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MOVING THE VISION FORWARD

TAIWAN'S NEW SOUTHBOUND POLICY

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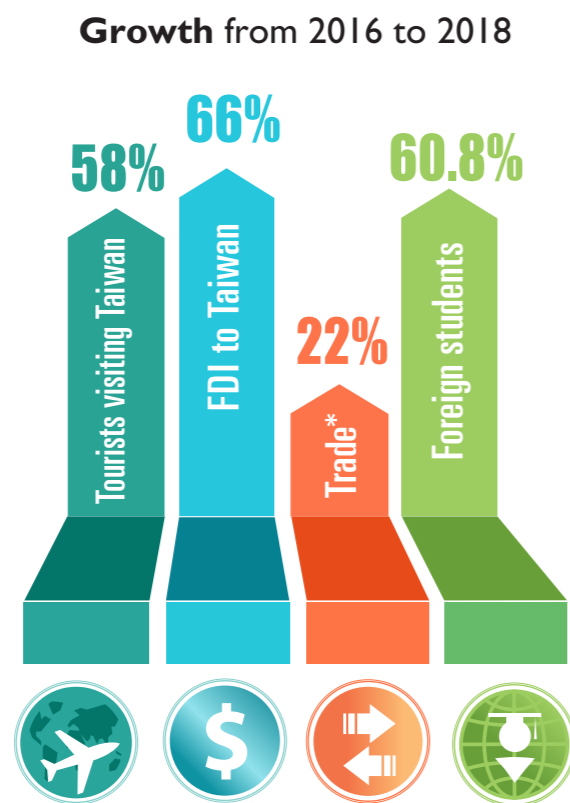
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Disaster Preparedness

Introduction

LAUNCHED by President Tsai Ing-wen (蔡英文) in 2016, Taiwan's New Southbound Policy has generated some impressive numbers in just two years.

Trade between Taiwan and its 18 partner countries — the 10 ASEAN members (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam), as well as Australia, Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka, and New Zealand — amounted to US\$117.1 billion in 2018, a 22 percent increase from 2016.



*BETWEEN TAIWAN AND ITS 18 PARTNER COUNTRIES



▲ President Tsai Ing-wen (蔡英文) speaks at a forum on the New Southbound Policy on May 30, 2019.

Foreign investment from those countries has grown by 66 percent over the same period. The number of tourists visiting Taiwan has increased by 58 percent over the same period, while the number of foreign students has grown by 60.8 percent. The revenue of the largest 1,000 Taiwanese businesses operating in the partner nations has reached US\$113.88 billion, with their combined profit exceeding US\$3 billion.

These results show that the New Southbound Policy is more than empty talk, Tsai says, adding that the government will continue to augment its implementation to allow Taiwan to play an integral role in economic development throughout Asia.

Building on the New Southbound Policy, Taiwan has been engaging in a wide range of deliberations with its partner countries, promoting bilateral partnerships and exchanges of talent, capital, technology, culture and education. The initiative consists of four main aspects: economic and trade collaboration, people-to-people exchanges, resource sharing and promotion of institutional links.

During a forum in June 2019 about the policy, President Tsai noted that the increasing geopolitical and economic importance of the nations included in the policy has motivated the US, Japan, South Korea and India to also introduce new regional strategies,

which she said shows that it is a “vision-oriented and forward-looking policy.”

The US-China trade dispute has also sparked more Taiwanese companies with operations in China to look toward New Southbound Policy partner countries. The initiative does not seek to advance Taiwan's geopolitical stature or influence, but intends for the nation to play a proactive role in the region through multifaceted cooperation, with mutual benefit and prosperity being key.

PRESIDENT TSAI

noted that the increasing geopolitical and economic importance of the nations included in the policy has motivated the US, Japan, South Korea and India to also introduce new regional strategies, which she said shows that it is a “vision-oriented and forward-looking policy.”



▲ Minister Without Portfolio and Office of Trade Negotiations head John Deng (鄧振中) attends the APEC ministerial meeting in Port Moresby, Papua New Guinea, on Nov. 15, 2018.

It promotes a new model of economic development for the nation that reduces reliance on a single market, Tsai said, and avoids directly competing with China's Belt and Road Initiative, which focuses on regional infrastructure; Taiwan's projects are all about people and soft power, supporting tourism, education, healthcare, technology, small and medium enterprises, and agriculture.

Minister Without Portfolio John Deng (鄧振中), who oversees the policy, says that the government's plans for 2019 entail providing more assistance to small and medium-sized enterprises, facilitating greater cooperation on health and agriculture, and pushing for major investment projects while maintaining the policy's steady progress in other areas.

With the policy's target student numbers reached and exceeded, the Ministry of Education is devoting more resources to assuring the quality of

exchanges, such as improving Mandarin education for foreign students. It is also fine-tuning the policy's implementation strategies by streamlining overseas operations and deepening government-to-government exchanges.

Meanwhile, awareness of and the need for greener solutions continue to grow in the partner countries — in June 2018, the Association of South-east Asian Nations launched a collaborative marine protection project, and in August 2019, in conjunction with the EU, the nations initiated the High-Level Dialogue on Environment and Climate Change. Accordingly, Taiwan's Environmental Protection Administration continues to share and export Taiwan's rich experience and expertise in environmental policy and implementation, which presents abundant opportunities for Taiwan's professionals and industry.

Over the past two years, the Ministry of Science and Technology has set up 12 overseas research centers in the partner countries, covering artificial intelligence, healthcare, biotechnology, engineering and humanities. But it's about more than just exporting Taiwan's scientific achievements, as the ministry hopes to expand Taiwan's academic network while fostering long-term friendships and collaborations to enable both sides to better understand each other's needs.

Through regional collaboration, Taiwan is able to conduct research on a more global scale.

Boasting Asia's largest training facility in Nantou County's Zhushan Township, the National Fire Agency continues to share Taiwan's extensive experience in dealing with a wide range of natural and human-made disasters. Taiwan's expertise has garnered the attention of the US, which called it a "model of disaster preparedness for the region." In partnership with the American Institute in Taiwan, the two sides have already co-hosted two disaster relief and humanitarian assistance workshops with participants from across the Indo-Pacific region.

The Ministry of Health and Welfare's One Country, One Center program — in which Taiwanese hospitals are tasked with each forming a medical team to integrate local medical resources and extend healthcare cooperation with a specific partner country — has been expanded to seven countries, with Myanmar joining in March 2019. During 2018, the program trained 336 medical professionals from partner countries and introduced 71 enterprises to the target region. Looking forward, the ministry hopes to further expand its medical and health connections in the region, open up economic opportunities and build a better and more secure regional preventive health network. ■

▲ An advertisement to promote tourism in Taiwan is featured prominently at a mall in Australia.



▲ Minister of Science and Technology Chen Liang-gee (陳良基), front row fifth from left, touts the achievements of 12 overseas research centers in nine countries covered by the New Southbound Policy initiative, at a news conference in Taipei in August 2019.

IN AUGUST 2019, the Ministry of Science and Technology unveiled the achievements of its 12 overseas research centers in South and Southeast Asia, focusing on a range of fields including engineering, artificial intelligence (AI), healthcare, environmental change, as well as the humanities and social sciences.

While the ministry has so far established three of its 17 overseas divisions in Australia, India, and Vietnam, it has been encouraging local universities and research institutes to establish long-term operations in other New Southbound Policy partner countries.



▲ Professor Tsair-Fuh Lin and an assistant stand next to a mobile laboratory trailer with water testing equipment that was donated to the Philippines.

Minister of Science and Technology Chen Liang-gee (陳良基) says that these academics funded by the ministry can act as vanguards to explore new territories or broaden existing ties.

Over the past two years, the centers have been successively set up in India, Singapore, Sri Lanka, Malaysia, Thailand, Vietnam, Indonesia, the Philippines and Myanmar with the goal of “solving mutual problems, creating mutual benefits and promoting high-level talent exchanges.”

