

AmCham Kaohsiung 2018

Southern Taiwan White Paper

Smart Clean & Green



ACKNOWLEDGEMENTS

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Although the Southern Taiwan White Paper represents the immediate business interests of AmCham Kaohsiung members and the local business community, its ultimate goal is to foster the upgrading of Taiwan's economic conditions to the benefit of both local and multinational businesses. The 2018 White Paper deals with issues that are critically important to creating a solid future growth for southern Taiwan, but affect all of Taiwan as well.

AmCham Kaohsiung's goal is to enhance understanding, communication, cooperation, and commitment as we all work for a better future. Thank you for your attention.

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A. INTRODUCTION

2017 was another eventful year for southern Taiwan. AmCham K would like to acknowledge and commend all of the impressive efforts and improvements that have taken place here in southern Taiwan. We commend business and government, local and foreign, educators and community leaders and the untold numbers of nameless individuals who work so hard every day to contribute to south Taiwan's healthy economic growth and future outlook.

Together, everyone shows great commitment and cooperation. Together, we can accomplish amazing things. With the world becoming ever-more complicated, southern Taiwan is managing to hold its own in many ways as it continues the transition to a high value-add, innovative, service-oriented, tourist friendly, foreign investment friendly, and internationally competitive destination.

Although much progress has been achieved, much work remains. Growth in today's world is increasingly difficult and competitive. However, if we look hard, we will find opportunities hidden within those hard spots. Often the greatest opportunities and solutions are hidden inside difficult problems. Those solutions require coordination and leadership to solve in the face of resistance. And if we understand our competition, we will also understand how we can better compete.

For example, one recurring issue that has been growing worse with each passing year is Taiwan's energy situation: a challenging problem which links to south Taiwan's environmental impact, impact on virtually every industrial sector and the health of the population, social safety, agriculture, and international competitiveness. While it is easy to understand how history created Taiwan's power bottleneck, it is now time to solve it.

Solving the power problem requires leadership and commitment to break through. To change past ideas, obsolete procedures, traditional mindsets and hardline approaches to producing energy. Economic and social pressures demand more aggressive changes to how Taiwan produces its energy, improves recycling, reduces future waste, and deals with its existing waste.

The good news is that there is opportunity in these challenges. These are opportunities to create new, large, profitable markets; new jobs; innovative technology; and huge new domestic and foreign investment. Most importantly, good solutions are possible for every problem.

The key to these solutions lie within AmCham K's 2018 themes:

SMART, CLEAN, & GREEN.

In short, we recommend that south Taiwan must work harder to embrace Smart technologies, Clean ideals, and Green energy. For our people, for our children

and future generations, for our ability to compete and succeed, the time has come for Taiwan to take real action in addressing the tough problems.

Development and growth go hand in hand with reliable, clean electricity and access to healthy, clean water. New revenue and jobs, higher wages and long-term sustainability are just a few of the benefits to be realized by embracing smart, clean & green ideas and goals into almost every aspect of life in Taiwan.

Taiwan's nuclear energy program has been around for years; perhaps reliable but not without controversy. Memories of the March 2011 earthquake and tsunami in Japan and the nuclear disaster of Fukushima highlight the risks for Taiwan. Taiwan's nuclear proximity to population centers is ranked the worst risk, or second worst, in the world – on par with Pakistan. The goal to make Taiwan nuclear-free is a direct result of those concerns. Nuclear safety in Taiwan is a major issue and the fourth nuclear power plant will likely never see operations. Nuclear waste is a huge issue that cannot be ignored. Taiwan must look towards a Smart, Green and Clean future where neither nuclear energy nor coal plays any major role in the island's energy profile. These sources can and should be replaced with a combination of natural gas (LNG), solar power, wind power, hydropower and ultimately newer alternatives from geothermal to tidal energy.

LNG is an import; meanwhile for solar, wind, hydro, geothermal and tidal, south Taiwan has an abundance of its own natural resources. For these green energy sources, southern Taiwan has some of the best natural resources in all of Asia; Taiwan's manufacturing sector has much of the technology, and can partner with US and other international companies to bolster for tech, product and operational know-how; and as highlighted by the 75GW increase in privately invested green energy capacity in Japan in the 5 years after Fukushima, the US, Japan and Taiwan have abundant private capital investors interested to develop Taiwan's green energy and LNG sectors if and when the balance of profit vs. risk is attractive.

Although there is still much more to be done, southern Taiwan deserves recognition for all the great work it is doing, as does the central government for their vital role in area development. Kaohsiung is seeing both the Pop Music Center and Cruise Ship Terminal rising into the sky, while user growth of the Kaohsiung MRT, the development of the Light Rail Loopline, and the shift underground of the central rail line are excellent, long-term infrastructure moves which are already starting to change the development path and transportation culture of Kaohsiung.

Meanwhile, building on its core strengths of high education and culture, Tainan is pursuing aggressive development in its high value-add scientific and tech parks as well as its transportation infrastructure and clean energy initiatives. With one of the largest floating solar power facilities in the world so far starting operation now beside the Tainan Science Park, Tainan has the potential to be a Smart, Clean and Green leader in investment and innovation for Taiwan and the world.

Pingtung likewise is becoming a force to be reckoned with in its efforts to repurpose itself, from green energy initiatives to clean water solutions and new moves in the tourism space. Penghu is proving itself to be willing to push the envelope to develop itself into a major tourist destination with great results. And as highlighted in the 2018 South Taiwan AIT Smart Cities Forum in Kaohsiung, Chiayi is increasing leading Smart city initiatives and turning into a place known for much more than fantastic turkey rice and the beautiful Alishan.

