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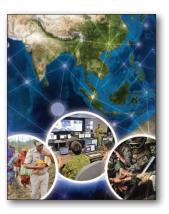


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ABOUT THE COVER: Information sharing is

essential for security in the Indo-Pacific.

FORUM ILLUSTRATION



Dear Readers,

elcome to *Indo-*Pacific Defense

FORUM's edition
on information sharing.

The ability of Indo-Pacific military and security organizations to share accurate information effectively with multiple international partners is essential to their security and resilience, regardless of whether

conducting traditional warfighting, counterterrorism, multinational and stability operations, humanitarian assistance, disaster relief, or homeland defense.

Regional leaders at all levels must convey the importance of developing and maintaining trust between allies and partners and facilitate a cultural shift that emphasizes the importance of routinely practicing intelligence and information sharing — within nations and internationally — to counter potential adversaries' nefarious activities in the region.

This issue of *FORUM* explores various applications of information sharing. One article highlights how Indo-Pacific early warning systems successfully provide urgent information about extreme weather events, saving lives and reducing economic harm. Another article analyzes the new security agreement between India and the United States that operationalizes information sharing across the region. Additionally, Maj. Gen. Jake Ellwood, commander of the Australian Army's 1st Division, provides his perspective on optimizing cooperation and information sharing in the Indo-Pacific.

Also in this issue, Dr. Mohan Malik, a professor at the National Defense College of the United Arab Emirates, evaluates the importance of sharing observations, insights, and practices among allies and partners to counter coercive elements of the People's Republic of China's One Belt, One Road scheme. Meanwhile, retired Philippine Lt. Gen. Danilo Pamonag shares lessons learned during the 2017 Marawi military operation to repel Islamic State-inspired militants.

I hope this edition advances information-sharing activities in the region. I welcome your comments. Please contact the *FORUM* staff at **ipdf@ipdefenseforum.com** with your perspectives.

All the best,

P. S. DAVIDSON Admiral, U.S. Navy

Commander, U.S. Indo-Pacific Command

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DR. MOHAN MALIK is a strategic studies professor at the National Defense College of the United Arab Emirates. A trained Sinologist with research interests in Chinese and Asian geopolitics and nuclear issues, he previously served as a professor of security studies at the Daniel K. Inouye Asia-Pacific Center for Security Studies. Prior to that, he was director of the postgraduate Defense Studies Program at Deakin University in Australia. He earned his doctorate in

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ARATI SHROFF, a U.S. State Department foreign service officer, is an Una Chapman Cox fellow and a fellow at the East-West Center. She is researching the evolving state of Chinese investment in the United States in emerging high-tech industries. In collaboration with industry, academia and government, she will explore the implications of China's ambitions in high-tech sectors that are expected to drive future global economic growth. In her most recent assignment at

the U.S. Consulate Shanghai, she collaborated with senior policymakers to advance U.S. priorities related to China's macroeconomic situation, financial sector and foreign investment climate. She has served in the U.S. State Department's Bureau of South and Central Asia and at the U.S. Embassy in Kuwait. Featured on Page 28



MAJ. GEN. JAKE ELLWOOD of the Australian Army became commander of 1st Division/Deployable Joint Force Headquarters in December 2018. He graduated from the Royal Military College-Duntroon in 1990 and entered the Royal Australian Infantry Corps. He has commanded battlegroups in Iraq and Timor-Leste and served as the chief of operations in Afghanistan and in other staff roles. A highly decorated commander with several advanced degrees, he was

promoted to major general in May 2018 and served as deputy chief of the Army until assuming his current position. In 2019, he became a member of the Order of Australia for his service as the chief of staff of Headquarters Forces Command and as director general of Career Management-Army.

Featured on Page 50



FIRST ADM. DATO ANUAR BIN HJ ALIAS joined the Royal Malaysian Navy in February 1981. During his 38 years of service, he has held several posts in Pasukan Khas Laut (PASKAL), the main special operations force for the Royal Malaysian Navy, including commanding officer and chief of staff at the Naval Special Forces headquarters. An episode of his career during a 1998 U.N. mission in Angola was adapted into *PASKAL The Movie*, which was released in September

2018 and became available on Netflix in March 2019. He spoke with *FORUM* on the sidelines of the Pacific Area Special Operations Conference in April 2019 in Honolulu, Hawaii. Featured on Page 58

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VIETNAM AND GERMANY SEEK CLOSER DEFENSE TIES

ietnam and Germany advanced talks in June 2019 to formalize a defense cooperation agreement.

A bilateral memorandum of understanding would establish a deputy ministerial-level defense policy dialogue mechanism, making it easier to share information country to country and further deepen ongoing collaboration in areas that include military medicine, personnel training, peacekeeping operations and other defense areas, according to The Diplomat, an online news magazine.

Both sides have also been working toward a permanent resident defense attache to Hanoi, another push to boost military relations. In May 2019, members of the European Union-Vietnam Joint Committee met for the first time in Hanoi to implement a framework for partnership. They took stock of Vietnam's relationship with the EU during the past three decades and emphasized a desire by both sides to deepen bilateral cooperative ties in regard to delegation exchanges, security and defense, trade investment, science and technology, clean energy and agriculture, including forestry and fisheries. FORUM Staff

INDONESIA

U.S. to Normalize Relations With Special Forces Unit

Patrick Shanahan, then acting U.S. defense secretary, met his Indonesian counterpart in May 2019 as the United States looked to improve ties with an Indonesian special forces unit that has been limited due to human rights abuses in the 1990s.

During a 2018 trip to Jakarta by Shanahan's predecessor, Jim Mattis, Indonesia said it was hoping Mattis could help ease U.S. limitations on contacts. The U.S. announced in 2010 that it had lifted its outright ban on U.S. military contacts with the Indonesian special forces unit, known as Kopassus, which drew criticism for activities in Timor-Leste as it prepared for independence. (Pictured: Kopassus forces participate in an anti-terror drill before the Asian Games in Jakarta, Indonesia, in August 2018.) Since then, legal restrictions prevented U.S. contacts with Kopassus from advancing beyond preliminary levels, U.S. officials say.

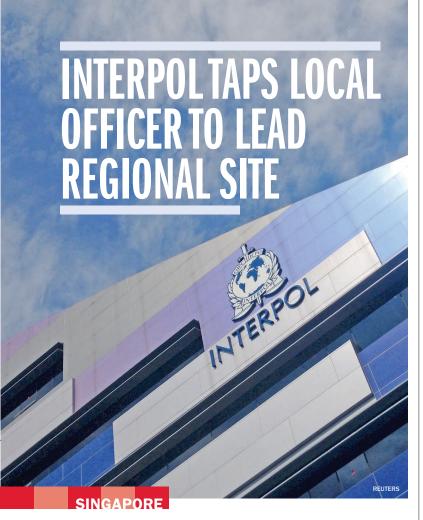
Indonesia and five other Southeast Asian nations launched the "Our Eyes" intelligence pact in 2018 aimed at combating Islamist militants and improving cooperation on security threats. Indonesia, the world's largest Muslim-majority country, has in recent years struggled to contain a resurgence in homegrown radicalism inspired in part by the Middle Eastern militant group Islamic State.

The two sides said in a joint statement after the meeting between Shanahan and his Indonesian counterpart, Ryamizard Ryacudu, that the United States was looking to normalize relations with Kopassus and hold a joint exercise in 2020. "Both ministries affirm support for the expansion in our army-to-army exercise next year, and by normalizing

the Army special forces relationship beginning in 2020 with a Joint Combined Exercise Training with Kopassus," the statement said.

Lt. Col. Dave Eastburn, a Pentagon spokesman, said planning for the training was still in the initial stages but would likely be for four to six weeks and include about 150 participants. "While planning is just starting, the initial concept includes topics such as crisis response, hostage rescue and safeguarding human rights, among others," Eastburn said. Reuters





Singapore Police Force officer is now the leader of Interpol's new Regional Counter-Terrorism Node (RCTN), *The Straits Times* newspaper reported in July 2019.

The officer, whose rank and name were not released, will work with police units across the Indo-Pacific region, encouraging them to share information and intelligence regarding terrorist activities.

"The police officers from the region know the region best," said Tim Morris, Interpol's executive director of police services, according to *The Straits Times*. "Interpol needs to use their expertise, knowledge and experience, not only to help the fight against terrorism within the region, but also [to find out] how it impacts other regions around the world, whether it be Europe, West or East Africa, or even Latin America."

Interpol enables police in 194 member countries to share information and work together to fight international crime. It manages 17 police databases with information on crimes and criminals, accessible in real time to countries.

Interpol chose Singapore as the site of its RCTN because Singapore is an important security hub in the region, Morris said.

Interpol has similar nodes operating in East Africa and West Africa. The Singapore location was slated to begin with six officers, including the Singapore Police Force officer in charge. Each officer, according to *The Straits Times*, brings a different skill in fighting terrorism to the team.

"Interpol believes such a network is important if police forces around the world are going to be connected in an effective way to fight terrorism," Morris said. FORUM Staff

Pact in Works India for U.S. Defense Technology Transfers

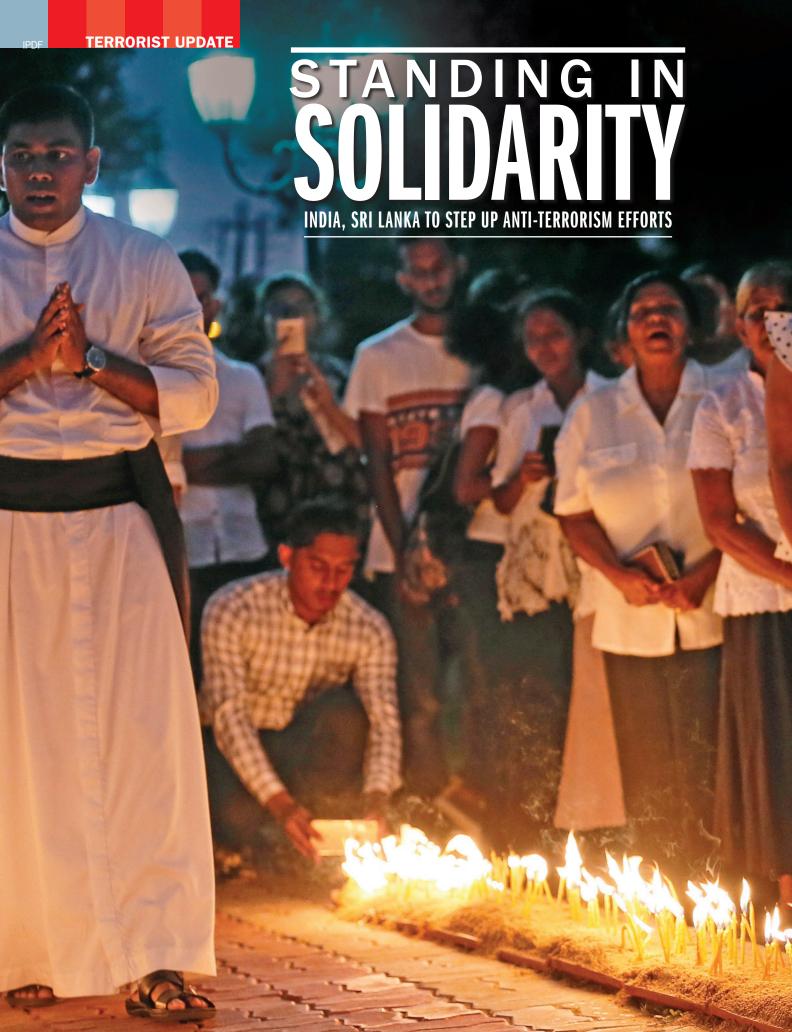
India and the United States are closing in on an industrial security agreement that will allow the transfer of defense technology and billions of dollars' worth of investments in India's military.

India has bought weapons worth more than U.S. \$15 billion from the United States over the past decade. India is replacing its Russian-origin military and is in talks for helicopters, armed drones and a bigger Indian plan for local production of combat planes. To allow for transfer of technology for building combat jets locally and other joint ventures, the United States had sought guarantees for the protection of classified information and technology.

It would be the first time New Delhi has entered into such a pact with any country, although the United States has agreements in place with several countries. U.S. companies Lockheed Martin and Boeing are in the race for a deal estimated at over U.S. \$15 billion to supply the Indian Air Force with 114 fighter planes to replace its aging fleet of MiG 21 jets. The planes have to be built in the country as part of Prime Minister Narendra Modi's Make-in-India drive to cut expensive imports and build a domestic industry. (Pictured: A U.S. Air Force F-16 fighter taxis on the tarmac during the Aero India air show in Bangalore, India.)



After years of hesitation, India signed an agreement in 2016 to allow both countries to access each other's military bases and a second one in 2018 on secure military communications. A third accord on sharing geospatial information is still in the early stages. These are all foundational agreements designed for closer military cooperation and enhanced information sharing. Reuters





ndian Prime Minister Narendra Modi paid homage in June 2019 to the more than 250 Sri Lankans killed in the Easter suicide bombings and agreed with Sri Lanka's leaders to increase cooperation to combat terrorism. Modi, on his first overseas tour since being reelected, emphasized India's "neighborhood first" policy during visits to the Maldives and Sri Lanka.

Before commencing official talks in Sri Lanka, Modi visited St. Anthony's church in Colombo — one of three churches targeted by bombers on April 21, 2019 — to pay respects to those killed in the attack. The bombings on three churches and three luxury hotels left 258 people dead. The suicide attacks also dealt a severe blow to Sri Lanka's economy, hitting the Indian Ocean island nation's vital tourism industry particularly hard. "I am confident Sri Lanka will rise again. Cowardly acts of terror cannot defeat the spirit of Sri Lanka. India stands in solidarity with the people of Sri Lanka," Modi tweeted after visiting the church.

Photos with the tweet showed him in discussion with Catholic priests and viewing images of attack victims and renovation work on the church. Sri Lanka's Navy completed the church's renovation.

The Islamic State group claimed responsibility for the attacks, which were carried out by a local radicalized Muslim group known as National Thowheed Jammath, which had pledged allegiance to the Islamic State.

Modi held discussions with Sri Lankan President Maithripala Sirisena, focusing on bilateral relations and regional security, peace and stability. "Since both Sri Lanka and India have been victims of terrorism, both the leaders condemned terrorism in all its forms and manifestations and decided to step up cooperation in this critical area," Sri Lanka's presidential office said in a statement.

Modi also held talks with opposition leader Mahinda Rajapaksa and minority ethnic Tamil leaders before returning home. Since first becoming prime minister in 2014, Modi has stressed a "neighborhood first" policy for the South Asian region, promising neighbors prioritized benefits of India's economic growth.

India has been concerned with Sri Lanka and the neighboring Maldives leaning toward the People's Republic of China (PRC), which is seeking more influence in the Indian Ocean region. Modi arrived in Sri Lanka from the Maldives, where the archipelago nation's new president, Ibrahim Mohamed Solih, pledged closer ties with New Delhi in a departure from his predecessor's pro-Beijing policy.

Sri Lanka leased a Chinese-built port located near the world's busiest east-west shipping route to a Chinese firm in 2017 for 99 years in a bid to recover from the heavy burden of repaying a loan the country received to build the facility. The port is part of Beijing's plan for a line of ports stretching from Chinese waters to the Persian Gulf. In March 2019, the PRC agreed to provide a loan of U.S. \$989 million to Sri Lanka to build an expressway that will connect the island nation's tea-growing central region to the China-run seaport on the southern coast. The PRC's influence in Sri Lanka makes neighboring India anxious because it considers the Indian Ocean region to be its strategic backyard.

Sri Lanka's government has been trying to strike a balance between both Asian giants. Sri Lankan officials have reiterated that the port's security will be handled by the government in an attempt to allay fears that the port could be used by the PRC as a military hub. In an apparent bid to offset Chinese influence, India has been helping Sri Lanka fund construction of houses and university facilities, as well as a free islandwide ambulance service. India also has extended credit to develop rail transport and a water project. The Associated Press

A priest delivers a blessing outside the St. Sebastian church, one of three churches in Sri Lanka targeted by bombers in April 2019. REUTERS





avy patrol aircraft from India and the U.S. flew together over the Indian Ocean in April 2019 while a U.S. guided-missile destroyer parted the waters below. For the first time since signing a secure communications compatibility pact in 2018, the military partners conducted an anti-submarine warfare exercise together, and communication barriers that posed challenges in the past were no longer a factor.

The landmark Communications, Compatibility and Security Agreement (COMCASA) signed in September 2018 allows for enhanced operational coordination between the militaries of India and the U.S. As the People's Republic of China (PRC) expands its naval fleet and ventures more frequently into the Indian Ocean, COMCASA will allow the partners to more seamlessly communicate to safeguard the region's security.

Dignitaries from both countries acknowledged that the agreement represents a maturing defense partnership.

"U.S.-India defense relations have strengthened significantly over the last decade, and India is now a major defense partner," then-Acting U.S. Defense Secretary Patrick Shanahan said in a June 2019 speech at the Shangri-La Dialogue in Singapore. "We are increasing the scope, complexity and frequency of our military engagements to include our first tri-service exercise later this year."

Before COMCASA was inked, the U.S. had to remove advanced communications equipment from military platforms sold to India. Another stumbling block was the need for the U.S. to install temporary systems on Indian aircraft and ships during joint exercises to allow the militaries to communicate, according to The Diplomat, an online news magazine. In the April 2019 exercise, however, P-8 reconnaissance and patrol aircraft from both navies patrolled the Indian Ocean while the U.S. Navy guided-missile destroyer USS Spruance joined the drills. The exercise focused on antisubmarine warfare training, information sharing and coordination between aircraft and ships and took place near the island of Diego Garcia, the U.S. Navy said in a news release.

"We were greatly impressed by the professionalism and competency of their MPRA [maritime patrol and reconnaissance aircraft],"

U.S. Navy Cmdr. Matthew Smidt, commanding officer of the USS Spruance, said of his military partners from India. "The exercise was a wonderful experience and opportunity from which we learned and honed our skills."

Years of Negotiations

India's government remains fiercely committed to maintaining strategic autonomy, which is one reason it took more than a decade of negotiations before Delhi would sign off on a logistics exchange memorandum with the U.S. in 2016, according to The Diplomat. When the countries negotiated COMCASA, Indian Prime Minister Narendra Modi's government insisted on several amendments and provisions to the standard agreement.

The pact is valid for 10 years, but it can be terminated with six months' notice. The agreement also states that the U.S. can't turn off encrypted communications systems while the agreement is in force, and it can't share data obtained from Indian platforms with third parties without India's consent. At least one published report stated that India's border standoff with the PRC was a turning point for the Indian position on COMCASA. It provided a real world example of the benefits of closer U.S.-India defense cooperation.

In June 2017, PRC troops with construction vehicles and road-building equipment were working to extend a road southward into Doklam,



From left, then-U.S. Defense Secretary Jim Mattis, U.S. Secretary of State Mike Pompeo, then-Indian Foreign Minister Sushma Swaraj and then-Indian Defence Minister Nirmala Sitharaman meet in New Delhi prior to signing a secure communications compatibility pact in 2018. APP/GETTY IMAGES



"COMCASA IS A HISTORIC STEP FORWARD IN STRENGTHENING OUR RELATIONSHIP WITH THE U.S."

— Nirmala Sitharaman, then Indian defence minister

an area that borders Tibet's Chumbi Valley to the north, Bhutan's Ha Valley to the east and India's Sikkim state to the west. Although Bhutan has claimed the area since 1961, Doklam is also claimed by the PRC. On June 18, 2017, about 270 Indian troops armed with weapons and two bulldozers arrived in Doklam to stop the PRC troops from building the road. After a 10-day faceoff, both countries announced that they had withdrawn their militaries.

A report in *The Economic Times*, an English-language newspaper in India, suggested the incident marked a change in India's perspective on COMCASA's value.

The signing of the agreement also heightens the maritime awareness of the Indian Navy. When a U.S. warship or aircraft detects a threat, it can communicate instantly with Indian Navy vessels in the region through transmission of encrypted data from the U.S. Navy, according to a report by New Delhi Television Ltd. As part of COMCASA, Indian Navy assets are being fitted with the Combined Enterprise Regional Information Exchange System (CENTRIX). The U.S. describes CENTRIX as a collection of classified coalition networks that support combatant commands worldwide.

