National Maritime Foundation

MAKING WAVES

A maritime news brief covering:

- MARITIME SECURITY
- MARITIME FORCES
- SHIPPING, PORTS AND OCEAN ECONOMY
- MARINE ENVIRONMENT
- GEOPOLITICS

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MARITIME SECURITY

MARITIME PIRACY MAJOR CAUSE OF CONCERN FOR OVER TWO LAKH INDIAN SEAFARERS: MUI

- PTI

Concerned at rising incidents of piracy during the COVID-19 pandemic, maritime body MUI on Monday said it has become a major cause of worry for over two lakh Indian seafarers. The Maritime Union of India (MUI), India"s oldest union of merchant navy officers, said there is around 26 per cent increase in maritime piracy due to the pandemic, which has shut down many businesses and job opportunities around the world. "The menace of maritime piracy is a major cause of concern for over two lakh Indian seafarers as India now provides around 9.35 per cent of the global seafarers and ranks third in the list of the largest seafarers supplying nations to the world maritime industry," MUI said in a statement.

It said the West Coast of Africa comprising Benin, Angola, Equatorial Guinea and Ghana are the current hot spots of maritime piracy. "It has become a political issue unfortunately as governments of certain countries are unable or not willing to extend their control over various groups of pirates who manage to procure arms and ammunition without much difficulty," said Amar Singh Thakur, General Secretary MUI.

"The temptation of a little quick money has led many residents of the underdeveloped countries to choose such an illegal path which continues to terrorize millions of seafarers globally, including Indian citizens," said Thakur. A global piracy report published recently by the United Kingdom-based The ICC - International Maritime Bureau, indicates a rise in piracy and armed robbery on the world"s seas in the first nine months of 2020, with a 40 per cent increase in the number of kidnapping reported in the Gulf of Guinea, compared with the same period in 2019. Pirates armed with guns and knives are abducting bigger groups of seafarers at further distances off the West African coast, MUI said quoting the report and added that it details 132 attacks since the start of 2020, up from 119 incidents in the same period last year.

In the first nine months of 2020, seafarers reported 134 cases of assault, injury and threats, including 85 crew members being kidnapped and 31 held hostage onboard their ships. A total of 112 vessels were boarded and six were fired upon, while 12 reported attempted attacks. The body said twenty Indian nationals were kidnapped recently from a Marshall Islands-flagged oil tanker vessel MT Duke off Lome, Togo in West Africa. The vessel was attacked and boarded by six pirates some 115 nautical miles southeast of Lome. These Indian seafarers were recruited by London-headquartered V Group through its ship management company operating in India.

MUI said billions of dollars are paid every year by ship owners or ship management companies worldwide to sea pirates towards ransom amount for securing the safe release of abducted seafarers and added that these companies ironically solicit services provided by kidnap-for-ransom consultants based in developed countries.

Source: Outlook; 28 December 2020

NAVY PROTECTS SINGAPORE WATERS AMID PANDEMIC AND RISING PIRACY

- David Sun

When Covid-19 hit Singapore in January and the circuit breaker period saw most Singaporeans working from home, it hit personnel of the Republic of Singapore Navy (RSN) hard. Especially those who had to be out at sea with one eye on keeping our waters safe, and another on making sure there was no virus breakout on board their vessels. Master Sergeant Kevin Nicholas Simon, 30, an Accompanying Sea Security Teams (ASSeT) senior specialist with the 180 Squadron, recalled how he had to spend two weeks away from his family each time, isolated away from the rest of the community as he went out on operations at sea. He said: "When we first got the news, I was quite down. "But although the pandemic was happening, the threat was still out there at sea. We still needed to go and board vessels (for checks) and there were still ships coming into Singapore waters." MSG Simon said his biggest challenge now is putting on an N95 mask during operations.

"Our gear with everything on weighs about 15kg to 20kg. And we have to climb about six to seven metres (to board ships) wearing the N95 mask," he said. "By the time you are on the ship you are breathless." The Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia Information Sharing Centre (ReCAAP ISC) recently reported that there has been a sharp spike in incidents in the Singapore Strait. There were a total of 33 incidents from January to last month, compared to just 23 in the same period last year.

But none of these incidents happened in Singapore waters. Commenting on this increase, Rear Admiral Yong Wei Hsiung, 40, the commander of the Maritime Security Task Force, said the pandemic could be a reason causing more people to turn to piracy in the region. He said: "It's not rocket science. We know Covid-19 has affected economies around the world. "People need to feed their families and so in a way I think that may be one source as to why we see an increase in some of the attempted sea robberies, sea thefts in our region." RADM Yong added that the monsoon season could also be a factor, as fishermen may find it harder to fish out at sea.

"Potentially they may need alternate sources of income, but again this is just speculation on our part," he said. "It's not impossible to imagine given the economic situation." Associate Professor Goh Puay Guan, from the Department of Analytics and Operations at the National University of Singapore's Business School, said Singapore's sea routes are important to the continued flow of goods in maritime trade and to Singapore's position as a trading hub. He said: "Piracy will impact the shipping lanes

and disrupt shipping and trade, which could have an impact on economic activity, as well as the safety of ships and crew. "Consumers will not see the immediate effects directly. However, if the costs of goods go up due to higher insurance and freight costs, then consumers may feel the effects."

Source: The New Paper; 28 December 2020

CYPRUS SHIPPING CHAMBER SAYS 'ENOUGH IS ENOUGH' WITH PIRACY IN GULF OF GUINEA

The Cyprus Shipping Chamber (CSC) expressed regret and frustration over the ineffectiveness of the international community to address the continuing piracy crisis in the Gulf of Guinea (GoG). Back in June 2020 the CSC said it raised grave concerns about the worsening piracy situation in the GoG and invited action by governments. "Unfortunately, the CSC is sad to observe that we have now reached the end of 2020 and despite the efforts being made by the industry, the situation remains gravely dangerous for ships trading in the GoG," the chamber said in a statement. According to the last report of the International Maritime Bureau's Piracy Reporting Centre (IMB PRC), in the first nine months of 2020, there was a 40 per cent increase in the number of kidnappings reported in the Gulf of Guinea, compared with the same period in 2019. Approximately 95 per cent of the global kidnappings during that period occurred in the Gulf of Guinea, involving 80 crewmembers being kidnapped in 14 attacks off Nigeria, Benin, Gabon, Equatorial Guinea and Ghana.

The CSC said it welcomes the creation of the Nigerian government and Industry Joint Working Group (NIWG) that aims to facilitate coordination between government and industry and align efforts to deter and respond to incidents of piracy and armed robbery in Nigerian territorial waters and EEZ. The Integrated National Security and Waterways Protection Infrastructure project, otherwise known as the Deep Blue Project (DBP), the new Nigerian National Maritime Reporting Framework which will support merchant vessels in distress, and enhancement of the NIMASA's Command, Control, Computer Communication and Information (C4i) Centre are policies in place that could be considered as steps towards the right direction of deterring the piracy incidents in the area. "While various efforts to improve maritime security in the region are ongoing, actual implementation will take time and consequently possible positive results are not expected in near future as this persistent problem cannot be addressed within just a few months," the CSC said.