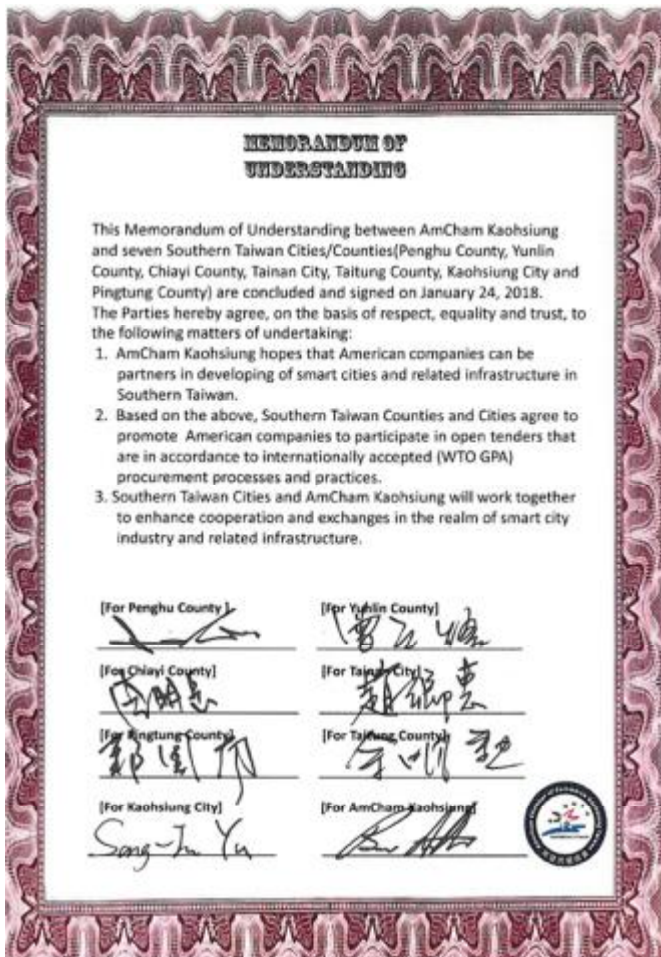
AmCham K always aims to contribute to positive solutions. During the past several months, AmCham K was honored to participate in the signing of two major MOUs with southern Taiwan regional governments: the first – with Tainan City – set the groundwork for Tainan to work towards equal access with American companies for developing new infrastructure projects in Tainan.



The second MOU – with 7 southern Taiwan regional governments including Kaohsiung, Tainan, Chiayi County, Pingtung, Taitung, Yunlin and Penghu – was a historic MOU paving the way to enhance US-Taiwan cooperation and exchanges relating to the Smart City industry and related infrastructure. This MOU was the first of its kind for Taiwan and US enterprises, and we hope it will set the template for more Smart, Clean and Green joint initiatives in the future.

For America, Taiwan can be the land of opportunity. With its continuing vibrant economy, and its focus on becoming a world leader in virtually everything it does, Taiwan represents a wealth of business needs, choices, and prospects for all forms of US business and investment relationships, on every level.

This includes the potential of Taiwan being the best gateway for US businesses to and from Asia. Due to its geopolitical position and stability, freedom of speech and high levels of education, democratic system governed by the rule of law and respect for Intellectual Property Rights, a history for intra-Asian commerce and a world-class living environment for families featuring a free society and bountiful nature, Taiwan inspires confidence with US businesses that most other Asian economies simply cannot equal. At the same time, Taiwan has deep historic, linguistic and cultural connections with its regional neighbors.



US enterprises from Google to Apple to Tesla to the entire spectrum of large and small businesses across the technology and multiple industries have noted this and followed through with business setups and partnerships. For companies like Tesla, the connections with Taiwan started when purchasing components from Taiwan for their products, including from southern Taiwan metal manufacturers; next in 2017, Tesla began exporting cars into Taiwan; in 2018, Tesla expanded charging stations across southern Taiwan so that Tesla car owners never need to worry about running out of power. This is one of many US-Taiwan stories featuring Smart, Clean, Green business, and highlights the bilateral business relationship.

Likewise for Taiwan, the USA is also a land of opportunity. With the largest economy in the world, and the long-standing relationship and support that is the cornerstone of a very solid bilateral US-Taiwan bond that grows stronger with each passing year, the US offers not only an excellent target market for Taiwan products, but also outstanding investment opportunities. Examples abound, from the recent Foxconn deal in Wisconsin to Tainan Evertek's functional fabric manufacturing investments in North Carolina.

In tandem with Smart, Clean, & Green, AmCham K also highlights that for southern Taiwan to fully realize its collective goals for the future, it must push boldly with its "5-C" policy efforts: Connect, Communicate, Coordinate, Cooperate and Compete. Like the "5-C", each aspect of this White Paper is interrelated, just like the communities in which we live. We must approach our future with a clear vision of the big picture, knowing that every single detail is fully dependent on the successful implementation of several programs, projects, initiatives, and the participation of a lot of people.

Brian Aiello



President and Chair of the Energy Committee – AmCham Kaohsiung.

Have comments or questions? E-mail me at, brian.aiello@amchamkaohsiung.org.

This edition of the Southern Taiwan White Paper is published by the American Chamber of Commerce Kaohsiung (AmCham – K). It includes an overall assessment of Southern Taiwan's business climate, a review of the current priority issues identified by the Chamber, as well as recommendations for each topic. The primary purposes of AmCham-Kaohsiung's annual white paper are promoting understanding, providing information, and supporting advocacy. This document outlines suggestions to the Taiwan government and public on issues that have a significant impact on the business environment in southern Taiwan. It is also used to inform government officials, elected representatives, and other interested parties in the United States about Taiwan's business climate.

This 2018 edition of the AmCham K White Paper has been written and edited by Brian Aiello with additional input and editing from the AmCham K Board of Governors and members of AmCham K.

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for MHK

B. RECOMMENDATIONS – Smart, Clean & Green

Southern Taiwan is a beautiful and diverse region. From the international gateway and port of Kaohsiung to the pioneering universities and science parks of Tainan; from the record-setting historic railway of Alishan in Chiayi to the pristine Pacific coastline of Taitung; from the tropical fruits of Pingtung to the windy islands of Penghu, and the wetlands of Yunlin. Blessed with ocean and mountains; year-round sunshine and wind; history and bountiful agriculture; and a free society of warm citizens, Southern Taiwan is a spectacular place to live and work.

AmCham K is focused on promoting the US-Taiwan business community and commercial opportunities in southern Taiwan – the place we call home. AmCham K has in-depth interactions and, most recently, cooperation MOUs with all of the regional governments of southern Taiwan including Kaohsiung, Tainan, Pingtung, Chiayi, Taitung, Penghu and Yunlin.

Across the region southern Taiwan, like Taiwan as a whole, now faces challenges. From power supply to water; from air quality to education; from technology to tourism; from agriculture to land management. In almost every case, there are crises for the future outlook of southern Taiwan; and likewise in almost every case, those crises also represent tremendous opportunities for southern Taiwan.

With an eye on sustainable opportunities and urgent solutions, throughout this White Paper and throughout this year at AmCham K we highlight 3 core themes: SMART, CLEAN and GREEN.

