates greater tensions on issues of territory and sovereignty. As the sea level rise begins to shrink the sovereign space, it will lead to jurisdiction issues for each state in the sea. The idea of the territorial sea, Exclusive Economic Zone, and other activities the state may take up in the sea will be disrupted. This would further complicate the situation of the climate refugees, and their questions will become more political than humanitarian. If states begin having conflicts over their territory and access to the sea, many of them will be stateless. The submerged region becomes a contentious issue for neighbouring states regarding control over the sea.

Is there a possibility for Sustainable Development Leading to Climate Action to help Climate Refugees?

Indo-Pacific is the world's largest carbon polluter. This region requires global leadership and thinking beyond politics. Right now, about 145 million people live less than 3 feet above sea level in countries like Bangladesh, China, and the Philippines, and scientists predict the world's oceans could rise 5 to 6 feet by the year 2100. By the end of this century, worst-case projections have parts of Boston and Manhattan underwater. There is a necessity to share information about climate refugees, their stories, and the urgency of the situation is to provide essential humanitarian assistance, including housing, food, healthcare, and education. It is also necessary to pressure governments, international organisations, and companies to address climate change. Climate change knows no boundaries as it affects us all, but it impacts some more than others. By taking these steps together, we can create a world where refugees find safety, security, and hope.

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Book Review

Maritime Security Complexes of the Indo-Pacific Region

Ankit Tiwari

The book '***Maritime Security Complexes of the Indo-Pacific Region***', written by **Dr Vijay Sakhuja and Dr W. Lawrence S. Prabhakar,** is an important and timely contribution that provides a comprehensive net assessment of the region's security dynamics and challenges, using the theoretical framework of the 'maritime variant' of the Regional Security Complex (RSC) Theory.

The Maritime Security of the Indo-Pacific Region has become an important area of focus for multilateral organizations, great powers, and emerging as well as existing regional and extra-regional alliances. This is apparent in the formation of the Quadrilateral Security Dialogue and other mini-laterals. The region is confronted by a milieu of traditional and non-traditional security challenges, and the line separating the two is increasingly blurred as spill-overs from each domain further complicate the combined threat matrix of the region for various stakeholders. Further, as the book points out, the security environment of the region is threatened, in no small measure, by rising great-power contestations (and militarization) in the Western Pacific Ocean. Both, the US and China have significant military capabilities (nuclear and conventional), and the ever-present threat of escalation is driving (and will continue to drive) many of the security-based engagements by various stakeholders. However, various sub-regions in the Indo-Pacific play host to an entire range of challenges like climate change, terrorism, piracy, narcotics trade, small arms proliferation, and even illegal fishing, that are separate from this binary, and the lens of the RSC theory is particularly helpful in bringing out their salient characteristics without the consistent and sometimes unnecessary distraction of great-power rivalry. This also allows the authors to generate insights into the intra-state, inter-state and the intra-regional conflicts by studying regions and their 'security complexes', as the latter is not constrained by simplistic statist interpretations and approaches to maritime

security. This approach also pays off when looking at non-traditional security trends and challenges, and the authors do a great job of expounding a policy research perspective on a very impressive range of the same.

In the first chapter, the authors lay out the theory in depth and define a regional security complex as an autonomous locality of insecurity that exhibits certain regionally bounded, inter-state, and mutually affective intra-state security conditions and conduct. They explain how this theory can be used for analysis through the referent role of the state, the importance of regionalism, and the discursive processes of 'securitization' and 'de-securitization'. They further elaborate on how the salient features of an RSC can be extended into the maritime domain. The authors also believe that the concept of security has evolved beyond its traditional 'militarized roots' and the state can no longer be the sole referent object of security. The authors draw a picture of the implications of non-traditional threats for the economic development of a region, human (in)security in coastal areas, the blue economy, etc, and remind us that many threats are undeterred by constructed state boundaries.

In the next chapter, the authors highlight how geographical features and historical connections within the Indo-Pacific region have played a role in shaping the existing regional security complexes. Territoriality, for instance, is a permanent feature of an RSC (due to geography) and historical experiences determine identities and construct norms that play a vital role in regional cooperation on security issues. This chapter defines the Indo-Pacific region as the Asian-African-Australian-American maritime littoral space and sheds light on the various formulations of the concept from the perspective of different nations and their bilateral and multilateral arrangements. Three paradigm shifts with broad implications for the region are identified: 1) Economic growth and regional economic integration, 2) the rise of China, and 3) the extra-regional intervention in the West-Asia Gulf region and the Korean Peninsula due to the potential for escalation in these areas.