In addition, it said, the economic impact of the Covid-19 pandemic is likely to lead to budget shortfalls which have already be observed in Nigeria as well as several other countries. "It is therefore vital that governments, at the very highest level, become far more engaged in finding a long-term solution to the crisis. International community should remain committed in the efforts of taking concrete actions towards protecting the vessels and crew operating in the Gulf of Guinea." The shipping industry is also calling on local governments in the Gulf of Guinea to continue their efforts and even

take more effective actions to eliminate this intolerable situation, with additional steps to be taken now, and not later. "We cannot continue to allow crews to be taken hostage, a situation which is simply unacceptable."

Source: Cyprus Mail; 30 December 2020

5 TECHNOLOGIES TO TRANSFORM MARITIME COMMUNICATIONS

- Martyn Wingrove

Having fast, reliable and secure connectivity between ships and shore has never been more important than when crew are stuck on board and face restricted travel. With the coronavirus pandemic, there is also an increased need for all onshore personnel in shipping companies to be connected with real-time data and information from anywhere worldwide on their own devices. Internet of things (IoT) and cloud technologies enable real-time data telemetry and much more in terms of analytics and informed insight into performance trends. All this needs the latest in maritime communications technology and satellite connectivity.

LEO VSAT

There will be multiple constellations of low Earth orbit (LEO) satellites boosting maritime connectivity within a year or so as more are launched and others planned, providing connectivity in V, Ku and Ka bands for ship VSAT with better access and speed than existing VSAT from geostationary satellites or LEO L-band by Iridium. Some of the world's entrepreneurs are battling to become the first to provide commercial VSAT communications over LEO satellites. Elon Musk's SpaceX was the first to proceed, launching LEO satellites for its Starlink project. Another 60 satellites were launched in November on SpaceX's Falcon 9 rocket, bringing the total to over 800 units in orbit. SpaceX intends to begin commercial VSAT services from these satellites in early 2021 with global coverage by the end of the year.

Mr Musk has approval to commission 12,000 satellites into orbit. These will operate using V-band frequencies (40-75 GHz), compared with the standard K-band frequencies (12-40 GHz) other constellations are designed to use. OneWeb was following SpaceX's lead until it went into administration in March 2020. Ownership was transferred to a new company in November, with its principal shareholders being the UK Government and the Indian conglomerate Bharti Global, founded by Sunil Bharti Mittal. OneWeb has 74 satellites operating and 36 more being commissioned in orbit, with plans to have around 650 in the first phase for global connectivity. Shipborne hardware will be ready in 2021 as Intellian has started producing a wide range of dedicated user terminals for OneWeb. Commercial communications services are set to begin in Q4 2021. Coverage will extend to the UK, Alaska, Canada, northern Europe, Greenland, Iceland, and the Arctic Seas. Other companies are planning to implement constellations. Telesat is laying the foundations for its future growth with a LEO constellation with backing from the Canadian government. Amazon plans to

have more than 3,200 satellites in its Project Kuiper constellation for broadband services and to interconnect its data centres.

5G networks

Investment in 5G mobile phone networks has increased rapidly, with key players such as Vodafone rolling out new coverage in cities and ports providing lightning-fast connectivity, which can be extended along coastal areas and further for maritime applications. Having true terrestrial-like broadband at sea will be a game-changer for vessel operators, as P&O Maritime Logistics operations director Paul Jarkiewicz said during Riviera's Maritime Communications Webinar Week, held in July. Vessel owners can combine VSAT, 5G, 4G and long-term evolution (LTE) networks to communicate more effectively and transmit data faster. This is vital as ships become high-performance, remote mobile offices and extensions to shipping company internal networks. 5G's lower latency and faster connections make video conferencing more important as the global coronavirus pandemic has restricted face-to-face contact. 5G is not just about short-range networks. It will be extended through satellites using the C-band spectrum in the US as operators invest in new satellites. In Q3 2020, Inmarsat tested one of its satellites for IoT communications using the 5G mobile network standard.

Maritime mesh networks

Another alternative to satellite communications has emerged with Scandinavian companies promoting mesh networks. These use ships as network hubs and conduits for IoT data, with a small fleet able to relay data to shore for uploading to a cloud. Ericsson has trialled a mesh network using 4G LTE and 5G mobile networks for building a dynamic network architecture. This communications web is between vessels across common international shipping lanes. Ericsson's project has already undergone the minimal viable product development phase. It is expected to complete its first field trial in a live maritime environment by Q1 2021, moving this technology a step closer to commercial rollout. Ericsson estimates with around 200 vessels linked through a mesh network, 99.9% coverage could be guaranteed across major well-trafficked shipping lanes. Another version will be driven by Telenor Maritime which acquired KNL Networks in November. KNL has developed data access to merchant ships through a secure mesh network. Its WaveAccess network uses ship radio communications as the IoT conduits. This will be expanded in 2021.

Flat-panel antennas

Research and testing has shown the potential of flat-panel antennas to support LEO satellite VSAT. There have been successful tests on yachts and developments for commercial vessels over the past five years. Companies such as Kymeta have focused on developing flat-panel antenna technology for vehicles and military applications Kymeta and Isotropic Networks are collaborating on a next-generation flat-panel antenna, with Kymeta's u8 electronically steered antenna terminals getting through beta testing and securing US approval in Q4 2020. This antenna enables Ku-band communications in mobility applications with reliable electronic beam steering and no moving parts. Kymeta said this antenna could be used in hybrid satellite-cellular connectivity solutions on small vessels and ferries, with more trials expected in 2021.

In-space refuelling

Despite interest in LEO satellites, there is still more investment in dollar terms in geostationary orbit satellites. However, these are costly to produce and launch, leaving some satellite operators seeking to maintain services through existing space infrastructure. This can be achieved if satellites can be refuelled to continue providing reliable communications to ships. Intelsat became the first to successfully complete a refuelling mission in Q1 2020. Its Intelsat 901 (IS-901) satellite in geostationary orbit was refuelled by Mission Extension Vehicle-1 (MEV-1), owned by Northrop Grumman Corp subsidiary SpaceLogistics. They will remain connected to extend IS-901's life for four more years before IS-901 is transferred into a decommissioning orbit in 2025. In August, a second (MEV-2) was launched on Arianespace's Ariane 5 rocket to dock with Intelsat's 10-02 satellite from Q1 2021. This satellite provides broadband services across Europe, the Middle East, Africa and South America. Telenor Satellite has contracted capacity from this satellite (also named Thor 10-02) to provide mobility coverage, including for maritime, over Europe and the Middle East. Another company plans to test this emerging technology. Orbit Fab expects its first in-space fuelling unit, Tanker-001 Tenzing, to launch aboard a SpaceX Falcon 9 in June 2021.

Source: USNI News; 17 December 2020

MARITIME FORCES

AFTER PREDATOR DRONE LEASE, GOVT APPROVES INDIAN NAVY PROPOSAL TO BUY SHIPBORNE DRONES

- Ajay K Dubey

New Delhi [India], January 1 (ANI): After leasing two predator drones from the US, the Indian Navy is now going to urgently acquire 10 shipborne drones for enhancing its surveillance capabilities in the Indian Ocean Region, for which it has received the government approval recently. "A proposal moved in fast track mode by the Indian Navy before the Defence Ministry, under which it will buy 10 Naval Shipborne Unmanned Aerial Systems for around Rs 1,300 crores has been cleared by the government," government sources told ANI.