Timely data sharing isn't the only value

of the agreement. A June 2019 report in The Times of India newspaper said the Indian government had finalized a plan to purchase 30 weaponized remotely piloted aircraft from the U.S. These SeaGuardian aircraft. a maritime modified version of the MQ-9B SkyGuardian, travel at 300 kilometers per hour and can fly 14-hour missions to do reconnaissance or patrol as far away as 1,800 kilometers from base. The SeaGuardian transmits images to a control room, which flies the aircraft using a two-way data link.

Additional sales of aircraft are in the works. In 2015, the Indian Navy debuted its first squadron of P-8I Neptune aircraft. The anti-submarine warfare planes are a variant of the P-8A Poseidon used by the U.S. Navy. In April 2019, the U.S. also approved the sale of 24 submarine-hunting MH-60R Seahawk helicopters to India for U.S. \$2.6 billion. The helicopters, which are designed to operate from cruisers, destroyers, frigates and aircraft carriers, boost India's anti-surface and antisubmarine warfare capabilities. In addition to hunting submarines, the Seahawks can disable ships and conduct search-and-rescue operations at sea.

Prior to the signing of COMCASA, India already had purchased U.S. C-17 Globemaster II aircraft and AH-64 Apache attack helicopters from the U.S.





Growing PRC Submarine Fleet

The PRC now has a fleet of missile submarines that can launch nuclear attacks, providing a more reliable second-strike capability if its land-based nuclear arsenal is attacked. In an August 2018 report, the Pentagon said the PRC's military now has expanded its submarine fleet into a "viable" sea-based nuclear deterrent.

Already possessing the region's largest naval fleet, the PRC continues to expand it submarine inventory. It currently operates four nuclear-powered ballistic missile submarines, five nuclear-powered attack submarines and 47 diesel-powered attack submarines, according to the Pentagon report. By 2020, this force will likely grow to between 69 and 78 submarines.

Media outlets in India reported in 2019 that Indian Navy officials were becoming increasingly concerned by the PRC's frequent submarine patrols in the Indian Ocean. One of the first public mentions of such activity occurred in 2013 when the PRC confirmed that one of its nuclear attack submarines was traveling through the Indian Ocean on its way to carry out an anti-piracy mission in the Gulf of Aden. Then twice in 2018, PRC submarines docked at a PRC-funded port in Colombo, Sri Lanka.

India is particularly dependent upon maritime trade because it is blocked by Pakistan to the west and the Himalayas to the north, forcing it to import 80% of its oil across the Indian Ocean and ship 95% of its trade through those waters. Trade accounts for 55% of India's GDP. China, where trade accounts for nearly 60% of its GDP, is dependent upon maritime transit to ship 85% of that trade. Additionally, 80% of Chinese oil imports transit the Malacca

Strait. "As such, both countries are highly concerned about their vulnerability to potential blockades, which submarines would be crucial in enforcing," *The National Interest* magazine reported.

Meeting the Challenge

Enhancing operational coordination between the military partners is critical in maintaining a free and open Indo-Pacific where freedom of navigation and territorial rights are protected. According to a report by Asian News International, then-Indian Defence Minister Nirmala Sitharaman emphasized this point, stating, "COMCASA, therefore, is a historic step forward in strengthening our relationship with the U.S."

The relationship is growing in other key areas, too, including counterterrorism, trade and energy, according to Kenneth Juster, U.S. ambassador to India. The India-U.S. relationship is as "broad, complex and rich in substance as any bilateral relationship in the world," he told the Indo-American Chamber of Commerce of Greater Houston in June 2019. "It encompasses the entire spectrum of issues in international affairs," he said, according to a report by the Press Trust of India, the country's largest news agency.

U.S. companies are also working with partners in India to manufacture defense equipment in India, Juster said.

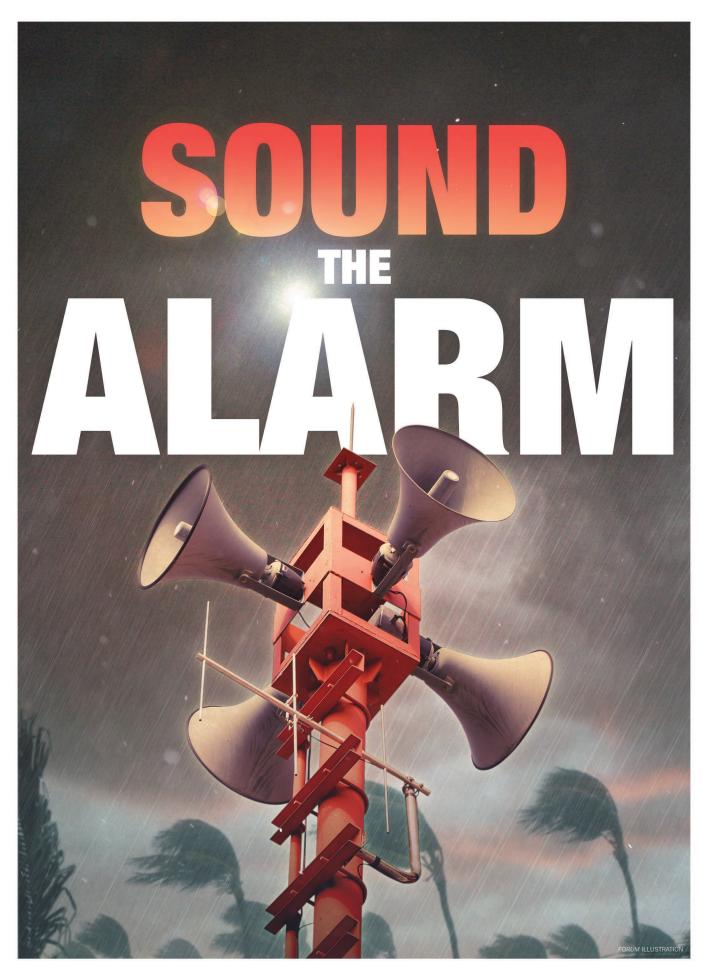
"We also have the software and integrated networks needed for national defense," he told the crowd. "Our military-to-military cooperation and defense agreements with India, including the landmark COMCASA agreement, are increasing interoperability between our forces and ensuring that best-in-class U.S. software and systems are available to India." □

Left: India plans to purchase 30 SeaGuardian remotely piloted aircraft from the United States.

GENERAL ATOMICS

P-8A Poseidon reconnaissance and patrol aircraft from the U.S. Navy participate in a submarine-hunting exercise with the Indian Navy in April 2019.

PETTY OFFICER 1ST CLASS BRYAN NIEGEL/U.S. NAVY





Early warning systems play an increasingly important role in risk reduction during natural disasters

FORUM STAFF

arly storm warnings, mass evacuations and proper coordination between militaries and civilian relief agencies have drastically reduced death tolls across the Indo-Pacific region, and humanitarian assistance and disaster relief experts say continued use of the alarms is essential.

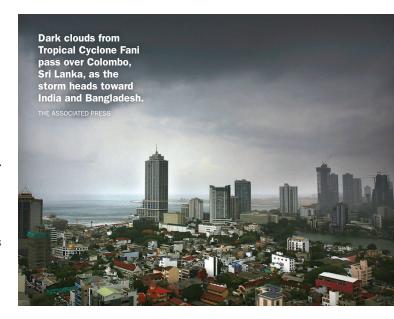
Recent successful evacuations in the region have prompted many governments to review their capabilities and address gaps in relation to risk analysis and forecasting tools for severe weather, flooding and drought.

Stronger coordination and communication mechanisms are flourishing in disaster-prone areas as local meteorologists work nationally and across borders to upgrade forecasting. Increasingly throughout the past decade, the need for, and use of, early warning systems has been amplified across the Indo-Pacific region in disaster risk reduction.

Population growth, urbanization and environmental abuses have agitated the impacts of extreme weather events to include cyclones, earthquakes, floods and extreme heat. These conditions make improved early warning systems, coordinated disaster relief and risk reduction more important than ever.

Early warning systems (EWS) use integrated communications systems to help communities prepare for hazardous weather. The systems save lives and jobs, land and infrastructure and support long-term sustainability, according to the consensus of the Global Platform for Disaster Risk Reduction held May 13-17, 2019, by the United Nations Office for Disaster Risk Reduction. The systems can also help public officials and administrators in their disaster planning.

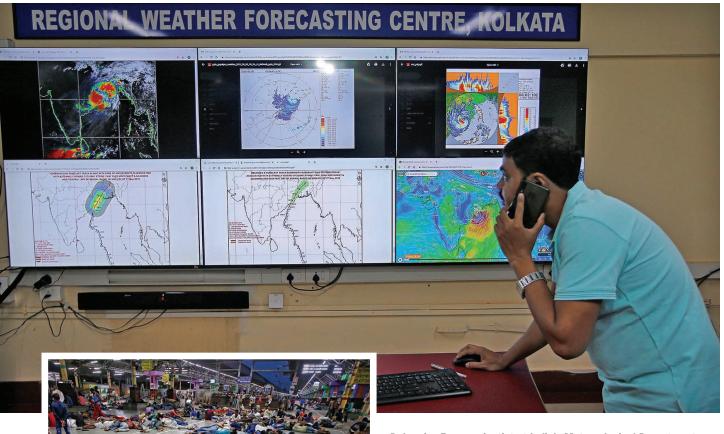
The U.N. and its partners have worked to introduce innovative EWS initiatives in vulnerable areas around the world. In Cambodia, for example, a U.N. partnership with the Regional Integrated Multi-Hazard Early Warning System (RIMES) for Africa and Asia aims to increase Cambodia's use of environmental information to better inform the populace. RIMES is an international and intergovernmental institution managed by 12 member



states: Bangladesh, Cambodia, Comoros, India, Laos, Maldives, Mongolia, Papua New Guinea, Philippines, Seychelles, Sri Lanka and Timor-Leste. RIMES members plan to provide daily weather forecasts and earthquake and tsunami warnings to alert locals.

Likewise, UNESCO's Intergovernmental Oceanographic Commission's (IOC) Tsunami Programme assesses tsunami risks, implements early warning systems and educates communities about preparedness measures. The IOC has more than 150 broadband seismometers and over 100 sea level stations in the Indian Ocean that process data in near real time for its EWS.

The purpose of an early warning system is to monitor weather and "environmental data on a real-time basis, detect adverse trends and make reliable predictions of possible impacts," according to a U.N. report on Cambodia's early warning systems. "An effective early warning system would enable timely response to natural hazards and extreme weather events, as well as risk-informed development planning."



Debapriya Roy, a scientist at India's Meteorological Department Earth System Science Organization, monitors Tropical Cyclone Fani inside his office in Kolkata, India, on May 3, 2019. REUTERS

Stranded passengers rest inside an Indian railway station after trains between Kolkata and Odisha were canceled ahead of Tropical Cyclone Fani in May 2019. REUTERS

Low-lying countries and long coastlines across Southeast Asia make the region more vulnerable to increasingly extreme weather conditions. In Cambodia, for instance, floods affected more than 1.7 million people a year in 2013; by 2016, the number had risen to more than 2.5 million, according to the U.N.

"The impacts are devastating, and it is usually the poorest and the most vulnerable who are hit first and worst by storms, floods, droughts, wildfires and rising seas," U.N. Secretary-General Antonio Guterres said in September 2018.

The Asian Disaster Preparedness Center, an intergovernmental organization working to reduce disaster risks, reported in January 2019 that it was forging transboundary early warning system networks to let neighboring countries input weather data to provide greater information for early warnings to larger

populations. Consider communities across the India and Nepal borders. These localities fall into poverty due to the lack of early warnings for upcoming floods, according to "Trans-Boundary Early Warning Systems (TB-EWS) in Asia," a January 2019 report published by the All India Disaster Mitigation Institute (AIDMI). The report said three out of 10 deaths from transboundary floods occurred because of delayed or nonexistent early warnings. In the context of South Asia's hazard profile, transboundary hazards are on the rise.

The Koshi River and Narayani-Gandak River basins historically cause flooding in the India-Nepal border region. Locals refer to the two river basins as the "Sorrow of Bihar" because of its history of flood damages. Nepal's Department of Hydrology and Meteorology upstream and the communities of India's Bihar state downstream have recently collaborated to develop a people-centric transboundary early warning system, according to AIDMI.

"Community-to-community communications have played an effective and functional role of TB-EWS. This effort also showed that building resilience for atrisk communities through systematic community-based

disaster risk reduction and engaging them into TB-EWS can result in high-level participation and vigilance beyond the boundaries."

Other efforts are underway to connect transboundary communities afflicted by the same disasters, AIDMI reported. "While efforts of strengthening TB-EWS are relatively growing in the past few years, harnessing the lessons from these are important for us to move ahead," the AIDMI report said. "The gradual connectivity between the TB-EWS and resilience building initiatives are growing, and some good lessons have emerged from these in the past few years' time."

One such good lesson came out of India and Bangladesh in May 2019 when one of the biggest storms in years bore down on one of India's poorest states. Tropical Cyclone Fani wreaked havoc on the coastal area in India on May 3, 2019, before moving on to Bangladesh.

With flights canceled and train service suspended, government authorities in Odisha knew the task of moving people to safety would be challenging, but they faced the situation head-on.

Odisha authorities mobilized 43,000 volunteers and nearly 1,000 emergency workers; they warned communities through television commercials, coastal sirens, buses, police officers and the public address system, blaring the warning in simple language and clear terms — "A cyclone is coming. Get to the shelters." — and they sent 2.6 million text messages, according to *The New York Times* newspaper.

The Odisha government successfully evacuated 1.2 million people based on their predictions. The death toll stood at 64.

"Few would have expected this kind of organization efficiency," Abhijit Singh, a former naval officer and head of the Maritime Policy Initiative at the Observer Research Foundation, a research organization, told *The New York Times*. "It's a major success."

Bangladesh also evacuated more than 1 million people to shelters.

Two decades ago, a massive cyclone struck the same region, obliterating villages and killing thousands. Some of the dead were found in post-storm debris miles away from where they had lived, the *Times* reported.

The sheer devastation and images left a lasting impression on Odisha authorities.

"We have a very serious commitment on this. There should not be any loss of life," Bishnupada Sethi, the state's special relief commissioner, who supervised the May 2019 evacuation operation, told the *Times*. "This is not the work of a day or a month but of 20 years."

Following the major cyclone in 1999, Indian officials built hundreds of cyclone shelters along the coast, and they have stood the test of time and storm.

"The government is usually dysfunctional in cases like this, but the whole mobilization was quite impressive," Singh, the former naval officer, told *The New York Times*. "Evacuating a million people in three or four days and



A girl dries her books in Puri in the eastern Indian state of Odisha after Tropical Cyclone Fani passed by in May 2019.

AFP/GETTY IMAGES

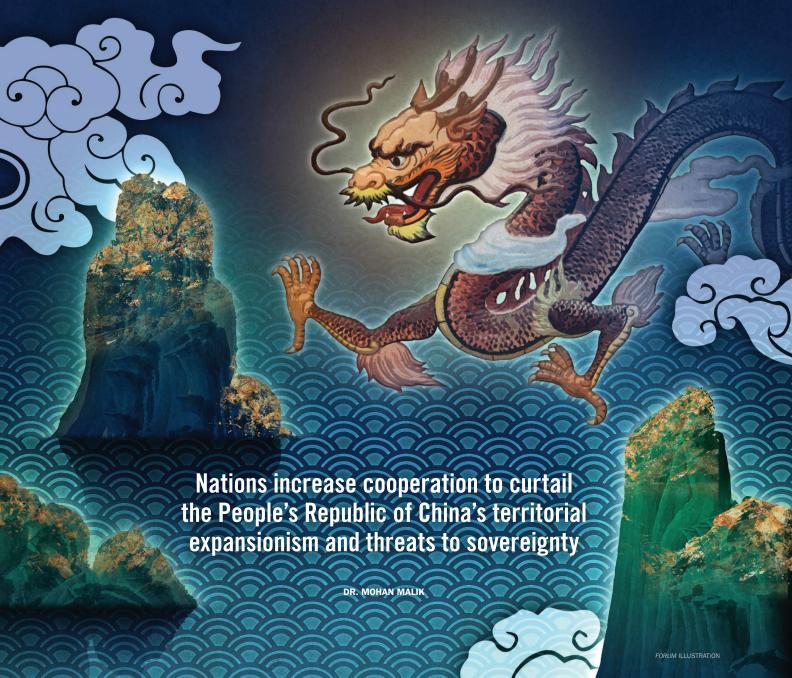
providing them with not just shelter but also food is a big achievement in such a short time."

Odisha has a community outreach system for notifying people and a network of 450 cyclone shelters, each with a maintenance committee in which youths have been trained for search and rescue, first aid medical attention and providing cyclone warnings, according to Deepak Singh, lead disaster risk management specialist at the World Bank. He said the World Bank helped create the intelligence to carry early warnings to the last mile. That system has been in use in Odisha for the past 12 years, he said.

Because of its vulnerable location, Odisha experiences a cycle every two years, Deepak Singh said. So much disaster means more opportunities for the government of Odisha to learn and improve its early warning system as the community strives for zero loss of life during such storms.

"Every small cyclone or tsunami teaches you how to deal with the bigger ones," Krishan Kumar, an officer in the Khordha district of the Odisha government, told *The New York Times*, saying his government's successful May 2019 evacuations highlight an accumulation of knowledge. "If you don't learn from the past experiences, you will drown." □

Countering CHINA'S Maritime Ambitions





dm. Philip S. Davidson, commander of U.S. Indo-Pacific Command (USINDOPACOM), testified in April 2019 that the People's Republic of China (PRC) has effectively taken control of the South China Sea through military expansion in the region that includes secret island bases and construction of artificial islands. "In short, China is now capable of controlling the South China Sea in all scenarios short of war with the United States," Davidson told the U.S. Senate Armed Services Committee.

In the past two decades, the Chinese People's Liberation Army Navy (PLAN) continues to work to realize PRC President Xi Jinping's goal of restoring "China's rightful and historical position as the greatest maritime power."

While the PLAN is militarizing the so-called first island chain of major archipelagos that extend from the East Asian continental mainland coast and include those stretching across the South China Sea, Beijing is buying off the small island states in the strategic second island chain which stretches from Japan through the Marianas and Micronesia in the Pacific Ocean. By 2020, China is projected to have the world's largest naval and submarine fleets. Nearly two-thirds of the world's major 50 ports are either owned by China or have received some Chinese investment. The PRC is continuing its base-buying spree to reinforce its offshore capabilities for commercial and strategic purposes, posting private security guards,

noncombatant troops and providing arms to strategically located countries along sea lanes and maritime chokepoints.

The search for natural resources to fuel industrialization and domestic economic growth, overseas markets to dump manufactured goods, and forward bases to access and protect both are largely driving Beijing's Indian, Japanese, Philippine and U.S. Navy vessels sail in formation in May 2019. New multilateral security networks are emerging to protect a free and open Indo-Pacific.

REUTERS

evolving maritime strategy. No other power matches the PRC's grandiose ambitions. Claiming nearly 90% of the South China Sea and its resources exclusively for itself may be just the beginning. The PRC now refers to itself as a "near-Arctic state," and describes the Arctic resources as the "commonwealth of mankind," which must be shared.

PRC'S TWO-OCEAN STRATEGY

China's maritime strategy is an integral component of Xi's signature One Belt, One Road (OBOR) plan, which is inspired by 19th-century geopolitical thinker Halford Mackinder and maritime strategist Alfred Thayer Mahan. OBOR entails building continental land transport and trade corridors across Eurasia and developing a maritime rim port network to secure control of resources and markets. The maritime network is a logical culmination of the PLAN's two-ocean strategy.

Preferred Options to the PRC'S ONE BELT, ONE ROAD

AUSTRALIA: Expanding Security Partnerships

Australia has expressed concern over the People's Republic of China (PRC) "ensnaring small Pacific states in a debt trap with 'white elephant' projects." Canberra has taken steps to preempt Beijing's moves to build fiber-optic cable from the Solomon Islands to Papua New Guinea (PNG) and Australia and build naval bases in PNG, Vanuatu and at Black Rock camp in Fiji. Australia has stepped up aid and diplomatic engagement with island states by allocating U.S. \$2.18 billion in infrastructure loans and grants. Australia and the U.S. are jointly building the Manus naval base in PNG. Maritime cooperation (through joint naval exercises and patrols) with France, India, Indonesia, Japan, the Philippines, the United Kingdom and Vietnam is also increasing.