While Taiwan has much expertise to offer, the focus remains on people. Chen says that interpersonal connections and mutual understanding are key to building long-term friendships with scientific collaborators. Instead of just exporting Taiwan’s technology, the human aspect is vital to identifying the needs of each country and what role Taiwan can play in meeting those needs.

For example, Chen says, engineers from Taiwan’s National Cheng Kung University (NCKU) hit the mark in meeting the specific needs of their Philippine collaborators by helping advance their water quality monitoring and improvement techniques. As Taiwan’s closest neighbour, the Philippines suffers from serious water contamination issues, with almost one in 10 residents lacking access to a safe and sustainable water supply.

With the ministry’s support, NCKU in May 2017 established the Taiwan-Philippines Joint Water Quality Research and Innovation Center along with Mapúa University (MU) in the Philippines, bringing experts from state-run Taiwan Water Corp and environmental consultancies in touch with their Philippine counterparts. Aside from sharing Taiwan’s expertise, the project aims to facilitate training and exchanges of professionals and students as well as establish a database for Philippine hydrologists.

They have been focusing on Laguna de Bay, the second-largest freshwater lake in Southeast Asia and an important source of drinking water for Manila, where a 2016 NCKU and MU joint project found high concentrations of cyanotoxins, and taste and odour compounds produced by cyanobacteria. In September 2018, four Taiwanese companies donated a mobile laboratory trailer with water testing equipment worth NT\$1.3 million to the center.

The ministry also supported National Chung Cheng University (NCCU) in inaugurating the Indo-Taiwan Research Center on Artificial Intelligence and Machine Learning at the Indian Institute of Technology Ropar in July 2019, when Deputy Minister of Science and Technology Hsu Yu-chin (許有進) led a delegation to expand collaborations with India.

Amid rapid growth in India's economy, the timing is ideal for Taiwanese to boost cooperation with that country, says Jack Huang (黃士銘), NCCU's dean of research and development. Hsu says the center will serve as a hub for faculty and student exchanges, as well as academic-industrial collaboration in diverse fields including microelectronics and space technology.

When Taiwan's capabilities in manufacturing and customized hardware design are coupled with India's edge in software and development, the two can make world-class breakthroughs in AI-related

areas, Huang says. As many Taiwanese businesses have difficulty finding proper access to the Indian market, the AI center can serve as a "beachhead" to facilitate access.

Capitalizing on Taiwan's highly acclaimed healthcare system and medical research, the ministry sponsored the Taichung-based China Medical University (CMU) to establish the Taiwan-Singapore Ageing and Cancer Overseas Science and Technology Innovation Center.

The quality of Taiwan's healthcare system — including infrastructure, professional competence, cost, and availability of quality medicine — has been ranked the best out of 89 countries surveyed, according to the most recent Health Care Index compiled by *CEOWORLD Magazine*. In another survey, released in 2012, 14 Taiwanese hospitals were included in a list of the world's top 200 hospitals, trailing only the US and Germany.



▲ **LEFT:** Deputy Minister of Science and Technology Hsu Yu-chin (許有進), front row, second right, accompanied by Representative to India James Tien, third right, and Indian Institute of Technology Ropar director Sarit Kumar Das, right, cuts the ribbon at the inauguration of the Indo-Taiwan Research Center on Artificial Intelligence and Machine Learning in Rupnagar, India, on July 27, 2019.
RIGHT: National Tsing Hua University's groundbreaking plasmonic nanoantenna combined with bilayer molybdenum disulfide technology to boost hydrogen production is a collaboration between Indian and Taiwanese doctoral students.

THE INDO-TAIWAN Research Center on Artificial Intelligence and Machine Learning at the Indian Institute of Technology Ropar will serve as a hub for faculty and student exchanges, as well as academic-industrial collaboration in diverse fields including microelectronics and space technology, says Hsu Yu-chin, deputy minister of Science and Technology.

Taiwan and Singapore share the problem of a declining birth rate and ageing population, making it crucial for both countries to explore methods of achieving "healthy ageing," CMU Office of Global Affairs dean Yang Liang-yo (楊良友) says.

The Singaporean government has over the past two years boosted its funding for research into human ageing, and the center builds on CMU's existing collaboration with the National University of Singapore on ageing, cancer and neurobiology.

While Singapore specializes in genetic screening, CMU is dedicated to combining Chinese herbal medicine and Western medical systems. The two have pooled their expertise to explore research into healthy ageing.

Even though Chinese herbal medicine is also part of China's medical tradition, CMU has the advantage given its broad-ranging evidence-based research and its use of Western scientific techniques to analyse the effects of herbal medicine, while most of the research into herbal medicine in China remains separate from the system of Western medicine, Yang says.

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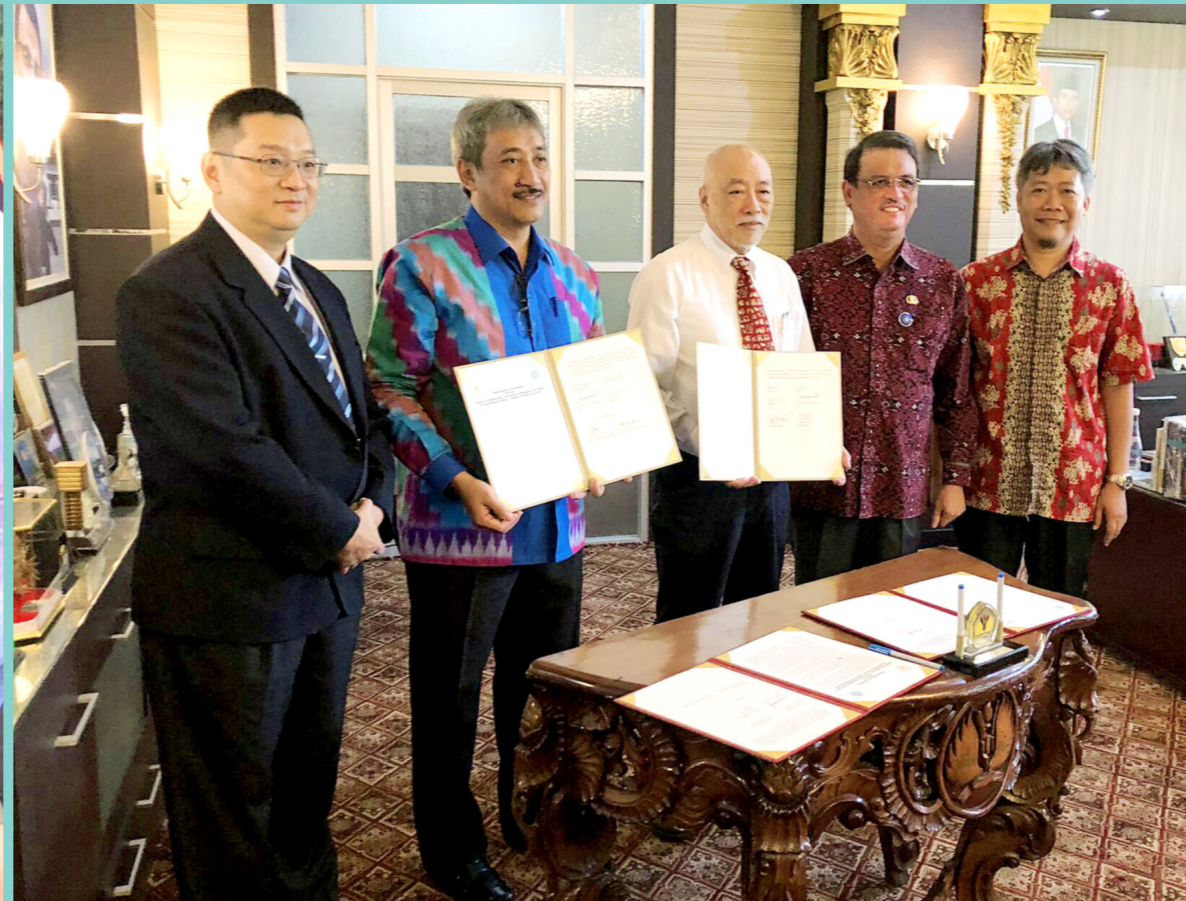


▲ Jyh-Hong Chen, Vice President of CMU and Dean of the College of Medicine, left, signed an MOU with Khay-Guan Yeoh, Dean of the NUS Yong Loo Lin School OF Medicine, right, at the National University of Singapore.

