February 2023 —Vol. 5, Issue 2

CPRG CHRONICLE

'A newsletter for public policy and governance enthusiasts'

CP RG CENTER OF POLICY RESEARCH AND GOVERNANCE

JANUARY 2023 HIGHLIGHTS

INTERNATIONAL RELATIONS AND SECURITY

- UK and India signed the Young Professionals Scheme under the Migration and Mobility agreement.
- Treaty on Deepening Military Trust in Border Regions" and the "Treaty on Reduction of Military Forces in Border Regions
- The first G20 Health Working Group Meeting was held on 18th January in Kerala, India
- India participates in the First Movers Coalition (FMC) Leadership Meeting of the World Economic Forum
- Inaugural Edition of Indo-Egypt Joint Training Exercise Cyclone - I commenced in Rajasthan
- ECI hosted the 2nd International Conference on 'Use of Technology and Elections Integrity' as the lead for the Cohort on 'Election Integrity'

SOCIAL

- India operationalized 1,50,000 Ayushman Bharat Health and Wellness Centers(AB-HWC) under Pradhan Mantri- Jan Arogya Yojana (PM-JAY)
- The International Year of Millets 2023, kickstarted with the vision of making it a 'People's Movement' and positioning India as a 'Global Hub of Millets'
- The world's longest river cruise 'Ganga Vilas' at Varanasi, to usher in a new age of river cruise tourism for India.
- NHA introduces new system under AB PM-JAY to grade hospital performance
- Ministry of Environment, Forest and Climate Change (MoEFCC) notifies norms for fly ash utilization by power plants
- IFSCA has introduced a framework for disclosures for ESG schemes. 19/01

ECONOMY

- Cabinet Committee on Economic Affairs approved Central Sector's 'Broadcasting Infrastructure and Network Development (BIND)' Scheme
- Rs 1,49,505 crore GST Revenue collected for December 2022, records an increase of 15% year-on-year.
- Direct Tax collection stood at Rs. 12.31 lakh crore which is 19.55 % higher than the net collections for the corresponding period of last year.
- National Financial Reporting Authority (NFRA) to introduce annual transparency report by the audit firms

SCIENCE & TECHNOLOGY

- Ministry of Science and Technology notified The National Geospatial Policy, 2022
- ISRO has planned to launch India's first space mission to observe the sun, Aditya-L1 in June or July 2023.
- India successfully tested the Prithvi-II tactical ballistic missile off the coast of Odisha.
- PM inaugurated the 108th Indian Science Congress

EDUCATION

- UGC unveiled draft norms for Foreign Universities
- NCERT notified the establishment of PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development), India's first national assessment regulator
- The National Commission for Indian System of Medicine (NCISM) and the Central Council for Research in Ayurvedic Sciences (CCRAS) have launched 'SMART' (Scope for Mainstreaming Ayurveda Research in Teaching Professionals) program.
- The National Technical Textiles Mission Program (NTTM) issued guidelines for updating the conventional degree programmes with new technical textile papers.

TRAINING & GOVERNANCE

- First capacity building programme for the civil servants of Arunachal Pradesh on Good Governance was started
- The Central Administrative Tribunal organized a two day Orientation Workshop at IIPA for developing the conceptual framework for discharging the Quasi-Judicial Functions in the Tribunal.
- The annual plan for conducting capacity-building programs for Grievance Redressal Officers was discussed under the Sevottam scheme by DAPRG in collaboration with the government of Andhra Pradesh.

TRAGEDY OF THE COMMONS

"What is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest." -Aristotle

Aristotle's statement showcases the inherent flaw in human rationality hinting at the fact that the common resources of the world are taken for granted and no one seems to take responsibility for these resources. This also holds true for the Global Commons in the light of various nations claiming a stake in them but none of them owning their responsibility for their development. This individualistic selfishness lies at the core of the concept of the Tragedy of the Commons.

Understanding the Common Property Resources becomes a prerequisite to dive in the details of the Tragedy of Commons. Resources in general, have been known to possess two characteristics of excludability and rivalry in varying degrees. **Excludability** is a property that talks about the control of access to the resource, i.e., whether someone can be excluded from exploiting that resource and at what cost is the exclusion possible. For example, it is highly cost-intensive to exclude someone from venturing into a dense forest. This cost intensive nature of the resources puts the resource high on the non-excludability scale.

On the other hand, **Rivalry** is the property which talks about the exhaustibility of the resource, i.e., whether the usage of a resource by one reduces its availability for others. For example, the amount of polluted air inhaled by someone does not reduce the availability of polluted air for other people in the region. This puts polluted air/emissions high on the non-rivalry scale.

Common property resources are those which are highly non-excludable yet rivalrous in nature. This means that it is quite costly to restrict access to them (thus making them open-access resources) but their usage cannot be contested. A few examples of common property resources or 'Commons' include public parks, open-access fisheries, communal grazing lands, etc. The term 'Global Commons' comes into the picture when the concepts of excludability and rivalry are applied to the resources that are not restricted to territorial boundaries or are accessible to multiple nations. A few examples of Global Commons include fishing stocks in the oceans, atmosphere, hydrocarbon resources in the seabed, Antarctica, etc.