EUROPEAN UNION: Countering PRC Connectivity

China's maritime expansion and attempts to establish an empire of "exclusive economic enclaves" is bringing former European imperial navies — the French and British — back into Asia in defense of international law, notably this time with the support of their former colonies (Australia, India, Malaysia and Vietnam). In 2018, 27 of 28 European

A Papua New Guinea woman hugs Australian Prime Minister Scott Morrison at the opening of a new building at the University of Papua New Guinea. The country has the support of Australia, following the Asia-Pacific Economic Cooperation forum in Port Moresby, Papua New Guinea, in November 2018. REUTERS



The PRC seeks to dominate the Pacific and become a resident power in the Indian Ocean. Retired Rear Adm. Yin Zhuo, for example, has called for building "at least five to six aircraft carriers" to maintain "two carrier strike groups in the West Pacific Ocean and two in the Indian Ocean."

For Beijing, the Xinjiang-Gwadar railroad and pipeline and the Kunming-Kyaukpyu railway and pipeline constitute the two most critical veins of OBOR to provide access to the Indian Ocean and help Beijing overcome the risks associated with moving trade and energy resources through the Malacca Strait. Under the PRC's Far Seas Defense doctrine, many PLAN strategists view Pakistan and Burma as constituting "the West Coast of China," to mask any Malacca Strait strategic vulnerability.

Beijing is also building a marine expeditionary force aimed at waging amphibious warfare operations far from

Setbacks to OBOR

- 1. Sierra Leone: Airport project canceled
- 2. Hungary and Serbia: High-speed rail uncertain
- 3. Montenegro: Road to Serbia unfinished
- 4. Djibouti: China-funded airport nixed
- 5. Kenya: PRC halted construction of East Africa rail in Nairobi
- 6. Tanzania: Bagamoyo port under renegotiation
- 7. Zimbabwe: PRC reneged on funding solar project
- 8. Kazakhstan: Work stopped on U.S. \$2 billion light rail
- 9. Kyrgyzstan: China-Uzbekistan railway changed route



its shores. Apparently, Beijing wants to send a message that countries along the proposed maritime route — which promises a network of ports, railroads and coastal cities linking China with Asia, Africa and Europe — should look to China for economic growth and military security, and that any challenges to Beijing's expanding sphere of influence will not be tolerated.

ALLURE OF PRC INVESTMENT TRAPS

Given that the new great game is about supply chain geopolitics, major nations are vying for influence over the crucial industrial, technological and commercial nodes across the Indo-Pacific. In trade and commerce, most nations do not pick sides but play all sides. For countries that want to build factories, schools, roads and ports, as most emerging and advancing economies do, PRC capital and engineering offerings are enticing. The PRC's economic heft also provides opportunities for small states

10. Pakistan: Renegotiating CPEC projects to avoid debt trap

11. Pakistan: PRC withdraws from Diamer Bhasha dam projects

12. Sri Lanka and the Maldives: Destabilized by debt

13. Sri Lanka: Hambantota port handed over to a Chinese operator

14. Nepal: Budhi Gandaki hydroelectric project contract canceled

15. Bangladesh: Hands over port project to Japan from corrupt PRC

16. Burma: Scales down Kyaukpyu port project by U.S. \$7.5 billion

17. Burma: Dawei oil refinery canceled

18. Thailand: Ongoing delays to high-speed rail

19. Malaysia: Reevaluated U.S. \$23 billion dollars worth of projects



(Preferred Options to the PRC's One Belt, One Road, continued)

Union (EU) ambassadors in Beijing — except Hungary's denounced One Belt, One Road (OBOR) for not being in line with "international standards regarding the environment or labor," hampering free trade and giving an unfair advantage to PRC state-owned enterprises. The EU sees Beijing pursuing a "divide and dominate" strategy as exemplified by the China-led 16+1 union (summits involving the PRC and Central and Eastern European countries such as the Czech Republic. Hungary and Serbia), which further weakens EU cohesion and regional unity. Beijing has had notable successes in luring small Southern and Central European countries (for example, Austria, Greece, Hungary, Italy, Portugal and Serbia) into the OBOR orbit, prompting the EU to call for a tougher stand on China to address mounting trade, technology and geostrategic concerns. In March 2019, the EU, for the first time, labeled China an "economic competitor" and "a systemic rival promoting alternative models of governance." The EU has proposed the Europe-Asia Sustainable Connectivity plan of 300 billion Euros from 2021 to 2027 for investors building infrastructure projects.

India, China's old rival in Asia, is the only major country that boycotted the PRC's OBOR forum in May 2017, and again in April 2019.

INDIA: Acting East, Looking West, Providing Secure Growth Plans

India, China's old rival in Asia, is the only major country that boycotted the PRC's OBOR forum in May 2017, and again in April 2019. New Delhi takes comfort that many of India's initial concerns about the viability and sustainability of OBOR projects have not only been vindicated but also have shaped other countries' criticisms of OBOR. Several countries, such as Burma, Malaysia, Maldives, Pakistan, Sierra Leone, Sri Lanka and Thailand, have either canceled or renegotiated contracts with Chinese companies over the past couple of years. Given Beijing's refusal to address India's concerns regarding the China-Pakistan Economic Corridor (CPEC), which passes through disputed Kashmir and is seen as undermining India's sovereignty and territorial integrity, New Delhi remains adamantly opposed to the CPEC. However, India supports eastwest corridors that connect India with Burma and Thailand (via the India-Myanmar-Thailand highway, the Kaladan Multimodal Transit Transport Project, and ports in Bangladesh and Burma). In the west, India has built a trade and transport (railroad and port) corridor with Afghanistan via Chabahar in Iran. India has reportedly committed U.S. \$25 billion to U.S. \$30 billion in credits and grants to its extended neighborhood from East

Continued on page 22

Africa to Southeast Asia and offered an alternative vision to the PRC's maritime rim port network with the Security and Growth for All in the Region project, declaring that the "responsibility for peace, prosperity and security rests with those who live in the Indian Ocean." This is not only Modi's riposte to Xi's "Asia for Asians" rhetoric but also an attempt to revive India's ancient trade routes and cultural linkages around the Indian Ocean region. Militarily, Beijing's maritime network has prompted the Indian Navy to unveil a three-pronged strategy: fortifying its defenses in the Indian Ocean by acquiring privileged access to bases in Indonesia, Iran, Madagascar, Mauritius, Oman, Reunion and Seychelles; conducting joint naval exercises in the East and South China seas; and launching an ambitious naval expansion (from a 138- to 212-ship navy with three aircraft carriers and 24 attack submarines by 2030). As the People's Liberation Army Navy (PLAN) goes south to the Indian Ocean, India's Navy is increasingly going east to the Pacific Ocean. Faced with Beijing's ever-expanding presence all around its periphery, India is tilting toward the U.S., Japan and other like-minded countries in a balancing-without-provoking posture toward China.

INDONESIA: Becoming a Global Maritime Fulcrum

Malaysian leader Mahathir Mohamad's critique of the PRC's OBOR as "neocolonialism" coupled with the unresolved maritime disputes in the South China Sea induce caution in maritime Southeast Asia. Although Indonesian leader Joko Widodo sought to downplay Chinese-funded projects in recent elections, he will continue the current stance of attracting Chinese capital for development while reinforcing defenses around the Natuna islands against PRC encroachments and illegal fishing. As a counter to China's maritime route, Jakarta has proposed a plan to make Indonesia the "global maritime fulcrum," given the country's location as a quintessentially Indo-Pacific state. As China continues with its maritime expansion in the eastern Indian Ocean, the Indonesia-Australia-India maritime trilateral, formed in 2014 in the aftermath of the

Indonesia's and Australia's trade ministers, Enggartiasto Lukita, right, and Simon Birmingham, sign an economic partnership agreement in Jakarta, Indonesia, to boost trade and investment. REUTERS



to play major powers off each other to their advantage. For conflict-torn countries with autocratic regimes that cannot get funding from global financial institutions, PRC aid and investment offer a way out.

The PRC's authoritarian fusion of state entities and corporations enables Beijing to marshal funds in a way that democratic countries often cannot match. The PRC's cash-rich, state-owned enterprises (SOEs), backed by Chinese banks and other government institutions, can circumvent environmental, labor and human rights concerns and other international norms that, although well-intended, often prolong construction and increase costs. Chinese enterprises invested over U.S. \$90 billion in OBOR countries between 2013 and 2018, the *South China Morning Post* newspaper reported in April 2019. Given the huge demand for infrastructure development in Asia and Africa, OBOR's purported connectivity goals seem to conveniently align with regional connectivity plans. China has signed 173 cooperation

deals with 125 countries and 29 international organizations as of April 2019, according to the state-run Xinhua News Agency.

Infrastructure diplomacy plays to China's strengths while at the same time helping it reshape the Eurasian continent and move toward its goal of internationalizing the yuan. By inserting itself as an inevitable gatekeeper of the region's emerging infrastructure network, Beijing also hopes to lure nations into China's orbit and loosen U.S. alliances. The completion of the OBOR plan would give China access to resources, enable it to export excess industrial capacity and secure a forward strategic presence to project power.

COLLATERAL DAMAGE

Although significant numbers of countries seeking economic growth are tilting toward Beijing, some, however,

are increasingly uncomfortable with what they perceive as Beijing's "neocolonial diplomacy" that often ends in a trail of debts, IOUs and strategic entrapment in the form of long-term PRC presence. Just as European industrializing powers' quest for resources, markets and bases led to the colonization of Asia, Africa and Latin America in the 18th and 19th centuries, China's quest for overseas resources, markets, bases and mercantilism now poses major challenges to the sovereignty and independence of small and weak states in Asia, Africa and Latin America. Some OBOR projects traverse contested territories and waters and undermine territorial integrity and sovereignty.

PRC geopolitical considerations to acquire strategic footholds drive many of the infrastructure projects, not sound economics. As a result, the undertakings often



fail to make money, instead producing "white elephant" projects that saddle host countries with heavy debts. The greater the debt, the more leverage Beijing acquires in negotiating exclusive ownership or access to land, resources, ports and airports.

Moreover, PRC SOEs borrow from Chinese national banks in renminbi or yuan to build projects with Chinese labor and technology in strategically located countries with loans at high interest rates of 4% to 6% and expect host countries to pay them back in U.S. dollars. Beijing often seeks overseas bases (50- to 99-year leases with 75% to 85% ownership stake) to protect its overseas interests, assets and nationals and project power. As in the case of Sri Lanka and Djibouti, China's economic domination resulted in the loss of sovereignty over host nation strategic assets, including ports, airports and critical infrastructure. One Chinese company, UDG, for example, controls nearly 20% of Cambodia's coastline



Chinese investment funded Sri Lanka's U.S. \$1.4 billion Colombo Port City project, which is run by a People's Republic of Chinacontrolled firm. Japan and India have teamed up to develop a rival Colombo port sector that will be owned and controlled by Sri Lanka and have more favorable loan terms for the host nation.

AFP/GETTY IMAGES

on a 99-year lease, prompting former Australian Foreign Minister Gareth Evans to describe Cambodia as "a wholly owned subsidiary of the PRC Inc." Pakistan's and Kenya's examples show that rising debts often force nations to seek International Monetary Fund bailouts to pay off Chinese loans. In short, Burma, Kenya, Maldives, Malaysia, Montenegro, Sri Lanka and others have expressed unease with unequal deals that burden them with high-interest loans for buying Chinese products,

(Preferred Options to the PRC's One Belt, One Road, continued)



Japanese Prime Minister Shinzo Abe, right, greets Burmese leader Aung San Suu Kyi before the Japan-Mekong Summit Meeting in Tokyo in October 2018 at which they and four other leaders of Mekong countries agreed to cooperate on connectivity and quality infrastructure projects in the region.

PLAN's first naval exercise in the Sunda Strait, could play a more activist role. Concerns about PLA naval expansion have already pushed Jakarta and New Delhi to cooperate on the Sabang port development project.

JAPAN: Extending Partnership and Asia-Africa Growth Corridor

Despite the hype over Chinese overseas investments, Japan still remains a major player in infrastructure development and a bigger international creditor. As a counter to China's OBOR, Japan announced a U.S. \$210 billion extended partnership for quality infrastructure, with very low interest rates (at 1% to 2% in contrast with Chinese interest rates of 4% to 6%), funded through the Asian Development Bank. Japan is increasing its aid and investments in building eastwest corridors from Vietnam to Burma in competition with China's north-south railroads to Southeast and South Asia. Significantly, the Japan International Cooperation Agency is funding ports in Bangladesh, Burma, Djibouti, Kenya, India, Madagascar, Mozambique and Oman. Japan set up its first post-World War II overseas base in Djibouti long before Beijing established its presence on the Red Sea. In addition, Tokyo unveiled the Asia-Africa Growth Corridor with India and advanced trade partnerships. Japan has also stepped up its naval cooperation with Australia, India, Indonesia, Malaysia, the Philippines, Sri Lanka and Vietnam as well as the U.S. Tokyo has offered Vietnam six patrol vessels worth U.S. \$338 million, part of a U.S. \$1 billion Japanese aid package to support Vietnam's "maritime law enforcement capability," and provided the Philippines with massive infrastructure aid

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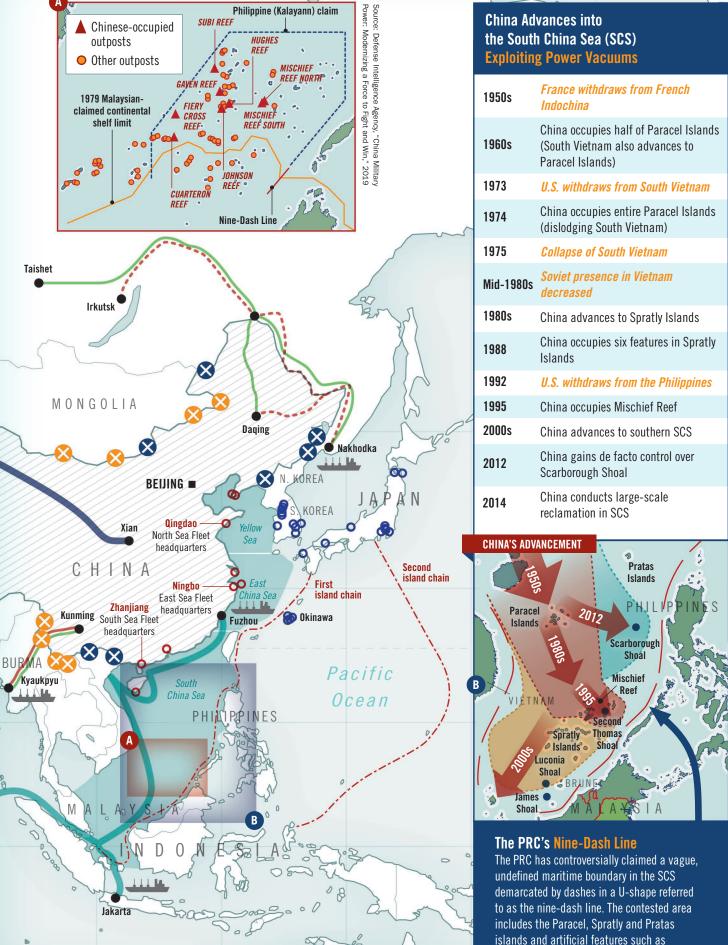
The People's Republic of China's Trillion-Dollar Boondoggle: One Belt, One Road

Regional and international concern continues to grow over the People's Republic of China's (PRC's) One Belt, One Road (OBOR) plan, as the PRC continues to push President Xi Jinping's trillion-dollar scheme. As more countries assume burdensome debt to build questionable projects, many analysts fear OBOR may be simply a plot by the Chinese Communist Party to undermine the security and economic architecture of the international order. Projects continue to fail from East Asia to the Pacific islands, from West Africa to Latin America. OBOR projects in South and Southeast Asia, in particular, have neither yielded returns on the investments nor increased political allegiances. Many projects, in fact, are not financially viable and have encumbered developing nations with debt. Moreover, there is a credibility gap between what the PRC has promised and what it has delivered, what it has claimed its motivations are and what its actions have proven to be. For the most part, projects related to PRC security and military ambitions have tended to be prioritized. The PRC stands to benefit the most from OBOR, while host countries have been destabilized economically and politically.





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Scarborough Shoal.

— U.S. \$8.66 billion over the next five years. For Indonesia's undeveloped coastal areas, Japanese Prime Minister Shinzo Abe has pledged U.S. \$640 million. Tokyo and Jakarta have also agreed to establish a Maritime Security Forum and 2+2 (foreign and defense ministers) dialogue.

U.S.: Developing a Free and Open Indo-Pacific

The U.S. National Security Strategy portrays China as a revisionist state engaged in predatory economics, with senior officials warning countries to beware "a new imperial power [offering] short-term gains for long-term dependency ... reminiscent of European colonialism." The U.S. regional strategy has transitioned from a pivot or rebalance to a free and open Indo-Pacific strategy. The principles of reciprocity and equality, not multinational corporations' profits, now underpin the U.S.-China policy. While the world is open to China for business, China remains closed to the world. Beijing does not allow foreign investment or stake in strategic industries and critical infrastructure that its SOEs seek in other countries.

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Under the U.S.-Japan-Australia infrastructure initiative and Build Act of 2018, the United States has set up a U.S. \$60 billion International Finance Development Corp. to streamline joint infrastructure investments. The Indo-Pacific Economic Vision outlined with Japan and Australia aims to check China from leveraging its economic largesse to undermine democracies. U.S. President Donald Trump administration's Asia Reassurance Initiative Act reaffirms old alliances with Australia, Japan, South Korea and the Philippines while calling for deeper ties with India and Taiwan. As strategic competition with Beijing intensifies, Washington has turned its attention to small island states in the Pacific island chain area, unveiling the Southeast Asia Maritime Security Initiative and plans to build a 355-ship navy to maintain a robust power balance. Trade, tariff and tech wars, the spotlight on China's gross human rights violations in Xinjiang and elsewhere, intellectual property thefts and cyber espionage all seek to maintain maximum pressure at multiple points on China to change its behavior and moderate its ambitions.



Chinese workers help build a train station in Beliatta, in a southern province near Chinese-run Hambantota port, Sri Lanka. The country was forced to effectively turn over the port to China on a 99-year lease after Sri Lanka couldn't repay its onerous debt. Instead of hiring local workers, Chinese firms usually bring Chinese workers to build projects in host nations. AFP/GETTY IMAGES

Continued from page 23

services and labor, yet do not alleviate unemployment, corruption or environmental degradation.

Furthermore, China's infrastructure largesse and economic domination of small countries constrain debtors' foreign policy choices concerning such issues as the South China Sea, Taiwan, Tibet, the Uighur concentration camps in Xinjiang and unfair trade practices. For example, through its economic stranglehold over Cambodia and Greece, Beijing has come to possess an effective veto power over disputed South China Sea matters and the European Union's (EU's) stance on human rights and trade issues. China's growing economic domination over small states has had the effect of weakening regional cohesion and organizations, including the EU, the Association of Southeast Asian Nations (ASEAN) and the Pacific Islands Forum. Economic coercion via controlled market access has eroded bilateral relations with India, Japan, the Philippines and South Korea, among other nations.

In addition, the so-called China model undermines fragile democracies and promotes authoritarianism and corruption, and its surveillance technologies curb freedoms. Easily available Chinese loans are the new opium for the corrupt elites in fragile economies with dysfunctional political systems. Concerns over China's stranglehold over local economies often generate domestic pressure for political change. Beijing's expanding economic footprint often weakens democratic institutions, favors strongman politics, shifts civil-military relations and increases corruption. Moreover, the China factor becomes a polarizing issue in times of regime

change or general elections as seen recently in Burma, Indonesia, Maldives, Malaysia, Pakistan, Sierra Leone, Sri Lanka and Zimbabwe.

Negative portrayals of the Chinese government are rising in conjunction with its increased involvement in other countries. Economic dependency begets despondency, as history reveals. As small and weak states seek to play one great power against the other, they often fall prey to intrigue and external intervention in domestic affairs. In Asia and Africa, the PRC is perpetuating what powerful European powers did to China and others in their moment of weakness in the 18th and 19th centuries. Xi's OBOR plan appears to have morphed at best into "One Base, One Road" and at worst into "One Debt, One Road" (ODOR). The result is the return of mercantilism, protectionism, trade wars and a Cold War-like base race to build, acquire or access forward bases from the Western Pacific to Western Indian Ocean.