▼ National Chung Shan University's College of Marine Sciences has been working with Sri Lankan researchers in biodiversity and marine studies for the past four years.



▼ National Taitung University signed an MOU with Tanjungpura University in Indonesia in 2018.



The college is helping some of the country's institutions to establish ocean research agencies later in 2019, as well as facilitating more links such as Chinese language learning programs and talent cultivation, Hung says.

The remaining centers cover vastly different fields. Schools are working with Vietnam and Thailand in agriculture, plant conservation and health-care; with Malaysia in digital technology, clean water and sustainable energy; and with Myanmar in economic research and data analysis.

Social sciences are also part of the focus — located in Taiwan's Aboriginal heartland, National Taitung University brings its expertise in indigenous studies to the Taiwan-Indonesia Center of Southeast Asian Ethnicities, Cultures and Societies, formed in August 2018 in conjunction with Tanjungpura University in West Kalimantan, Indonesia.

Taiwan's Aborigines and the majority populations of partner countries Brunei, Indonesia, Malaysia and the Philippines all share Austronesian roots in language and culture, and the program hopes to nurture deeper connections based on this common background. Consequently, the Science and Technology Innovation Center for Taiwan-Philippines Indigenous Knowledge, Local Knowledge and Sustainable Studies in the Philippines is also partially focused on incorporating indigenous knowledge.

Chen emphasizes that everything is going steadily according to plan, and he hopes to focus on recruiting more high-tech professionals from New Southbound Policy partner countries to Taiwan for exchanges and research.

"The more people come, the more we can expand our resources," Chen says. ■

Southbound collaborations in marine studies are no less vibrant.

The impact of global warming, ocean acidification and environmental change on marine life, especially in tropical and subtropical areas, are of concern to many scientists, says National Sun Yat-sen University (NSYSU) College of Marine Sciences vice dean Hung Chin-chang (洪慶章).

Even before the university launched the Taiwan-Sri Lanka Environmental Change Science and Technology Innovation Center in February 2019 in conjunction with the University of Sri Jayewardenepura, it had been collaborating with Sri Lankan researchers for almost four years in the fields of biodiversity and marine studies.

While many Taiwanese are unfamiliar with Sri Lanka, both are island countries with similar geographic features, and while one is located in the subtropical west Pacific and the other in the tropical Indian Ocean, they face similar environmental threats to their marine and plant resources, making them ideal partners to explore solutions. By working on a regional scale, Taiwan will be able to gather

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richer data and examine these issues from a broader international perspective.

The center is geared to play an instrumental role in enhancing exchanges between the two countries in marine life and ocean studies, and research carried out by the center is expected to help both Taiwan and Sri Lanka cope with the challenges of global environmental change.

The research center is focused on four vital environmental fields: terrestrial ecology and conservation; nutrient and carbon dynamics in coastal zones; the effect of global warming on coral reefs, marine ecosystems, mangroves and seagrass beds; and smart shrimp aquaculture using cutting-edge technology.

Sri Lanka's shrimp larvae are of better quality than their Taiwanese counterparts, making shrimp farming a valuable area for bilateral collaboration, Hung says. With the college's AI-assisted techniques for improving shrimp farming methods, it can help Sri Lanka mitigate the impact of ocean warming on its shrimp farming industry and boost production.



▲ The Vietnam-Taiwan Joint Plant Conservation Research Center has discovered a new plant species, *Stegnogramma austro-vietnamensis*, in Vietnam.

Industrial Talent Development

WITH A TOTAL OF 51,970

students from New Southbound Policy partner countries studying in Taiwan in 2018, the Ministry of Education has exceeded its original target of 48,300 students.

Since the policy was launched in 2016, this number has grown by about 60 percent, showing impressive and rapid growth. Students from the partner countries made up over 40 percent of the foreign student population in Taiwan, jumping from 28 percent in 2016. On the outbound side, Taiwanese students heading to the 18 partner countries reached 21,100 in 2018, a 31 percent increase from 2016. The number of young Taiwanese either interning or volunteering abroad in these countries through government initiatives in 2018 had reached 3,500 within a year.



▲ Taiwan Higher Education Fairs have been held in Thailand, top left, Vietnam, top right, the Philippines, bottom left, and Malaysia, bottom right.

“

We're entering version 2.0... We are shifting from output-based goals to outcome-based ones for every scholarship, program and initiative. We used to look at how many scholarships we offered per year, but can these people develop into talent that can benefit both sides when they enter the workforce? Will they help support and deepen our network in the partner countries?”

Bi Cheu-an
Head of the Department of International and Cross-strait Education Affairs



▲ Bi Cheu-an (畢祖安), head of the Department of International and Cross-strait Education Affairs at the Ministry of Education.

Bi Cheu-an (畢祖安), head of the Department of International and Cross-strait Education Affairs at the Ministry of Education (MOE), says that the ministry's goals within the policy remain the same through the four-year New Southbound Talent Development Program (新南向人才培育計畫), which takes a people-oriented approach and aims to encourage bilateral exchanges and resource sharing.

The program is designed to promote and expand the higher education market overseas, to widen the two-way flow of talent between Taiwan and New Southbound Policy partner countries, and to serve as a platform for bilateral educational cooperation by integrating social and cultural links. In addition to supporting a wide range of customized internship and study opportunities for students and professionals from the partner countries, the program aims to provide partner-country language and industry experience to Taiwanese students and teachers as well as second-generation immigrants from these countries.

Bi says now that the quantitative goals have been met, the ministry can start allocating more resources

to improving the quality of exchanges.

“We're entering version 2.0,” he says. “We are shifting from output-based goals to outcome-based ones for every scholarship, program and initiative. We used to look at how many scholarships we offered per year, but can these people develop into talent that can benefit both sides when they enter the workforce? Will they help support and deepen our network in the partner countries?”

GOVERNMENT-TO-GOVERNMENT EXCHANGES

In the past, many exchanges as well as recruitment were conducted between academic institutions or organizations under government auspices, with overseas operations carried out by universities under three programs: Taiwan Connection, the Taiwan Education Center and the Resource Center for Economic and Industry-Academy Cooperation. In November 2018, the Ministry of Education announced that it would be closing these three programs and put the operations under internal control.

Bi says the decision is part of the Ministry of Education's goal to increase government-to-government

initiatives to better assure the quality of both the students and their educational experience in Taiwan. This will also reduce the need for third-party brokers, further streamlining the process.

In June 2019, the education ministry announced that its trial “2+i” program — in which Indonesian junior college graduates are encouraged to enrol in two-year technology programs in Taiwan — would continue and expand. Launched in September 2018, this is an example of government-to-government collaboration in which the Indonesian government selects the students and provides incentives such as one-way airway tickets and a NT\$23,000 stipend. The students need to pass interviews with Taiwanese schools, and third-party brokers are not allowed in the process. In addition to subsidies, the students are allowed to work part-time for up to 20 hours per week during the first three semesters, then take on an internship in their fourth year.

HIGH-TECH, HIGH-LEVEL TALENT

Bi says that in the past, the Ministry of Education focused more on vocational skills, but as Thailand and Indonesia steer their economic development plans toward Industry 4.0, the need for high-tech talent, management and research is pressing.