The Navy will acquire these drones through an open bid under the Buy Global category and then soon deploy them on its large size warships for surveillance and reconnaissance activities. As per the plans of the Navy, the drones would be deployed on big size warships of the force and would help them in the detection of activities of the Chinese as well as other adversaries in and around Indian territorial waters, they said. The Indian Navy is working separately on a project to acquire Sea Guardian drones from the United States for expanding its surveillance in the country's areas of interest from Madagascar to Malacca Straits and beyond.

The Navy is also getting its existing drones upgraded as part of an upgrade programme, which was recently taken up for discussion in the Defence Ministry. Indian Navy has inducted two American Predator drones on lease from the US to carry out surveillance in the Indian Ocean region. Capable of carrying out surveillance for more than 30 hours, the drones are operating out of Indian Navy's INS Rajali airbase. The two Predator drones arrived in India around mid-November and entered into an operational role in the third week of November. The Indian Navy has inducted these drones under a lease agreement with the American vendor, sources added. As part of the deal, the vendor has deployed a team to guide the personnel operating the Predator drones.

Source: ANI; 01 January 2021

BHARAT ELECTRONICS LIMITED SIGNS CONTRACT WITH INDIAN NAVY TO SUPPLY LASER DAZZLERS

- PTI

New Delhi: The Bharat Electronics Limited signed a contract with the Indian Navy on Thursday to supply 20 laser dazzlers, a non-lethal weapon for warning and stopping suspicious vehicles, boats and aircraft. The Defence Ministry in a statement said that this weapon has been indigenously designed and developed for the first time, and it also "dazzles and distracts aircraft/UAVs (Unmanned Aerial Vehicles)". It stated that the Bharat Electronics Limited (BEL) had earlier in December won the contract to supply the laser dazzlers to the Indian Navy. "It (laser dazzlers) is capable of dazzle and thereby, suppress the person's/optical sensor's action with disability glare in case of non-compliance to orders. It disorients/ confuses/blinds a person temporarily. It also dazzles and distracts aircraft/UAVs (unmanned aerial vehicles)," the statement said. These weapons would be manufactured in the BEL's plant in Pune. "The BEL has signed a contract with the Indian Navy for initially supplying 20 Light Amplification by Stimulated Emission of Radiation Dazzlers (laser dazzlers) in New Delhi today," the statement said.

Source: NDTV; 01 January 2021

GRSE DELIVERS LAST LANDING CRAFT UTILITY SHIP TO INDIAN NAVY

- PTI

KOLKATA: Defence PSU GRSE has delivered to the Indian Navy the last of the eight landing craft utility (LCU) ships manufactured by it, providing a major boost to the country's defence preparedness, a top company official said. The amphibious ships, to be based in the strategic location of Andaman and Nicobar Islands -- which is close to various routes leading to the South China Sea -- "are specifically designed to undertake landing operations in most difficult beaching areas", GRSE chairman and managing director Rear Admiral (retd) V K Saxena said. Despite challenges owing to the COVID-19 pandemic and subsequent lockdown, the Kolkata-based Garden Reach Shipbuilders and Engineers (GRSE) has successfully delivered the last of eight LCUs manufactured for the Indian Navy, he said.

The LCU ships, equipped with state-of-the-art technology, were developed in-house with 90 per cent of its parts indigenously manufactured. "These ships are very unique in their design and class in the world. A very specific kind of requirement was given by the Indian Navy -- speed of 15 knots, a displacement of 900- odd tonnes and a low draught for beaching in the shallowest of waters," Saxena told PTI. Apart from troops, each ship can accommodate main battle tanks, personnel carriers and other Army

vehicles, which can be launched on the beaches, he said on Thursday. The ships are designed to accommodate 216 personnel and have two indigenous CRN 91 guns to provide artillery fire support during landing operations, he added.

Source: New Indian Express; 01 January 2021

SHIPPING, PORTS AND OCEAN ECONOMY

A KOREAN CONTAINER SHIPPING ALLIANCE (K-ALLIANCE) SET TO LAUNCH IN 2021

- Hariesh Manaadiar

As covered in my Shipping and Freight Review of 2020, the global container shipping market is dominated by 3 major global container alliances consisting of 10 container shipping lines, who together, control a whopping 83.80% of the total container shipping market across various services. Now a grouping of South Korean container lines are reportedly teaming up to create their own alliance called K-Alliance. The lines (rank in top 100 container lines) which form the K-Alliance are HMM (10), Sinokor Merchant Marine (20), SM Line Corp (25), Pan Ocean (73) and Hueng-A Line (not part of the Top 100 container lines)..

The agreement between these 5 operators signed on the 23rd of December is said to have been done at the behest of the Ministry of Oceans and Fisheries (MOF) of South Korea. As per MOF estimates, the combined market share of the South Korean container line operators is around 40% on the South East Asian trade which equates to about 190,000 TEUs which has been steadily declining due to the aggressive marketing and rate actions of global shipping lines on this route. The Korean operators seem to be focusing on the South East Asian market because of its huge potential for growth due to the manufacturing base/activities in the region, especially in Vietnam. While noting that the partners were not obliged to join the K-Alliance, the ministry said, "It's the first attempt to form a service alliance consisting of only South Korean carriers to reap economies of scale. Other operators are welcome to join in at any time, in consultation with existing member companies." It is expected that 6 other Korean operators may join the Alliance at a later stage.

The aim of the K-Alliance is said to be enhanced cooperation between the Korean lines, strengthening carrier competitiveness through the creation of new routes, cost saving through the deployment of eco-friendly ships, shared container pool and port facilities. The K-Alliance is expected to officially begin operations during the second quarter of 2021 but whether they will join any of the global alliances is yet to be known. HMM which is the 10th largest container shipping line in the world, is already part of the THE Alliance, the smallest of the 3 global container alliances with a 3% market share. Will HMM pull some strings to bring the K-Alliance in to this alliance..?? Only time will tell.

Source: shippingandfreightsource.com; 29 December 2020

INDIA LAUNCHES FIRST REMOTE MONITORING SYSTEM FOR OIL REFINERIES

New Delhi: Indian Oil Corp (IOC), the country's largest fuel retailer, announced it has launched the country's first remote monitoring system for oil refineries' turbines. The project, located in Hyderabad, was inaugurated by oil minister Dharmendra Pradhan on Tuesday. The Remote Monitoring & Operation Centre for Tracking of IndianOil's Refinery Gas Turbines was implemented by BHEL-GE Gas Turbine Services (BGGTS), a joint venture of BHEL and General Electric. "This is the first time ever, such a multi-unit monitoring system in the country is being implemented by an Oil PSU in India," IOC Chairman S M Vaidya said. He informed that originally the remote monitoring system was envisaged to be operated out of GE's Atlanta Analytical Centre in the United States but owing to Data Residency Clause and National Cyber Security Guidelines, it would now be operated from Hyderabad.

The technology -- called Proactive Predictive Analytics-based Automated Anomaly Detection -- will allow Gas Turbune Operational Data flowing in digitally from 27 turbines of the eight IndianOil refineries to be analysed round-the-clock in Hyderabad. This analysis will help in detection and diagnosis of emerging issues relating to gas turbines before they become critical and triggers corrective actions. This will help avoid refinery process unit shutdowns.