Global commons, just like other common property resources, are either owned by no one (res nullius) or by everyone (res communis). According to Wijkman, 1982, they are known to possess some definitive characteristics that hinder their privatisation or control by the state(s). There are high risks associated with subdividing common resources of uncertain value, as no state risks obtaining a worthless share, and the cost of gathering accurate information is too high. They entail high costs of defining and policing private property rights or enforcing national jurisdiction. This happens when the size of the resource is not known and quotas cannot be established without knowing the size. There is a significant presence of external economies since the exploitation of the resource by one significantly affects its availability for the others.

THE CONCEPT OF THE TRAGEDY OF THE COMMONS

With the clarity about the Global Commons, it becomes necessary to discuss the tragedy of the commons. The concept of Tragedy of the Commons was discussed by Garrett Hardin in a paper published in 1968. In order to explain the concept, Hardin uses a parable of an old English village with a common pasture that is available to the residents to graze their privately owned cattle. He states that each herder would try to maximise the number of cattle grazing on the land due to lack of property rights without realising they are reducing the grazing area available for all the grazers (including them) in the future by doing so. And if they do not maximise their private benefit now, someone else would capture the benefits. Hence, eventually, they all tend to over-exploit the resource. Therein lies the tragedy (Hardin, 1968).

This concept can be aptly applied to the Global Commons. In the international arena, it is the nations that are parties to negotiations pertaining to Global Commons, with no organisations superior to them. This allows the nations to make maximum use of resources due to the lack of existence of outside mechanisms to bring about an acceptance of their external costs either the cost of resource degradation or the cost of resource depletion. The problems of free riding further gets intensified with the inefficiencies of monitoring of resource-using individuals at the national and international level. Along with that, mobilising popular support for resource's management and its enforcement entails huge socio-economic costs.

In his paper, Hardin argued that ruin is the endgame for common property resources unless they are governed through external coercion or are privatised.The argument for external coercion states that

governments/ international organisations must control most of the Commons.The governments would devise property rights and enforce them, and monitor the usage of the resource. But this argument is based on assumptions like accurate information, adequate monitoring capabilities and zero costs of administration. There is no guarantee that these assumptions are fulfilled in the practical world, as the cost of doing so is gigantic. The other solution proposed is to privatise the resource. This shall deal with the incentive problem as the users shall be responsible for their allotted part of the resource and would invest for sustainable returns. But what if the resource is heterogenous like a huge tract of grazing land? Or is it non-stationary like fisheries? Then the important question is on what basis do we allocate the property rights/usage rights. Again, the problem emerges in the form of transaction costs.

An alternative to these theoretically valid but impractical solutions was provided by Nobel Laureate Elinor Ostrom. Ostrom argued that the tragedy of the commons can be avoided without any external coercion. This is possible only when the users create a contract on consensus and appoint an external arbitrator to enforce the terms of usage on them. Though, this is not a panacea as the cost of getting the users to agree on a contract can be high (Ostrom, 1992).

It is easy to comprehend that the issues would get quite complicated when we look at potential solutions to the problems at the level of the Global Commons. It is the nations that negotiate to handle the usage of the global commons and their management and terms of usage would be easy only when the nations have similar perceptions but the divergent views prevalent among the nations decreases the possibility of voluntary management of the commons.

Along with that, each government cares about several non-pecuniary benefits from the resources that are specific to them. For example, seabed mining is important for security reasons, research of marine life/ecosystem, etc. Thus, measurement of these non-pecuniary benefits and their inclusion in negotiations can become cumbersome. Many times, the states with financial prowess dictate the utilisation of global commons for their own benefit, thereby de-incentivising the developing nations from taking part in the discussions.

Nevertheless, there have been some inter-governmental instruments to manage global commons, like the United Nations Convention on the Law of the Sea (UNCLOS) (Clancy, 1998) which was signed in 1982 to establish a legal order for the oceans, while respecting states' sovereignty. It defines various stretches of exploitation like the Territorial Sea, Contiguous zone, the Exclusive Economic Zone, etc and accordingly grants property rights to the nations for the same.

However, there is ambiguity in the UNCLOS regarding the exploitation of the High Seas that do not fall in any of the above zones. Along with that, as foreign fishermen are not allowed to fish in territorial waters, they move to the High Seas, thus expanding the geographical scale of exploitation.Various agreements have been devised for the management of the Global Commons, but only a handful of them have been fruitful. The problem, as we have seen, is the information asymmetry and conflicting motives that nations have with respect to these resources. The ancillary problems of nationalistic ego and financial assertiveness of certain nations also obstruct their efficient management. Thus, there is no one way to solve this problem. However, the tragedy can be diluted by adopting Commons-specific approaches involving community participation (Ostrom, 1992). The Tragedy of the Commons can therefore be diluted and not eradicated because of the myriad issues related to its management.

It is quintessential to take measures for the sustainable usage of the Global Commons so that we do not use these resources at the cost of the needs of the environment and the future generation. It is therefore pertinent to metamorphose this tragedy into an opportunity by giving the Global Commons their long due importance.