The authors concern themselves with the maritime regional security complexes of the Indian Ocean and its sub-regions—the North Arabian Sea Crescent (NASC) to the west and the Bay of Bengal to the east—in Chapters 3 to 5. The highly securitized IOR forms an important dimension of the study, and the authors deconstruct the multiple traditional and non-traditional threats that shape the dynamics of maritime securitization in the Indian Ocean. In the case of the NASC (Chapter 4), the destructive impact of irregular insurgency-related conflicts, piracy, and terrorism are examined, and a detailed survey of the region's strategic relationships with extra-regional powers and their security implications are also presented. The authors view this region as having the highest incidence of hybrid threats, and skilfully explain the serious risk of escalation and breakout of inadvertent conflict that could also have spill-over effects for adjoining regions due to high levels of militarization. Their argument—that Great Power interventions in this region have largely failed to reduce tensions and on the contrary have played a role in aggravating them—is particularly hard-hitting and completely unburdened by ideological conflations. In the next chapter titled 'Security Dynamics in the Bay of Bengal', the authors explore many non-traditional security issues, such as oxygen depletion and acidification, natural disasters, marine litter, search and rescue, natural disaster, and the security of the Blue Economy. As mentioned earlier, the value added by including such discussions in the framework of a 'security complex' is noteworthy and makes the reader reflect on a grim future that only promises to aggravate the threats, in the absence of extensive cooperation between actors. This chapter also explores the regional dynamics between South Asia and Southeast Asia and provides an overview of various multilateral institutions in the region working towards greater integration and ensuring security.

After carefully laying out the broad themes of security in the IOR, the book turns to the much-discussed and contested regional security complex of the Western Pacific Ocean in Chapter 6. It is in this region where extensive traditional security threats have emerged due to China's destabilizing behaviour and growing military power. The authors begin by pointing out that six of the world's ten

largest standing militaries are contained in this region and four of them have nuclear weapon capabilities. Great power contestation, severe politico-diplomatic tensions, military infrastructure build-up, and aggressive naval-air posturing, are identified as the key security drivers in this region and the authors aptly use three issues to anchor the larger processes at play. They are, 1) Pacific Deterrence Initiative, 2) the emergence of "Multiple Quads", and 3) China's naval build-up and aggressive exercises in the South China Sea. Some of the most interesting analyses in the book are contained in this chapter and the authors conclude by observing that US-China tensions are unlikely to resolve in the near future and will continue to be one of the most pressing geopolitical issues of this day and age. The final chapter of the book is titled 'Naval Nuclear Dynamics in the Indo-Pacific region', and the authors explain the need for nuclear powers in the region to maintain and develop sea-based deterrence. The logic of mutually-assured destruction continues to prevail in this century, and naval nuclear deployments are viewed as critical for ensuring retaliatory capability in the event of any first strike. The authors also identify the proliferation of delivery vehicles and fissile material stocks of new nuclear states as a highly destabilizing threat that should be monitored and mitigated.

The book's overall assessment of maritime regional security complexes in the Indo-Pacific region stands out as it covers an impressive range of prevalent threats and challenges, which is no small feat given the non-uniformity, complicated nature, and varying scope of security dynamics throughout different parts of the region. By not treating the Indo-Pacific as a monolithic single construct, the authors succeed in bringing out the diversity of security drivers and do not get stuck in the US-China binary. Although a more detailed analysis of some subjects would have been welcome, for example existing mechanisms of mitigation and cooperation on non-traditional threats, the authors perhaps calculated that a brief but comprehensive overview would be more impactful and relevant for policy-makers and research scholars, alike. Likewise, the book would have benefited from policy recommendations but the authors refrained by design and merely attempted to enrich the debate on various maritime security challenges. In this endeavour, they certainly succeeded and the book's

combination of vigorous academic insights with a pragmatic practitioner's perspective is commendable.

CLIMATE COOPERATION
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MAARITIME SECURITY
INDO PACIFIC ECONOMIC FRAMEWORK
ASEAN
BLUE ECONOMY
RENEWABLE ENERGY
MARITIME DOMAIN AWARENESS
RULES BASED INTERNATIONAL ORDER
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