Source: Economic Times; 30 December 2020

CHINESE BIDS ON PACIFIC CABLE RAISE ALARM IN US AND AUSTRALIA

- Fumi Matsumoto

SYDNEY -- Moves by Chinese corporations to buy into undersea cable projects and telecommunications companies in the Pacific islands have become a point of major concern for Australia and the U.S. over the possibility of spying. This region has long been the backyard of Canberra and Washington. But they increasingly find themselves fighting over influence with Beijing, which has strengthened its presence there by building infrastructure. The U.S. has warned Pacific island nations about security threats posed by a bid by China's Huawei Marine to build a $72.6 million undersea cable linking the Federated States of Micronesia, Kiribati and Nauru, Reuters reported. Washington sent a diplomatic note to Micronesia in July expressing strategic concerns about the project as Huawei Marine and other Chinese companies are required to cooperate with Beijing's intelligence and security services, the report said, citing sources. It noted in a follow-up report that Republican senators Ted Cruz and

Marco Rubio told Micronesia in a letter dated Sept. 18 that China could leverage its way into the project to wage "campaigns of espionage and geopolitical coercion." Huawei Marine used to be under the umbrella of Huawei Technologies, the Chinese telecommunications equipment maker that has been targeted by U.S. sanctions, before it was acquired by China's Hengtong Group. The East Micronesia Cable project is backed by the World Bank and Asian Development Bank. The bidding process ended in May and the World Bank and ADB are currently reviewing the bid evaluation report, according to sources. An undersea cable is needed to improve the weak telecommunications infrastructure in the Pacific islands. Such equipment is important from a security standpoint due to the massive volume of data that flows through it. Because Washington is responsible for Micronesia's defense under a decades-old agreement, it apparently has concerns that Beijing will be able to get its hands on military and other classified information.

"Companies that are required to cooperate with their home government's intelligence agencies and to conceal such cooperation, as is the case with Chinese companies, pose risks to the integrity and security of data travelling through undersea cable systems," said Michael Shoebridge at the Australian Strategic Policy Institute. Australia has removed Huawei Marine from an undersea cable project in the past. In 2018, it decided to finance construction of an undersea cable between Sydney, Papua New Guinea and the Solomon Islands, and excluded Huawei Marine, which had already received an order from the Solomon Islands. And in October, it decided to finance the connection of a submarine internet cable to the Pacific island nation of Palau along with the U.S. and Japan.

There has also been talk of Chinese companies entering the mobile-phone business in the Pacific islands. Australian media reported that China Mobile is interested in acquiring the Pacific operations of Jamaica's Digicel. A spokesperson for Digicel confirmed to Nikkei that the telecom has received unsolicited approaches from a number of parties with respect to its Pacific operations. The spokesperson declined to comment further as discussions with the parties are confidential. Digicel is believed to control 90% of the mobile market in Papua New Guinea and more than half in Vanuatu and Tonga. The Australian government is considering offering financial support to local bidders circling the Pacific operations of Digicel to block Chinese companies from acquiring the politically sensitive assets, according to the Australian Financial Review. South Pacific island nations have come to the forefront in the battle for dominance between the U.S. and China, and hold geopolitical significance for Washington and its ally Canberra.

Beijing held a videoconference with 10 of the region's 14 island countries in late November. Even though the topic of the meeting was the coronavirus pandemic, the joint press release issued afterward included a line stating that "Pacific Island Countries reaffirmed to uphold the One China principle," which asserts that Taiwan is an inalienable part of a single China. The Solomon Islands and Kiribati both severed diplomatic ties with Taiwan in September 2019 and switched to Beijing. China had reportedly been offering infrastructure support to both countries for some time, and agreed that October to fund a stadium for the Solomon Islands. The U.S. and Australia worry that if Beijing builds structures in the region that can be put to military use, it could monitor their military activities. A Chinese company and the fisheries minister

of Papua New Guinea have signed a memorandum of understanding to build a $147 million "comprehensive multi-functional fishery industrial park," according to the U.K.'s Guardian newspaper. The proposed site of the facility is only about 200 km from Australian shores. The possibility has been floated of the Chinese side building a port for this business, which could further stoke tensions in the area.

Source: Asia Nikkei; 03 January 2021

SHIPPING NEWS: THE 1990S LAW CHANGE CONTRIBUTING TO COVID CHAOS

- Craig Harrison

As a wharfie and the leader of the maritime union, a lot of people are asking me why our ports are jammed and there's delays getting freight from ships to shops. Clearly, Auckland's attempts to cut staff in favour of automation are a big part of the problem this year, but there's a more fundamental problem: we are utterly dependent on a handful of international shipping lines to move our seafreight. Covid-19 has thrown international shipping into disarray. We're seeing fewer ships coming in and they are coming less regularly, which means more domestic freight on the road. A key part of this problem is our lack of domestic-flagged coastal shipping. The reason we're reliant on expensive and carbon intensive methods to shuttle freight around our country is because nearly all of our domestic sea freight is shipped by international ships as a sideline to their main, imported, cargo. The backlog at POAL and the congestion, the increased costs, and difficulty in getting goods to market it's causing are just the latest manifestation of that vulnerability.

If those big ships choose only to visit a major port and skip our regional ports, then the freight piles up and we have no effective way to remove it around the country ourselves. So how did an island nation that is dependent on trade to survive, find itself with practically no shipping fleet? We used to protect our coastal shipping by requiring domestic freight to be shipped only by New Zealand registered vessels operating under New Zealand law. We did this because we recognised shipping was vital to our economic interests. When that protection was removed in the deregulation of the 1990's, the fleet dwindled in the face of international companies, running crews who weren't protected by New Zealand's minimum employment standards. We had 34 New Zealand flagged ships in 1994. Today we have just one Kiwi flagged container ship. That's an incredible loss. Coastal shipping - the "blue highway" - is cheaper than other forms of domestic freight transport, has much lower carbon emissions, and has none of the externalities of road transport such as congestion and road maintenance. It also offers security for regional supply chains when road transport is unviable such as when the Kaikoura quake closed state highway one (and the main trunk rail line). Additionally, many of the classes of vessels that run coastal routes can also sail trans-Tasman and Pacific routes. That's a hugely valuable backstop to international shipping.

Restoring our Kiwi-flagged coastal shipping fleet would give us independence and security when global supply chains are in chaos. Changing the law back is simple, there's one line of legislation that allows for foreign flagged ships to carry domestic freight as of right. Change it so domestic freight has to be carried by Kiwi-flagged ships, with crews operating under New Zealand employment law and pay rates

We won't be able to rebuild our domestic coastal shipping overnight - but there are no fundamental barriers. We're talking to the industry about what they would need to make this work and it's clear that a staged process will be needed. The money is there to build the industry back up quickly, but there are issues around crewing - our support for training has diminished with our fleet. A Government that wanted to rebuild the security of our seafreight, reduce our carbon footprint, and support regional jobs and economies should be able to re-establish New Zealand flagged coastal shipping within a matter of years. All it needs is a Government with the will to do it. Labour has long talked about restoring coastal shipping - this term, we want to work with them to make it happen.