In solving the urgent problems Taiwan faces today, AmCham K emphasizes the value of effective use of Smart solutions making the most efficient use of Taiwan's high tech expertise and manufacturing and human resource base; combined with Clean approaches to the environmentally sustainable solutions and technology for cleaner air and water; and boosted by the effective deployment of Green energy investment and development to grow new markets and make Taiwan a global Green innovation and investment leader.

Southern Taiwan – Great Investment Potential in The Big Picture

Southern Taiwan continues to offer tremendous potential for trade and investment, employment and growth, both domestically and internationally. Notably southern Taiwan has six (6) key advantages for attracting foreign investment:

1. Excellent geographical position and transportation connectivity across east Asia and all of Taiwan – with multi-mode links including sea, air, rail and road;

2. Natural advantages of good year-round weather combining tropical sunshine with consistent wind – the most essential natural resources for large-scale Green energy;
3. All-inclusive industry clusters leveraging on a strong industrial base from Chiayi to Pingtung, and pioneering Science Parks most notably in Tainan and Kaohsiung;
4. High quality, well-educated and reliable manpower, with a relatively low cost of living, high standard of living and good health system;
5. An extensive transportation network and a diverse set of tourism attractions, both natural and man-made;
6. Comprehensive necessities for international professionals including excellent accommodations, restaurants, mass transit entertainment and outdoor recreation.

The 4 Pillars of Southern Taiwan's Future Success

- ENVIRONMENTAL RESPONSIBILITY WITH GREEN ENERGY- Modernizing Taiwan's energy infrastructure, and diversifying its energy portfolio to include significant portions of solar, wind, geothermal, tidal, hydroelectric, and natural gas will increase reserve capacity, bring energy security, lower emissions, improve the health and quality of life for all residents and visitors alike. Ridding the island of coal and oil-fired power plants, as well as nuclear are worthy goals that need to be embraced. At the same time, these changes will create manufacturing, engineering, design, construction, supply, maintenance, and operational jobs that will help buoy Taiwan's economy and outlook for decades to come.
- GLOBAL ACCESS - Development of revenue generating industries requires easy access by air, sea and land as well as through online portals. Comprehensive and convenient choices in getting to Taiwan should include efficient arrival procedures whether by sea (Cruise Ships) or air (Commercial, Business or Private Jet). Growing demands on local transportation require continuing development and expansion of mass transit systems, smooth flowing traffic and adequate parking.
- A SOLID COMMERCIAL and INDUSTRIAL FOUNDATION - The continuing transition from Kaohsiung's traditional industrial manufacturing base; from Tainan's historic and spiritual foundation; and from Pingtung's agricultural

economy to cleaner, higher-tech, tourism and service based economies will lead to real sustainable growth and robust economic stability. Expansion of renewable energy technologies, foreign investment, tourism, and corporate relocation to the south are common essentials.

- **WORLD-CLASS EDUCATION and TRAINING** - The global economy, and especially any cooling of the economy in China will always create new challenges and opportunities that will increase demands on Taiwan's creativity and business abilities. Taiwan's educational system needs to really step up its game while working with local and international companies so that brain drain can be minimized, and more students from abroad can be attracted to study and find work here.

Taiwan will successfully position itself as the perfect hub for business to, from and in Asia if it can nurture and produce a broad array of well-prepared members of the workforce. A talented and efficient high-value workforce is a very important part of attracting and keeping the businesses that will help ensure that the island will be a world-leader for future generations to come.

Energy and the Environment – Smart, Clean, Green

- Renewable and sustainable energy will dominate the domestic and global economy for decades to come. Taiwan must seize this opportunity now, to be a leading example in clean energy so that it can exchange ideas and technologies with its friends, develop innovative solutions and export a better future to its neighbors. Southern Taiwan has ideal conditions for the development of many clean energy technologies, projects, and systems integration. As such, it should strive to, invest in, build, showcase and market energy innovations that include not only new technologies, but also new ways to use existing tech in new and innovative ways.
- Blessed with tremendous natural “green” resources, in three words southern Taiwan – and Taiwan as a whole – should ensure its electric power sector is SMART, CLEAN and GREEN.
- The potential to combine large-scale solar power (including large scale ground-mounted with distributed roof-top and innovative water-mounted solar) with onshore and offshore windpower is obvious to anyone who is familiar with southern Taiwan's year-round sunshine and wind. To this end, improvements to the regulatory environment are needed to clarify priorities

across government agencies and Taipower, and to encourage new domestic and international investors to deploy the large amounts of private capital to realize Taiwan's Green and Clean energy targets.

- Together with a balance of forward-thinking LNG power supply, southern Taiwan's Green and Clean energy potential can more than replace the aging nuclear power plants, and its coal and oil-fired power plants while capitalizing on the power transmission network to supply green energy to all of Taiwan. The total conversion to LNG can be accomplished in 12 years with a full commitment by government and Taipower, with the resulting output increasing reserve capacity and with less emissions than we have today.
- At the same time, southern Taiwan should encourage the private sector to actively invest in additional innovative Smart, Clean and Green energy development and investment initiatives to more fully exploit southern Taiwan's Green energy resources, from geo-thermal to tidal power. In all cases, the combination of clarifying regulatory issues, reducing Taipower grid access risks, and providing a profitable environment is key for private sector acceleration in this essential sector.
- Nuclear energy has remained controversial since the earthquake and tsunami that affected Fukushima, Japan in 2011; this is further exacerbated by the litany of recent closures and mis-starts which highlight the safety risks of Taiwan's ageing nuclear fleet; and the enormous cost and danger of nuclear waste is still the "elephant in the room". Finding new or expanded sites to store nuclear waste in Taiwan is not the answer. Taiwan's current energy portfolio is neither Smart nor Clean nor Green; ironically, given the heavy historical weight of nuclear and coal, Taipower's portfolio is the opposite. This endangers the population and endangers the air quality especially of southern and central Taiwan. Taiwan must finally embrace large-scale solar and wind power generation with substantial private sector investment; explore and develop potential for innovative geothermal and tidal energy; modernize its hydroelectric reservoirs and power plants; and look to the most efficient natural gas systems in order to rapidly establish a nuclear-free and coal-free energy future. With the 2025 deadline for decommissioning all nuclear power plants in Taiwan, alternatives need to be addressed in a timely manner as much time has already passed. The time is now.