PUSHBACK STRATEGIES

Although Beijing claims to be building infrastructure for connectivity to promote a "community of common destiny" for growth and prosperity, it now faces major pushback from not only small and middle powers along the intended OBOR route but also from the EU, India, Japan and the U.S. Several countries that attended the first OBOR forum in 2017 chose not to participate in the second such forum in 2019. These include Argentina, Fiji, Poland, Maldives, Spain, Sri Lanka, Turkey and the United States.

In response to growing criticism of OBOR, Beijing promised course correction at the second forum held in April 2019 by promoting corruption-free, environmentally conscious and transparent ventures. The resistance against Xi's project of the century is no longer limited to Western countries or China's Asian rivals but has spread to countries such as Burma, Maldives, Malaysia, Nepal, Pakistan, Sri Lanka and Thailand.

Skeptics, such as Wang Jun, a former director of the Information Department at the China Center for International Economic Exchanges, argue that Beijing will only "make tactical adjustments, not strategic." Therefore, the EU, India, Japan, the U.S. and others should jointly insist on supporting only those OBOR connectivity projects that follow these rules:

- Uphold territorial integrity and sovereignty.
- Provide funding by multilateral financial institutions like Asia Infrastructure Investment Bank, Asian Development Bank, not just Chinese banks, and follow international lending standards and norms.
- Promote good governance and curb corruption.
- Generate employment via use of local, not Chinese, labor.
- Invite competitive bidding from all, not just Chinese SOEs, in a transparent manner.
- Offer fiscal sustainability and commercial viability.
- Don't incur unsustainable debt burdens that lead

- to strategic entrapment (via long-term leases) or constrain foreign policy choices.
- Allow dispute settlement in international courts, not just Chinese courts.
- Promote environmental responsibility.

Mercantilist policies, unresolved territorial and maritime disputes and strategic mistrust of China present Australia, the EU, India, Japan and the U.S. with strategic opportunities.

Many nations are already offering better alternatives to the PRC's OBOR. Their programs enable stable development without financial and political debt traps. Examples include Japan's Asia-Africa Growth Corridor, India's Security and Growth for All in the Region, Indonesia's global maritime fulcrum, the EU's Europe-Asia Sustainable Connectivity plan, and the U.S.' free and open Indo-Pacific strategy.

Beijing's efforts to acquire sea-denial and sea-control capabilities have prompted leading maritime powers, including Australia, India, Japan and the United States, to cooperate in unprecedented ways to ensure that the South China Sea and the northern Indian Ocean do not fall under PRC hegemony.

MARITIME FUTURES

A complex web of security relationships is beginning to emerge in the Indo-Pacific. The future of regional security cooperation is likely to be in the trilateral or triangular, quadrilateral and multilateral formats. Over time, various trilateral (for example, Japan-Vietnam-the Philippines, the U.S.-Japan-India, Australia-Indonesia-India, India-Japan-Vietnam, France-Australia-India) and informal multilateral efforts to constrain China's maritime expansion could coalesce into a maritime coalition or the Indo-Pacific Maritime Partnership. Should Beijing continue with its unlawful activities in the South China Sea, a multinational task force may be needed to keep the South China Sea open and free, and more importantly, to disabuse Beijing of the notion that "the South China Sea belongs exclusively to China."

Examples of such coalitions are already emerging. Australia, India, Japan and the U.S. are now coordinating on tactics and strategy to offer an alternative vision of development finance to ensure that the end of China's century of humiliation does not usher in a century of humiliation for poor developing counties led by corrupt, unsavory regimes. Consequently, China's power-and-hierarchy-based OBOR vision is now pitted against the law- and rule-based visions for a free and open Indo-Pacific.

Hopefully, more countries, including New Zealand and Canada, will further join these efforts to help sustain the trilateral, quadrilateral and multilateral cooperation at the regional level required for a rules-based order that maintains a fairer competitive environment for all states regardless of size. \square





Short-circuiting the People's Republic of China's ambitions to control technology

ARATI SHROFF

he Chinese government has moved quickly to erase all mention of its flagship industrial policy "Made in China 2025" (MIC 2025) from official speeches, papers and official press amid heightened international concern.

international concern. However, the MIC 2025 strategic policy continues to play a central role in the People's Republic of China's (PRC's) efforts to achieve its technological, economic and military ambitions, namely to be the dominant supplier and leading research and development (R&D) center for 10 strategic 21st-century economic sectors. Despite recent attempts to divert international attention away from MIC 2025's stated objectives, the Chinese Communist Party's (CCP's) implementation of the 5-year-old plan will continue, if not accelerate, following the U.S. administration's tariff actions and trade restrictions against Chinese telecommunications companies Huawei and ZTE. MIC 2025 is a manifestation of the CCP deploying a comprehensive, wholeof-government approach to turn the PRC into a global technology powerhouse at the expense of other countries.

The CCP's continued pursuit of MIC 2025 policies and goals underscores the priority the party places on achieving economic and technological self-reliance and domination of key next-generation industries. The United States and its allies — confronted with the PRC's playbook — need to accordingly respond to the challenging economic asymmetries presented by China's growing global influence.

National security practitioners in the Indo-Pacific should continue to pay attention to the policies and programs under MIC 2025, regardless of the plan's progress, inefficient use of capital or adjusted prominence to date. The PRC's model of authoritarian state-capitalism — actualized through MIC 2025 — has serious implications for the region, given the interconnectedness of economic prosperity to national security, the dual-use nature of frontier technologies and the PRC's acceleration of military-civilian fusion.

A Step in China's Long March

The CCP through MIC 2025 aspires to transform the PRC from a low-value, heavy industry producer into a "smart" manufacturing, high-tech powerhouse, whose economic growth is powered by domestically dominated next-generation technologies such as quantum computing, artificial intelligence (AI) and microprocessors. China's State Council outlines 10 sectors China seeks to dominate through MIC 2025: next-generation information technology (for example,

semiconductors and cyber), robotics, aerospace, maritime engineering, advanced rail, new energy vehicles; power equipment (smart grid and smart cities), advanced agriculture, new materials and biopharma.

Becoming the global leader of these emerging sectors is central to China's ability to reap the power of the "fourth industrial revolution," according to consultancy PwC. The fourth industrial revolution refers to the technological evolution underway "that is blurring lines between the physical, digital, and biological spheres," according to the World Economic Forum's Klaus Schwab. Dominance in these sectors enables the companies, or in the PRC's case, the government, to set global standards, exert monopolistic pricing, impose trade embargos, and lead in military hardware and software development, enabling distinct advantages in hard and sharp power situations.

Avoiding Middle-Income Trap

Chinese leaders also believe that MIC 2025 will prevent China's economy from falling into the middle-income trap. Coined by economists Indermit Gill and Homi Kharas, the middle-income trap contends that middle-income countries — defined by per capita gross domestic product (GDP) of about U.S. \$12,000 — will slide into wage stagnation and slower



Visitors are seen on a screen displaying facial recognition technology at the Consumer Electronics Show Asia 2019 in Shanghai, China. The Chinese government has used such technologies to persecute the Uighur ethnic minority group in Xinjiang, analysts say. VeriSilicon is a Chinese silicon platform services company based in Shanghai. REUTERS

economic growth unless they can boost productivity beyond traditional inputs of land, labor and capital. After more than three decades of unprecedented rapid growth as the world's largest factory of lowvalued products, China's previous economic growth model is no

longer working. Through MIC 2025, the CCP hopes to avoid economic stagnation and set the country on a path toward future economic stability. If successful in its economic objectives, MIC 2025 will accomplish two core goals: preserve the CCP's legitimacy at home and abroad and enhance the People's Liberation Army's (PLA) military capabilities.

Reducing Reliance on Foreign Tech

Released in 2015, MIC 2025 has increasingly raised considerable alarm around the world, in no small part because of the sheer size of the program and the rising importance of geoeconomics. Many countries use industrial policy to achieve their economic and national security goals.

However, MIC 2025 seeks explicitly to displace the leadership of advanced economies in high-tech industries by building and backing Chinese "national champions" that can then become leading global titans.

In particular, MIC 2025's localization targets signaled that China is determined to take over — not just compete in — nextgeneration technologies that are the future drivers of global economic growth. Localization targets refer to the percentage of market share to be held by Chinese firms within China's and the world's markets. The plan's unofficial road map projects that by 2025, China's economy should achieve 70% self-sufficiency in key tech industries. By 2049, China desires to lead global markets as a tech powerhouse in time for the 100th anniversary of the PRC. It is also no coincidence that MIC 2025's targeted completion date aligns with the PRC's goal to become a world-class military power, as outlined by Xi Jingping at the CCP's 19th Party Congress.

Beyond trying to build up China's innovation ecosystem, MIC 2025

follows a familiar playbook of Chinese economic statecraft to protect Chinese companies to grow domestically, subsidize their efforts to capture global market share and displace foreign competitors in the process. Tools the government employs in this endeavor include: intellectual property theft, statebacked commercial espionage, forced technology transfers in exchange for market access, subsidies for national champions, protectionism and import substitution policies, acquisitions, and foreign talent recruitment programs. China also uses advanced economies' open education systems to cultivate human talent in the science and tech industries. Central to the implementation of MIC 2025 is the role of the CCP in coordinating and aligning the activities of its private sector, research institutions and academia, including through the use of CCP committees and access to finance.

Mention of Policy Disappears

In the wake of international

backlash over the past year and a half, Chinese leaders have publicly downplayed MIC 2025, avoiding any references of the plan in official speeches, publications and propaganda. Official Chinese media outlets received explicit instructions from the central government to avoid the term "MIC 2025" in print and online platforms. Mention of MIC 2025 was notably absent from the 2019 Chinese government work report delivered by Premier Li Keqiang to the National People's Congress in Beijing, despite having been highlighted in the previous three work reports. (The CCP's annual work report communicates specific economic policies to local governments, businesses and citizens to set the future direction of the country and catalyze action.) Li, however, still vowed that the PRC would upgrade traditional industries, strengthen R&D and support sectors such as next-generation information technology, new-energy autos and new materials — aspects found within MIC 2025.

China's government claims to international audiences that it will release a revised — and presumably less threatening — version of the MIC 2025 plan. However, regardless of what is included in MIC 2025 version 2.0 or how the program is rebranded for international audiences, the CCP remains committed to pursuing MIC 2025's stated objectives. In fact, China's government appears to be preparing for the long game and doubling down on its long-term industrial strategy to upgrade manufacturing — a move incentivized partially by U.S. tariffs and national security bans against PRC companies by Australia, Japan, New Zealand and the United States.

Using its monopolistic control over domestic media, the CCP is stirring up national sentiment to guide all elements of society to band together to achieve China's technological, economic and military-civilian fusion goals. The domestic speeches of CCP leader Xi Jinping, who is also PRC president,

domestic speeches increasingly urge China to accelerate self-reliance, master core technology, become a cyber superpower, and create an innovation-driven economy – all themes that were fundamental to the creation of MIC 2025.

Deeply Rooted Tech Ambitions

Conceptually, the core objectives of the MIC 2025 strategy are not new to China. Indeed, their roots extend deep in Chinese history and society. MIC 2025 is fundamentally an evolution of the PRC's longstanding industrial policies aimed at developing core technologies to boost domestic growth and preserve political legitimacy. China's leaders from Mao Zedong through President Xi have all coalesced around the strategic importance of technology as a source of national power and the need to develop indigenous Chinese science and tech capabilities, according to China scholar Evan Feiganbaum.

Deng Xiaoping's 1978 launch of economic "reform and opening" designated science and technology as paramount to China's modernization, while Hu Jintao's 2006 "indigenous innovation" strategy serves as the direct precursor to MIC 2025. Similar to MIC 2025, Hu's strategy established targets to wean China off foreign technology, establishing an objective to reduce the country's reliance from 60% in 2006 to 30% and become a global tech leader by 2050. Other government-backed initiatives, such as the 1986 "863" high-tech development program, sprung up to fund research to reduce

China's reliance on foreign technology and led to the creation of Shenzhou, China's indigenously developed manned spacecraft, and Tianhe-2, one of the world's fastest supercomputers.

Hu's strategy launched a new era of techno nationalism, according to China expert James McGregor. Indigenous innovation became the blueprint for a whole-ofgovernment approach with deeply embedded elements of unfair competition: forced foreign tech transfer, discriminatory treatment of foreign investment in China's market, intellectual property theft, cyber espionage, excessive subsidies to domestic firms and import substitution policies, all drawbacks that Western firms were willing to accept as the "cost of doing business in China" to gain market access. These policies in aggregate have helped increase Chinese companies' control of key foreign technologies and expanded their domestic and global market share at the expense of foreign competitors.

The CCP accelerated and expanded the idea of indigenous innovation after President Xi came into office in 2012 and declared China would become a "moderately prosperous society" by doubling its 2010 per capita GDP by 2021, and by 2049 would become a "fully developed, rich and powerful" nation.

Analysts note, however, that these industrial policies in aggregate violate the PRC's commitments to the World Trade Organization and could unfairly place Chinese

Top 15 Most Vulnerable Economies to 'Made in China 2025'*

- 1. Taiwan
- 2. South Korea
- 3. Singapore
- 4. France
- 5. Germany
- 6. Ireland
- 7. Hong Kong
- 8. Japan
- 9. Switzerland
- 10. Malaysia
- 11. Philippines
- 12. United States
- 13. United Kingdom
- 14. Norway
- 15. Belgium

^{*}China's diversification from low- to high-end products. Source: Fathom Consulting



Men work on a production line making robotic arms at a factory in Huzhou, China, in January 2019. The Chinese Communist Party wants to dominate 10 industry sectors, including information technology and robotics, by 2025.

companies' in pole position to set standards, develop protocols and establish strategic ecosystems of next-generation technologies, including AI, deep learning and smart manufacturing, among others. China's increasing advantages in these sectors are accelerating the closing of an already narrow window for multinational firms to fairly compete in these areas in China. Simply put, China is expanding its domestic and global market share at the expense of foreign competitors, but not through free and fair competition in open markets.

CCP Guidance Funds Distort Global Markets

The Chinese government is allocating vast financial resources to implement MIC 2025 and build up domestic "national champions." A slowing domestic economy and the downplaying of MIC 2025

by CCP's official mouthpieces
has not delayed the allocation
of money and personnel to
the MIC 2025 cause. The
strategy is moving forward,
full steam ahead, even
though limitations to this
approach exist, including the
potential for inefficient allocation

of capital to state-owned enterprises and duplication of efforts.

Various analysts estimate that MIC 2025 is supported by 800 to 1,600 central and local government guidance funds, with a combined estimated value of U.S. \$584.8 billion in capital at the end of 2018, according to consulting firm Zero2IPO Research. The firm calculates that an average of 7.57 new government guidance funds are created every month, with each fund averaging U.S. \$361 million in capital. This massive amount of stateguided money consists of a mix of Chinese direct and indirect funding, subsidies, tax breaks, low-interest loans and government procurement contracts.

Gavekal Dragonomics Senior Analyst Lance Noble, however offers a caveat: The success of the CCP's industrial policy is unlikely to be determined by the extent of funding but rather by "the interaction between the structure of the industry, government policy and the actions of individual companies." Using metrics that follow the above, he estimates that within the PRC's MIC 2025 policy, China has better odds of success in the sectors of electric vehicles and pharmaceuticals than in

civil aircraft development.

Concerns exist that, given the size of MIC 2025 government guidance funds, excess capacity and global market distortions will follow, having a similar effect as that of Chinese government-backed funding of industries ranging from solar to steel. Additional opacity of MIC 2025 government funding indicates there will be inefficient allocation of capital and misallocation of resources. Unfortunately, as the CCP continues to downplay MIC 2025 policy, being able to follow the money and track how these government guidance funds might distort global markets and future industries will prove difficult.

If You Can't Build It, Buy It

Beyond subsidizing domestic firms, MIC 2025's related government guidance funds are focused on obtaining foreign technology that China needs through overseas acquisitions and foreign investments in early stage tech startups and incubators. Over the past 18 years, Chinese foreign direct investment in the information and communications technology sector amounted to approximately U.S. \$16.8 billion annually, according to consultancy Rhodium Group's investment monitor. The majority of this deal flow occurred from 2014 to 2016, in line with the Chinese government's launch of MIC 2025 and associated tech industrial policies, per their calculations.

Some of these deals were led by China's private sector and categorized as venture capital investment to avoid foreign government scrutiny. However, these investments are unlikely to have been pursued for pure profit motives but rather to directly or indirectly help China bolster its domestic science and technology capabilities. As President Xi reexerts Communist Party control over all domestic economic forces to achieve national objectives, the line between China's private sector and government-supported firms continues to blur — an observation

that finds little resistance among many China academics and practitioners. Examples of the CCP tightening its grip over the private sector include the passage of the 2017 National Intelligence Law, the increase in Communist Party committees at private companies and the use of government venture capital funds to invest in private firms specializing in next-generation technologies, according to researcher Ashley Feng with the Center for a New America Security.

Melanie Hart, a China policy expert with the Center for American Progress, cites China's foreign tech acquisition strategy as an example of gray zone tactics in the economic sphere. For example, China uses incremental steps to acquire "piece by piece" foreign know-how to ultimately transfer the entire value chains to China. (Historian Hal Brands defines gray zone challenges as activity that is coercive and aggressive in nature but deliberately designed to remain below the threshold of conventional military conflict.) China has adopted these tactics in a number of strategic priorities, most visibly in exerting sovereignty claims in the South China Sea.

For example, the development of the car-ride sharing industry is a quintessential example of China's command and control approach to dominate, by any means possible. China's largest ride-sharing company, Didi Chuxing, battled head-tohead with U.S. competitor Uber, employing all the state-sponsored advantages in its favor — including state-provided subsidies and favorable media coverage — while Uber was the victim of blunted market access, last-minute changing regulations and carefully orchestrated smear campaigns. Uber eventually sold its China business in exchange for a small equity share in Didi Chuxing. Regionally, Didi Chuxing has continued to expand by acquisition, investing over U.S. \$2 billion in Singapore-based company Grab, doubling down on what turned out to be the accurate belief that Grab had what it took to defeat Uber in Southeast Asia. After ousting

Updated Investment Restrictions to Protect Economies



AUSTRALIA

February 2018: Australia announced tougher restrictions on foreign buyers
of agricultural land and electricity infrastructure amid concern about the
People's Republic of China's rising influence. Australians will be given priority
over foreigners in sales of farmland, and foreign buyers will face ownership
restrictions when purchasing electricity distribution and transmission assets.



JAPAN

- May 2019: The Japanese government added high-tech industries to a list of businesses for which foreign ownership of Japanese firms is restricted. The rule became effective August 1 to help mitigate risks associated with cyber security and technological transfers involving China.
- Japan is considering restricting exports of advanced technology used in such
 applications as artificial intelligence and robots, following the lead set by recent
 U.S. measures aimed at China. While Japanese law has a framework for keeping
 sensitive technology out of foreign hands, it focuses mainly on dual-use goods that
 can be used in nuclear weapons, missiles, and chemical and biological weapons.



UNITED STATES

- August 2018: Foreign Investment Risk Review Modernization Act of 2018 expands
 the Committee on Foreign Investment in the United States' (CFIUS's) jurisdiction
 to review a broader number of transactions, requires CFIUS to examine a wider
 array of technologies and industries, and extends the timetable for investment
 review processes.
- Export Control Reform Act of 2018 establishes a process to identify and control "emerging and foundational technologies," technologies "essential" to U.S. national security that are not currently subject to export controls.
- August 2017: The U.S. trade representative initiated an investigation of whether the PRC violated international trade agreements with respect to its intellectual property practices.

Uber from Southeast Asia via Grab, Didi has been eyeing Australia as its next place for regional conquest. It is no coincidence that the CCP-supported Didi is investing massive amounts of financial capital to develop automated driving technologies and artificial intelligence capabilities.

The scale at which China is leveraging open market economies and innovation centers to acquire foreign tech has led advanced economies to reevaluate how to protect economic security and innovation. Within the Indo-Pacific, Australia, Japan and the U.S. have recently revised foreign investment regulations, including in the emerging technology sector.