Source: newsroom.pro; 28 December 2020

CYPRUS: LEADING MARITIME HUB

Cyprus is an established quality Ship Registry and a leading maritime centre within the EU. The Cyprus flag currently ranks as the eleventh largest merchant fleet worldwide and the third largest in the EU, with more than 1,100 oceangoing vessels with a total gross tonnage exceeding 23 million. The Cyprus flag is committed to safety, security and excellence. Testament to this, the flag is included in the 'White List' of the Paris, Tokyo and other MoUs for Port State Control, as well as in the QUALISHIP 21 of the US Coast Guard. Cyprus has a strong voice at international shipping fora (IMO, ILO) and within the EU and actively participates and contributes to the formulation of the international and EU shipping policy. Cyprus is a party of all international maritime conventions on safety, security, pollution prevention, maritime labour ensuring their effective implementation.

Moreover, particular emphasis is given to the quality and speed of the services provided, which are tailored to our clients and available on a 24/7 basis. We try to make the best use of digital technologies promoting a paperless environment, thus increasing efficiency and attractiveness of the Cyprus flag. Shipping has evolved as one of the leading sectors of Cyprus economy. It is estimated that the total contribution of Cyprus shipping to our GDP is around seven per cent. Cyprus has one of the most attractive shipping taxation regimes. The tonnage tax system, which is approved by the EU, provides stability and certainty to shipping entrepreneurs. Also, the abolition of registration and mortgage fees and the competitive fees and dues, make the Cyprus flag an ideal choice for every successful entrepreneur.

Cyprus is a major base for international shipping operations and for other shipping related activities by becoming one of the largest and widely known shipping centres in the world. More than 3,000 vessels are managed from Cyprus, which represents around 20% of the world's third party managed fleet. Several of the ship management

companies which operate on the island, rank among the largest of their kind in the world. The Shipping Deputy Ministry has ambitious plans for sustainable growth and is actively involved in promoting a positive change to the shipping industry, by actively contributing to the green transformation, digitalisation, technological innovation of the sector. Cyprus is an international centre of maritime excellence with a bright sustainable future.

Source: Khaleej Times; 28 December 2020

BPA WELCOMES BREXIT TRADE DEAL

- Baibhav Mishra

Warns, "there will still be major changes for our trade with Europe"

Responding to the news that the EU and the UK had reached an outline agreement on a future post Brexit deal the British Ports Association has welcomed the continued tariff free trade but suggested that there will still be major impacts at the end of the transition.

Commenting the British Ports Association Chief Executive Richard Ballantyne said:

The prospect of continued tariff free trade with the EU and other market access arrangements is certainly something most in the freight and logistics industries will welcome. It looks as if our agricultural and automotive trade with the EU can continue without being subject to the high tariffs that could have been introduced. It also means that the fish we land will be able to exported its biggest market. However despite this deal the UK is definitely leaving the EU's Customs Union and Single Market which means major changes for cross border trade. Goods being transported between Great Britain and the EU, including Northern Ireland, will be subject to a number of new controls and requirements and there is no escaping the increase in costs that this will create for UK traders, businesses and potentially consumers. As our new trading relationship starts to bed down we are hopeful that an ongoing reciprocal acceptance of each other's standards might mean a reduced need for inspections and interventions at ports and borders.

The British Ports Association represents ports that handle 86% of the UK's maritime trade as well as all our main Roll-on Roll-off port gateways that collectively facilitate tens of thousands of lorries and trailer movements to and from Europe each day.

Source: seanews.co.uk; 28 December 2020

MARINE ENVIRONMENT

ATLAS RESEARCH PROJECT DISCOVERS NEW SPECIES IN LOWEST DEPTHS OF THE OCEAN

- Alison Branley

In 2019, the Canadian Coast Guard Icebreaker Amundsen travelled through some of the iciest waters of the north Atlantic Ocean just off Greenland. On board were scientists from one of the largest oceanic research projects in the world. It is called the ATLAS project and it has just handed down the findings of its five-year study of the Atlantic Ocean. After sending special robotic landers to the lowest depths of the ocean, it brought back a trove of scientific riches. Among them was the discovery of 12 new deep-sea species, including a coral growth called Epizoanthus martinsae. The species lives on black corals up to 400 metres below the ocean surface. A moss animal, or bryozoan, named Microporella funbio was also discovered. The researchers found it in an undersea mud volcano off the Spanish coast. Another moss animal called Antropora gemarita, which feeds on particles of food suspended in the water, was identified. The team also found up to 35 new examples of species in areas where they were previously not known to exist. The research was not limited to new species, with scientists also mapping currents and discovering a field of hydrothermal vents, or hot springs, in an area known as the Azores.

Robots 'hands and eyes' of scientists

The sea mosses, molluscs and corals have previously gone undetected because the deep ocean has been explored so little. Murray Roberts from the University of Edinburgh led the ATLAS project and said the research showed how little was understood about the ocean. Professor Roberts said the robotic landers used as part of the project were remotely operated vehicles tethered to the surface and included cameras and lights. "They truly are the hands and the eyes of the scientists in the study," he said. But the new species may already be under threat.

Coral condition 'like osteoporosis'

The researchers found 50 per cent of cold-water coral habitats were at risk from climate change as oceans absorbed up to one-third of the carbon in the atmosphere. Further, they found 19 per cent of deep-sea ecosystem services were at high risk from ocean acidification and fisheries. They found major currents of the Atlantic had been slowed because of climate change. Professor Roberts said their study demonstrated the impact of the sea becoming slightly more acidic from absorbing carbon. "We face the prospect that the corals of the deep sea are changing," he said. "Their skeletons are getting more porous as that slightly acidic sea water corrodes and damages their skeleton. "It's almost like an osteoporosis. They've become more brittle, more vulnerable to breaking. "That's attacking the very foundations of huge deep-sea coral

reefs. Predictions are showing the suitability of the habitats really collapsing over the next 100 years." The project included more than 70 scientists from 13 countries. The project has concluded, but researchers have launched a new study involving South American researchers to look at the south Atlantic until 2023.

ATLAS project 'gold standard' in research

Marine geologist at James Cook University Robin Beaman said the ATLAS project was the "gold standard" in marine research because it brought together many researchers and government agencies. "These are effective because you involve a lot more people, a lot more equipment and you can do time-series," Dr Beaman said. His work with The Schmidt Ocean Institute has done similar mapping and data collection in a year-long project across reefs off the Australian coast in both the Pacific and Indian oceans.

It includes deep ocean reefs off Perth and Ningaloo in Western Australia all the way around to the Great Barrier Reef. "It brought together many, many people including students, which is really important," Dr Beaman said. "When you're going into the deep ocean, you're going into places that haven't really been explored before, so there are all these fauna that have been there for perhaps millions of years but it's just we haven't discovered them. "We've found new species here — fish, deep-water corals and other invertebrate sponge species. "It's quite fascinating to shine light into these depths. I understand the excitement of the ATLAS project." Dr Beaman said southern hemisphere oceans did not appear to have as many deep water mounds of corals, but it might be they simply had not discovered yet. "It could be we haven't looked as much in the southern oceans — it's not explored as much as north Atlantic. "There are lots of cold water corals species found in these depths — in parts of southern Tasmania they've found great fields of these cold water corals."