Thailand took it a step further in January 2019 — as its first move as ASEAN chair, the nation announced its strategy to implement a cohesive re-

gional plan to promote the development of Industry 4.0 across ASEAN's 10 member countries, all of which are New Southbound Policy partners.

Launched in September 2017, the Elite Scholarship Program is part of the push for high-level talent, providing for 100 lecturers per year from partner countries to pursue a graduate degree in Taiwan, with priority given to doctoral students. The program will run until 2022.

Over the past two years, several schools have established joint/dual graduate degrees with counterparts in partner countries. In May 2019, National Chiao Tung University (交通大學) established a joint doctoral program with the Indian Institute of Technology (IIT) Delhi, adding to its existing dual degree programs with four other IIT campuses. In addition to cultivating talent, the program also boosts academic interaction between the schools, since the research is carried out in both institutes under mentorship from a professor from each school.

Students focusing on semiconductors and optoelectronics receive preference. The goal is to have 200 students enrol in the next two years, and so far 25 Indian students have signed up. To help with recruitment and better prepare the students for Taiwan, Ministry of Education-sponsored Mandarin-language teachers have been sent to two IIT campuses to offer lessons and gain a deeper understanding of local needs.



▲ National Chiao Tung University (交通大學) established a joint doctoral program with the Indian Institute of Technology (IIT) Delhi in May 2019.



▲ National Chung Cheng University dean of research and development Jack Huang (黃士銘), second row center, other university faculty and Indian collaborators pose for photographers at a news conference in Taipei in August 2019.

“Through this program we will be able to enhance the mobility of scholars, nurture talent and research with the best from both institutes to ensure quality education for future world leaders,” said Dr. Mau-Chung Frank Chang, president of National Chiao Tung University.

The dual degree programs can go both ways

— the agreement between Vietnam’s Can Tho University and National Taiwan Ocean University aims to recruit the children of Vietnamese immigrants to Taiwan. The students will spend two years in Taiwan and two in Vietnam, fulfilling the New Southbound Policy’s goal of helping second-generation immigrants to get in touch with their parents’ culture.

THE MINISTRY launched a program that encourages Taiwanese to teach in India, with the Taiwanese government covering transportation and teaching material costs, and providing a US\$1,500 per month stipend. Not only is this building ties between Taiwan and Indian schools, the government hopes that the classes will pique Indian students’ interest in studying in Taiwan. A similar program was initiated with Vietnam in April 2019.

MANDARIN EDUCATION

Another area that the Ministry of Education aims to advance is Mandarin-language education for foreign students — not only to prepare the students for life in Taiwan, but also in response to growing demand in partner countries.

In October 2018, the ministry launched a program that encourages Taiwanese to teach in India, with the Taiwanese government covering transportation and teaching material costs, and providing a US\$1,500 per month stipend. Not only is this building ties between Taiwan and Indian schools, the government hopes that the classes will pique Indian students’ interest in studying in Taiwan. A similar program was initiated with Vietnam in April 2019.

“The program will reduce the culture shock when the students arrive in Taiwan,” National Chiao Tung University vice president Dr. Edward Yi Chang (張翼) says. “They will have more confidence to live independently in Taiwan, and this will also make it more likely that they will stay in Taiwan for work after graduation.”

In July 2019, the Ministry of Education launched the Chinese Teacher Training Program (華語教學師資培訓班), which trains teachers to provide classes customized to meet the needs of students from New Southbound Policy partner countries. The training also includes classroom management and basic counselling techniques.

“The program will continue to provide post-training support to ensure the teaching quality of each trainee, and assist the teachers in adjusting and improving their teaching plans,” the ministry’s program description states.

“Adequate language skills enable these students to immerse themselves in Taiwanese society. Mandarin skills are invaluable if they want to work in a Taiwanese corporation or the Asian market in general,” Bi says.

BOOSTING OUTBOUND STUDENTS

As far more students from New Southbound Policy partner countries are coming to Taiwan than the other way around, Bi says the Ministry of Education will continue to provide incentives for Taiwanese to head to these countries to study or engage in internships.

The interest is there: a King Car Cultural and Educational Foundation (金車文教基金會) survey released in October 2018 indicated that over 67 percent of teenagers and nearly 80 percent of university students are willing to consider studying or working in Southeast Asia.

The Mandarin teachers to India initiative is one component, while 2,013 students from 95 schools will head overseas through the New Southbound Pilot Overseas Internship program in 2019. Judging from the number of approved applications so far, the ministry expects to nearly double the number of participants in 2020.

The proposals are diverse and vibrant — National Pingtung Institute of Science and Technology’s Department of Aquaculture is sending its students to experience one-stop blue shrimp farming in Brunei, while Mackay Medical College is partnering with the Mercy Community Aged Care Services in Brisbane, Australia.

“Once people see the opportunities in these countries, they will no longer think of Europe, the US, Japan and South Korea as the only overseas options,” Bi says.



▲ Malaysian education officials participate in the week-long Malaysia Mandarin Training Program.



▲ ABOVE: Students from New Southbound Policy partner nations and their Taiwanese counterparts participate in a National Taiwan University of Science and Technology week-long boot camp in Taipei on July 23. RIGHT: Nearly 200 talents were matched at a New Southbound Markets Recruitment event on June 4, 2019, in Taipei.

THE Taiwan External Trade Development Council launched three New Southbound Market Recruitment Matching events in Taipei, Kaohsiung and Taichung in 2019, where 105 Taiwanese companies offered 1,300 jobs in diverse fields including finance, precision industry, aquaculture and communications.



BUILDING PLATFORMS

The final component is to provide more platforms for exchanges between Taiwan and New Southbound Policy partner countries. Expos are one of the main avenues — the Ministry of Education brought 17 universities to Hyderabad, India, in September 2018 through the Taiwan Higher Education Expo, and 32 schools to the Taiwan Higher Education Fair in Manila, Philippines, in September 2019.

In June 2018, the Ministry of Education launched the first Taiwan-India University President Forum at National Tsing Hua University, where 11 Indian university heads met with 15 of their Taiwanese counterparts to engage in direct talks on academic and student exchanges and collaborations.

The 2019 edition was held at India's National Institute of Technology, Warangal, where a five-year memorandum of understanding was signed between the Foundation for International Cooperation in Higher Education of Taiwan and the Association of Indian Universities to capitalize on young Indians' rapidly growing interest in studying in Taiwan.

Similar exchanges also took place with Malaysia and the Philippines in 2018 and 2019.

Once the students finish their programs, the Ministry of Education hopes that they will make use of their Taiwan experience and Mandarin skills to become important bridges between Taiwan and their home countries, and it encourages them to stay in Taiwan or find employment with an overseas Taiwanese enterprise.

Bi says the students who come to Taiwan are entered into a talent database that provides them with information about job openings.

The Taiwan External Trade Development Council launched three New Southbound Market Recruitment Matching events in Taipei, Kaohsiung and Taichung in 2019, where 105 Taiwanese companies offered 1,300 jobs in diverse fields including finance, precision industry, aquaculture and communications.

At these events, Vietnam-based, Taiwanese-run Dai Phat Foods noted an urgent need for Vietnamese talent with Taiwanese experience over a wide range of capabilities, including marketing, sales and logistics.

Vietnamese student Daisy Nguyen, who graduated in June from a two-year international trade program at Chihlee University of Technology in New Taipei City, hoped to work in the pet care business, which has become a burgeoning industry in Vietnam as its economy grows and people are able to devote more resources to pets.

According to a Ministry of Foreign Affairs report, Nguyen managed to secure employment six months before she finished her studies with a Taiwanese entrepreneur who plans to open an animal grooming salon in Ho Chi Minh City, adding yet another success story to the program. ■



▲ A Filipino Lubag syndrome patient celebrates after being treated at Chang Bing Show Chwan Memorial Hospital in Taiwan's Changhua County.