Tourism

- Keep developing high quality tourism experiences; especially look for ways to provide a value-added experience that will attract greater revenue to the island.
- Explore and deploy Smart technologies – from online and social media promotions of southern Taiwan tourism attractions to the world, to the use of Google Translate and other automated multilingual technologies to enable southern Taiwan tourism to efficiently overcome language barriers and raise its international profile across a diverse range of inbound tourist markets.
- Promote engagement by southern Taiwan in thoughtfully targeted niche markets across a diverse range of inbound tourist audiences via international events integrated with international organizations. For example, events like the Taitung International Balloon and the World Surf League / Asia Surf Championship events in Pingtung and Taitung are great examples of international events which help to broaden southern Taiwan's tourism appeal vis a vis a high value, diverse and robust niche of international visitors – from mountaineering to Austronesian culture to tea cultivation to scuba to world heritage sites to hot springs, much more can be done across southern Taiwan's attractions to raise profile via events with international organizations.
- Recognizing that many of Taiwan's tourism attractions focus on natural beauty and clean environments, make sure to balance Clean and Green development with tourism opportunities. The two industries should be in constant communication to ensure that negative environmental impact is minimized as growth in tourism increases. If done at its best, these industries can help each other. Eco-energy tourism; where persons from around the world come to see how new ways of integrating the variety of energy production and conservation technologies come together to create real energy solutions and life styles that have a positive impact on the environment and economy.

Air Quality & Water Supply

The need to improve southern Taiwan's air quality is a key issue which increasingly affects southern Taiwan, and calls for urgent Smart, Clean and Green solutions.

The problem of air pollution, especially during the October – May months of the Northeasterly Typhoons, is becoming increasingly severe in southern Taiwan.

China's air pollution increasingly impacts Taiwan and substantially worsens southern Taiwan's air quality problem. However, unlike Hong Kong southern Taiwan has the additional factors of domestic heavy industry and power production.

The keys for Taiwan to improve its domestic air quality are consistent with the themes of this White Paper: Smart, Clean, and Green:

Green energy is potentially the largest and most direct solution for improving air quality in Taiwan. Rapidly expanding the deployment of Green energy power generation in southern Taiwan – including large-scale solar, wind, geothermal – and relatively Clean power generation – potentially LNG / FSRU – offer the timely means to reduce air pollution from Taiwan's existing oil and coal-fired power facilities while at the same time supporting Taiwan's denuclearization.

Clean and Smart technologies should be deployed far more in the Taiwan industrial sector to reduce emissions and enhance compliance. In addition to an inefficient power sector, Taiwan's industrial sector is all too often culprit of illegal emissions and a source of domestic air pollution and PM2.5. AmCham K supports improved and active regulatory compliance initiatives for the industrial sector to enhance use of Clean technologies to reduce emissions.

In addition, across southern Taiwan sustainable supplies of clean water for users across the household, industrial and agricultural sectors is an increasingly serious problem. Southern Taiwan's recurring water shortages are ironic considering that the country has tremendous annual rainfall.

The fact is that given Taiwan's lack of adequate reservoir storage, exacerbated by mis-use of mountain slopes on Taiwan's naturally steep topography, more than 80% of Taiwan's rainfall flows straight from land to sea, an unfortunate loss of Taiwan's naturally plentiful supply of rainwater, and additionally a serious hazard from flashfloods and landslides.

With low water pricing supporting inefficient use and lack of re-use of water across the agriculture, industrial and household sectors of southern Taiwan, further problems of groundwater depletion, salination and degradation of water supplies and arable land hurt. The source of the problem here, too frequently, is wastage and unauthorized over-use.

AmCham K understands and agrees with the government's objective of encouraging water conservation and more efficient use; as with the power sector, the key to encouraging conservation lies in more efficient water pricing, potentially helped by Smart meters. As costs rise, users naturally adjust practices to be more efficient to conserve water.

AmCham K enthusiastically supports efforts by the central government and southern Taiwan regional authorities to solve Taiwan's water problems ASAP:

improving Taiwan's extensive but aging reservoirs is a start; and storage solutions such as the Pingtung underground reservoirs are also worth exploring. Similar to Japan's experience, these can be helpful for recharging and storing groundwater and agricultural-use water while also providing a tool for flood mitigation.

Improved compliance and active management of mountain slope use should be encouraged as Taiwan attempts to mitigate the immediate run-off and loss of rainwater and the subsequent flashflood issues. AmCham K observes that southern Taiwan mountainsides covered with Betelnut groves that damage topsoil and promote run-off are not helping.

Finally, there are multiple Smart, Clean and Green technologies in the US and Taiwan that could be immediately helpful to upgrade the cleaning and re-use of agricultural wastewater, including waste conversion / digestion, desalination and water re-use. A key in all cases for deployment of these technologies is economic feasibility.

Human Resources – Balance & Growth

A common theme among AmCham K US company members in southern Taiwan, and anecdotally across the whole country, is that while Taiwan local employees are highly educated, hard-working, loyal and honest, there is often a language barrier to find good local English speaking candidates; and sometimes there is a hesitation among local Taiwan staff to be proactive problem solvers rather than awaiting instructions. Both of these attributes could be addressed most effectively with marginal adjustments to the education system, to encourage young Taiwanese to study and gain experience abroad (including professional internships) to expand the skills and mindsets to be effective when working with international firms in Taiwan, or in setting up their own entrepreneurial ventures.

Education and training is clearly an important investment for the successful future for southern Taiwan. Business, Government and Academia have a shared responsibility, and should be devoted to achieving the following goals:

1. Clearly understanding the needs of industry and commerce; corporate Taiwan needs to communicate clearly those needs and make sure that all the building blocks are in place to meet those needs when new members enter the workforce (Make sure government and academia know what is needed);
2. Knowing how the role of government will need to adapt and being able to meet future growth demands with a well-prepared staff and officials who can execute support programs so that both industry or commerce and academia are not hindered by outdated regulations (Ensure continuing outreach with educators and businesses so that the government can provide well-placed and timely support);

3. Preparing curriculum that most closely reflects what will be required by the future workforce (Educators must provide the best environment possible where student talents and capabilities can be identified and nurtured).