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DEEP SEABED MINING: THE OCEAN'S WILD WEST

Introduction

The Oceans are emerging as the next big commercial avenue. Manganese nodules found on the ocean floor are like gold mines containing 37 metals, including nickel, cobalt and copper (Shackelford et. al., 2023). These rare earth metals play a critical role in the transition to renewable energy technologies such as wind turbines, solar cells, electric vehicles. A green revolution is brewing in the ocean and Deep Seabed Mining (DSM)- carried out by tractor-like machines- is the key to unlocking these highly lucrative metals.

This may sound like an easy solution to our problem, but this is barely the full picture. The ocean's midwater ecosystem represents 90% of the biosphere (Miller et. al., 2021), and these organisms stand to lose a lot from our gains. As per IUCN,

"The digging and gauging of the ocean floor by machines can alter or destroy deep-sea habitats. This leads to the loss of species, many of which are found nowhere else, and the fragmentation or loss of ecosystem structure and function." (IUCN, 2022)

he IUCN also notes that we are far from understanding the exact consequences of DSM, which severely limits our ability to fully assess the potential risks that come with it.

This is where it gets alarming because a Canada-based corporation called The Metal Company (TMC) is already planning to start DSM as soon as 2024 (DW News, 2022). A private corporation being able to lay its hands on the deep ocean may come as a surprise considering that it is a Global Common or Common Heritage of Mankind (United Nations General Assembly Resolution 2749). However, what is unfortunate is that what TMC is doing is 100% legal. How is that possible? The answer to this lies in the body of laws regulating the deep ocean.

The exploration and exploitation of ocean resources is governed by the United Nations Convention on the Law of the Sea (UNCLOS). UNCLOS was adopted in 1982 and came into force in 1994. The Convention defines the deep seabed, commonly referred to as "the area," as "the seabed, ocean floor, and subsoil thereof, beyond the limits of national jurisdiction." The Convention was signed by nearly 200 countries, 168 of which have ratified it and are now subject to its obligations and rights. The International Seabed Authority (ISA), also known as "the Authority," was also established in the Convention.

The international system of seabed governance is mired in loopholes. As per the existing framework, Member states can request permission to conduct DSM operations from the Technical and Legal Commission of ISA, however, the catch is that private companies can apply as well. Out of a total of 31 contracts given out by the ISA, the TMC currently holds three exploration licences through two subsidiaries and a partnership (The Metals Company, 2022). Any country may request approval to carry out surveys to locate mining sites. They are required to provide the Seabed Authority with half of the areas they discover so that they can mark those as "reserved zones" for low-income countries. Due to a lack of proper governance, TMC now has control over about half of the roughly 200,000 square miles of these “reserved zones” for exploratory work in the protected regions (Lipton, 2022).

There is also a transparency issue concerning the workings of ISA. It has been reported that TMC’s executive was made privy to confidential information way back in 2007 by the ISA which presumably acted as a catalyst for TMC’s seabed ambitions (Lipton, 2022). In the same vein, it should be noted that Meetings of the Assembly and Council are open to observers unless otherwise specified but meetings of the Legal and Technical Commission (LTC) and the Finance Committee are not (Ardon, 2016). Furthermore, the ISA is a small and underfunded body. It does not have the infrastructure capacity to ensure compliance with environmental codes. For instance, to safeguard the maritime environment, the ISA has approved an environmental management plan that comprises regional environmental management plans. The requirements of these REMPs are not, however, enforceable against its member states (Ngum *et. al.,* n.d.). Its powers are limited in ensuring the safety of marine ecosystems.

The seabed is like the wild west. It is uncharted territory. Not only do we not know much about it -to be precise 80% of the deep ocean is unknown to us- but we are also actively trying to govern it. However, this is a hefty task, and as evidenced, the ISA would need significant restructuring to address the loopholes and inadequacies in its operations. The regulatory framework is framed in a way that has legitimized the claim of a private company on a global common. A global common belongs to all of humanity, and it is important that it is commercialized in a way that is not only sustainable but also equally distributed.

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PERTINENCE OF OCEANS AS A GLOBAL COMMON

Oceans have been a vital source of livelihood and recent centuries have made our lives more reliant on them than ever before. Their presence not only facilitates climate regulation, economic activity, and scientific research, but it also poses a security risk to countries. Oceans have been rightly considered as a part of the Global Commons since their vastness transcends political boundaries, and the actions of one country can have far-reaching effects on other countries and on the ocean itself.

Maritime access to countries has been a boon in recent decades since it led to improved connectivity, trade, and created more job opportunities. On the contrary, increased economic activity with less consideration for sustainability has led to numerous environmental concerns over the decades. The same access to the maritime sphere had led the invasion of countries and had generated a serious risk posed by this vast, unregulated domain. The insecurity led to countries ensuring their security through forming military strategies for this domain. In this globalized and cutting-edge technology era, countries must ensure the inclusion of blue economies in their policies and strive harder for the protection of the environment just as they ensure the exercise of their rights in the oceans for their security.

The significance of Oceans from the perspective of security and economy has been increasing over the years.

In comparison to the previous two decades, there has been a huge increase in the number of joint naval exercises between countries, not just for targeting pirates, illegal drugs, and the arms trade but also for being able to secure their strategic interests. In the previous year, the Indo-Pacific region became the pivot of geopolitics as major powers like the US, China, and the EU formed their maritime policies, prioritizing their involvement in this region, realizing the spotlight of its newness.