Competitiveness, Innovation at Stake

MIC 2025 or whatever name is given to the PRC's model of "innovation mercantilism" fundamentally challenges the economic welfare of countries that have core competitive advantages in higherwage, innovation-based industries, said the Information Technology and Innovation Foundation's Robert Atkinson. Unlike with lowvalue manufacturing industries, a permanent loss of competitiveness in a country's tech sector and innovation base is hard to recreate because of the complexity of long-standing ecosystems and high barriers of entry, he said. Moreover, a loss of leadership in advanced tech industries would create a "death spiral."

First, market-based firms lose market share and profits to mercantilist-supported competitors. At stake are the loss of advanced, high-wage jobs in advanced manufacturing and tech industries, especially in places such as Japan, Korea, Taiwan and the United States. Market-based companies are also unable to reinvest their revenues to develop the next generation of innovative products, further harming their country's respective innovation ecosystem, according to Atkinson. Supply chains are often reorganized as a result, leading to negative consequences for a country's economic security and ability to preserve its defense industrial base.

For example, China's forced tech transfer of Japan's high-speed rail intellectual property resulted in Japanese firms' Chinese joint venture partner becoming its highspeed rail low-cost competitor, according to Brad Setser of the Council on Foreign Relations (CFR). In exchange for access to China's market, Japan transferred its highly prized high-speed rail intellectual property to China. Once China obtained and mastered the technology, it cultivated its own high-speed rail capabilities under the careful protection of CCP policies and regulations, only to turn around

and compete globally with Japanese high-speed rail companies and undercut their competitiveness and innovation base.

Inroads to Regional Semiconductor Industry

Shifting to a different sector, China's ongoing MIC 2025 economic statecraft risks chipping away at the competitiveness and innovation of the semiconductor industry in the region. The Indo-Pacific is home to nine out of the world's top 10 semiconductor companies. If developing a domestic high-speed rail industry was China's imperative in the 2000s, China continues its charge to create national champions in the semiconductor industry to replace foreign suppliers.

Despite limited success until now, China views the development of a domestic semiconductor industry as critical to economic growth because semiconductor chips are the backbone of future technological breakthroughs, including in AI, autonomous systems and quantum computing, according to the Semiconductor Industry Association. The Chinese government's planned semiconductor investment over the next five years of U.S. \$118 billion dwarfs the planned research and development of foreign competitors, according to the Center for Strategic and International Studies' James Andrew Lewis.

In addition to large-scale government funds to build a domestic semiconductor industry, China is accused of state-sponsored intellectual property theft at foreign firms in places from Silicon Valley to Taiwan. Indo-Pacific countries are taking up measures to address these threats. For example, the South Korean legislature is seeking ways to address trade secret theft in the semiconductor industry through harsher penalties. The Japanese government meanwhile is considering revising its Foreign Exchange and Foreign Trade Act to expand the foreign investment restricted list to include such sectors as semiconductors, while also



A man monitors stock prices at a Beijing brokerage in June 2019. The Chinese government is increasing foreign direct investment in the technology sector and obtaining technology through overseas acquisitions and investments in more foreign firms. THE ASSOCIATED PRESS

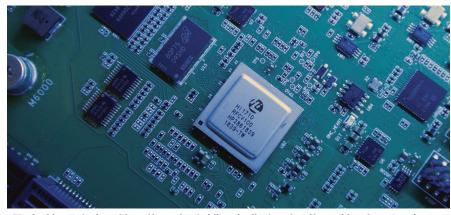
assessing the creation of an export control framework for advanced technologies, similar to the U.S. revised export controls system.

Dual Use Technologies, Military Civilian Fusion

MIC 2025 also remains a vital component of CCP Chairman Xi's defense modernization and military civilian fusion strategy designed to reform the PLA into a world-class military by 2049. First, the dual-use nature of MIC 2025 technologies will help the PLA to accomplish battlefield superiority. For example, China is already incorporating AI into military robotics programs, autonomous capabilities and military command decision-making, according the Center for New American Security's (CNAS') Gregory Allen. The PLA anticipates AI will drive the next revolution in military affairs as military systems and fighting doctrine transition from "informatized" to "intelligentized," CNAS' Elsa Kania said. China's technological advances in other MIC 2025 sectors will have long-term military implications for the region and the nature of next-generation warfare, including quantum communications, radar and cryptography; autonomous vehicles and automated systems; and robotics, according to researchers Meia Nouwens and Helena Legarda with the International Institue for Strategic Studies.

Second, through MIC 2025 and other associated industrial policies, Chinese private sector firms are increasingly playing a larger role in advancing China's military and national security goals. For example, Chinese private sector AI and facial recognition technologies are at the heart of the CCP's persecution of millions of the Uighur ethnic minority group in Xinjiang, according to Kania. These same Chinese national champion AI companies also export their surveillance tools around the world to support authoritarian

governments' efforts to monitor their citizenry.



A chipset designed by a Huawei subsidiary is displayed at Huawei headquarters in Shenzhen, China, in May 2019. Industry insiders are skeptical Chinese companies will be self-sufficient in chip manufacturing by 2025, as the Chinese Communist Party (CCP) desires. The CCP plans to invest more than U.S. \$118 billion in the semiconductor industry over the next five years. REUTERS

Opportunities for the Region

Amid the CCP's efforts to remove MIC 2025 from international consciousness, the international community should continue to raise awareness on the PRC's unfair and predatory economic practices through calls for transparency and information sharing. Enhanced information sharing in the Indo-Pacific region between the public and private sectors and academia is essential to address threats posed by the CCP's model of state capitalism and economic aggression. U.S. allies and partners are already pursuing diplomatic efforts in the region. However, more outreach needs to be conducted with the private sector and universities because that is where the majority of tech transfer occurs — whether legally, forced, surreptitiously or illegally.

Sharing information with the tech private sector and with R&D labs at academic institutions will reinforce the need for strong defensive measures, including transparency of ownership, while also raising awareness about longterm unintended consequences that their investments or joint ventures can have. Simultaneously, the private sector and research labs still hold power to influence the behavior of the CCP, although their influence will wane as Chinese companies gain more international market share and as more Chinese universities become world class. Unified, public pressure with the threat of real consequences has worked with China in the past. For example, foreign companies' unified, pressure — in combination with U.S. government support — prevailed in rolling back China's 2003 introduction of a local domestic standard for wireless networks, according to the CFR's Adam Segal.

Equally critical will be information sharing between the public and private sectors and academia on how to further strengthen innovation ecosystems and enhance collaboration among the U.S. and its allies across the Indo-Pacific, in order to set up the region for sustained economic success and shared prosperity for decades to come. A call for global R&D funding and partnerships among countries with similar, shared values would be a welcome start. This can lay the framework to create global infrastructure for next-generation technologies, (similar to how 5G consortiums are being developed), to effectively compete against China's discriminatory MIC 2025 strategy. Ultimately, R&D collaboration based on the rule of law and reciprocity enables all partners to reap the benefits from technological innovation. □

Arati Shroff, a foreign service officer with the U.S. Department of State, is an Una Chapman Cox fellow and East-West Center adjunct fellow in Honolulu, Hawaii. Her views are her own and do not represent those of the Department of State. High-Speed Networks,

High-Stakes Risks



United States warns against using Chinese telecom giant Huawei as a vendor

FORUM STAFF

espite its status as the world's largest seller of communications equipment and the second-largest smartphone maker, China's Huawei Technologies Co. finds some of its markets closing due to concerns that it could be an instrument of espionage.

As nations dive into the next wave of mobile technology by building 5G wireless networks, Huawei is now banned from providing the equipment in Australia and the United States. Other countries are also closely watching as leaders, including the secretary-general of NATO, warn of the dangers posed by Huawei's close ties to the Chinese Communist Party (CCP).

U.S. Vice President Mike Pence urged all U.S. allies to turn their backs on the telecommunications giant, saying the company posed a severe security threat.

"Chinese law requires them to provide Beijing's vast security apparatus with access to any data that touches their networks or equipment," Pence said during a February 2019 speech at the annual Munich Security Conference, according to the business journal *Nikkei Asian Review*. "We must protect our critical telecom infrastructure, and the United States is calling on all our security

partners to be vigilant and to reject any enterprise that would compromise the integrity of our communications technology or national security systems."

The U.S. House Permanent Select Committee on Intelligence concluded as far back as 2012 that equipment made by Huawei and ZTE Corp, a telecommunications rival in China, could undermine U.S. security interests. Adding to the concern is the sheer enormity of Huawei. The company passed Sweden's LM Ericsson in 2017 to become the No. 1 global seller of wireless network gear. Its smartphone brand passed Apple in mid-2018 as the world's No. 2 seller behind Samsung Electronics, according to a report by The Associated Press (AP). The 5G projects Huawei wants to build would vastly expand the reach of networks to support such things as self-driving cars, factory equipment and internet-linked medical devices.

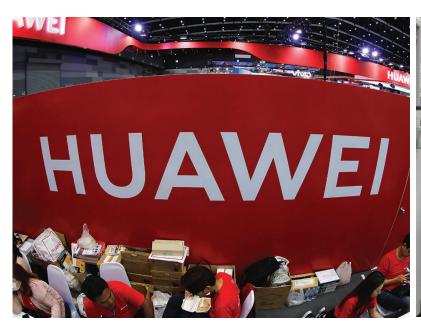
Despite Huawei's insistence that it is not involved in spying, politicians, academics and intelligence officials offer a range of reasons for why more vigilance is needed before Huawei and other Chinese companies can be allowed to participate in the buildout of critical information systems.

Huawei workers participate in the Mobile Expo in Bangkok in May 2019.

REUTERS

A Huawei worker mans the production line for P30 smartphones. Huawei is the world's second-largest smartphone maker behind Samsung Electronics.

REUTERS







CHINESE LAW MANDATES COOPERATION

In his Munich speech, Pence pointed to laws enacted by the People's Republic of China (PRC) that burden companies with helping the government gather information. The PRC's National Security Law enacted in 2015 states

that citizens and businesses have the "responsibility and obligation to maintain national security." Perhaps even more significant is the 2017 National Intelligence Law that requires Chinese companies to "support, assist and cooperate with" the government's intelligencegathering agencies.

sanctions on Iran.

Meng Wanzhou, chief

monitoring device on

escorted from her home in Vancouver, Canada.

extradition to the U.S. on

allegations the company illegally skirted U.S.

her ankle as she is

Wanzhou is facing

financial officer of Huawei, wears an electronic

gathering agencies.

In an analysis for the Lawfare
Institute, a Washington, D.C.-based

organization dedicated to exposing legal abuses and protecting human rights, Dr. Murray Scot Tanner argued that the 2017 law was a "uniquely troubling milestone in Beijing's [then-] 4-year-old campaign to toughen its security legislation." Tanner, who has published books on Chinese law and the country's internal security apparatus, previously worked as an analyst for the U.S. government. The 2017 intelligence law, he wrote, is intended to be used as an offensive weapon instead of a protective security measure.

"Of special concern are signs that the intelligence law's drafters are trying to shift the balance of these legal obligations from intelligence 'defense' to 'offense' — that is, by creating affirmative legal responsibilities for Chinese and, in some cases, foreign citizens, companies or organizations operating in China to provide access, cooperation or support for Beijing's intelligence-gathering activities," he wrote.

PRC law permits authorities to detain or criminally punish people who obstruct intelligence gathering, but it doesn't distinguish obstruction from merely failing to cooperate. Tom Uren, Australian Strategic Policy Institute's international cyber policy expert, said the risk of Chinese companies cooperating with intelligence-gathering efforts is high. "There's risk of Huawei being used to enable either espionage or sabotage," he told the *Daily Mail Australia* newspaper. "The Chinese Communist Party has great control over enterprises. They prioritize their own security over anything else."

A REVEALING PATTERN

While Huawei insists that no evidence exists to prove it spies on foreign companies or governments, examples to the contrary abound.



Huawei founder and President Ren Zhengfei, right, shows Chinese President Xi Jinping the company's London offices. AFP/GETTY IMAGES

U.S.-based technology firm Cisco, for example, accused Huawei in a 2003 lawsuit of stealing its source code, the commands used to run software. Both sides eventually settled the lawsuit.

A U.S. jury in 2017 found Huawei guilty of stealing intellectual property from telecommunications company T-Mobile. In a 2019 indictment, the U.S. Justice Department said Huawei repeatedly tried to steal design information for a T-Mobile robot.

Allegations, besides trade secret theft, follow the company. The U.S. in January 2019 unsealed an indictment against Huawei Chief Financial Officer Meng Wanzhou, daughter of company founder Ren Zhengfei. The indictment alleges that Huawei defrauded U.S. banks to do business with Iran in violation of U.S. sanctions. Canadian authorities detained

Meng in December 2018, and the U.S. is seeking her extradition. The indictment said Meng in 2013 repeatedly lied to a bank executive about her company's relationship with an Iran-based firm called Skycom.

PRIVATE OR STATE-OWNED?

Despite concerns raised by Australia, the U.S. and other countries that Huawei is possibly controlled by the CCP, company executives remain adamant that they would not turn over information to their government.

"There is no obligation on Huawei's part to cooperate with the government in the way in which the Americans are indicating," Tim Watkins, Huawei's vice president for Western Europe, told BBC radio.

Scholars who have studied Huawei's ownership claims cast doubt on those assertions.

"Huawei calls itself employee-owned, but this claim is questionable, and the corporate structure described on its website is misleading," wrote Christopher Balding and David Weaver, authors of an April 2017 report titled, "Who Owns Huawei?" Balding, an associate professor of economics at Fulbright University Vietnam, and Weaver, a research professor at George Washington University Law School, said a holding company owns 100% of Huawei, and founder Ren owns 1% of the holding company. The other 99% is owned by an entity called a "trade union committee" for the holding company.

In the PRC, trade union members have no rights to assets held by a trade union. What Huawei has referred to as "employee shares" in the company are "in fact at most contractual interests in a profit-sharing scheme," the authors wrote.

"Given the public nature of trade unions in China, if the ownership stake of the trade union committee is genuine, and if the trade union and its committee function as trade unions generally function in China, then Huawei may be deemed effectively stateowned," the report stated.

Ren's military history and ties to the CCP also have raised suspicion. India, for example, while not issuing a ban on Huawei, is considering a plan to keep the company out of its 5G buildout in sensitive border areas where India has territorial disputes. Media reports cite the billionaire Ren's party ties as one reason. After growing up poor in the southwestern province of Guizhou, Ren eventually studied at the Chongqing Institute of Civil Engineering

and Architecture and later joined the military in the 1970s, according to a report in *The Guardian* newspaper. He joined the CCP in 1978 and was invited to attend its 12th national congress in 1982.

THE LARGER THREAT

The roiling debate about whether Huawei is allowed to build 5G networks often centers on two potential risks: A company that is closely linked to the PRC government would have a window into critical national telecommunications systems, so it theoretically could provide Beijing a "kill switch" to shut down vital mobile networks during a crisis or confrontation, according to various media accounts.

Another concern is the company's potential access to secret government or proprietary information. In March 2019, Microsoft revealed that Huawei equipped

some of its laptops with a so-called backdoor flaw that could allow unauthorized access to information on the computers. Microsoft said it informed Huawei of the flaw, and Huawei released a patch on January 9, 2019. Microsoft engineers traced the suspect code to a device-management software called PC Manager, which is preinstalled onto Huawei's Matebooks. The software originally included a driver that would allow unprivileged users to upgrade their access levels.

Professor Alan Woodward, a computer security expert at Surrey University in the United Kingdom, told BBC News that the backdoor on the laptops was introduced at the manufacturing stage, but no one knows how it got there. He said he didn't see any evidence it was introduced intentionally by the government or the company, but the question remains: "How did the software engineering processes allow this on?" he asked. "This is not

Huawei
employees
wait for
a shuttle
bus at the
company's 5G
testing park
in Shenzhen,
Guangdong
province,
China. REUTERS



going to help their [Huawei's] case or reduce people's concerns."

Huawei, however, is merely a small part of the overall threat when it comes to information security concerns about the PRC. In a June 2018 report titled "How China's Economic Aggression Threatens the Technologies and Intellectual Property of the United States and the World," the White House Office of Trade and Manufacturing Policy said the PRC wants to capture emerging high-tech industries that will drive future economic growth. To do this, the government engages in state-sponsored internet protocol theft, cyber espionage, evasion of export control laws, counterfeiting and piracy, the report said.

While cyber espionage is the most common tactic used by the PRC, technological advances are sometimes physically stolen. In September 2016, a U.S. federal judge sentenced a Chinese woman to nearly two years in prison for illegally shipping parts for submersible vehicles to a Chinese university, including some that she tucked in her suitcase, the Orlando Sentinel newspaper reported. Prosecutors accused Amin Yu, who was 55 at the time of her sentencing and a former employee at the University of Central Florida, of failing to disclose that she worked on behalf of the PRC government and of lying about what she was shipping to China. She pleaded guilty to exporting goods to a foreign country without registering as a foreign agent and conspiring to commit international money laundering. U.S. District Judge Roy B. Dalton Jr. sentenced her to 21 months.

Military targets are often in the crosshairs of Chinese hackers. In July 2018, a U.S. federal judge sentenced Chinese businessman Su Bin to nearly four years in prison after he pleaded guilty to conspiring to hack the networks of the Boeing Co. and other U.S. military contractors. He traveled to the U.S. at least 10 times from 2008 to 2014 to steal data with two unidentified co-conspirators based in China. The three stood accused of stealing plans for the C-17 military transport plane as well as the F-22 and F-35 stealth fighters.

Even while the eyes of the world were trained on Huawei as the company expanded its business, it fought another public relations battle when one of its employees was charged with espionage in Poland.

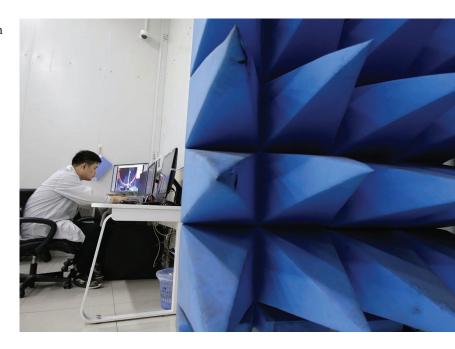
In January 2019, Polish authorities arrested two people, including a Chinese employee of Huawei, and charged them with spying for Beijing, according to a report in *The New*

York Times newspaper. Polish television said the Huawei employee graduated from Beijing Foreign Studies University with a degree in Polish studies and once worked at the Chinese Consulate in Gdansk, Poland.

Huawei responded by promptly firing him. The company said it "decided to terminate the employment of Mr. Wang Weijing, who was arrested on suspicion of breaking Polish law," according to an AP report. Polish authorities said they arrested Wang, a former Chinese diplomat, along with a Polish cyber security expert who had held several top government cyber security jobs.

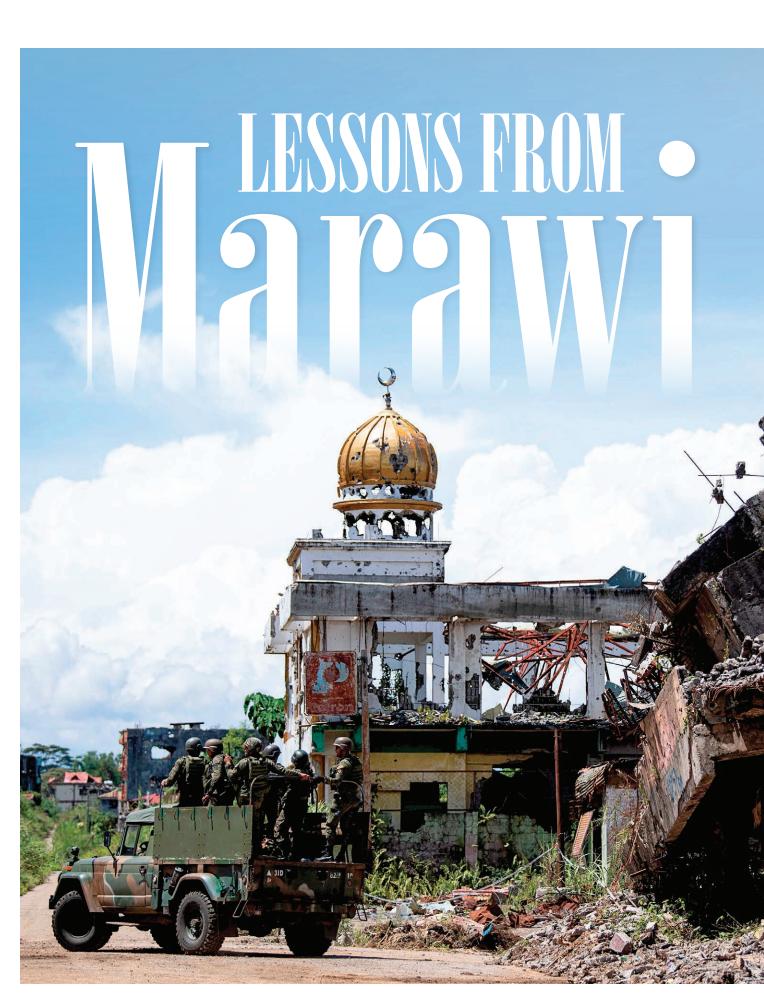
Huawei maintained that Wang's actions "have no relation to the company" and that he was fired because "the incident in question has brought Huawei into disrepute." Those protestations did little, however, to diminish the concerns of those who see the company as a national security risk.