- Investment of time and resources in school systems and business partnerships would give businesses more say in how the future workforce is developed, give students a better chance of obtaining a job that fits their skill set, and help keep the talent from looking abroad for a career.
- Continue to work at creating better communication with foreign educators whose native languages are being studied by tomorrow's workforce. Get foreign educators more involved in the development of new programs.
- At the same time, encourage courses targeted at fostering the service industry: tourism, hotel and hospitality management, international cuisine, tour management, event management for concerts, and restaurant management.
- As part of the above, it may also be helpful to encourage international schools if we want to have truly international cities; this might include experimental schools under the new Taiwan education regulations. In either case, enrollment processes for international schools, or international programs at existing public, private and experimental schools, should ideally allow for a broad spectrum of young Taiwanese students to learn and gain internationally-relevant skills and experience.
- Private schools must also continue their outstanding efforts to reach out to assist the community and the community needs to embrace private schools that are dedicated to being a positive partner in raising the children of southern Taiwan. Public and private schools have many programs, resources, staff, and ideas that can be shared and in doing so, will benefit all students. Working together for quality education for all students should be the call for all educators and governmental officials. High quality private schools help greatly to attract foreign companies and skilled talent, in addition to providing a jumping off point for Taiwan students seeking to continue their education abroad.

C. ENERGY – Big, Fast & Green Solutions vs. Power Crisis

Taiwan Energy – Smart, Clean & Green

During this past year, events in Taiwan's energy sector once again reminded us of the critical urgency to address Taiwan's power problems. A nation-wide blackout in August 2017 shocked Taiwan and raised alarm bells about Taiwan's energy security for its future economic and social growth.

The fact is that, with new Green energy capacity additions lagging, polluting coal-fired plants running at full capacity, hydropower reservoirs badly silted, and Taiwan's aging nuclear plants in a gradual shut-down, the old and centralized electrical power grid, and confusing regulatory frameworks that discourage micro-grids and solar power self-generation by households and businesses, and an oddly cheap electricity pricing regime despite reliance on insecure imported fossil fuels ... the Taiwan power sector is a major problem that affects all of Taiwan's society and future(2).

In August 2017, Taipower claimed that energy demands at times were within 2% of total capacity (far short of the 15% required margin of safety), and that an error in fuel supply caused an intermittent blackout around the island when the 11% drop in production could not be absorbed by the existing reserve capacity. This is an important example of when demand approaches maximum capacity, system-wide overloads or even a temporary drop in fuel supplies become a significant risk which can lead to a cascading shutdown, brownouts and/or blackouts. Such a lack in reserve capacity also causes undue stresses on manpower and equipment, difficulties in providing proper maintenance, and premature aging of infrastructure.

Part of the pressure on capacity is from the elimination of nuclear power. Taiwan's goal of carefully and quickly denuclearizing is commendable, especially considering the lessons learned from Japan's Fukushima nuclear disaster, the formidable long-term costs of nuclear waste disposal, and the fact that Taiwan's nuclear accident risk profile is the worst in the world (i.e. proximity of nuclear plants to major population centers is the closest in Taiwan, as well as Pakistan). Nuclear fuel rod creation and transportation, heightened security issues, and the biggest issue of nuclear waste remind us that nuclear power is neither Clean nor Green, nor cheap notably when waste disposal costs are included⁽¹⁾. Interesting articles illustrating the total cost of nuclear can be found at, <http://www.grisanik.com/blog/real-cost-of-nuclear-energy/> , <http://content.time.com/time/magazine/article/0,9171,2059603,00.html> and <https://www.ucsusa.org/nuclear-power/cost-nuclear-power#.WscBOJe-nDc> .

In addition to denuclearization, Taiwan also needs to change its reliance on polluting oil and coal-fired power as well. When PM2.5 levels rise above acceptable levels, power plants again have to initiate a partial shutdown decreasing available electricity to the grid. Aside from air pollution floating over from China, or generated domestically at Taiwan's own heavy industry factories, a significant factor in PM2.5 is

the coal-fired power sector. About the only thing coal has going for it is that it has traditionally been cheap. But coal is polluting and contributes badly to southern Taiwan's air quality problems; imported coal prices are volatile and unpredictable in the long-term as the world moves away from coal, making it even more expensive; and reliance on imported fossil fuels is risky from an energy security perspective.

Taiwan needs to modernize its energy infrastructure while adding capacity, lowering emissions, expanding renewables and controlling costs; a very difficult situation to resolve. Taipower insists that the electricity by their aging nuclear facilities is needed to cope with immediate demand; however, since denuclearization is a given by 2025, this is little more than a short-term Band-Aid covering a far more serious long-term situation. More Green energy capacity is needed immediately to replace the shortfalls from nuclear and mitigate the air quality impact of coal. The answer here lies in a rapid acceleration of large-scale Green energy – notably large scale (i.e. >50MW per installation) solar and wind power in the immediate term – as well as large-scale conversions to LNG to rapidly fill the gaps.

Hand-in-hand with increased Green energy supply, an important point stressed by Taiwan government and Taipower officials regarding energy in Taiwan has been conservation. While this is a great policy that is intended to create a more efficient use of power throughout the island, it must be managed carefully vis-a-vis industry and customers: companies here that hope to increase output need clarity about the security of power supply, and the cost of power so they can budget and price their products accordingly. Businesses do not need the conflicting messages of conservation, threats of power shortages and the push for growth.

We know from the fundamentals of economics that the key to conservation and energy efficiency is price. Smartly increasing electrical power prices is essential to discourage companies and households from wasting energy. Post-Fukushima, Japan was successful in increasing power prices and introducing more flexible power pricing linked to usage volumes and times; as anyone who has visited Tokyo during summer and noticed the prevalence of “cool biz” business attire and reduction of office air conditioning knows, conservation is now a major part of Japan's power consumption practices and has even changed its business culture. No more neckties. While this may sound like a humorous anecdote, the point is clear: power prices are the key to conservation and energy efficiency.

A price increase of about 3% in electricity was recently announced in Taiwan. But according to the comparison data from the International Energy Agency, for household users, the price of electricity in Taiwan remains the third lowest and for the industrial users is the fourth lowest in the world. In 2016, prices for both residential and industrial electricity in Taiwan were the lowest compared with Mainland China, Malaysia, South Korea, Singapore, Philippines, and Japan.

Taiwan electricity rates will be raised by 3 percent to NT\$2.6253 per kWh, but households that use less than 500 kWh and small businesses that use less than 1,500 kWh per month will not have their electricity rates increased. That means that more than 80 percent of users (by number) will remain unaffected by the rate hike, but major users (by volume) will be affected. This is probably logical, considering that Taiwan's heavy industry has often been criticized for power inefficiency and a push for efficiency at major business can have great positive effects. Described as a "moderate" increase, the Minister of Economic Affairs said that the rate adjustment will not affect small businesses. Large consumers that use 1,000 kWh and 2,000 kWh per month will see their monthly electricity payments rise by NT\$72 and NT\$83, respectively: this means real expected impact of less than NT\$100 per month. That is too small to have any significant impact on both usage and funding modernization of infrastructure.