Over 90% of the trade is carried out by the sea and has made countries more interdependent through this medium of exchange. As ships dock at other countries' sea ports, it boosts cooperation as well as provides monetary benefits to the host countries. This low-cost mode of transportation has increased the global reach of products, with more countries engaging in specialized goods trade and receiving access to complementary goods for their economies.

Nonetheless, this interdependence has not been able to overcome a country's fear of threat which is clear from the changes witnessed in the foreign policies of countries which are aiming at gaining hands on more advanced technology to safeguard their countries from state and non-state actors. Countries that conduct a large portion of their trade by sea are not afraid to cross the borders of other sovereign territories. In continuation to this, there has been a surge in various countries' maritime budgets to improve their ability to exert influence over various so-called choke points, which is a major cause of concern for those littoral countries.

Just as a country requires protection from the threats posed by the existence of Oceans as a global common, Oceans also require security from human activities which further impact their ecosystems unintentionally. Ocean acidification, pollution, overfishing, coastal erosion, and marine disasters such as oil spills, etc. pose a serious threat to the biodiversity of the oceans, which is now being depleted at a faster pace. In addition to these, there are also emerging environmental issues related to the use of the oceans, such as the expansion of marine aquaculture, the exploration and extraction of minerals and energy resources, and the development of offshore wind farms which make it crucial to turn attention to the global common.

Including blue economies to promote ocean sustainability is crucial as it can prevent the acceleration of climate change. Oceans mitigate climate change by acting as a carbon sink and absorbing the Co2 produced by industries and providing us with more than 50% of oxygen. There have been numerous efforts at the international level by the United Nations, such as the global oceans treaty, the International Maritime Organization, and regional fisheries management organizations (RFMOs), and they have been successful in fulfilling their aims to some extent.

Considering their national, security, economic and environmental connotations, and the views and positions of stakeholders, regional organizations, and non-governmental organizations, countries need to focus on concocting their ocean-related foreign policies. The consideration of international laws and agreements is another major factor that shapes their foreign policies, but lack of agreements and enforcement institutions makes adherence to the rules of UNCLOS quite difficult. Another significant challenge is the difficulty in coordinating action among countries with limited capacity of many coastal states to manage their ocean resources which results in unsustainable practices.

Countries like Norway, Japan, Canada, Australia and the Netherlands have made significant efforts in this direction. Norway's Blue Economy Strategy promotes sustainable economic growth while protecting marine ecosystems. Japan's Ocean Policy aims to promote sustainable use of ocean resources for economic growth, while preserving marine ecosystems and biodiversity. Canada's Ocean Strategy focuses on areas such as sustainable fisheries, aquaculture, marine transportation, and ocean

science and technology. Australia's Blue Economy focuses on marine resources, while addressing climate change impacts and promoting research and innovation in ocean industries. The Dutch Blue Economy aims to promote sustainability and job creation while protecting the health of our oceans and the livelihoods of those who depend on them. But the efforts of all these countries exist in silos and it is difficult to bring them to adopt a common strategy in consonance with their own efforts of protecting oceans.

Oceans are a shared responsibility of all nations and communities and cooperation among nations need to be strengthened to protect and preserve this vital source. Countries continue to live in ignorance about the harm caused by their self centered policies to the environment and its long-term impact on living beings. The misconception of policies working like a panacea needs to be addressed. Further, the preservation and protection of the oceans is the responsibility of all nations and it requires a concerted effort to ensure that future generations can continue to enjoy the benefits they provide. The protection of the global common therefore becomes apposite in the light of the importance held by them for the entire world.