Source: ABC News; 29 December 2020

INCOIS LAUNCHES 'DIGITAL OCEAN'

Union Minister for Science and Technology Harshvardhan on Monday launched the 'Digital Ocean' platform of Indian National Centre for Oceanic Information Services (INCOIS) here as a one stop-solution for all data related needs of a wide range of users, including research institutions, operational agencies, strategic users, academic community, maritime industry, and the public.

"Digital Ocean (www.do.incois.gov.in) is expected to bring a sea-change in how the oceanographic data is served for a better understanding of oceans surrounding us. It will play a central role in sustainable management of our oceans and expanding our 'Blue Economy' initiatives," informed INCOIS Director T. Srinivasa Kumar. Dr. Harshvardhan virtually unveiled the web platform in the presence of secretary of Ministry of Earth Science M. Rajeevan, Joint Secretary Vipin Chandra and others from New Delhi. This first of its kind platform for ocean data management has a set of applications that present heterogeneous oceanographic data with geospatial technology. "It will facilitate an online interactive web-based environment for data integration, 3D and 4D data visualization, data analysis to assess the evolution of

oceanographic features obtained from multiple sources like on site monitoring devices, remote sensing and model data," said the Director.

INCOIS provides ocean information and advisory services to various stakeholders in the country, including Potential Fishing Zone (PFZ) advisories, Ocean State Forecast (OSF), high wave alerts, tsunami early warnings, storm surge and oil-spill advisories, among others., using state-of-the-art technologies and tools to get real time information on oceanographic and marine meteorological data. The institute has been serving as the National Argo Data Centre and Regional Argo Data Centre of the International Argo Programme, he added, in a press release.

Source: The Hindu; 29 December 2020

GEOPOLITICS

CHINA-EU DEAL IS A REALITY CHECK FOR INDIA

- M. K. Bhadrakumar

After seven long years of negotiations, China and the European Union announced on December 30 that they have reached a Comprehensive Agreement on Investment (CAI). It is a hugely consequential event for the world economy and international politics. The agreement is destined to rebalance the trade and investment relationship between two of the top three economic power centres in the world order, binding them to values-based investment principles that are rooted in sustainable development principles. The agreement envisages that China will open up to provide an unprecedented market access for EU investors, giving them certainty and predictability for their operations and a level playing field with transparency and accountability, apart from committing on environment and climate and on labour standards. The agreement also provides for a robust enforcement and monitoring mechanism. The European Commission's press release outlining the key elements of the agreement is here. The Chinese commentaries describe the agreement as "an extraordinary boost for pragmatic cooperation" between the EU and its largest trading partner China based on win-win approach, to mutual benefit, being "the basic logic in the era of globalisation". (here and here) President Xi Jinping stressed at the video conference that the "balanced, high-level, and mutually beneficial" pact demonstrates China's determination and confidence to open up on a high level, and Beijing will provide broader market access, a better business environment, stronger institutional guarantees and brighter prospects for bilateral cooperation.

Xi vowed that China and the EU, "two of the world's major powers, civilisations and markets," are set to enhance mutual trust and join hands together to kick off a new start in 2021 and signal to the world community that notwithstanding differences on some issues, "both sides have the political willingness to enhance dialogue, deepen cooperation and share the benefits based on mutual respect." According to Eurostat data, in 2019 the EU had exported goods worth approximately US$242 billion to China and imported goods worth US$442 billion from China. China is the second largest FDI recipient after the US counting – according to Rhodium Group. The CAI's main objective would be an enhanced protection of EU investments in China and vice versa, improved legal certainty regarding the treatment of EU investors in China and Chinese investors in Europe, reduction of barriers to investing in China and vice versa, and as a result, increasing bilateral investment flows and improved access mutually to the Chinese and EU markets. Indeed, the CAI signifies a turning point in the China-EU relationship. Some analysts estimate that the EU has snubbed the US by concluding the CAI unilaterally. But the high probability is that the EU expects the Biden administration to find an alignment with the CAI and follow its footfalls to use trade

and investment relationship with China as a key stimulus for post-pandemic economic recovery.

If that happens, the CAI may represent not only a strong foundation towards sustainable cooperation between China and the EU but provide a reference point for China-US bilateral negotiations about issues such as the Phase Two trade deal. Of course, this would mean that the relations among China, EU and the US will be based on similar principles and will increasingly tend to achieve similar goals, thus curtailing both current and potential conflicts in the future. In a statement in Paris on Wednesday, President Emmanuel Macron said, "The dialog between Europe and China has strengthened and become more balanced these past few years. It continues." Macron offered to visit China in the coming months along with German Chancellor Angela Merkel to discuss areas of cooperation. To be sure, the CAI bears the imprimatur of German Chancellor Angela Merkel who was determined to finalise the pact during Berlin's presidency of the EU.

Suffice to say, the Franco-German axis is at work and the momentum will continue during the French presidency of the EU next year. Significantly, Germany is proceeding with Huawei's access in its 5G sector, while the Chinese company has chosen Brumath Business Park in the Grand-Est region of France, close to the French-German border, to build its new European production facility to manufacture technological solutions for mobile networks for Huawei customers in Europe, with an annual production value in the order of 1 billion euros. Huawei already has 23 R&D centres in Europe and partnerships with over 100 universities, and a highly performant supply chain including 3100 companies. Clearly, Indian policymakers ought to take note that there is a powerful sign in all of this to the US that real, tangible power in the world order has shifted. The next two decades are going to be critical "because China will use them to become the first global power," as EU foreign policy chief Josep Borrell wrote recently. Borrell, interestingly, has implied the decline of US power as well as the inevitability of China's rise as the number one world power. In geopolitical terms, the CAI flags that Europe intends to be strategically independent. It shatters India's foreign policy assumptions that Europe is preparing to join the US-led "Indo-Pacific" strategy to contain China. The heart of the matter is that Europe is backing out of the US project for a binary world. Biden has to take note that his predecessor's raucous "Indo-Pacific strategy" is a road to nowhere without the European allies. Europe is in quest of permanent institutionalised peace in the continent. In a forceful essay last week, former German foreign minister and a highly respected European thinker Joschka Fischer wrote,

"Europeans must make clear to the Biden administration from the start what Europe can and cannot do. America is a global power… Europe, by contrast, consists of many small- and medium-size countries, each of which has only limited ability to project power and influence… Past experience with military missions outside of Europe has shown that the perspective of a global power differs fundamentally from that of a small- or medium-sized power. European voters recognise this, and it will have a strong bearing on whether they accept such missions in the future. "In the context of the transatlantic relationship, Europe's role is to defend NATO territory and its precarious periphery. In Eastern Europe, this concerns primarily the Baltic states.., the war in eastern Ukraine, and other "frozen conflicts" in Europe's neighbourhood.

Resolving these – or at least achieving some sort of stabilisation – will require a much more forceful European diplomatic response… As for world politics, Europe must leave this domain to the global superpowers – a title it cannot claim for itself. This is particularly true when it comes to China… NATO should not be made into a security organisation for East Asia, as that would simply overstretch it."