It is time to wake of and smell the pollution: Taiwan has a power crisis!

It is the opinion of AmCham K that although private companies might complain about any price increases in general, profit margins are healthy enough to absorb more change. In fact, without more substantial changes we are dooming ourselves to little if any positive changes in Taiwan's energy sector in the near future, despite the lofty goals and promises made by various well-meaning officials. If we only see increases as small as this, it limits infrastructure modernization schedules; it limits the viability of conversions of existing power plants into cleaner and more efficient ones will be delayed or scrapped again; it limits the feasibility of proper and timely maintenance of our aging power plants will suffer; and it limits international investor interest in devoting large-scale capital to new Taiwan Green power capacity. It endangers the 2025 Green energy deadline.

AmCham K also believes that Taiwan's power crisis is southern Taiwan's single greatest economic opportunity. The estimated costs for creating up to the 45gigaWatts of electricity that Taiwan will demand in the near future, and doing it using renewables and the cleanest technologies and fuels at our disposal today, will require Taiwan to have to spend about US\$45Billion in generating infrastructure. US\$45 billion of investment, given the right regulatory and pricing conditions. This means financial, technical, design, equipment, installation, training, supply and maintenance. This means new, large-scale JOBS in those same areas! It means new, large-scale markets to grow Taiwan's Smart, Clean and Green energy products, services and expertise; entirely new segments of opportunities for US-Taiwan business partnerships and tie-ups. And it means new, large-scale sectors for international investment in Taiwan.

The Bottom Line on Power Pricing:

Prices can be made more flexible, and some further rises can be easily justified with reference to Taiwan still having the cheapest power in East Asia (2).

The fact is that even with the 3% increase in electricity, the cost in Taiwan is significantly lower than its neighbors.

The power pricing comparative tables that show Taiwan as #1 cheapest in east Asia and #2 cheapest globally for Residential and #7 globally for Industrial. Taiwan is unique in these high rankings for a country that imports the majority of its energy.

2016年各國平均電價比較

國際能源總署(IEA)2017年發布之最新統計資料與亞鄰各國電價資料

106年11月8日更新

住宅用電						工業用電					
排名	國別	台幣元/度	排名	國別	台幣元/度	排名	國別	台幣元/度	排名	國別	台幣元/度
1	墨西哥	2.0599	17	荷蘭	5.6918	1	挪威	1.3706	17	丹麥	3.1749
2	臺灣	2.5679	18	盧森堡	5.8673	2	瑞典	1.9468	18	希臘	3.2095
3	大陸*	2.6656	19	法國	5.9061	3	美國	2.1818	19	紐西蘭**	3.2344
4	馬來西亞	2.7493	20	菲律賓	5.9336	4	盧森堡	2.2293	20	土耳其	3.4141
5	挪威	3.3763	21	希臘	6.1630	5	墨西哥	2.2774	21	奧地利	3.4238
6	南韓	3.8475	22	紐西蘭	6.4041	6	芬蘭	2.3624	22	法國	3.4764
7	美國	4.0553	23	英國	6.4242	7	臺灣	2.4491	23	比利時	3.6300
8	匈牙利	4.0624	24	瑞士	6.5696	8	波蘭	2.6750	24	愛爾蘭	3.8342
9	土耳其	4.2802	25	日本	7.1597	9	荷蘭	2.7596	25	智利	4.0278
10	新加坡	4.4212	26	奧地利	7.2234	10	馬來西亞	2.8407	26	菲律賓	4.0333
11	以色列*	4.7317	27	愛爾蘭	7.8717	11	匈牙利	2.8695	27	英國	4.0475
12	波蘭	5.0177	28	葡萄牙	8.4479	12	捷克	2.8889	28	葡萄牙	4.0501
13	捷克	5.0406	29	義大利	8.9456	13	以色列*	2.9416	29	瑞士	4.3148
14	智利	5.4711	30	比利時	9.3422	14	南韓	2.9911	30	德國	4.5643
15	芬蘭	5.4899	31	德國	10.6556	15	新加坡	3.0410	31	日本	5.1027
16	瑞典	5.6295	32	丹麥	10.6633	16	大陸*	3.1322	32	義大利	5.9872

註：1.表列數值原係以美元計價，台幣對美元換算匯率為1美元=32.318台幣（2016年平均匯率）。

2.*為2015年資料，**為2014年資料。

3.工業用電部分，新加坡採自選電力供應用戶（contestable consumers）之平均電價，包含工業及商業用戶。

◆我國與鄰近國家電價比較

單位：新臺幣元/度

104年				105年			
住宅用電		工業用電		住宅用電		工業用電	
國別地區	平均單價	國別地區	平均單價	國別地區	平均單價	國別地區	平均單價
馬來西亞	2.8267	臺灣	2.7641	臺灣	2.5679	臺灣	2.4491
臺灣	2.8409	南韓	3.0286	大陸	2.6656	馬來西亞	2.8407
大陸	2.8555	馬來西亞	3.0491	馬來西亞	2.7493	南韓	2.9911
南韓	3.4883	大陸	3.3594	南韓	3.8475	新加坡	3.0410
新加坡	5.0347	新加坡	3.7169	新加坡	4.4212	大陸	3.1322
菲律賓	6.6508	菲律賓	4.6767	菲律賓	5.9336	菲律賓	4.0333
日本	7.1809	日本	5.1672	日本	7.1597	日本	5.1027

註：1.資料來源：台電公司

2.104年表列數值原係以美元計價，台幣對美元換算匯率為1美元=31.898台幣（104年平均匯率）；大陸採103年資料、菲律賓採102年資料。

3.105年表列數值原係以美元計價，台幣對美元換算匯率為1美元=32.318台幣（105年平均匯率）；大陸採104年資料。

For industry, price increases have most likely already been factored into future overhead estimates, and adjustments are in place. However, with the exception of a very limited number of energy intensive, low profit margin companies, they can afford a larger increase. While we expect this statement to result in some complaints from industry; but it is something that needs to be said. Taiwanese industry – including foreign industries in Taiwan – should be gradually weaned off cheap power to be more efficient.