Medical and Public Health Cooperation & the Development of Industrial Chains

ONE COUNTRY, ONE CENTER

Taiwanese hospitals are tasked with each coordinating cooperation in an assigned partner country to provide medical training, host exchanges, nurture culturally sensitive healthcare environments, and assess local medical regulations and market opportunities:

National Taiwan University Hospital (國立臺灣大學醫學院附設醫院) — **INDONESIA**

National Cheng Kung University Hospital (成大醫院) — **INDIA**

Changhua Christian Hospital (彰化基督教醫院) — **THAILAND**

Chang Gung Memorial Hospital (長庚紀念醫院) — **MALAYSIA**

Hualien Tzu Chi Hospital (花蓮慈濟醫院) — **THE PHILIPPINES**

Taipei Veterans General Hospital-National Yang-Ming University (臺北榮民總醫院-國立陽明大學) — **VIETNAM**

Shinkong Wu Ho-Su Memorial Hospital (新光吳火獅紀念醫院) — **MYANMAR**

IN 2019, the Ministry of Health and Welfare's (MOHW) One Country, One Center program gained its seventh member, Myanmar, less than a year after the program's launch in June 2018.

Under the project, seven Taiwanese medical centers have formed seven medical teams to act as the main coordinator in each assigned partner nation to help integrate local medical resources and deepen medical and healthcare cooperation.

"The program has been lauded in the medical field both domestically and internationally," says Deputy Minister of Health and Welfare Ho Chi-kung (何啓功). "That's why we expanded it to seven countries, because we have proven that this program is the right step for Taiwan and its partner countries."

In a bid to ramp up international collaboration in innovative industries, one of the New Southbound Policy's five flagship projects is geared toward promoting medical and public health cooperation as well as the development of industrial supply-chain links with the partner countries.

The project aims to leverage Taiwan's soft power in healthcare and form stronger ties with New Southbound Policy partner nations by expanding bilateral and regional collaborations, including offering professional training programs, promoting pharmaceutical and health-related industrial supply chains, building a regional disease prevention network, and working toward regulatory harmonization and standardized inspection techniques.

While Taiwan is best known for its universal National Health Insurance System, it is also known for the quality of its medical system and public health network: *CEOWorld's* 2019 Health Care Index ranked the nation the best in the world in terms of overall health-care quality, looking at infrastructure, professional competency, cost, quality, medicine availability and government preparedness. Bloomberg ranked Taiwan in ninth place in its 2018 Health Care Efficiency Index.

Taiwan's medical industry is known not just for its quality and affordable medical care and related products, but also for integrating its cutting-edge information technology capacity with innovative medical management to establish a wide array of smart health solutions.

Taiwan is no stranger to international medical training — in 2002, the health ministry established the Taiwan International Health Training Center, which has since trained 1,500 health professionals from 65 countries. By means of the initiative as well as other medical cooperation programs, Taiwan has collaborated with its Southeast Asian neighbours in areas including epidemic prevention, birth control and treatment of rare diseases even before the New Southbound Policy was implemented.

Amid rapid growth in the partner countries' economies, the scope of cooperation has expanded from a purely medical context to public health planning at government level.

The Ministry of Health and Welfare launched the One Country, One Center program in June 2018 and commissioned the Chung-Hua Institution for Economic Research (中華經濟研究院) and other think tanks to establish the Health and Welfare New Southbound Policy Project Office to assist in coordinating related efforts.



▲ National Taiwan University Hospital, commissioned by the Centers for Disease Control, established the nation's first New Southbound Personnel Health Service Center in August 2018.

The original hospitals and their six assigned nations are:

- National Taiwan University Hospital, serving Indonesia;
- National Cheng Kung University Hospital, serving India;
- Changhua Christian Hospital, serving Thailand;
- Chang Gung Memorial Hospital, serving Malaysia;
- Hualien Tzu Chi Hospital, serving the Philippines;
- and Taipei Veterans General Hospital and National Yang-Ming University, serving Vietnam.

Shinkong Wu Ho-su Memorial Hospital, which has been working closely with Palau, opened up collaboration with Myanmar under the program. In April 2019, hospital director Hou Sheng-mao (侯勝茂) led an extended team to the country, signing memorandums of understanding (MOUs) and setting initial goals of providing opportunities for the disadvantaged to seek medical help in Taiwan, training local medical professionals and setting up a platform for referring patients to Taiwan.

"Our hospital became involved in Myanmar four years ago, but in the capacity of providing free medical services. We hope to export our services wholesale along with our vendors — from medical personnel to information systems, surgical equipment and medical devices — bringing entire industry chains into the market and opening up new economic opportunities," Hou says.

“

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Hou Sheng-mao
Director of Shinkong Wu Ho-su Memorial Hospital



▲ The Centers for Disease Control hosts a tuberculosis prevention workshop with health professionals from Vietnam.

The teams have been visiting various hospitals and institutions in their partner countries, exploring their needs and signing MOUs on mutual cooperation and training in specific fields. Changhua Christian Hospital, for example, has been helping Thailand set up a smart medical system in accordance with the Thailand 4.0 economic model, donating and demonstrating appropriate equipment to the Bangkok Christian Hospital and Overbrook Hospital in December 2018, in addition to other ventures.

The hospitals have provided medical personnel training programs, offered health consultation services for Taiwanese expats, and studied the local markets and health-related regulations to customize feasible cooperation models and find business opportunities in each nation.

Other cooperation projects are taking place outside of the One Country One Center system. In accordance with the World Health Assembly's emphasis on global surgery, Taiwan had trained 21 seed practitioners from nine countries as of December 2018. The government also opened local hospitals to training foreign medical professionals, with 301 participants in 2018. In December 2018, the National Kidney and Transplant Institute in the Philippines

sent two doctors, two registered nurses and two anaesthetists to undergo a 12-day extracorporeal membrane oxygenation (ECMO) training workshop at National Taiwan University Hospital.

Collaborations with the US through the Global Cooperation Training Framework also include the medical field. In April 2018, the two nations hosted the International Training Workshop on Laboratory Diagnosis for Enterovirus, inviting lab professionals from 15 countries, 11 of them New Southbound Policy partners.

In accordance with the WHO target of eliminating tuberculosis by 2035, the two countries co-organized the Workshop on the Programmatic Management of Drug-Resistant Tuberculosis in April 2019, which included experts from five New Southbound Policy partners.

"Taiwan has much to contribute in advancing efforts to combat infectious diseases and many other international health concerns," American Institute in Taiwan Director Brent Christensen says.

In June 2018, Taiwan's Centers for Disease Control (CDC) presented a four-week Tuberculosis Control and Prevention Workshop under the New Southbound Policy for 26 health officials and professionals

DURING THE TAIWAN EXPO in Vietnam in August 2019, most of the questions directed at the New Southbound Policy Office were about medical tourism to Taiwan — last year, the number of patients from partner countries who visited Taiwan for medical treatment exceeded 150,000, accounting for 38 percent of the number of international patients visiting Taiwan, up 50 percent from two years earlier.

from Quảng Ninh Province in Vietnam. In addition to engaging in exchanges in which participants compared practices in different countries with local public health officials and medical experts, they also visited a local face mask factory and met with tuberculosis drug manufacturers.

The workshop was presented again in 2019, when participants visited the Taipei Municipal Wanfang Hospital to learn about the Taiwan Multi-drug-resistant Tuberculosis Consortium. They then toured the Center for Research, Diagnostics and Vaccine Development as well as the MOHW's

Chest Hospital. In turn, the CDC visited Vietnam for field training in September 2018 and March 2019.

It is estimated that 3.9 billion people around the world are at risk of infection with dengue viruses, and 70 percent of the number of at-risk people reside in Southeast Asia and the Western Pacific region. Many dengue fever cases reported in Taiwan are imported from Southeast Asia, with between 8 and 31 percent of them acquiring the disease in Indonesia over the past four years.