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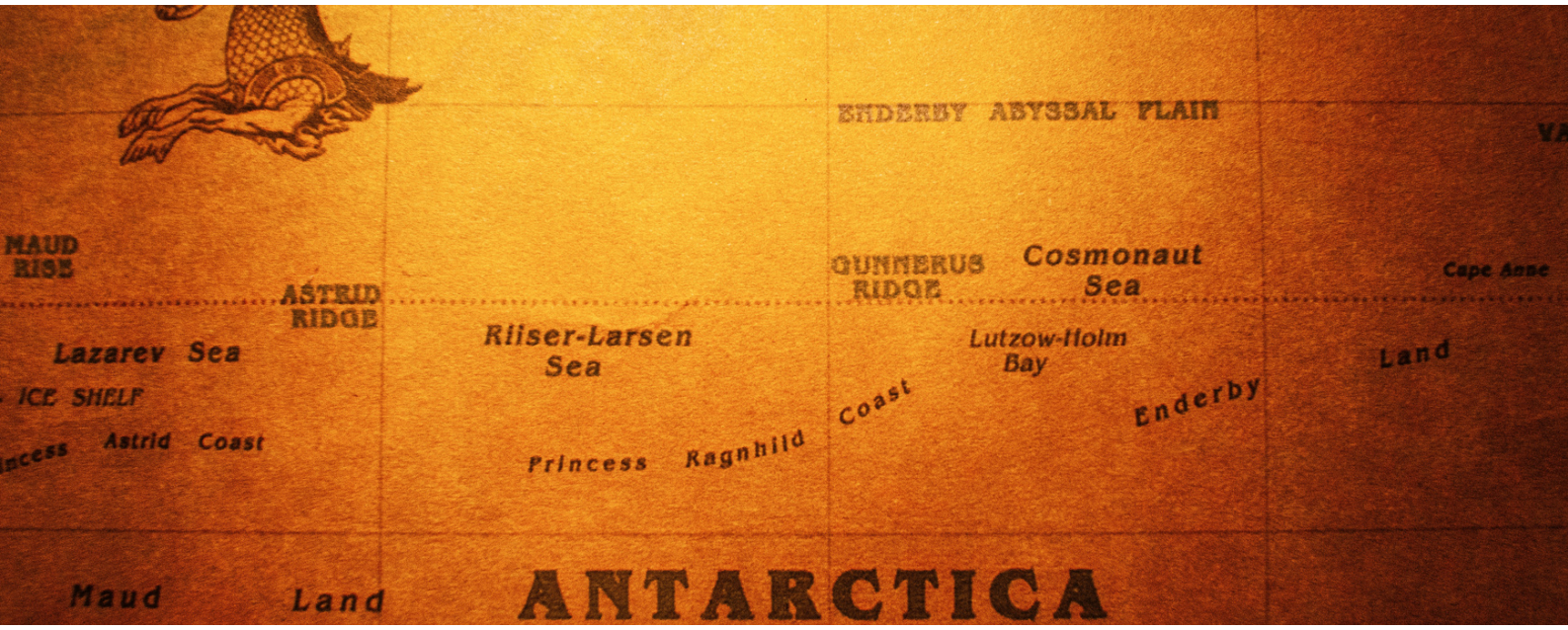

ANTARCTICA AS A GLOBAL COMMON

Global commons are referred to as the international and global resource domains in which common-pool resources are found. It includes earth's shared common resources such as Oceans, Airspace, atmosphere, outer space, cyberspace, etc. ("Global Commons," 2022). These spaces are governed through international treaties and agreements instead of being governed by any single country. Antarctica is also a global common that is governed and managed through the Antarctic Treaty System (ATS), which provides collective ownership to the contracting parties.

Antarctica is the fifth largest Continent on the earth, situated at the geographic South Pole. It is the coldest, driest, and least populated land on the planet. 92% of Antarctica is Ice covered with rainfall of less than 4 mm/ year and a population density of <0.01/km2. The average ice depth is 6200 feet ("Antarctica," 2023). In terms of biodiversity, it hosts a rather limited variety but significantly unique land and marine species ranging from Penguins, Krills to few bird species ("Antarctica," 2023). These salient features give it a special status as a place of collective concern since a small change in this region affects the entire world.

The Continent was first discovered in 1820, and there have been numerous expeditions by various countries since then. This isolated Continent has largely remained ignorant from the perspective of Global affairs, and there wasn't much happening there to catch the world's eye. However, the changing dynamics of the world order in the 1940s and 50s attracted the world's attention toward this massive piece of land. The shipping activity during the world war and the advent of the cold war increased competition among the nations over the influence and control over this region. (Micallef, 2022). Simultaneously, the concept of 'Antarctica as a global common' evolved, demanding the need for cooperation to limit the zone of contention and protect the region from harmful activities concerning global interests. This balance was achieved through the negotiation of the Antarctic treaty of 1959, which soothed regional affairs thereby once again concealing it from world affairs.

In the decades that followed, another major concern brought this region back to the world table. As a result of increased human activity; Melting Ice, Habitat loss, the ozone layer depletion, led to the formation of a hole in the South Pole. To address these issues, some additional treaties were formulated which included 'Convention for the Conservation of Antarctic Marine Living Resources' signed in 1980, 'Protocol on Environment Protection' (1991), also known as the Madrid protocol and some other agreements such as 'Convention for the Conservation of Antarctic Seals' (1972). This provided some relief, yet not sufficient enough to keep pace with the rate of environmental degradation. Additionally, recent times are witnessing renewed challenges threatening the sustainability of the Antarctic due to the changing world order and geopolitical realignments thus compounding the issue. The matter therefore seeks even more attention and demands much more deliberate efforts in the context of Antarctic as a global common.It therefore becomes important to explore the challenges faced in the Antarctic in the light of the changing global dynamics.

Governance

The region is governed through a number of treaties in place. The majority of things are covered under the Antarctic treaty. It gives provisions concerning ownership, inspection, judicial affairs, use of resources, and the activities conducted (THE ANTARCTIC TREATY, 1959). The treaty does not give ownership to any single country and all the decisions must be made through consensus which leaves a lot of space for disagreement.

The key contention in this regard is indecisiveness over the issue of territorial claims over the Antarctic. On the one hand, the treaty prevents countries from making fresh territorial claims over the Antarctic (Berkman, 2023) and it retains the existing claims of the contracting party, essentially freezing them at the same time. Many countries have laid territorial claims on different grounds. Argentina and Chile made them based on the Treaty of Tordesillas (1494) between Spain and Portugal and, therefore, as a successor state of the Spanish empire. They apply Sector Principle in International law, which pertains to using meridians to demarcate boundaries. The same basis is applied by the U.K. through its claim over the Falkland Islands and later by Australia and New Zealand through the statute of Westminster 1931, which grants the right to British dominions to make claims over territories. France makes it through its 1840 exploration of the Antarctic coast. Similarly, Norway makes it through its exploration of Peter 1 Island and Queen Maud Land in the 1920s & 30s; other countries are Brazil, Peru, Uruguay, Ecuador, the U.S., and Russia (former Soviet Union) (Micallef, 2022).