For years, the Taiwan economic miracle has been used as a reason why energy prices must be kept at below profitable prices. But the fact is that Taipower has been stuck between a rock and a hard place for years subsidizing inefficient industrial users on aging infrastructure that cannot be modernized because of those same subsidies' drain on funds.

Stuck with overly restrictive rules and regulations that create automatic inefficiencies, that mandate Taipower buy its fuel from CPC making CPC more profitable at Taipower's expense, by its own desires to protect its own staff and reputation, and its own lack of appreciation for the needs of the Taiwan business community to have safe, clean and stable electricity that will allow for their expansion and increased revenue, Taipower itself has now evolved into its own worst problem.

In light of the above, the business sector must understand that higher prices are really needed in order to pay for the growth of capacity in ways that are not going to poison the air and water, and that it is their own corporate interest and community responsibility to help. After all, necessity is the mother of invention: Taiwan industry should be a global innovator in energy efficiency, and that can happen best if Taiwan's companies – like those in Japan – are used to operating profitably in reasonably priced energy markets.

From Taipower's perspective low power prices are not a good thing since they prevent improvements and modernization of the power grid. Raise prices according to usage and sector, but such price increases must come with aggressive action to modernize and diversify the electrical grid, introduce Smart Grid elements, improve electricity production, efficiency and reliability including the expansion of renewables into the mix.

Finally, new energy capacity – large scale solar power, windpower and LNG power generations for immediate start – is essential. Huge new capacity – between 25GW and 45GW of new capacity is estimated to be needed to address current power use and future growth with margin buffers – requires huge amounts of private investment capital and technology from Taiwan and its trade and investment partners in the US and worldwide. Such huge private investment requires a reasonable profit motive and an attractive balance of return vs. risk; which requires profitable pricing.

Large-Scale Solar, Wind, LNG, and More:

With large-scale solar, wind, geothermal, tidal and natural gas fired power plants, pollution can be dramatically reduced, along with related health issues, while at the same time replacing Taiwan's nuclear capacity. This will enhance energy security, improve productivity, decrease sick leave and health costs, and improve the environment and quality of life, tourism and every other aspect of Taiwan.

A key factor to keep in mind when discussing Green energy initiatives and projects in Taiwan is scale. In order to make a difference in achieving the 2025 denuclearization target, new solar and wind power projects must be large scale – whether singly or in aggregate. Installations of at least 50MW-100MW each are needed: incentives should be crafted appropriately to encourage large-scale Green energy in order to rapidly solve Taiwan's power crisis.

Such large scale, in such a limited time, is possible. Again, post-Fukushima Japan provides a template: in the 5 years from 2012 to 2017, new solar and wind power capacity in Japan increased by approximately 75GW. In parallel, an equivalent amount of new LNG capacity came on line in Japan. The providers of this wave of a combined 150GW of new Japanese electric power capacity were primarily not the traditional utilities; instead, the providers of such huge capital and technology were domestic and international private investors from around the world.

When considering scale and speed, two sub-categories stand-out most: ground-mounted solar power and LNG.

Large-Scale Solar Power:

If land use regulations can be properly designed, ground-mounted solar power farms can be set up quickly at scale of 50MW each on unused or under-used farmland and low hillsides across Taiwan.

If the regulatory and profitability environment can be improved, ground-mounted solar alone could quickly reach 15GW on a wave of inbound international capital and domestic private investment.

The key barrier to large-scale ground-mounted solar power is archaic land-use regulations which do not account for the temporary nature of ground-mounted solar power racks nor their minimal impact on the underlying land, in stark contrast to illegal industrial use of agricultural land as seen frequently in Taiwan.

In fact, ground-mounted solar has little or no impact on the underlying land; it can be viewed as temporary on unused or under-used farmland or hillsides, and the solar farms can easily revert to agricultural use after their project period, with no pollution to the land or groundwater.

Furthermore, top political leadership at all levels of government is needed to clarify priorities between Clean and Green energy land-use and non-essential agricultural land-use. After all, when it comes to sub-optimal land-use in the face of an existential power crisis, betelnuts and bananas can be imported; Green energy cannot.

In addition, the new innovation of water-mounted floating solar platforms is opening up opportunities where no existed before. With reservoirs, irrigation ponds and flood control ponds across the country, Taiwan's freshwater bodies (and potentially certain saltwater surfaces as well) offer a large new area for development of solar power – even only counting Taiwan's 66 reservoirs, there is more than 5,000ha available (data source: Taiwan Water Resources Agency, MOEA).

Remarkably, the key global technology leader in this category is a proud southern Taiwan company based in Pingtung. One of the largest floating solar plants in the world at 6MW started operating near the Tainan Science Park in spring 2018; much larger facilities of 100MW-300MW are now being planned across Taiwan. In theory and practice, these Clean and Green floating solar power platforms can be deployed across any freshwater body in Taiwan – from reservoirs to irrigation ponds – to contribute up to possible 5GW of Green energy capacity. This is a valuable potential complement to Taiwan's large-scale ground-mounted solar power.

However, like the confusing and costly confusion of regulatory barriers on land-use that hampers large-scale ground-mounted solar power development in Taiwan, likewise there is a confusing tangle of regulations and agencies involved in use of freshwater surfaces.

Here again, top political leadership at all levels is needed to cut through the inter-agency confusion and establish clear priorities to promote Clean, Green solar power use of land and water surfaces wherever possible to solve Taiwan's power crisis.

Large-Scale LNG Power (including the use of FSRUs):

The conversion of all aging coal and oil-fired power plants to natural gas is something that has never been a better idea than it is right now. The latest developments in natural gas combined cycle turbines, coupled with very low rates for LNG that are likely to stay that way, make natural gas the preferred method for producing electricity for Taiwan. Renewables are great, and must play a major role in Taiwan's energy portfolio, but there must be in place the means to produce electricity from fuels that are less susceptible to earthquakes and typhoons, and general weather inconsistencies. Unless and until tidal and geothermal power is in place and significant, which will likely take 25 years or longer to achieve, natural gas holds the promise of efficient power with emissions far lower than with coal or oil. In addition, with the US looking to export increasing amounts of natural gas, there are

advantages for Taiwan in security, stability, and the trade balance between the two. Using natural gas in place of coal or oil will result in decreases in emissions of between 50 to 75% per megawatt. As stated elsewhere in this White Paper, using the Taichung facility as an example, the current 5,500 megawatts generated from the 10 installations could be converted into as much as 9,000 megawatts (including new installations 11 & 12) with emissions equivalent to about 2,700 megawatts of coal burners. The newest small-scale natural gas systems currently being built by companies like GE (including self-contained floating power plants) could easily replace smaller power plants currently using diesel fuel, and are an option worthy of serious consideration.