In 2018, the CDC initiated the New Southbound Dengue Prevention and Control Collabo-



▲ The Centers for Disease Control presented a week-long dengue fever prevention workshop for Indonesian health professionals.

ration Program, first focusing on Indonesia. The program aims to boost exchanges and provide technical training courses that suit Indonesia's needs, as well as promote community-based disease prevention practices to enhance regional capacity and reduce the threat of cross-border outbreaks.

In October 2018 and March 2019, the CDC hosted two technical training workshops on dengue control, inviting practitioners from prevention and control agencies in Indonesia.

Taiwan has also been looking at expanding opportunities for traditional medical practices, especially with India, which has a ministry dedicated to alternative and traditional medicines. In October 2018, China Medical University hosted the Taiwan-India Symposium on Traditional Medicine, and in July 2019, representatives from the Ministry of Health and Welfare's Department of Chinese Medicine and Pharmacy visited India to explore collaborative opportunities with the government regarding traditional Indian medicine. India can share its expertise in research into plants with pharmaceutical value, while Taiwan can provide data analysis and clinical expertise.

Translation skills are also vital in an increasingly global medical field. In August 2019, the health ministry announced that, in addition to translators to help market medical products and services, it would start offering training classes for hospital translators, with Vietnamese as priority.

The Centers for Disease Control in August commissioned National Taiwan University Hospital to establish the nation's first New Southbound Personnel Health Service Center. The center specializes in providing comprehensive services, including health checkups, infectious disease consultation and vaccination, chronic disease care and a hotline for people

travelling to partner nations.

The Ministry of Health and Welfare has been encouraging local medical industry vendors to make use of Taiwan's increased presence through the New Southbound Policy to bring their products and technology to partner countries.

A major avenue is the Taiwan Expo (台灣形象展) held in New Southbound Policy partner countries, which includes a pavilion for smart medical services and technology at each expo. More than 1,600 enterprises participated in nine of these expos in India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam in 2017 and 2018, which attracted a total of more than 210,000 visitors and created business worth more than US\$630 million. Five more are scheduled for 2019.

During the Taiwan Expo in Vietnam in August 2019, most of the questions directed at the New Southbound Policy Office were about medical tourism to Taiwan — last year, the number of patients from partner countries who visited Taiwan for medical treatment exceeded 150,000, accounting for 38 percent of the number of international patients visiting Taiwan, up 50 percent from two years earlier.

One of the discussion forums at the Vietnam event focused on Taiwan's smart healthcare industry, where companies had the opportunity to present products such as telecare and smart hospital wards.

Taiwan Healthcare+ was established under the New Southbound Policy as an international trade platform for Taiwanese medical services, technology and biotechnology companies. It held its first expo in 2017, and the 2019 event in December is set to feature over 500 hospitals and vendors from 17 countries, with countless networking and business opportunities. ■



▲ Taiwan External Trade Development Council (TAITRA, 外貿協會) Chairman James Huang (黃志芳), third left, expanded the Taiwan Expo to India in 2018.

Environmental Protection

IN OCTOBER 2018, JANE NISHIDA,

principal deputy assistant administrator at the US Environmental Protection Agency, lauded Taiwan's achievements in environmental protection as a source of inspiration for countries in the Asia-Pacific region.

Taiwan has made great strides in tackling environmental issues over the past 25 years, achieving significant results in water, air pollution and electronic waste management, Nishida says.

The government's recent "5+2" innovative industries initiative stresses the need for a circular economy and green energy, aiming to generate 20 percent of Taiwan's electrical power from renewable energy sources by 2025.

"The development experiences of Taiwan over the past two years demonstrate that economic growth can go hand in hand with environmental protection and sustainability," President Tsai Ing-wen (蔡英文) said at an exhibition on the circular economy exhibition opening in September 2018.

In 1993, the trash collection rate in Taiwan was just 70 percent, with virtually zero recycling mechanisms. In just 25 years, the government has built one of the world's most efficient recycling systems, with a recycling rate of 60 percent in 2018 — one of the highest in the world, including a plastic bottle recycling rate of 95 percent. In 2018, Taiwan banned handing out free plastic bags in most stores, and in 2019 it began restricting the use of single-use plastic straws. The government doesn't plan to stop at that, setting an ambitious goal of completely banning single-use plastic cups, straws, utensils and bags by 2030.

▲ A bird rests in the Taipei Botanic Garden, the first institution in Taiwan dedicated to conserving plant diversity.

“Perhaps, with plastic production showing no sign of diminishing and economic growth inextricably linked to waste generation, rising economies might look at Taiwan before issues with their own garbage get out of control,” an article on Taiwan’s recycling industry in the *Smithsonian Magazine* states.

This is exactly the role Taiwan’s Environmental Protection Administration (EPA) has been aiming for through the New Southbound Policy, which partners with several rising economies. As Taiwan’s own economy skyrocketed in the 1970s and 1980s, it had to deal with many of the serious environmental woes its partners are wrestling with today. Taiwan’s decades of policy, regulations, technology, services, maintenance and innovation can all serve as assets to connect with and benefit its partner countries.

An article by the Taiwan Environmental Information Center from a regional air pollution policy workshop in 2018 states: “The New Southbound Policy should not be exporting polluting industries, but environmental protection talent and green businesses.” Rapid economic development, population growth and region-wide social inequalities in South and Southeast Asian countries have led to environmental problems that threaten the future of the region, but the good news is environmental aware-

ness is growing in these nations, with their respective governments taking significant steps in environmental policy.

For example, as the second-largest polluter of the world’s oceans, Indonesia in March 2017 pledged US\$1 billion to reduce 70 percent of its ocean waste by 2025. In June 2019, the island of Bali banned the use of single-use plastics, and two weeks later the Indonesian government imposed a nationwide tax on plastic bags. India is also moving forward with its bans on single-use plastic items, aiming to phase them out completely by 2022.

Regional efforts are gaining steam — in June 2018, the Association of Southeast Asian Nations (ASEAN) launched a collaborative marine protection project, while in July 2019, the bloc of nations launched a High-Level Dialogue on Environment and Climate Change with the European Union.

One avenue through which Taiwan has been sharing its expertise with countries across Asia is the International Environmental Partnership (IEP), a collaboration between the US’ Environmental Protection Agency and Taiwan’s Environmental Protection Administration launched in 2014.

An increasing number of IEP events are being held in New Southbound Policy partner nations, such as the International E-Waste Management Network



▲ Department of Waste Management Director-General Lai Ying-ying (賴瑩瑩) demonstrates a fountain pen made of recycled materials in Taipei on Sept. 16, 2019.

AT the 2019 Air Quality Management Policy Development Workshop in Taiwan, the EPA handed over 100 Taiwan-made air pollution detection kits to Vietnam’s Environmental Administration. Taiwan had also provided mercury pollution testing equipment and know-how to Sri Lanka in 2018.



▲ Taiwan hosts an air quality improvement conference with delegates from the Indo-Pacific region.

Workshop in Jakarta in October 2017 and Manila in September 2018. The 2019 Asia-Pacific Mercury Monitoring Network Partners Meeting took place in Jakarta, and Taiwan’s Bureau of Environmental Inspection shared its expertise and experience with Vietnamese natural resource officials during a five-day workshop in May 2019.

In July 2019, the IEP organized an Air Quality Management Policy Development Workshop in Taiwan, with participants from New Southbound Policy partner countries. They deliberated topics ranging from funding sources to management for air pollution mitigation and regulation of mobile pollution sources. The visitors toured pollution control facilities in Taiwanese factories and learned about the government’s regulation system.

At the end of the workshop, the EPA handed over 100 Taiwan-made air pollution detection kits to Vietnam’s Environmental Administration. Taiwan had also provided mercury pollution testing equipment

and know-how to Sri Lanka in 2018.