The bottom line is that while Biden's administration is expected to work alongside allies such as the EU to manage relations with China, the EU and China have rushed to get a deal done. Of course, this is not a deal against America, but the fact remains that the China-EU alignment makes nonsense of the single most potent weapon in the US armoury against China, namely, the ever-looming threat of sanctions. The implications are profound for both the Asia-Pacific as well as the Western Hemisphere. For, it can only mean the end of US hegemony in the Asia-Pacific and in the Western Hemisphere. Where does that leave Quad? Alas, India was punching far above its weight and the outcome is predictable. Fortunately, India is not in the dire straits as Australia finds itself. Beijing still remains open on rebooting cooperation with India. But India needs to jettison its delusional thinking and assess realistically the emergent directions of the reshaping of world order. China is entering 2021 with wind at its back. China's economic strength will only increase as global trade keeps recovering. In the OECD's estimation, China will account for around one-third of the world's economic recovery in the new year.

Source: indiapunchline.com; 31 December 2020

UK'S RAAB: PURSUING TRADE DEALS WITH AUSTRALIA, US, INDO-PACIFIC REGION – THE TELEGRAPH

- Anil Panchal

UK Foreign Secretary Dominic Raab crossed wires, via The Telegraph, while writing in the news during early Monday morning in Asia. The British diplomat marked optimism after striking the Brexit deal while saying, "We are pursuing trade deals from Australia to the U.S. and around the world – particularly in the Indo-Pacific region, a huge growth market for the future."

The news also quotes Foreign Secretary Raab while confirming UK PM Boris Johnson's visit to India on January 26 to join Indian Prime Minister Narendra Modi for Republic Day celebrations.

Source: fxstreet.com; 28 December 2020

IN LITHIUM MINES BENEATH THE ATACAMA SALT FLATS, A CRISIS WAITS TO ERUPT

- Ian Morse

Lithium is one of Earth's most widespread elements. The metal is found just about everywhere, even in small traces in drinking water. It's a key element in the batteries that experts say could guide us to zero-emission electricity and transportation. That is, if it can be mined fast enough. But in Chile, scientists are finding that the rapid rate of removal may be disrupting water availability in the surrounding desert. Beneath the Atacama Salt Flat, a Rhode Island-sized expanse of salts, a major source of lithium is locked in an underground reservoir. As mining projects there expand to meet skyrocketing demand, they have met resistance from Indigenous communities that surround the salt flat, and from regulators who are trying to understand a one-of-a-kind water cycle. Chile's lithium ends up in ceramics, lubricants, and most often, batteries, but the metal first enters balance sheets as a super-salty liquid. At the salt flat, two companies pump out brine from below the surface. In colossal pools under the power of the sun, the water evaporates out of the brine, leaving behind white salts that are sold into international markets. Ingrid Garcés Millas, a chemical engineering professor at the nearby University of Antofagasta, refers to this process as "water mining." But in the government's eyes, the brine is a mineral. It's a point of contention that has fuelled a conflict between local groups and companies over the importance of a water resource in one of the world's driest deserts. With brine regulated as a mineral, the government retains ownership and allows private companies to manage their own operations. But backed by growing evidence that brine extraction may reduce freshwater supply, advocates want to classify brine as water. This, they believe, will grant Indigenous groups more authority over their resources and protect a delicate ecosystem.

When Chilean citizens overwhelmingly voted in October to rewrite their dictatorship-era constitution, they set the stage for a dramatic reassessment of the coastal nation's relationship with the environment, a move which many believe will unsettle mining companies. Lithium brine, increasingly sought to fulfil global climate goals, has challenged humanity's attempts to classify and regulate the natural world. Its ultimate definition — mineral or water — has consequences that ripple across ecosystems, communities, and history in a nation built on mineral extraction. The salt flat's two lithium producers, US-based Albemarle and Chilean SQM, agree with the government. The brine, they say, is only useful as a source of the contained metal. Its water can't be used for drinking, irrigation, or other purposes. "Discussing the availability of the water resource in relation to the use of brine is equivalent to discussing the availability of fresh water in the country by incorporating the available seawater on the country's coasts," Albemarle wrote in a statement to Undark. Yet when Eduardo Bitran oversaw a hydrological study of the salt flat in 2016 and 2017 as an officer in Chile's economic development agency, the study tallied brine alongside freshwater. And there was a deficit: More water was leaving the salt flat than was entering it. To restore balance, lithium producers would have to figure out how to extract less water. Brine "is mostly

water," said Bitran, now an engineering professor at Adolfo Ibáñez University. He believes it's a mistake to regulate the substance as if it has no influence on the surrounding freshwater. This view is shared by local communities who live on the edges of the basin, said Jorge Muñoz Coca, a member of the Lickanantay Indigenous group.

On a September afternoon, at the confluence of two streams that flow to the salt flat, Muñoz Coca shepherded sheep and goats in a landscape of cactus and shrubs. Water flowed from the basin's high mountains, past his feet, and toward the lagoons on the brim of the salt flat. "This water goes toward the big salt flat and finds the balance there," he said, speaking in Spanish in a voice message to Undark. "Nature always finds its balance." Over the past few years, scientists have begun to study this ancient arid area and its salt flat with a particular focus on human-caused change. Among other things, they've learned that precipitation at high altitude falls to the earth and seeps through mountains' porous rocks. As gravity pulls it down, the water collects in a basin larger than the Hawaii islands. In the basin, the precipitation encounters more water with higher concentrations of minerals, and the two mix to some extent. Water with lower concentrations of minerals, which is less dense, floats higher to form lagoons where flamingos migrate. The brine, several times saltier than seawater, stays low. With no outlet, water exits only through evaporation — a process that leaves behind minerals and creates the salt flat's hard salty crust. "The desert historically has been seen as a wasteland," said Cristina Dorador, a microbiologist at the University of Antofagasta. Few had researched the life in the Atacama's extreme environment when she first published on the subject in 2008. Her research traced the microbes that live in the brine to the diets of the region's three species of flamingos, which eat brine shrimp. All three flamingo species are considered either vulnerable or near threatened, and since 1996, their habitat has been protected as a globally important wetland area under the Ramsar Convention. Dorador thought telling people about the diverse ecology would incline others to protect the area. But "it's not enough." On the slopes of the basin, thousands of feet above the centre of the salt flat, several Indigenous communities rely on the mountains' freshwater that fills aquifers and streams to sustain themselves and livestock. In 2016, after decades of extraction, activists caught international headlines as they called out shrinking water resources. A 2019 study of satellite imagery found that drought conditions had worsened, soil moisture and vegetation declined, and daytime temperatures rose. Flamingos began migrating to the flat in smaller numbers. Skeptics blamed climate fluctuations, but locals point to another culprit: the pumps that draw brine from below the surface of the flat and the water evaporation pools that can be thousands of feet long and hundreds of feet wide.