An engineer works at a 5G testing center for Huawei in the Songshan Lake Manufacturing Center in Guangdong province, China. REUTERS



NATO Secretary-General Jens Stoltenberg in May 2019 warned U.K. leaders about the risks of using a Chinese company to build out 5G networks. He acknowledged that all NATO members have the right to make their own choices.

"Having said that, of course, what matters for NATO is that these decisions are made in a way that makes sure that they have secure networks," Stoltenberg said, according to an Agence France-Presse report.





Retired Lt. Gen. Danilo G.
Pamonag shares what he
learned from the Philippines'
largest military engagement
since World War II

FORUM STAFF

y the height of fighting during the siege of Marawi, jihadist militants had taken more than 1,770 civilian hostages to keep control of the southern Philippine city on Mindanao, the country's second largest island. Some they killed right away; others they used as human shields. They put others to work making explosive devices, digging tunnels and securing supplies.

The initial invasion of the Muslim enclave had occurred several months earlier on May 23, 2017, after

Lt. Gen. Danilo G. Pamonag retired in January 2019. ARMED FORCES OF THE PHILIPPINES

a failed attempt by Philippine government forces to capture Isnilon Hapilon, the leader of the Philippinebased radical militant Abu Sayyaf Group. The Islamic State in Iraq and Syria (ISIS) had anointed him its emir, or military commander, of Southeast Asia or

at least emir of a region encompassing the Philippines, Indonesia and Malaysia that the terrorists dubbed the Islamic State of East Asia.

The Maute Group, composed of Philippine rebels based in Lanao del Sur province, had announced its allegiance to ISIS two years earlier and to Hapilon, seeking to help them establish a caliphate in Southeast Asia. Maute leaders, Omar and Abdullah Maute, members of Abu Sayyaf, and other Philippine and foreign rebels linked to ISIS had been planning a takeover of Marawi, the province's capital, for some time, video evidence later revealed. Weapons and supplies had been stashed across the city.

Armed Forces of the Philippines Soldiers drive past destroyed buildings in Marawi on May 23, 2019. AGENCE FRANCE-PRESSE/GETTY IMAGES

The combined rebel forces struck the day of Hapilon's May evasion from capture and raised the ISIS flag in Marawi. They burned buildings, desecrated churches and would displace the bulk of the city's population of more than 200,000 people from their homes, according to government figures.

Lt. Gen. Danilo G. Pamonag, Armed Forces of the Philippines (AFP) Southern Luzon Command, knew he had to free the Marawi hostages from the militants if he was to retake the city. He had previously freed hostages on Mindanao during the September 2013 siege of Zamboanga City, when he was first called upon to be the AFP ground commander. Under his leadership, AFP Soldiers secured the safety of 195 of 197 hostages from a faction of the Moro National Liberation Front, bringing an end in less than three weeks to the crises, which displaced more than 100,000 people and killed several civilians. "That was a complete victory," Pamonag said.

The Marawi siege, however, would be different, as would be Pamonag's second time as ground commander. Although Philippine President Rodrigo Duterte had declared martial law across Mindanao on the day of the siege, the battle would persist for months.

"The presence and alliance of foreign terrorist fighters with our homegrown terrorists made our fighting more difficult. Comparing our fight during the Zamboanga crisis

He would lead the largest urban engagement for the AFP since the Battle of Manila in World War II. (He had also led the second largest at Zamboanga.)

ENEMY TACTICS

The militants chose Marawi city for strategic reasons. Lawlessness was the norm in the city, which is in one of the country's poorest provinces, and had long observed a tradition of Muslim exclusivity and of resisting external influence. Marawi, the only declared Islamic city in the country, was more than 99% Muslim at the time of its capture. The Philippines' total population is about 11% Muslim and that of Mindanao, 23%. For more than 40 years, Muslim factions throughout Mindanao have sought independence from the Philippines, often through violent means. With implementation stalled of the latest peace agreement, signed in 2014 to create a new self-governing region in Mindanao known as Bangsamoro, the rebels hoped to seize upon the entrenched Muslim grievances there, according to an analysis by International Crisis Group, a nongovernmental organization.

The jihadists, besides taking hostages in Marawi, employed more sophisticated tactics, techniques and



practices than AFP troops had previously encountered. The rebels possessed powerful sniper rifles and scopes to slow down advancing troops. They imbedded massive numbers of improvised explosive devices in buildings and along possible approaches for the government troops. They used multirotor drones to conduct reconnaissance on the disposition of troops. They used force protection and night-vision goggles. They even used floating devices to swim across Lanao Lake, the nation's second largest freshwater lake, on which the city was built.

Fighting in a built-up area is complex and more challenging than conventional fighting. The Philippine security forces were primarily trained in jungle operations. Fighting enemies in a new urban and populated environment requires a different mindset, different approach and method."

- Lt. Gen. (Ret.) Danilo G. Pamonag

The militants demonstrated their schooling in urban warfare, Pamonag said. To change location, the militants breached walls of buildings. They knew to use basements and interconnected underground tunnels to protect themselves from airstrikes by the Philippine Air Force, which would be supported by U.S. and Australian forces. They burned buildings to isolate troops and obscure observation during rebel movement and withdrawal. To sustain their endurance, they used illegal drugs. They employed social media to gain popular support.

The militants, more heavily indoctrinated, were crueler in their practice of jihad than previous rebels the AFP had confronted. "They also became more barbaric and brutal as their actions were beyond the comprehension of humanity and compassion. They burned and decapitated our dead Soldiers, raped women hostages and killed non-Muslim hostages who failed their religious tests," Pamonag said.

URBAN COUNTERMEASURES

Pamonag, however, would find ways to outsmart and outwit the militants. "We made many innovations. Those are my secret weapons. We never had sophisticated weapons, but we had lots of ingenuity."

Pamonag's Soldiers used drones, for example, to locate a key group of hostages. The AFP Soldiers attached a cellphone by a string to the drone along with instructions on how to use the phone and a knife to cut the string. The cellphone had one number programmed into it. The hostages called the number that afternoon. By midnight, the AFP Soldiers had rescued 18 hostages.

"That was a big score on our side. We were able to have a better picture of the battleground, where they were hiding, who were leaders, who they are, where they were hiding, what they were doing during the day," Pamonag said. Until then, the AFP had operated based on limited information.

Fighting in an urban environment was also a leading challenge for the AFP Soldiers.

"Fighting in a built-up area is complex and more challenging than conventional fighting. The Philippine security forces were primarily trained in jungle operations. Fighting enemies in a new urban and populated environment requires a different mindset, different approach and method," Pamonag said.

In Marawi, for example, 105 mm howitzers became irrelevant because they are indirect fire weapons. "They became useless because we were fighting less than 100 meters away. We were fighting building to building," Pamonag said.

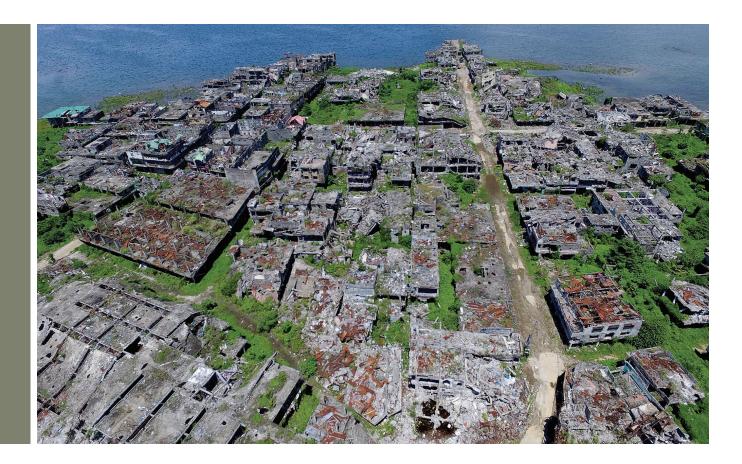
AFP Soldiers used plastic Ramen noodle packaging to adapt the weapons into direct-fire weapons. "We had units who had urban experience. But those who didn't have urban training were trained first for a week at the main battle area. They could not be deployed directly because they had no knowledge at the start. So that's how we did that," he said. "We had to adopt very quickly the new techniques and procedures in fighting in the built-up area. And, changing ways and means of fighting when enemies are already in the battleground was not easy for us."

Armored vehicles also became useless because of the condition of the streets. AFP Soldiers built ramps to station the armors on the second stories of buildings and fired them from the higher vantage points.

"Victories are not often achieved by sophistication of weapons. The most powerful weapons I had at that time were the innovations, ingenuity, initiative and adaptability of my Soldiers to get the job done. We had to innovate ways, become more wise and agile, and be unpredictable and adaptable to the evolving conflict," Pamonag said.

DEDICATED SOLDIERS

The ISIS-affiliated militants' barbarism was met with the resolve and heart of the AFP troops. "Another key to the success was the 'heart' of the Soldiers who were totally determined and committed to stand up and fight for the sovereignty of the country. Of the 2,000 wounded



Soldiers, 70% went back to the main battle area and fought again," Pamonag said.

The AFP Soldiers' determination was palpable. "I could feel the commitment. Every time I went to hospital, I would say, 'How are you feeling?' I talked to them several times. They would want to go back. Some even went AWOL [absent without leave] and snuck out of hospital to go to the battlefield to fight."

Duterte's presence also made a difference. "We had a president who visited inside the main battle area. It was terrible protecting him inside the main battle area. It was not enough to talk to them; he wanted to fire a gun," Pamonag said. In most countries, "you would never see a president with helmet inside a battle area. So that motivated us."

TURNING POINT

The rescue of the first group of hostages proved to be a turning point in the battle, Pamonag said. "I felt that victory was in my hands, when I started rescuing hostages, because in the first two months we had no knowledge what was happening within the main battle area."

Pamonag said the experience was similar to that in Zamboanga. Once the hostages were freed, he knew they would prevail. "It's the same story during the Marawi siege. After two months I knew at that time that victory would be coming."

Rescuing the hostages was rarely straightforward, however. "We did a peace corridor to allow the hostages to get out of the battle area. Three times we did that, only

Two years after Marawi city, Philippines, was overrun by Islamic State-affiliated jihadists, much of the city remains in ruins.

AGENCE FRANCE-PRESSE/GETTY IMAGES

to find out that most of the hostages who were released by them were Muslims." The rebels kept the Christian hostages and released the Muslim ones during these shortterm truces. This reinforced their religious authority over the civilian population. They often immediately killed hostages who failed their religious challenges such as being asked to recite Islamic scripture or prayers, he explained.

The military operation was prolonged because the AFP leaders strove to minimize deaths and injuries of Soldiers and civilians trapped in the main battle zone and damage to property. "There were 35 mosques inside Marawi, but none of these mosques was bombed by us," Pamonag said.

Before the end of the conflict, the AFP Soldiers had rescued 1,777 civilians from the battle zone, Pamonag said. On October 17, 2017, after nearly five months of fighting, President Duterte declared Marawi city free of terrorist influence. The day before, AFP troops had killed the key commanders, Hapilon and Omar Maute. Although the ISIS and Maute leaders had been neutralized, some isolated skirmishes would continue for almost another week.

An Armed Forces of the Philippines Soldier walks on the rooftop of the Grand Mosque in Marawi, Lanao del Sur province, on May 11, 2019. REUTERS





Marawi was officially recaptured October 23, 2017, exactly five months after the initial invasion, when AFP Soldiers tore down the black ISIS flag and Philippine Defense Secretary Delfin Lorenzana announced an end to the battle. All the rebel leaders were killed except for a couple who escaped during the first phase of the conflict.

"They were able to slip out because we didn't have enough men initially," Pamonag said. Among those who got away was Abu Dar, a leader of another pro-ISIS group who would succeed Hapilon as emir of ISIS in Southeast Asia but was later killed in March 2019, according to The Associated Press.

In addition to evacuating most of the hostages, the AFP successfully contained the conflict in Marawi and prevented it from spilling over into other areas. The AFP also stopped other rebel splinter groups from participating or reinforcing the militants. All were elements of the AFP's strategy. In total, AFP Soldiers killed 920 terrorists, including 32 foreign fighters from countries including India, Indonesia, Malaysia, Morocco, Saudi Arabia and Yemen. They also confiscated more than 850 high-powered firearms and 100 other weapons.

"There are so many factors that contributed to our success," Pamonag said. "Our multilateral and interagency approach enabled us to harness the cooperation of each and every one. National and local government agencies, national and international nongovernmental organizations, and all of our government instrumentalities thereby allowing us to win the support of the people. Each has an important role to play," Pamonag said. "By making them feel that they were a part of our campaign, we were able to establish and legitimize our operations."

The people of Marawi paid a heavy price, however, that will be felt for some time. At least 165 AFP Soldiers and Philippine police officers and 87 civilians perished in the battle. More than 400,000 people fled their homes in the city and surrounding areas, half of whom are counted as internally displaced people (IDPs). Parts of the city were flattened, others rendered uninhabitable by unexploded ordnance.

REBUILDING EFFORTS

Today, more than two years after the recapture of Marawi, reconstruction, rehabilitation and rebuilding are ongoing. Significant numbers of the 200,000 IDPs have still not returned home and challenges remain. Many displaced people worry they may never be able to go home, especially if a Chinese consortium, attracted to Mindanao's rich natural resources, including substantial natural gas reserves, is allowed to lead the reconstruction as proposed, according to media accounts.

Displaced Marawi residents celebrate the end of Ramadan in a makeshift prayer tent on June 5, 2019. The International Committee of the Red Cross said that access to potable water, viable livelihood opportunities and permanent shelters are the most pressing problems for evacuees. AGENCE FRANCE-PRESSE/GETTY IMAGES

In the aftermath of the battle, AFP Soldiers are playing key roles, Pamonag said. "The military can ably provide security, mitigating the effects of harsh conditions of IDPs, and clearing the main battle area, keeping the community safe while reconstruction and rehabilitation is taking place. The military will stand guard to make sure that this kind of conflict will never happen again in the future," he said.

Special forces, in particular, can play a role in the reconstruction as community defense builders, Pamonag added. "During peacetime, they can safeguard the community and undertake reconstruction and rebuilding works aimed at winning the heart and minds of the people. They are most effective in a post-conflict situation where civil-military works are initiated to mitigate the effect of the conflict."

The Philippines must be vigilant when it comes to ISIS and its affiliated internal militant groups because they still possess the same ideology, Pamonag said. "They are in a hibernation period. On the surface everything is going fine, but covertly they are planning and continuing their indoctrinations," he said. "A whole-of-government approach that involves all levels of government and all stakeholders is required."

The Philippines still needs the support and assistance of other countries in fighting terrorism, he said. The Philippine government has extended martial law in Mindanao through the end of 2019.

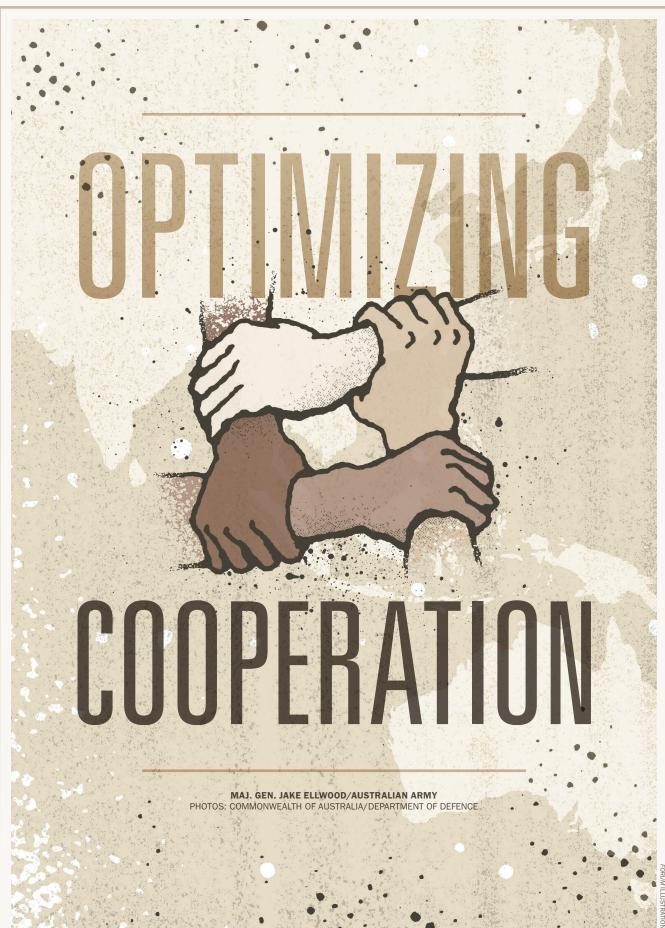
BATTLE AFTERMATH

Pamonag retired from the military in January 2019. He will always remember the two sieges he presided over. Zambioga and Marawi were the "two incidents that changed my life," he said.

He joined the military because he thought it was the noblest of professions. "I joined because my father was in the military. I am the youngest of seven children. My oldest brother was also in the military. Serving the military for all your life is something very noble. I cannot find many professions where you are willing to offer your life."

"For me joining the military is the best thing, the best decision I made. I served the military for 37 years, eight months. There was not a single day that I regret joining the military. It made me a complete man."

The same day of his retirement, the Philippines' secretary of social warfare recruited him for a new role for which he believes his military experience will prove invaluable. "You need to know how people are feeling. Because we had to see how the indigent people live. I have the experience of going in the poor places," Pamonag said. "From a combat officer, I now become a social worker tasked with improving the condition, welfare and development of well-being. I love this job very much already because this is totally new to me. I intend to help my Filipino brothers/sisters by extending the department's helping hand especially to those who are in need."



Indo-Pacific nations need to build a region where working together and sharing information are the norm

"We live in an era of increasing competition where the rules-based international order is coming under increasing pressure. In the face of this, we have an opportunity: If we posture to harness our innate potential, we stand to increase our collective prosperity," according to our chief of Army's future framing concept, Accelerated Warfare.

Optimizing our theater for cooperation is a vital topic because of the risks and opportunities that exist in a world more connected than ever and changing at an accelerating pace.

As the commander of the Australian Army's 1st Division, I am responsible to our chief of Army for force preparation and certification of Army personnel and units for known and contingency operations. I am also the responsible lead for planning and commanding all Army international engagement in Southeast Asia and the Southwest Pacific, a new role that the chief assigned to me in November 2018. Concurrently, I have a joint responsibility to our chief of joint operations to provide the Australian Defence Force's (ADF's) Deployable Joint Force headquarters. In this role, I am responsible for generating minor or major joint task forces (JTFs) at home or abroad.

Most recently, these responsibilities have been exercised supporting a major international sporting event, the Commonwealth Games, conducted in Queensland, and several international political activities, supporting the Asia Pacific Economic Cooperation in Papua New Guinea and elections in the Solomon Islands.

All of these were highly successful, which is a testament to the great work of my staff and the assigned units and personnel.

In July 2019, my headquarters commanded a multinational JTF during Exercise Talisman Sabre. The JTF is composed of 33,000 Soldiers, Sailors and Aviators, 250 aircraft and 50 ships. Talisman Sabre is a biannual combined and joint training activity that highlights the significant and credible warfighting

capabilities of the ADF in conjunction with its allies and partners.