Exchanges outside the IEP are fruitful as well, such as when the EPA partnered with the Asian Productivity Organization to send Taiwanese e-waste and recycling professionals and experts to Thailand in October 2018 to gain first-hand experience of their existing methods and needs.

The EPA has also launched programs for student exchanges, for instance partnering with National Dong Hwa University’s Vietnam-Taiwan Research Institute in August 2019 to send 12 environmental education ambassadors to Vietnam to interact and exchange ideas with their counterparts there.

“The goal is for students from different social and cultural backgrounds to engage in discussion and exchanges regarding environmental issues,” says Wu Pei-yu (吳珮瑜), deputy director-general of the EPA’s Department of Comprehensive Planning. “We hope to encourage the younger generation to participate in such issues.”



▲ A Filipino inventor volunteering for the Tzu Chi Foundation in Taiwan devised a way to turn the non-recyclable plastic layer in paper boxes and cups into floor tiles.

“It’s environmental diplomacy,” EPA Deputy Director Tsai Hung-teh (蔡鴻德) says. “Taiwan is well-equipped to play the role of a regional technical center, research center and training center. Many of our visitors are potential high-ranking government officials, and these exchanges will allow them to develop closer relations with Taiwan. We help their environment while we gain friends and create more opportunities for our green industries.”

Through these exchanges, Tsai says Taiwan also learns about the pressing needs of each partner country, so it knows what expertise it can offer.

The EPA should share Taiwan’s extensive experience and expertise in each area, starting from its environmental regulatory framework, Tsai says.

Having relative regional unity in rules and regulations will make it easier for Taiwanese environmental engineering firms and green businesses to move into the New Southbound Policy market, Tsai adds.

General policy dialogues have included the 2017 South-east Asian Environmental Forum, where high-level officials and experts from nine countries convened with about 200 Taiwanese environmental professionals in Taipei. The discussion focused on how Taiwan can export its expertise to help with the region’s emerging environmental policies, as well as the environmental challenges Taiwanese enterprises face through their operations in the region and how they can play a larger role. Taiwan hosted its first Environmental

Protection and Management Forum with Vietnam in July 2018.

Tsai says that many partner countries are in need of waste management solutions. For example, Jakarta launched its first incinerator project in December 2018, which will convert trash into electricity. Taiwan already has abundant experience in the field, having built 24 incinerators between 1987 and 2003.

Tsai stresses that just using incinerators to burn trash is not enough to meet the EPA’s vision — the energy produced should be used to generate more value such as electricity or for heating water, just like Jakarta’s project.

Taiwan cannot just help these countries build incinerators, though, since most garbage can be recycled instead of burned. Since Taiwan is also experienced in recycling, Tsai says it should impart its know-how in a way that creates industry value. This will produce a whole Southbound ecosystem of connected services that Taiwan can export as a whole.

“We’re not just exporting one thing at a time,” Tsai says. “It’s an integrated supply chain.”

Nanoplus Tech, whose diverse services include green technology, provides a prime example — it signed a memorandum of understanding with Vietnam-based SPT Telecoms in May 2018 to establish a joint venture that would establish a “circular economy research park” that would cover landfills, incinerators, recycling and turning recyclables into commercial or industrial products. This creates a whole supply chain of opportunities for other enterprises and organizations as well, maximizing the value of the venture.

Enrestec is also a model of creating maximum value out of recycling — the Taiwanese firm has a one-of-a-kind, minimal pollution pyrolysis method that completely recycles car tires into useful materials such as black carbon, fuel oil and steel wire. Recently, it has exported its entire system to Sheico Group’s production plant in Thailand, where it will provide EU-certified non-toxic black carbon for the world’s largest wetsuit manufacturer.

These endeavours are not just economic success stories for Taiwan, but also showcase the nation’s environmental prowess while providing and promoting greener solutions for its partner countries. Tsai says the importance and the value of recycling should be imparted early — that way the factories can design products that are easily reusable, instead of, for instance, producing bottles that have different recycling categories for the cap, body and wrapper.

These innovative ventures mark the trend for part of Taiwan’s lucrative environmental protection industry, which grew from 5,789 businesses in 2006 to 9,432 in 2016. As the nation starts to focus on a circular economy and sustainable development, the

green industry is also moving in that direction with widely expanded applications and ever-improving technology.

The number of registered recycling companies in Taiwan has jumped from 100 to nearly 2,000 in just a decade. These companies have mostly shed their shabby junkyard image, with innovative and lucrative businesses thriving.

One of these is Spring Pool Glass (春池玻璃), which recycles glass into eco-friendly building materials, household products and art pieces. The company takes in about 100 million kilograms of discarded glass per year, contributing significantly to Taiwan’s second-place ranking in the world in terms of its glass recycling rate.

In 2016, President Tsai called Spring Pool Glass a model New Southbound Policy business, noting that it combined tradition with innovation and fits well with the government’s push for a green and circular economy.

As environmental awareness grows in Southeast Asia, Spring Pool has been an eager participant at numerous Taiwan Expos (台灣形象展) to New Southbound Policy partner countries. More than 1,600 enterprises participated in nine of these expos in India, Indonesia, Vietnam, Malaysia, the Philippines and Thailand in 2017 and 2018, which attracted a total of more than 210,000 visitors and created US\$630 million worth of business.

Five expos are scheduled for 2019.

Each of these Taiwan Expos features a green pavilion, with platforms that promote Taiwanese services and products that specifically cater to the environmental needs of the host country. The event headed to India for the first time in May 2018, where its green pavilion presented the themes of “providing India with green solutions to build smart cities,” “helping India solve environmental problems that arise from population growth and economic development,” and “waste reuse and green living.”

Through the expos, Spring Pool has expanded its market into Singapore and its Southeast Asian neighbours, and has also begun to make headway in India.

With this comprehensive environmental push in New Southbound Policy partner countries between official and commercial avenues, and the rapid shifting of global trends toward green solutions and Industry 4.0 — which prioritizes green manufacturing — coupled with South and Southeast Asian countries’ desire to clean up the environment, the opportunities will only increase for Taiwan and its partner countries.

“All of these elements will eventually fall into place,” Tsai says. “But the most important thing is to do it with a genuine intention to improve the environment of our partner countries. ■

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Tsai Hung-teh

Deputy Director of Environmental Protection Administration



▲ The National Fire Agency organizes a search and rescue drill at its training center in Nantou County.

Disaster Preparedness

“TAIWAN CAN HELP,” says Huan-Chang Hsiao (蕭煥章), deputy director-general of the National Fire Agency (NFA), quoting a government slogan that offers Taiwan’s broad-ranging expertise and experience to the world. These are not empty words just to garner international support: Countries especially in the Pacific region have been eager to learn from Taiwan’s advancements in disaster relief and emergency management at the National Fire Agency’s training center in Nantou County’s Zhushan Township.

“More natural and manmade disasters are happening in the world due to global warming and climate change,” Hsiao says. “Every country has to consider how they would deal with them.”

Covering 109 hectares, the training center is the third-largest in the world and the biggest in Asia, lagging only behind the 250-hectare Fire Service College at Moreton-in-Marsh in Gloucestershire, England, and a 150-hectare facility at Texas A&M University in the US. The main complex was expanded in 2017 with the specific goal of increasing international exchanges with New Southbound partner countries.

Encompassing two detention basins and irrigation canals, the grounds contain a 30 hectare conservation area with “green” buildings that have all passed environmental assessments, fitting the government’s push toward a sustainable, circular economy. It includes a comprehensive list of simulation grounds for a wide range of scenarios, from ship fires and collapsed buildings to aviation accidents.

The training center showcases Taiwan’s state-of-the-art equipment, and has drawn enthusiastic interest from visitors. The New Southbound Policy is geared to generate more business opportunities for Taiwanese companies in its partner countries — and Hsiao says the best way of doing that is to let visitors to the center use the equipment themselves during training exercises.