Militarization through double dual means

There are measures in place for safeguarding the Antarctic region which involves banning the militarization of the Continent and using it only for peaceful purposes, and allowing for only scientific activity and research in the region. However, it does not restrict military personnel or equipment for scientific research or any other peaceful purpose. Allowing, a window for dual-purpose research. On these lines, some incidents have occurred in the recent past further enforcing this concern. Russian deployment of remote sensing equipment, satellite relays, and ground-based Global Navigation Satellite System (GLONASS) installation in Antarctica (Boulègue, 2022); 'Admiral Vladimirsky' expedition in 2016, which was an oceanographic research trip (Strategy Bridge, 2021), are among few of them.

Economic Activity

At the economic frontier, there is also no restriction on fishing activity and exploitation of ice resources, essentially the water. Krill is the major fishing resource in the region. Although there is a cap on the quantity that can be fished, yet commercial fishing and the expansion of distant water fishing fleets by the countries like China are becoming major ecological concerns (Lou & Panter, 2021). Also, it is reducing fishing resource availability for dependent species like seals and penguins. Likewise, it contains 60% of the world's freshwater, making it an attractive destination ("Antarctica," 2023); with declining water reserves thereby increasing profitability from the possession of water resources, it might be a cause of concern for the region without proper legislation in place.

Inspection and Judicial Affairs

The jurisdiction is according to the sovereign laws of the contracting parties. Apparently, there is the absence of a body like the arctic tribunal or autonomous arctic court. In the case of disputes, decisions are made by consensus, and veto power to members is a major hurdle in this regard.

Any country at any time can conduct inspections on the base camp of other countries. However, inspections on the continent are rare and brief. There are instances where access was restricted to the inspecting team in certain areas. One such is the Novo and Perseus runway incident in 2018, in which Russia didn't allow access to the Norwegian delegation to the Pegasus runway in the Novolazarevskaya airbase (Boulègue, 2022).

Environment protection and conservation

Environment protection is a major concern in the Antarctic. The health of the Continent is the health of the world. There have been continuous efforts in this direction in the last 4 decades through international agreements. One of the major ones is the Conservation of Antarctic Marine Living Resources 1980 (CAMLR). It is an additional instrument to the arctic treaty. It brought about measures for protecting the land, living marine species, and the arctic ecosystem by demarcating protected areas and formulating regulations for them. There are 27 member countries to this agreement, and additional 10 members which cannot vote since they are not engaged in fishing activity. It successfully brings out many such legislations; however, decisions must be made through consensus, giving effective veto power to every country. It, therefore, is a major hurdle for formulating legislation and reforms. In recent years, there have been 2 instances of violation of protected zones by Chinese and Russian fishing vessels (Strategy Bridge, 2021).

The probe for the confiscated vehicles was vetoed by the respective countries.

Protocol on Environment Protection to Antarctic Treaty 1991 is another such agreement. It is also known as the Madrid protocol. It provides for specially protected areas and their further extension but, most importantly, prohibits mining activity till 2048. However, it allows for mining activities provided an agreement is reached between the parties within the ambit of the protocol, which requires 3/4th majority and ratification by 3/4th of the contracting parties in their parliament.

Some other agreements involve the Montreal protocol for the prevention of Ozone depletion, The Convention for the Conservation of Antarctic Seals (CCAS, 1972) which deals with seal conservation, and the Paris agreement on limiting global temperature to 1.5 degrees Celsius (The Paris Agreement, 2015). These agreements have some positive results. Nevertheless, they are no match for the skyrocketing consumption and resource exploitation rate.

Other issues

There are some other emerging key areas of concern in the wake of recent transformations and developments. Tourism is among one them. The attractiveness of Antarctica as a tourism spot is increasing, translating into increased human activity in the region. It involves cruises and overhead flights. Australia's aerodrome project is one such example aimed at increasing Australia's presence in the region (Young, 2021). Then there is the question of Antarctica's Air and Cyber Space which is unregulated. Ocean noise due to increased vessel movement is another emerging concern which harmful to marine species and their SONAR systems, due to which increased loudness is detected during their mutual communication.

Ice acts as a natural boundary. Melting ice is changing the territorial extent of Antarctica. Climate change is damaging the Antarctic infrastructure, accelerated by permafrost melting and pose an even greater threat.

What is there for India?