The chief of joint operations assigned an additional role to my headquarters in January 2019: to plan and command all Australian joint enhanced regional engagement activities within the Southwest Pacific. Hopefully, we will stimulate discussion on how to optimize a shared vision for cooperation. This is an important aspiration if we are to help mitigate the risks posed by the challenges we all face within our region and exploit the opportunities.



Maj. Gen. Jake Ellwood, commander, 1st Division, center, salutes during a parade for Australian forces deploying to Taji Military Complex, 20 kilometers north of Baghdad, after training at Gallipoli Barracks, Brisbane, in April 2019.

Mounting Threats

Some may question whether the need for cooperation is greater now than it has been historically. Several factors suggest that it is. Consideration of our threats is a good first step to understand why.

Let's consider as an example the threat posed by insurgencies in the Philippines. Historically, the majority of these were isolated organizationally,

geographically and culturally. While at various times they have, and continue to, present an ongoing threat, the insurgents were locally motivated and radicalized, locally trained, and they operated locally. Evidence shows this is no longer the case. Rather, they now appear as increasingly well-connected organizations with links to regional and global actors. These transnational actors, who are more often than not nonstate aligned, help motivate, resource, inform, train and equip these local groups. Malign actors are now "setting their theater" to undermine nation states, freed by technology and modern interconnectivity from the encumbrance of obstacles of the past such as geography, national borders or even cultural differences. New forms of connectivity have accelerated the influence and reach of radical ideologies, transforming hitherto local problems into international ones.



An Australian Army section commander delivers orders to his Soldiers during a live-fire drill in 2019 as part of a trilateral exercise, known as Southern Jackaroo, with Japan Ground Self-Defense Force Soldiers and U.S. Marines.

There is abundant evidence that violent extremists, aided by the accessibility of new communications technologies, are cooperating across previously unimaginable distances and political, social and cultural barriers. A related concern is the transnational criminal activity that often goes hand in glove with the permeable borders of an increasingly interconnected world.

The illegal international trade in weapons and narcotics, people smuggling, money laundering and theft of intellectual property, whether done in support of violent extremism organizations or purely organized crime cartels, all erode the national sovereignty of our states and, more broadly, the amity and security of the Indo-Pacific region.

Not only nonstate actors but also state actors in the Indo-Pacific region are threatening the established order that has brought record development and prosperity to billions across the region.

States are also acting in other ways that are probably not in the best collective interests of the countries of Southeast Asia and the South Pacific. For example, the application of pressure to the point of coercion, to suit another nation's regional desires at the expense of international norms, is something we must, as a collective, resist. A nation's sovereignty, democracy and freedoms within an international architecture cannot be purchased at any price. As individual states, this may be difficult to guarantee; as a cooperative collective, anything is possible.

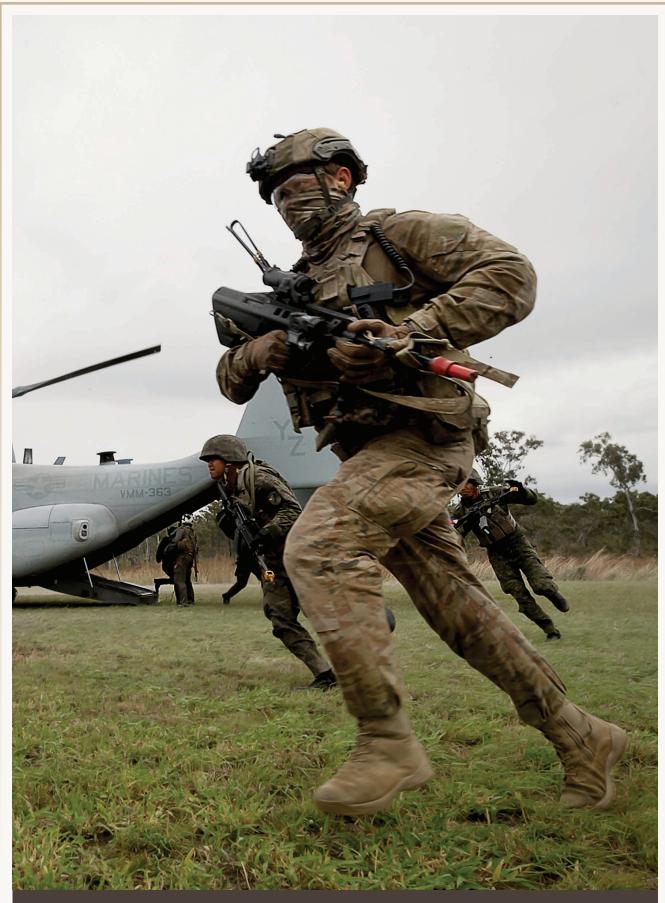
Beyond malign state and nonstate actors, other threats give cause for concern. Whether you are a believer in climate change or not, the increase in extreme weather events, combined with the other ongoing effects of rising sea levels, desertification and the acidification of our oceans that science is reporting will increasingly affect the region.

Moreover, the other natural phenomena that have long characterized life in much of the Indo-Pacific — typhoons, earthquakes and related tsunamis — cannot be forgotten. Magnifying the levels of catastrophe associated with these events is the large and ongoing growth of population within the region. Some experts suggest this population growth multiplies the effects of such natural events tenfold.

Irrespective of the origin of the threat — nonstate, state or environmental — we in the Indo-Pacific cannot ignore the risks they pose to stability, security and prosperity. Responding to such events can be far more agile and effective within a framework where cooperation is already the norm and optimized in its application. While affected nations invariably do outstanding work in responding to such events, many hands from friends abroad lighten the load that affected nations must carry.

Opportunities

Seven of the world's 10 largest armies, nine of the world's top 10 megacities and three of the world's top economies exist within our region. It is hard to come up with any conclusion other than the resources available and the potential that exists for cooperation are almost boundless. While noting that every nation will have different policy and resource thresholds for cooperation, optimized cooperation, even in part, will undoubtedly allow great gains. Where nations coexist, with so much to gain but also so much to lose, cooperation is the obvious path. Cooperation is, in my mind, the most powerful way to maintain a prosperous region where sovereignty is guaranteed and international rules and norms are protected, no matter where the threats to these unassailable principles emanate from. The key is understanding how we can set our theater to optimize cooperation, posture to collectively protect ourselves from malign



Australian Army and Armed Forces of the Philippines Soldiers disembark a U.S. Marine Corps MV-22 Osprey aircraft during a simulated assault drill for exercise Carabaroo in June 2019 at the Shoalwater Bay Training Area in Queensland, Australia.



A Papua New Guinea Defence Force Soldier participates in March 2019 in the Australian Defence Force's premier service weapons shooting competition, conducted annually in Puckapunyal, Victoria.

influences and actors and be resilient in the face of strategic shocks. Identification and adoption of such a path will also help us to enhance our strategic freedom for a globalized economy, helping to shore up a future that is certain and prosperous.

Potential Pathways

I have established why it is in our interests to seek a region where cooperation is the norm. The difficult part can be understanding how we, in the military, can play a part in setting the conditions for success. In addressing this, I will focus closely on the ADF — the force I know best — and the changes it might make in moving toward this collective effort.

When I look at our previous efforts to foster security cooperation across the region, it is fair to say they have always been well-intentioned but sometimes lacked focus and consistency. Our high operational tempo in the Middle East over the past couple of decades often meant there was physically less ability to remain actively involved with our regional partners to the degree we wished. Where we were involved, our engagement was more out of habit than focused, which reduced its effectiveness and impact.

One of the biggest hurdles to optimizing cooperation is the development of personal relationships. People-to-people ties are a proven accelerant to creating trust and understanding. In an ADF context, there were limited habitual relationships between key leaders. A few of our very senior leaders had maintained a close focus, but it was organizationally sporadic.

This meant the development of meaningful relationships was difficult. As we know, relationships are only built at the speed of trust, and trust takes time. This leads to a significant question: How do we set the conditions for optimized cooperation at a people-to-people level? Primarily we achieve it by building relations over time.

Key Engagements

Key leader engagement (KLE) is the first step. KLE is vital because it gives leaders an opportunity to understand where shared interests exist and how to pursue these interests. I decided to invest time in meeting with my counterparts in the region. It is always comforting to discover how many shared issues we have. We all look at them from different angles. Combining these different perspectives provides us all with a far better chance of addressing them. My recent interactions with friends from Papua New Guinea, Indonesia, Malaysia and Timor-Leste have all helped me understand the issues I am facing more deeply and to consider perspectives from different foxholes.

Another ever-growing opportunity is our

enhanced ability to communicate, and not just in person but across vast expanses of geography. The tyranny of distance is no longer an inhibitor to communicate with our friends and neighbors. Mobile phones, unified communications, video teleconferencing, FaceTime, instant messaging, WhatsApp — are all available in the toolbox to ensure we need not only communicate in times of crisis or at times formally set by our staff.



A U.S. Marine Corps amphibious assault vehicle hits the beach after disembarking from the Royal Australian Navy's amphibious ship HMAS Adelaide during the 2018 Rim of the Pacific exercise.

I have made it a priority to keep in contact with my counterparts via informal means, outside of set times in a set program. This is important if we are to develop authentic relationships, built on trust, over time. Skillful application of interpreters, where necessary, and used in conjunction with these new and ever improving methods of communications, also mean that language differences need no longer be such a barrier. In time, we may find that even the availability of interpreters is no longer an impediment to constant contact with colleagues when using new communication systems. Technologies such as "instant interpreter" are undoubtedly closer than we think as artificial intelligence grows in capability. I suspect time zones will remain an issue we will have to compete with, but a little less sleep is a small price to pay for a theater set for optimized cooperation!

Information Sharing

Some will say that a pervasive but necessary block to deeper relations is security. Australia, like every other nation, has different levels of classification for sovereign information. Naturally, information that is highly sensitive is restricted to those who need to know. We have different information we can share with different partners at different times.

Nevertheless, we also know this is a limitation that all militaries face. It is not something to be frustrated by, nor is it something that we, as partners should be mistrustful of — it is merely a fact. At the same time, it is something that commanders should always keep a weather eye on. Much of it is a matter of personal judgment, and like any organization, we have individuals who are overly cautious and others who are perhaps cavalier. There is a sweet spot in making sure that our partners and friends receive the information they need, when they need it, in a format that does not put either nation in a difficult position and still ensures their interests are supported and protected.



Papua New Guinea Defence Force members and Australian Army Soldiers deploy exclusion zone markers in Port Moresby Harbor during a 2018 Asia Pacific Economic Cooperation leaders' week event.

I am constantly asking my team how we can alter systems and information to protect our security, but also allow us to enable our partners to gain advantage from timely information. It is not a simple issue and is one that will never be fully "solved." However, it is an issue that needs constant attention by commanders at the appropriate level. If we share right up to the point of discomfort, but not beyond, it is a real sign of commitment to cooperation.

Another important part of enhancing cooperation is actually working together, living together — and winning together. Bilateral and multilateral training events provide a fantastic way to achieve this enhanced level of cooperation. In an Australian context, this was historically difficult due to our previously limited strategic transport options. With our newly acquired multiple purpose amphibious assault ships (LHD) and enhanced airlift capabilities, a new horizon has presented where it is far easier to travel to our partners to undertake such training, or if needed, help them come to Australia. This is a significant opportunity, allowing us to think beyond exercising at home by ourselves, and it allows us to achieve much more with our friends and neighbors.

One of the significant challenges we find in the ADF, not unlike all the nations I have interacted with, is our ability to manage tempo. Known operations, contingency force commitments, an active exercise schedule and a busy international engagement program all place demands on the force. We cannot do more, but I believe we can achieve more within the current tempo. Fusing an exercise, which historically we have conducted domestically, with our regional neighbors in a joint construct and with whole-of-government participation is the way of the future.

For example, historically, we have trained our amphibious forces in the conduct of humanitarian operations from an LHD on a domestic activity. Why don't we conduct such a humanitarian aid and disaster relief exercise offshore with our partners in a region that is prone to natural disasters? All the while undertaking some concurrent capacity building with local communities while there with our other Australian government agencies and partners? We would achieve joint and wholeof-government training outcomes and enhance our interoperability. This in turn will increase responsiveness with our regional partners for short notice missions and will help build capacity in regions that have been affected by disaster. Making such events the norm instead of the exception would transform the theory of setting our theater for optimized cooperation into practice.

Developing deeper relations does not need to start and finish with strictly military-related activities. Again, with enhanced strategic lift come broader opportunities to engage in activities that foster strong relations that transform into deeper levels of trust over time. These types of activities go beyond business transactions and move into a more personal space.

Activities such as sports, music and other cultural and social activities can all play a vital role in encouraging stronger bonds. In 2018, the chief of the Defence Force asked whether I would — or



Australian Army Soldiers coordinate an attack during the 2018 Rim of the Pacific exercise at Pohakuloa Training Area in Hawaii.

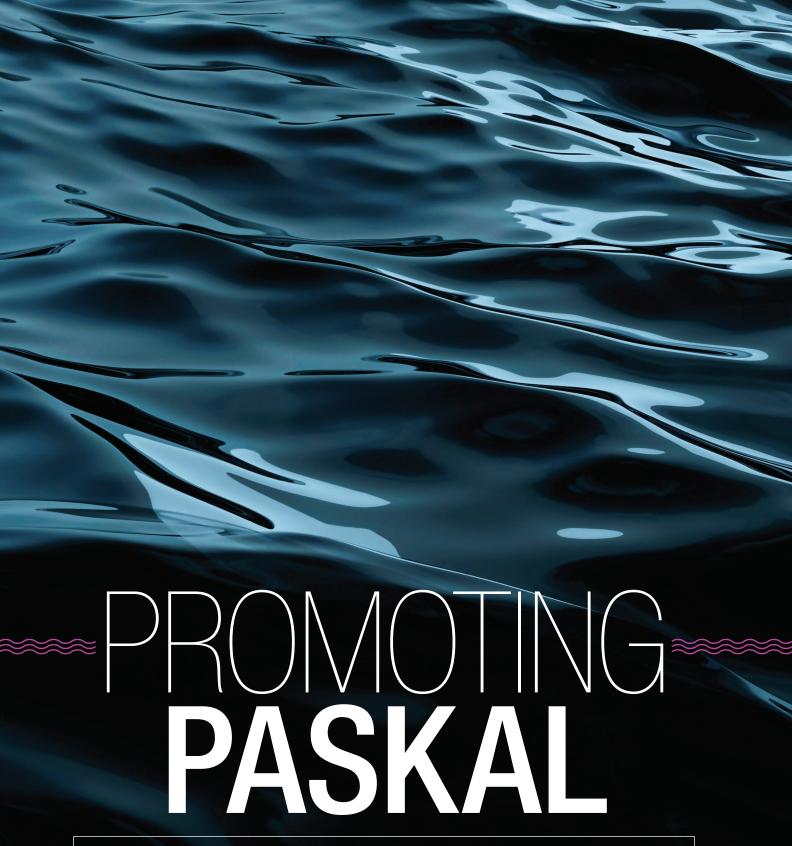
perhaps it would be more accurate to say he asked me whether I could — participate in the Lombok Marathon. It was organized by the Indonesian military to encourage growth in tourism in the wake of a significant natural disaster. I jumped at the opportunity to see the Indonesian National Armed Forces (TNI) at their very best. They were dedicated to supporting their community, and their community was deeply grateful. I also had a chance to speak firsthand to the wonderful men and women of the Reconstruction Task Force who were doing amazing work. While the activity was not military in nature, it had a profound effect on me, and I think the TNI appreciated Australians having a team run in this sporting event as a sign of respect and support.

Similarly, our musicians have played overseas at numerous events, like the Good Friday services in Tonga. These are arguably more meaningful to both our personnel and the nations we visit because it develops a personal connection, which often can be stronger than the professional one, but at the very least significantly enhance it. If we can somehow develop deep professional and personal relationships, our shared appreciation, understanding and trust for one another will necessarily grow. This can only lead one way — to enhanced cooperation.

Working with allies, partners and friends Optimizing the theater for cooperation will help us all mitigate threats, capitalize on opportunities and most importantly, it will help develop people-to-people relations — which is the key ingredient to success. In an Australian context, we can achieve this by exploiting our enhanced communications capabilities, strategic mobility and seeking to achieve a more collaborative approach to combined activity planning, not only focused on our militaries but also across the whole of our governments. If we do this, we will have set firm foundations for a prosperous region where nation states are free to exercise their rights within an environment where international rules and norms are respected.

Our profession is most certainly a team sport, and history tells us our shared interests are best realized when we work together. Cooperation means that none of us will need to face challenges in an increasingly important and increasingly demanding Indo-Pacific region on our own.

Maj. Gen. Jake Ellwood is commander of 1st Division/Deployable Joint Headquarters. FORUM edited this excerpt from his June 2019 speech at the Pacific Amphibious Leader's Symposium 2019 (PALS 19) to fit the magazine's format.



FIRST ADM. DATO ANUAR BIN HJ ALIAS LEADS THE ROYAL MALAYSIAN NAVY'S SPECIAL FORCES OVER NEW OBSTACLES

FORUM STAFF -



First Adm. Dato Anuar bin Hj Alias of the Royal Malaysian Navy Special Forces spoke with *FORUM* on the sidelines of the Pacific Area Special Operations Conference (PASOC) in April 2019 in Honolulu, Hawaii. He has held several posts in Pasukan Khas Laut (PASKAL), the main special operations force for the Royal Malaysian Navy, including commanding officer and chief of staff at the Naval Special Forces headquarters, during his 38 years of service.

FORUM: Please tell us more about your career path. Why were you attracted to a naval career, and what do you think enabled you to succeed?

Alias: I wanted to join the Navy since I was a child. One fine day during an exhibition in 1972, I was exposed to naval forces for the first time. I saw the white uniform and fell in love and knew I wanted to be in [the] Navy. I joined in 1981, and my qualification allowed me to join as a cadet officer. I immediately loved the job. I think that is the recipe that made me succeed. The chemistry was right, and I made a career as a naval officer.

FORUM: What attracted you to special operations forces?

Alias: It was a long journey. I learned about the small wing of officers who were doing something special, more than just ordinary personnel. I was drawn to the challenges of special warfare, being tasked and pushed to the limit. I joined special forces in 1986. I completed the diving, parachuting and other special training within a year. I love to do the diving, parachuting, activities that ordinary officers cannot do. That is the challenge. After serving five years onboard ships, I rose to the level of squadron leader in Naval Special Forces.

FORUM: What are some of the highlights of your career before you assumed the role of first admiral?

Alias: I was chosen to be part of the naval special task force for the United Nations Operations in Somalia known as UNOSOM II in 1995 and be part of a special mission. Then, I was selected as military observer officer in 1998 in Angola, MONUA [U.N. Observer Mission in Angola], for one year. At that time, I was still a major or lieutenant naval commander. During my tour of duty, I had encountered at least four times close-quarter situations in a mine area and surrounding village that was under attack. I countered the attack on the civilians during the worst part of the rebellion

when insurgents wanted to kill the children and women. I managed to save 20 lives, and for that I was awarded a prestigious medal for bravery and valor [Panglima Gagah Berani Medal] in 2000 by our king.

FORUM: And that was just the beginning of your career?

Alias: Special operations forces offer many opportunities, and I had the chance to continue my military career in Australia, the U.S. and Indonesia. I was sent abroad for my study. In 2006, for example, I attended the Naval War College in Rhode Island. I was appointed director of J3 [operations] joint force headquarters in Kuala Lumpur for about five years [from 2011 to 2015]. During that appointment, I was given a chance to be a subject matter expert in maritime counterterrorism and special warfare and involved actively and engaged with defense ministers in various countries. I also served as director of the multimission counterterrorism exercise in Langkawi and the Langkawi International Maritime and Aerospace Exhibition in 2015. I went to Indonesia a second time in 2016 to attend the National Resilience Institute of the Republic of Indonesia, known as Lenhannas, for my studies. After I returned from Indonesia, I was promoted in June 2017 to first admiral and assumed command as the Naval Special Operation Forces commander.

FORUM: What are the biggest challenges the Royal Malaysian Navy faces today?

Alias: One of the biggest challenges we face today is modernizing our fleet. We have a 15-to-5 armada transformation plan of the Royal Malaysian Navy. The plan will transform our Navy from an old, aging fleet to the new fleet for the emerging environments and the future. [The 15-to-5 program is a centerpiece plan that will reduce the current 15 classes of vessels to just five categories: littoral mission ships, multirole support ships, littoral combat ships, new generation patrol vessels and submarines.]