Hsiao adds that in addition to hands-on training, the center produces teaching materials in accordance with international standards that focus on strategic planning and management.

“We’re basing everything on the simple principle that each life is priceless,” Hsiao says.

As South and Southeast Asia are prone to various disasters, including earthquakes and flooding, the National Fire Agency has been providing increased training in disaster prevention and relief through the New Southbound Policy, with the goal of reinforcing the region’s mutual aid network. Hsiao stresses that disaster relief has always been an international effort, and it only makes sense that Taiwan ramps up its international cooperation in the region.

“There are no boundaries for firefighting or emergency management,” Hsiao says.

From typhoons and earthquakes to dust explosions and transportation accidents, Taiwan has seen its share of disasters in recent decades, most notably the devastating 921 Earthquake of 1999. The National Fire Agency training center was created in response to the earthquake in order to enhance Taiwan’s capabilities in dealing with disasters, and to share its experience with other countries so that they can avoid making the same mistakes.

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▲ A Taiwan Rescue and Extrication Team badge.

The center has enjoyed close ties with the Philippines since its inauguration in 2010, and Filipino-Chinese volunteer fire brigade members have been visiting for training ever since. Thirty-two firefighters from 15 cities made the trip in April 2019 to participate in a week-long training program that includes vehicle extrication, fire equipment, fire control and first aid. The firefighters told the press that they acquired skills and experience using equipment not available in the Philippines, including the use of a self-contained breathing apparatus.



▲ Vietnamese firefighters, bottom right, undergo firefighting training at the National Fire Agency's training center in Nantou County's Zhushan Township.

In July 2018, the government announced that the training would be extended to professional Philippine firefighters based on the New Southbound Policy. Exchanges between the two nations have increased, with delegates from the Philippines' National Fire Training Institute as well as government officials visiting the facility in 2018 and 2019. The Philippine government in turn invited the National Fire Agency to share its experience with its counterparts in Manila.

Taichung has been one of Taiwan's most active municipalities in reaching out to New Southbound Policy partner countries. Most recently in May 2019, the Taichung City Government hosted a delegation from the Department of the Interior and Local Government of the Philippines, who came specifically to learn about the city's disaster prevention mechanisms and discuss avenues for mutual cooperation.

In March 2017, the Taichung City Government hosted a joint training event with firefighters from Vietnam's Binh Duong Province. Just north of Ho Chi Minh City, the province ranks third in Vietnam in foreign direct investment, with Taiwan being the

top investor at 841 projects worth US\$5.5 billion as of August 2019. The exercise not only enhances the experience of the participants on both sides, but also demonstrates Taiwan's ability to educate Southeast Asian professionals.

New Zealand sent a search and rescue team to Taiwan after the 921 Earthquake in 1999, while Taiwan reciprocated after the 2011 Christchurch Earthquake. For the 20th anniversary of the 921 Earthquake, Taichung invited firefighters from its sister city of Auckland who had helped with disaster relief efforts in 1999 to attend a tour and presentation.

Taiwan's capabilities in humanitarian assistance and disaster relief have also caught the attention of the US, which is working with the National Fire Agency through the American Institute in Taiwan (AIT) to establish Taiwan as a regional training center in the Asia-Pacific. This is not unlike the Environmental Protection Agency's (EPA's) International Environmental Partnership with the US, which was formed in 2014 and most recently held an Asia-Pacific Mercury Monitoring Network Workshop in Jakarta in August 2019.

Through the Global Cooperation and Training Framework (GCTF) initiative launched in 2015, the US and Taiwan co-hosted the GCTF's first international workshop at the NFA's training center in July 2017. Six guest countries participated, including the New Southbound Policy partner nations of Malaysia, the Philippines and Thailand.

The most recent workshop took place in December 2018 with 10 Pacific countries participating. In his opening remarks, AIT Deputy Director Raymond Greene called Taiwan a "model of disaster preparedness in the region" and lauded its willingness to assist other countries in the past decade, including after Typhoon Haiyan in 2013 wrought widespread destruction in the Philippines, and the 2015 Nepal Earthquake.

"Generating a robust domestic and international response to natural disasters is essential to ensuring that each of our communities, and the region as a whole, can rebound quickly," Greene says.

Another of Taiwan's strengths lies in the prevention and management of hazardous materials incidents, Hsiao says. The nation has continued to update and improve its Toxic Chemical Substances Control Act, renaming it the Toxic Chemical Substances Monitoring and Control Act in December 2018 to expand the legislation's remit to non-toxic substances that may pose environmental or health hazards.

AIT Deputy Director
Raymond Greene called Taiwan a "model of disaster preparedness in the region" and lauded its willingness to assist other countries in the past decade, including after Typhoon Haiyan in 2013 wrought widespread destruction in the Philippines, and the 2015 Nepal Earthquake.



▲ Army personnel undergo aircraft disaster and hijacking training at the National Fire Agency's training center in Nantou County's Zhushan Township on Sept. 1, 2019.



▲ **LEFT:** Representatives of the New Taipei City Fire Department and their counterparts from two Philippine cities pose for photographs after signing a memorandum of understanding on March 14, 2019. **RIGHT:** The Taiwan-US Global Cooperation and Training Framework hosts a humanitarian assistance and disaster relief workshop.

In collaboration with the EPA's Toxic and Chemical Substances Bureau and the National Yunlin University of Science and Technology, the NFA has been offering hazardous materials first responder operations training to South and Southeast Asian countries for the past three years. The latest event, in August 2019, included 22 students from India, Indonesia, Pakistan, and Vietnam, and a workshop in November 2019 will cater to government officials, academics, and professionals from partner countries.

"Through these workshops we can export Taiwan's advanced hazardous materials response capabilities, and further develop chemical substance regulation policies and educational programs with Southeast Asian governments, first responder groups and academic institutes," Yunlin University of Science and Technology vice-president Su Chwen-tzeng (蘇純繕) says.

Taiwan is also becoming known for its swiftwater rescue capabilities, Hsiao says, which is crucial to the policy, since South and Southeast Asia contain some of the most flood-prone regions in the world.

The NFA's training center includes an artificial river channel capable of simulating swift currents, short drops, and even large open-water areas. The center has been training instructors in this field from across Asia.

After the latest training session with attendees from Binh Duong Province, Hsiao says, the Vietnamese firefighters were greatly impressed by Taiwan's firefighting suits, helmets and gloves, and they enquired about purchasing such equipment. Hsiao says he hopes that the swiftwater rescue training sessions can also attract attention to the nation's products in that field.

Another technology Hsiao says that has gar-

nered international interest is the center's updated Emergency Management Information Cloud (EMIC) system, which is a smart information system that provides vital information about natural disasters and other emergencies to the general public as well as responders. For example, it can notify the government about which areas are prone to mudslides before a typhoon hits so that the authorities can evacuate residents beforehand. As disaster relief involves multiple agencies and facilities, the system can provide immediate, accurate data to responders on relevant and available resources based on the type and location of the disaster taking place.

During the Philippine fire agency delegation's visit, the Bureau of Foreign Trade invited several Taiwanese firms to present their wares to the visitors, including standard equipment as well as high-tech products such as an earthquake warning system, a smart dynamic evacuation system, and a smart disaster prevention command system that incorporates artificial intelligence and Internet of Things technology.

The Fire and Safety Expo in May 2019 prioritized providing smart and high-tech solutions targeting the needs of New Southbound Policy partner countries.

International rescue competitions are another area in which Taiwan has made its disaster relief prowess known. In May 2018, seven firefighters won an award for outstanding excellence at the Extraction Challenge in France, while in June 2019, the Kaohsiung Rope Rescue Team took first place at the Grimpday rescue competition in Belgium, beating 30 teams from 15 countries.

"This is more than just about winning or losing," one of the contestants said. "We want Taiwan to be seen." ■



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