Melting glaciers and rising sea levels are major concerns for India, having an extensive coastline. The Arctic, Himalayas, and Antarctic have very similar climatic conditions, and researching them can better help understand and formulate policies for adequate mitigation measures. Ozone layer depletion and its cancer-causing effects are a grave concern. India, a party to Montreal Agreement, has an extended obligation to deal with this concern. Recently India brought a legislation, the Antarctic bill, giving effect to the Antarctic treaty provision, which includes a ban on plastic waste in the Antarctic, strengthening its commitment to environmental conservation (Young, 2021). India is already conducting research in the Antarctic and sent its 41st expedition in 2021 to its Maitri base; further, in this direction, India can come up with satellite control bases for navigation and other peaceful purposes, research activity in oceanography, etc. Also, it can further efforts in the creation of marine protected areas. Adding a security dimension to it, countering Chinese activities is an essential strategic concern for India as the Southern Ocean provides an alternative route to the Indian Ocean, which is essentially India's backyard. In this direction, India can take steps to include the region in its Indian Ocean strategy, expanding the operation of the SAGAR initiative (Mission SAGAR 2022) and also involving QUAD members in these efforts. Australia is already working on its southern ocean policy in case a major war breaks out in the north (Young, 2021).

Moreover, it is also making ice-hardened patrol vehicles. In its developmental efforts, expanding the Coalition for Disaster-resilient Infrastructure (CDRI, 2022)and involving the polar region in its ambit can be a major breakthrough for India. Emergency response action and cold weather research can also be included as a part of such efforts. But above all, India's most important role is the Peacemaker in polar politics, adhering to its motto of 'Sarve Bhavantu Sukhina', meaning peace and prosperity for all. India's stand on the Falkland Islands issue as a mediator is the best example of this happening.

What can be done?

The polar region is no longer insulated, and therefore 'Great powers' competition must be prevented. Stricter regulations need to be brought in to tackle climate change. In this direction, the Arctic-Antarctic-Himalayan-Alps policy needs to be developed in conjunction. A stricter watch is required on the activities of double dual nature, and more frequent & open inspections need to be done with full accessibility. Further in its ambit, the emergence of new viruses and development & research activities related to viruses must be monitored with stricter regulations.

On the other side, deliberate efforts are required to strengthen the Madrid Protocol and extend it beyond 2048. Also, in this regard, it must address the shipping and trade interests of concerned nations through the southern ocean. The compliance mechanism needs to be strengthened to deal with the misuse of VETO power in the consensus mechanism for CALMR.

Small states' concerns need to be included in the Antarctic, and stronger participation by them should be encouraged to address their concerns. Further, in this regard, all other countries need to be included in the treaty. Strengthening and reforming dispute settlement mechanisms is another measure to be taken. Furthermore, to address the issue of present times, new legislation needs to be brought for the conduction of aerial, remote, and unmanned vehicle-related research and testing. Then also, tourism activity in the continent must be reduced to the bare minimum. Enhanced efforts need to be made for research sharing, transparency, and collaboration on research. The Antarctic, after all, is a global common and it is the collective responsibility of all to have a sustainable planet by having a sustainable continent.

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CLIMATE CHANGE: DEPLETION OF THE OZONE

Management of resources has always been a key issue for the entire world and the presence of Global Commons shifts focus towards this issue all over again. A global common is a shared natural resource that has no particular claim by any country. One such global common is the Ozone Layer. In 1985, a hole in the Ozone layer above Antarctica was confirmed. Ozone gas is present in the stratosphere about 15- 30 km above earth as well as in the troposphere. It plays a significant role in protecting the earth from deadly ultraviolet radiation. For more than 4 decades, human activity and chemicals produced due to human activities have been eroding the ozone layer. Its erosion will have a widespread impact, covering the entire earth and hence ozone happens to be a shared natural resource that isn't claimed by any one nation. This makes ozone a global common that concerns all the nation states.

EFFECTS OF OZONE DEPLETION ON INDIA

Ozone depletion has several harmful effects that impact humans and the ecosystem. Ozone depletion causes the UV rays to hit the earth directly and long term exposure to UV radiation leads to skin cancer, eye diseases and other health issues. It not only harms the humans but also the plants, animals and microbes.

For India, the effect of exposure to UV radiation would be catastrophic as the Indian economy is predominantly agrarian and the effect of ultraviolet rays on cattle used for tilling and transportation would be catastrophic. Further, the maintenance of food and livestock would become difficult in the event of ozone depletion causing frequent famines. 70% of ozone depletion is said to cause blistering sunburn after 10 minutes of exposure (Amanda Bickel, & Annie Makhijani, 1990). and AIndia is a country that gets sunlight for about 65% of the day which ultimately increases the chances of sunburn and blisters in Indians. A small reduction in ozone can cause malignant melanoma, a significant rise in skin cancer, cataract, and damage to the immune system and aquatic life. The temperature of Earth will rise by 3 to 5 degrees because of GreenHouse Gas emissions (Amanda Bickel, & Annie Makhijani, 1990). According to a study conducted in 1985 by the US National Academy of Sciences, it was claimed that the effect of ozone depletion will be similar to an all-out nuclear war (Amanda Bickel, & Annie Makhijani, 1990). All this will affect India acutely because India has a large population that would have to deal with the harmful effects of ozone depletion.