Royal Malaysian Naval Special Forces participate in a boarding drill.

Due to change of government and economic challenges, there are many pressures on the Navy and the special forces. Special forces exist because of the fleet, and the right level of special forces must be determined. Knowing that Malaysia is a very hot country, bounded by the sea, we need a level platform to defend our borders. Our 15-to-5 plan is a very good plan. But if it is not executed properly, if new ships are not delivered according to the time plan, it will affect the cost of maintaining the old aging fleet. Sometimes, it can become more expensive to maintain older ships. The cost of an aging fleet can be higher because the cost of obsolete equipment becomes higher. It is also challenging, given the Malaysian defense agency makes the decisions.

The government insists that most ships be built by locals, so that is one of the challenges. It's a good challenge because making our own submarines is better for our country. It's a good move and good role model for other neighboring countries to follow our mission. For developing countries, it is very important for countries, especially in the southeast, to pursue a defense industry. It is important to be proud to produce our own defense equipment. That is among the challenges of what the Royal Malaysian Navy needs to do to be prepared defensively for 2030. New ships will be coming into our inventory and old ships will be decommissioned, but a delay in the delivery of ships promised by the manufacturer could present a challenge.

FORUM: What else does Royal Malaysian Navy need to do to be prepared for the coming decades?

Alias: New dimensions of security are constantly changing the playing field. I do

believe social media and cyber will be game changers. Already, social media is playing important roles, and the rules will keep changing. It can benefit the good guy, but it can also benefit the bad guy. That's already been proven as ISIS [Islamic State of Iraq and Syria] used it to recruit newcomers. The future generations must be educated and trained for the new world. Cyber warfare will be nothing like what we are seeing today. The military needs to be educated on new technologies. Cyber troopers can win elections. I do believe before we go to war, cyber troopers will do their part. Cyber troops will conduct this type of warfare combined with information warfare. Even today, sometimes people mix up information with intelligent information and make decisions without actually knowing the facts or reality of what is true.

FORUM: What are the top goals that you hope to achieve as first admiral?

Alias: I've done my best during my tenure of duty to promote PASKAL to the world. In 2018, I became advisor on a film that occurred with my approval and approval of the Malaysian chief of Navy. They came and met me and incorporated my story in Angola and filmed it as part of *PASKAL* The Movie. You can find it on Netflix. I followed its development. I've worked to promote PASKAL to the world. It is a super story not only for the Malaysia military but to outside countries. It's one of action and shows how there are always many challenges ahead. Everything does not go as planned, but it works out.

FORUM: What do you think are the top security concerns for the Indo-Pacific in the coming years?

Alias: The South China Sea and China's claim of the resources. The American concern is shifting, balancing Asia. There will be a clash of strategies between China and the U.S., two big powers, where other militaries will be in the middle. Border conflict will be among the top security concerns in the Indo-Pacific in the coming years. The Spratly Islands plus the South China Sea globally. They are of interest for us and regionally and the area of East Sabah with kidnappings for ransom, piracy and illegal immigrants and Saba. PASKAL's Unit 1 will handle issues west of Malaysia. PASKAL Unit 2 is dealing with counterpiracy east of Sabah, working directly with my men.



FORUM: Do you believe multilateral approaches are important for security in the region? And why?

Alias: Yes, I do believe multilateral approaches are important because most of the problems are universal. It is important to develop a model for translation and interoperability. Countries that look for peace should be committed to developing joint solutions that are a win-win for countries involved. There should be mutual trust and understanding among the countries in order to give the best multilateral approach to security in the region.

FORUM: How do you see definitions of sovereignty evolving in the Indo-Pacific?

Alias: Each country has different definitions of sovereignty. It depends on each nation's interests and priorities and how the government functions; each have conditions.

We need flexibility, trust and confidence. I agree with the approach to a free and open Indo-Pacific. Most countries are small countries and should work with countries that have a big capability.

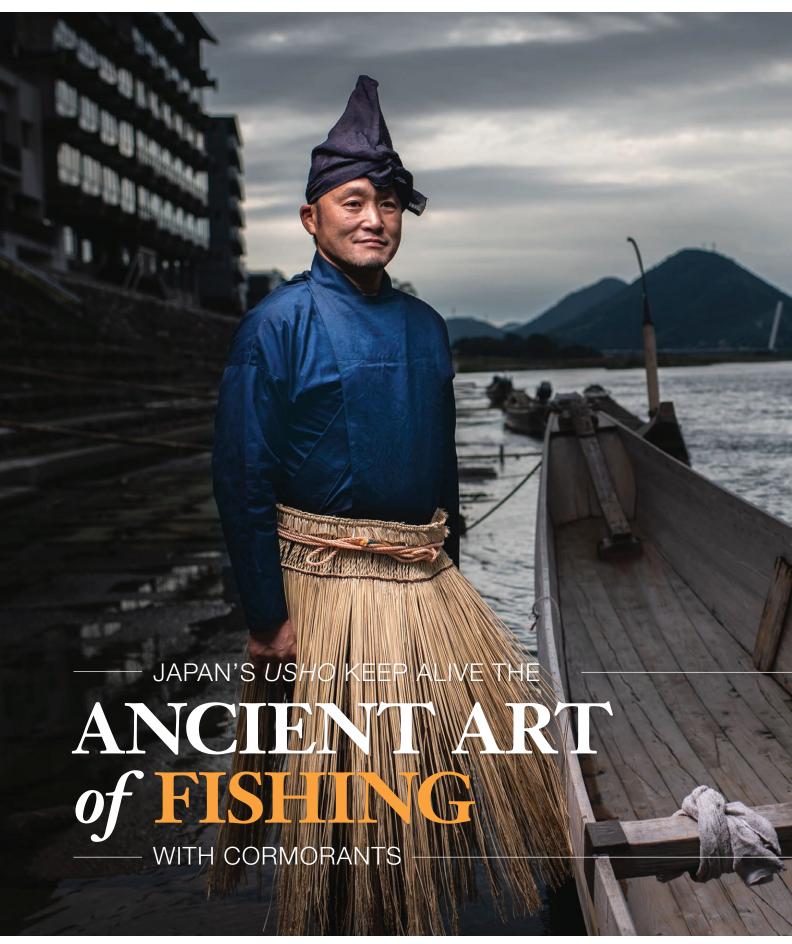
There needs to be a means to work together to do something in order to curb all these activities that have a potential threat. As long as there are potential volatile situations such as that in North Korea or possible threats from extremists, nations need to work together to protect sovereignty.

FORUM: What is the value of conferences such as PASOC?

Alias: People who were invited were likely specially selected based on the topic [resiliency in sovereignty] and current involvement in their own countries, so hopefully I can contribute my ideas. I don't come here as the policymaker; I just follow the orders. But here we have some freedom. We can express our ideas, and maybe our ideas are worthwhile to be explored and maybe used to start a good discussion. We try to be good Soldiers. This conference enables special forces from all over the world to meet together. We get to know each other. I met the commander of special forces from Thailand here for the first time. That is the beauty of PASOC. He is just next door, but we never met. There is opportunity for good discussion. □

Members of the Royal Malaysian Navy's special operations unit, known as PASKAL, participate in National Day celebrations in Kuala Lumpur.

AFP/GETTY IMAGES





n the pitch-black night, fires burn alongside a river in Gifu, in western Japan, as a handful of men prepare for a ritual that dates back more than 1,300 years: fishing with cormorants.

Dressed in traditional clothes, they look like they come from another time. They wield their cormorants, tied together with strings, like puppeteers.

Their profession, known as *ukai* in Japan, was once common in waterside villages and towns throughout Asia and other parts of the world. It has been on the gradual decline for centuries, and now lives on in Japan as a tourist attraction and a carefully protected part of the country's national heritage.

At 46, Shuji Sugiyama is the youngest of the cormorant masters, or *usho*, in Gifu. He is one of just nine people to hold an imperial license for the practice. He sits quietly on a rock by the inky water of the Nagara River, apparently undisturbed by the chatter of his fellow fishermen.

"It's because we live together, the man and the cormorants, that ukai fishing is possible," he said.

Centuries ago, the profession flourished, but by the time the palace began issuing imperial licenses to usho in 1890, the art was already on the decline. Now, there are only a few dozen usho throughout Japan, and just nine of them held imperial licenses at the end of 2018, turning over eight catches a year to the palace and receiving a symbolic salary of 8,000 yen (U.S. \$71) a month.

The method is hardly a commercial enterprise, and the usho rely on subsidies from local authorities that have turned the profession into a tourist draw and hope to one day see ukai make the UNESCO World Heritage list.

"Cormorant fishing is the biggest tourist draw we have in Gifu city," local tourism division chief Kazuhiro Tada said. "More than 100,000 people a year come to see it, and their numbers are growing."

Sugiyama inherited the job from his father, fishing alongside him until he obtained official usho status in 2002.

MAJOR TOURIST DRAW

Five generations of his family have practiced the unusual fishing technique, which once existed in Europe and elsewhere but now continues mostly in China and Japan.

The job requires a tolerance for unusual hours — fishing takes place after sundown, with the usho using flaming lamps hung on their boats to attract fish below the surface. While the fishing season only runs from May until October, each fisherman's cormorants require daily care all year round.

New birds arrive each autumn, after being captured during their migration across Ibaraki province north of Tokyo and must be trained — a process that takes about three years.

"I usually take about 10 birds fishing, and I integrate the new ones with the group, so they will imitate the older ones and learn how to fish," Sugiyama said.

HOPES FOR THE FUTURE

The fishermen wear traditional outfits: a blue shirt and matching bulbous hat to protect against the ashes of the lamps, long straw skirts to keep out water and cold, and truncated sandals that leave the heels exposed to prevent slipping.

They hang flaming torches on the boats to attract the small trout known as ayu, and a draw determines the order the boats will move out in.

The cormorants are tied together with ropes, and the fishermen tie string around each bird's throat to prevent them from eating the catch. The loops leave the birds enough space to eat smaller fish and are removed when the night's catch is complete.

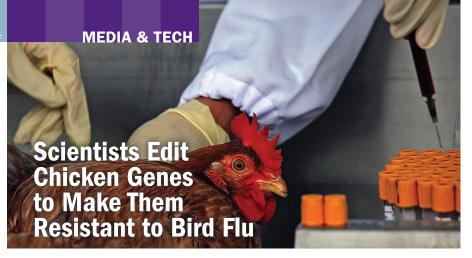
The birds are expert fishers and instantly kill their prey with their razor-sharp beaks.

When one surfaces with a fish, his usho pries it from the bird's gullet, then sends the bird back into the water.

At the peak of the catch, the air is full with the sound of squawking birds, shouting fisherman and the rhythmic tapping produced by boatmen banging sticks on the sides of the vessel. Tourists on separate boats float around the fishermen, snapping photos.

At the end of the season, Sugiyama will be able to relax a little, but he doesn't expect to take a holiday anytime soon. "I have a son who is still in primary school. I have the feeling that he has started to be interested in my work," he said. "He sees me every day with the cormorants, and I hope that one day he'll take my place." Agence France-Presse

Cormorant master Shuji Sugiyama poses in traditional *ukai* garb: a blue shirt and matching bulbous hat to protect against the ashes of the lamps and a long straw skirt to keep out water and cold. APP/GETTY IMAGES



cientists in Britain have used gene-editing techniques to stop bird flu spreading in chicken cells grown in a lab — a key step toward making genetically altered chickens that could halt a human flu pandemic.

Bird flu viruses spread swiftly in wild birds and poultry and can at times jump into humans. The threat of a human flu pandemic caused by a bird flu strain that makes such a jump and mutates into a deadly and airborne form that can pass easily between people remains one of the greatest concerns of global health and infectious disease specialists.

In the latest study, by editing out a section of chicken DNA inside the lab-grown cells, researchers from Imperial College London and the University of Edinburgh's Roslin Institute prevented the bird flu virus from taking hold in the cells and replicating.

The next step will be to try to produce chickens with the same genetic change, said Mike McGrew of the Roslin Institute, who co-led the research. "We need to check if the DNA change has any other effects on the bird cells before we can take this next step."

In future work, the team hopes to use the gene-editing technology, known as CRISPR, to remove a

section of the birds' DNA responsible for producing a protein called ANP32, on which all flu viruses depend to infect a host.

Lab tests of cells engineered to lack the gene showed they resist the flu virus — blocking its entry and halting its replication and spread.

The death toll in the last flu pandemic in 2009-10 — caused by the H1N1 strain and considered to be relatively mild — was about half a million people worldwide. The historic 1918 Spanish flu killed about 50 million people.

Wendy Barclay, professor and chairwoman in influenza virology at Imperial who worked with McGrew, said the idea behind developing gene-edited flu-resistant chickens is to be able "to stop the next flu pandemic at its source." Reuters

Singapore's Food Revolution

Singapore, the tiny Southeast Asian city-state, is an unlikely place to transform farming.

With tiered fish farms, vegetable plots atop office buildings and lab-grown shrimp, the island aims to increase its own food production and rely less on imports to feed its 5.6 million people.

Singapore produces about 10% of its food, but it aims to raise that to 30% by 2030 under a plan known as 30-by-30.

The challenge is space. With only 1% of Singapore's 724 square kilometers of land devoted to agriculture and production costs higher than the rest of Southeast Asia, the pressure is on new urban farmers to answer the government's call to "grow more with less."

"Whenever I talk about food security in Singapore, I tell folks don't think land — think space. Because you can go upwards and sideways," said Paul Teng, a professor specializing in agriculture at Nanyang Technological University.

Sustenir Agriculture is one of more than 30 vertical farms in Singapore, which has seen a doubling in so-called sky farms in three years.

The hydroponic farm grows nonnative varieties such as kale, cherry tomatoes and strawberries indoors under artificial lights and sells the produce to local supermarkets and online grocers.

Sustenir raised U.S. \$16 million from backers, including



Singapore state investor Temasek and Australia's Grok Ventures in 2018, which will be used for an expansion in Singapore and opening in Hong Kong.

Temasek is also providing funds to Apollo Aquaculture Group, which is building a highly automated, eight-story fish farm. Apollo said the new farm will deliver more than a twentyfold increase in its annual output of 110 metric tons of fish.

Singapore has not given a total price tag for 30-by-30, first unveiled in March 2019, but it has various funding schemes. Aside from Temasek, the government has budgeted U.S. \$106 million for research and development into food and U.S. \$46 million for agriculture firms to use technology to boost productivity. It also plans to build an 18-hectare agri-food site for indoor plant factories and insect farms by mid-2021. Reuters



ne in five people in war zones has depression, anxiety, post-traumatic stress, bipolar disorder or schizophrenia, the World Health Organization (WHO) said, with many suffering severe forms of these mental illnesses.

The findings highlight the longterm impact of war-induced crises in countries such as Afghanistan, Iraq, South Sudan, Syria and Yemen, the United Nation's health agency said, and the numbers are significantly higher than in peacetime populations, where about one in 14 people has a mental illness.

"Given the large numbers of people in need and the humanitarian imperative to reduce suffering, there is an urgent need to implement scalable mental health interventions to address this burden," the research team said.

Mark van Ommeren, a mental health specialist on the WHO team, said the findings "add yet more weight to the argument for immediate and sustained investment, so that mental and psychosocial support is made available to all people in need living through conflict and its aftermath."

In 2016, the number of ongoing armed conflicts reached an all-time high of 53 in 37 countries, and 12% of the world's people are living in an

In 2016, the number of ongoing armed conflicts reached an all-time high of 53 in 37 countries, and 12% of the world's people are living in an active war zone.

active war zone, according to U.N. figures. Since World War II, almost 69 million people globally have been forced to flee war and violence.

The WHO's conflict mental health study, published in *The Lancet* medical journal, was carried out by a team of researchers from the WHO, Australia's Queensland University, the Institute for Health Metrics

and Evaluation at the University of Washington and Harvard University in the United States.

They analyzed research from 129 studies and data from 39 countries published between 1980 and August 2017.

Regions that have seen conflict in the past 10 years were included, and mental illnesses were categorized as either mild, moderate or severe. Natural disasters and public health emergencies, such as Ebola outbreaks, were not included.

Overall, in war zones, the average prevalence was highest for mild mental health conditions, at 13%. Around 4% of people living amid armed conflict had moderate mental health illness, and for severe conditions the prevalence was 5%.

The study also found that rates of depression and anxiety in conflict settings appeared to increase with age, and depression was more common among women than men.

The study was funded by the WHO, the Queensland Department of Health and the Bill & Melinda Gates Foundation. Reuters

NEW BLOOD TEST COULD DETECT PTSD IN TROOPS

FORUM STAFF

bout 11% to 20% of U.S. veterans of recent conflicts in Iraq and Afghanistan are diagnosed with post-traumatic stress disorder (PTSD) in any given year, according to the U.S. Department of Veterans Affairs. The lifetime prevalence of PTSD in veterans from recent wars, including Iraq, the Persian Gulf and Vietnam wars, ranges as high as 30.9 percent, compared to about 7% in the general population, the agency reported. Many PTSD cases in Soldiers also result from noncombat experiences.

The U.S. Department of Defense and U.S. Army Research Office have sponsored research to develop a blood test to quickly screen large populations for Soldiers who may be suffering from or susceptible to PTSD, and so far, the results are promising, the journal *Molecular Psychiatry* reported in September 2019.

Investigators from leading medical schools and the U.S. Army Medical Research and Development Command (USAMRDC) are collaborating on the work that seeks to help doctors diagnose Soldiers with PTSD. The team of researchers sorted through a massive list of a million possible blood markers for physiological changes caused by PTSD. Using artificial intelligence and machine learning applications in part to decipher patterns, they identified 27 possible chemical indicators that can detect the condition when combined with heart rate measurements.

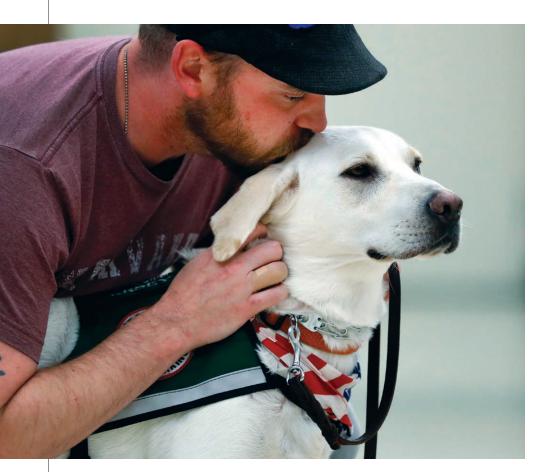
"The Army's concern is that Soldiers tend not to report, and they don't want to have PTSD," Marti Jett, the chief scientist in systems biology for USAMRDC, told *The Wall Street Journal* newspaper. "If we can begin to correct those things early enough, it helps to avert the self-isolation that is a major concern early on."

The screening method has proven to be about 77% accurate so far but needs further refinements and U.S. Food and Drug Administration (FDA) approval before it would be widely used. Once FDA approval is garnered, the test would be used in combination with clinical examinations to confirm such a diagnosis.

"We didn't design this line of research to replace clinicians or to replace an in-depth clinical assessment," Dr. Charles Marmar, chair of the school of psychiatry

> at the New York University School of Medicine and senior study author, told *The Wall Street Journal*. "We developed it for a high-throughput screening."

With additional improvements, the test could also be used to identify individuals who may be susceptible to PTSD. Marmar explained that the research team will use the test on large military and civilian populations before submitting it for FDA approval. "There will be attempts to validate these same markers in civilian contexts, such as for disaster victims, sexual assault survivors or industrial accident survivors," he told Scientific American magazine.



A U.S. Army veteran who suffers from post-traumatic stress disorder bonds with his support dog.



Soldiers with the 3rd Battalion of the Fiji Infantry Regiment move tactically through smoke during urban terrain training in Savusavu, Fiji, on August 3, 2019. The drill was part of Exercise Cartwheel 2019, a bilateral training operation with the U.S. Army and Republic of Fiji Military Forces. The Cartwheel exercises are designed to increase the strength and security of both military forces for a free and open Indo-Pacific.

Photo By: SGT. 1ST CLASS WHITNEY C. HOUSTON | U.S. ARMY

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