Whether the brine pumping affects freshwater supply and flamingo habitats hinges on the mixing zone between freshwater and brine. Is it porous? Can one side affect the other? Researchers published a 3D model of the theorised zone just two years ago. However, in a series of studies, University of Vienna postdoctoral geosciences researcher Miguel Ángel Marazuela found companies are pumping brine so fast that it may be jeopardising the balance. When brine is pumped out, the water table drops, and less water evaporates naturally from below the surface. Initially, the lower evaporation can compensate for the drop in water level from companies' brine pumping. But when the water table drops below two meters deep, the evaporation rate

hits zero — no more water can evaporate. At this point, Marazuela concludes, dropping evaporation rates can no longer counteract the effects of brine pumping. Freshwater pools may soon begin losing water. “We need to think [of] the system as a whole, as a complex ecosystem unit instead of seeing it as compartments, because at some point those things are related,” said Dorador. In December 2019, an environmental court upheld a complaint by Indigenous communities that SQM was overdrawing brine. In the midst of the legal battle, the nation’s environmental regulator announced it would conduct the region’s first comprehensive management plan. It was a tacit recognition that the country didn’t know enough about the salt flat to approve the recent expansion of lithium production. Indigenous groups called on the government to revoke SQM’s environmental permit.

Few expect the lithium producers to leave or reduce production. Instead, Bitran says, mining companies could collaborate to secure water for their operations and invest in water mining technology that reduces brine use. The companies say there is no other technology proven at scale. Others have said that companies could potentially re-inject the water that typically evaporates and improve the capture of lithium from salts. Mining companies have responded to the pressure. Copper miners, which once used more freshwater for their operations than lithium producers, have begun using desalinated seawater. SQM made an online monitoring system about its salt flat operations available to the public in August, and in October, the company said it would reduce brine pumping by 20% this year and by 50% by 2030, without reducing lithium output. “We can’t understand the [salt flat] with only what’s right there,” Muñoz Coca said. “If brine was recognised as a vital element that allows the existence of other ways of life, that would be fair both for science and also for the Indigenous peoples, and so for the health of the territory,” he added. Local groups can wield an Indigenous rights law to exercise control over the salt flat’s resources, but lithium brine falls through the cracks, just as it has with Chile’s water and mining codes. With the overwhelming support of citizens, the government may be on track to rewrite its constitution and question its long tradition of privatising natural resources. Lithium is one of Earth’s most widespread elements. The metal is found just about everywhere, even in small traces in drinking water. It’s a key element in the batteries that experts say could guide us to zero-emission electricity and transportation. That is, if it can be mined fast enough. But in Chile, scientists are finding that the rapid rate of removal may be disrupting water availability in the surrounding desert. Beneath the Atacama Salt Flat, a Rhode Island-sized expanse of salts, a major source of lithium is locked in an underground reservoir. As mining projects there expand to meet skyrocketing demand, they have met resistance from Indigenous communities that surround the salt flat, and from regulators who are trying to understand a one-of-a-kind water cycle.

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in one of the world's driest deserts. With brine regulated as a mineral, the government retains ownership and allows private companies to manage their own operations. But backed by growing evidence that brine extraction may reduce freshwater supply, advocates want to classify brine as water. This, they believe, will grant Indigenous groups more authority over their resources and protect a delicate ecosystem. When Chilean citizens overwhelmingly voted in October to rewrite their dictatorship-era constitution, they set the stage for a dramatic reassessment of the coastal nation's relationship with the environment, a move which many believe will unsettle mining companies. Lithium brine, increasingly sought to fulfil global climate goals, has challenged humanity's attempts to classify and regulate the natural world. Its ultimate definition — mineral or water — has consequences that ripple across ecosystems, communities, and history in a nation built on mineral extraction.

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As water evaporates from the lagoons, minerals from the brine deposit into a thick, pale crust. But the brine is also home to a shrimp that attract three species of flamingos to the region. Stefan Debruyne, a business development director at SQM, says that the company's data show that the mixing zone has prevented its pumping from shrinking water supply. Even within the salt flat, he says, brine extraction in the middle of the flat has no impact on brine on the edges where flamingos live. However, in a series of studies, University of Vienna postdoctoral geosciences researcher Miguel Ángel Marazuela found companies are pumping brine so fast that it may be jeopardising the balance. When brine is pumped out, the water table drops, and less water evaporates naturally from below the surface. Initially, the lower evaporation can compensate for the drop in water level from companies' brine pumping. But when the water table drops below two meters deep, the evaporation rate hits zero — no more water can evaporate. At this point, Marazuela concludes, dropping evaporation rates can no longer counteract the effects of brine pumping. Freshwater pools may soon begin losing water.

"We need to think [of] the system as a whole, as a complex ecosystem unit instead of seeing it as compartments, because at some point those things are related," said Dorador. In December 2019, an environmental court upheld a complaint by Indigenous communities that SQM was overdrawing brine. In the midst of the legal battle, the nation's environmental regulator announced it would conduct the region's first comprehensive management plan. It was a tacit recognition that the country didn't know enough about the salt flat to approve the recent expansion of lithium production. Indigenous groups called on the government to revoke SQM's environmental permit. Few expect the lithium producers to leave or reduce production. Instead, Bitran says, mining companies could collaborate to secure water for their operations and invest in water mining technology that reduces brine use. The companies say there is no other technology proven at scale. Others have said that companies could potentially re-inject the water that typically evaporates and improve the capture of lithium from salts. Mining companies have responded to the pressure.

Copper miners, which once used more freshwater for their operations than lithium producers, have begun using desalinated seawater. SQM made an online monitoring system about its salt flat operations available to the public in August, and in October, the company said it would reduce brine pumping by 20% this year and by 50% by 2030, without reducing lithium output. "We can't understand the [salt flat] with only what's right there," Muñoz Coca said.

"If brine was recognised as a vital element that allows the existence of other ways of life, that would be fair both for science and also for the Indigenous peoples, and so for the health of the territory," he added. Local groups can wield an Indigenous rights law to exercise control over the salt flat's resources, but lithium brine falls through the cracks, just as it has with Chile's water and mining codes. With the overwhelming support of citizens, the government may be on track to rewrite its constitution and question its long tradition of privatising natural resources. In Chile, water rights depend on use. Citizens can buy, sell, and even take out mortgages on naturally occurring water, if they can prove they will use it. Under an Indigenous rights law, Atacameños can earn legal water rights if they prove a long history of water use. Brine is primarily used by companies, but growing scientific evidence suggests that it impacts usable water. Customary law would in theory grant Indigenous groups the rights to lagoons in the basin, but the state claims ownership. "So it's a fairly straightforward colonial situation," said Alonso Barros. As an attorney, he has advised Indigenous groups for two decades. With a long history of negotiating with copper miners, the Atacameños have been the most successful in engaging with the mining sector, Barros says. But lithium isn't like copper. "Water is owned by Indigenous people, but the [brine] has somehow been taken out of this equation because it's invisible," he said. If lithium brine were to be defined as water, local communities may not be able to buy it. The price of water is determined by a market, and in the Atacama desert, scarcity inflates prices. Diego Rivera-Salazar spent part of his childhood in an Indigenous community in Chile's wetter south. There, the idea of buying and selling water clashed with community norms. "The land, the forests, the water, the airs — it belongs to the whole community," he said. It's not there for profit.. Now a hydrologist at the University of Desarrollo in the capital, Santiago, he believes those formative years led him to research the role of water in his country. When the new constitution is written, these kinds of property rights are likely to be at the centre of debates, he says. "Los pescados no votan. So, the fishes doesn't have the right to vote," he said. "The fish or the trees or the animals, the nature — we don't have any representation of the nature in the system."

Ian Morse (@ianjmorse) is a journalist of natural resources, once based in eastern Indonesia, and now in Seattle.

Source: The Wire; 30 December 2020

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