CAUSES OF OZONE DEPLETION

Human activities are major cause for ozone depletion as they release Ozone Depleting Substance (ODS) Major Ozone Depleting Substances such as ChlorofluoroCarbons (CFCs), carbon tetrachloride, hydrochlorofluorocarbon carbons (HCFCs), hydrobromofluoro carbons. methyl chloroform. These substances are used in refrigerators, air conditioners, fire extinguishers, foam, aerosol propellants. Methyl bromide is frequently used for fumigation of soil and CFCs used as industrial solvents for cleaning computers are significantly difficult to eliminate. Making of plastic also adds to ODS as it releases CFCs. All the CFCs released in the atmosphere will continue to destroy the ozone layer for years to come. Scientists have also measured the harmful effect of ODS substance wise. Some substances are more harmful and deplete the ozone layer more than others. Bromotrifluoromethane depletes more ozone than carbon dioxide. This is called Ozone Depleting Potential (ODP). Natural causes of ozone depletion are volcanoes. Volcanoes release large amounts of chlorine that causes temporary ozone loss. Overall, it can be said that human activities are contributing and causing more damage to the ozone layer and destroying the balance between replacement and replenishment of ozone. These causes are very telling of the fact that all nation-states have to contribute towards phasing out ODS and the crucial target of curbing the ozone layer depletion cannot be achieved without the cooperation of countries all around the globe. Steps have been taken by nation states for the prevention of Ozone depletion and various conventions related to the protection of the ozone layer stand as a testimony to their efforts. Some of these conventions include the Vienna Convention, Montreal Protocol and the Kigali Agreement.

Vienna Convention is an agreement that lays out principles agreed upon by 116 parties of the Vienna Convention. This convention was adopted in 1985 and came into effect in 1988. It was aimed to promote cooperation among nations through exchange of information on the effect of human activities on the ozone layer. It was thought that measures would be adopted on the basis of information to combat ozone depletion. The convention states that nations under the UN charter and international laws have the right to exploit and use their resources according to their own environmental policy as long as they ensure that activities within their jurisdiction do not damage the environment of other na

nations or areas beyond their national jurisdiction. Mindful studies were conducted at national and international levels. Measures were also taken to prevent further ozone depletion. The Vienna convention is significant in emphasizing that international cooperation is necessary to protect the ozone layer and it calls for further scientific research and observation, and advocates usage of alternative technologies and substances to protect the ozone layer. The countries meet every 3 years to make decisions on issues of research and systematic observation and financial and administrative matters.

The Montreal Protocol, on the other hand is an agreement that regulates production and consumption of 100 man- made chemicals that are referred to as Ozone Depleting Substances. The protocol was adopted on 16 September, 1987. It phases down production and consumption of various ODS in a step wise process. There is a different timeline for developed countries and developing countries and all the parties have specified responsibility to phase out different groups of ODS and control ODS trade. Developed and developing countries have equal but differentiated responsibilities, though there are time bound commitments to be met by both according to the ozone depleting substances released by these countries. A Multilateral Fund has been set up for funding implementation of the Montreal Protocol since 1991. The purpose of the fund is to provide financial and technical assistance to developing countries in order to achieve the goals of Montreal Protocol. Multilateral funds are implemented by 4 international agencies UNEP, UNDP, UNIDO and World Bank. Certain bilateral agencies are involved in funding as well. Without the Montreal Protocol ozone layer would have depleted 10-fold by 2050 and resulted in catastrophic impact.

As far as the Kigali Agreement is concerned, Hydrofluorocarbons (HFCs) were introduced in the late 1980s as non-ozone depleting alternatives. This was done in order to support the timely phase out of CFCs and HCFCs. Use of CFCs and HCFCs happens to be widespread in air conditioners, refrigerators and various other products. The drawback of replacing CFCs and HCFCs with HFCs is that they tend to have a high Global Warming Potentials (GWPs). It is predicted that growth in HFCs will result in a rise in temperature at or below 2 degrees celsius in this century. Thus, parties to the Montreal Protocol convened in Kigali, Rwanda in 2016 and agreed that HFCs should also be added to the list of controlled substances. The parties also approved a timeline for gradual reduction of usage of HFCs.

India is a party to the Vienna convention, Montreal Protocol as well as Kigali Amendment which are among few conventions to be signed and ratified universally. The country has been successful in phasing out chlorofluorocarbons, carbon tetrachloride, halons, methyl bromide and methyl chloroform for controlled uses. HCFCs are also being phased out in an accelerated manner. Successful implementation of Conventions is due to involvement of key stakeholders at planning and implementation level in India. The cold chain sector in India is promoting use of non ODS leading to India phasing out ODS in a timely manner. (*The Hindu, 2021*).

In a report that is published every 4 years on progress of the Montreal Protocol, the panel reported that 99% of banned ODS were already phased out. This phase down led to significant recovery of the ozone layer in the upper stratosphere. The Antarctic ozone hole has shown recovery in size from 2019 to 2021, these changes were driven by meteorological conditions, though improvement can be seen.

The Montreal Protocol and Vienna Convention have helped to avoid global warming by 0.5 degree Celsius and have been highly effective in protecting the ozone layer and recovering the ozone hole. (UNEP, 2021)

Improvements can be seen in the size of the ozone hole which has been on a path to recovery. Yet, the nation-states cannot afford to be lackadaisical now, and revel in the progress that has been made as more needs to be achieved and the destruction to the ozone has to be completely reverted to its original state. Major financial and administrative challenges have to be looked into and nations need to work rigorously to balance the protection of the global common with the economic growth of the nations.

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