One area that needs serious consideration for importing LNG is in the use of Floating Storage Regasification Units, or FSRUs. These are rapidly being deployed as a less costly, more flexible, more environment-friendly and safer alternative to the traditional land-based terminals now used in Taiwan. The good news is that FSRUs are beginning to gain interest here, but the full array of benefits might not yet be fully understood.

Large-Scale Offshore & Onshore Wind Power:

Long overdue progress has begun to be seen on a technically rigorous series of large-scale offshore windpower projects in Central Taiwan. This is commendable and should be accelerated. However, the challenges of offshore windpower are the time involved for construction and mitigation of impact on marine environments; solutions are in place now and we are encouraged to see these projects finally accelerate.

More needs to be done, and can be done, to capitalize on offshore and onshore windpower projects across southern Taiwan. Optimal velocity winds blow consistently along the shorelines and lower mountainsides of southern Taiwan, all the way down to the legendary “luo-shan-feng” of the Hengchun Peninsula and the year-round mists of Penghu. Like southern Taiwan’s sunshine, the wind is an abundant natural resource in our southern Taiwan region.

Together, large-scale onshore and offshore windpower farms should be encouraged and have the potential to contribute an additional 5GW of Green energy to Taiwan.

Smaller, Distributed Roof-Top Solar:

Roof-top solar power is smaller scale per installation and more widely distributed than large-scale ground-mounted solar and water-mounted solar, or LNG or windpower; however roof-top solar can and should be used to improve Taiwan’s Green energy profile and to encourage household-level self-generation.

Maximizing the potential for distributed roof-top solar power requires cooperation from Taipower with a Smart grid approach to enable connections and net-metering. These, alongside Renewable Energy Credits, should be used to incentivize homeowners and factory-owners to make maximum use of roof-top solar power.

In addition, a key problem for roof-top solar in southern Taiwan is the prevalence of illegal roof structures. Looking out from our offices in Kaohsiung, for example, AmCham K members look at an endless view of illegal sheet-metal top floors.

None of these unregistered roofs has a rooftop solar panel installed on it (aside from a few solar water heaters). What a terrible waste of sunshine and potential solar power! How Taiwan's authorities treat such illegal or unregistered roof structures can either help or hinder the uptake of rooftop solar power in southern Taiwan.

For example, we might suggest a new provision whereby pre-existing unregistered roof structures can be registered legally IF they are reinforced and include installation of rooftop solar power panels. The installation process for the solar panels can provide the ideal opportunity for safety inspection of the roof structure itself, and reinforcement where necessary.

Green Energy Bid Processes:

In the recently published 2017 AmCham Taipei White Paper, the Infrastructure and Engineering Committee proposed that the government actively encourage more international companies to participate in such projects in the interest of helping Taiwan develop world-class infrastructure. We strongly agree with this opinion.

"Successful delivery of the planned infrastructure program, especially of the power generation projects, is critically important for the continued prosperity of the Taiwan economy," the Committee's position paper notes. The paper specifically highlights the contractor tendering process as an opportunity to improve infrastructure quality, recommending selecting winning bids on the basis of "Most Advantageous Tender" rather than "Lowest Price." All too often these days, choosing the lowest price results in the poorest returns and higher long-term costs".

One area where the bidding process can be significantly improved is in the initial stages of any proposed or planned project. Currently, a single winning bidder enters the first phase, typically referred to as the study phase of a project. From here, the initial direction for the project will continue along the same course without diversions, or motivation for finding the best ideas and best solution; often opting for the safe choices that have been widely accepted for decades with the lone winner unwilling to look outside their comfort zone, instead falling back on perhaps outdated ideas or old data. The problem is that global energy technologies,

environmental awareness, fuel pricing and availability have all changed considerable to the point where old ways of thinking simply do not equate to the best choices for today and tomorrow. Instead of awarding the first Phase (typically the study phase) to a single bidder, multiple bidders should be chosen to be involved in independent competing studies, each with equal access to details and data regarding the particular project.

Having 3 separate bid winners involved in their own independent studies would instill greater innovation, more competitive and creative ideas, and in the end, better options and solutions. In the end, each of these initial winners must still pass all the same requirements for the project to move forward, but there will be a much greater motivation for each to come up with a plan that provides the greatest cost/performance/lifespan benefits. If there are specifically promising aspects of an otherwise losing study participant, they should still be involved in the final projects according to their level of contribution to the final project design. Ask for the best, demand the best results, reward the best results, and get the best solutions; Taiwan wins! High stakes projects are often done in this manner with great success, such as military contracts for new platforms.

More Green Energy Updates:

There have been some interesting recent updates on the Taiwan energy situation.

- Premier Lai announced recently that wind power construction will be increased in order to expand wind generation by 50% over the already aggressive goals that were previously made public. With Taiwan's relatively consistent winds in many locations, this seems like a good choice. The main concerns that must be satisfied of course are real costs being in line with the needs of Taiwan, and the robustness of the equipment to withstand everything that Taiwan will throw at it in terms of weather.
- Nuclear advocates had a good news/bad news week in early April this year. The good news for them: the 2nd power plant at the number 2 nuclear power plant (let's call it 2-2) finally got approval to restart after more than 600 days offline. Taipower kept talking about it being able to provide another 3% to the reserve capacity (later found to be lower than that). The bad news for nuclear advocates: on the very first day it was powered up, it automatically shut down due to safety issues with the steam generated. Taipower noted that at least this proved that the safety systems worked. Up to now, no one will say publicly when it might be restarted again. In related news, the 3-2 nuclear facility is getting scheduled maintenance underway now as well, meaning even less reserve capacity. One set of numbers that jumps out is the following:

the energy reserve over the last 2 years has fallen to less than 2%; Taipower said the 2-2 plant would increase that reserve about 3%, making for as much as 5% (still well below the required 15%). If it is assumed that the 3-2 plant makes the same amount of electricity as the 2-2 was supposed to make, then it means that the updated numbers with both the 2-2 and 3-2 down means a reserve capacity of -1%. Of course this is a narrow and oversimplified view of the current situation, but how close is it to the actual situation? So this summer, be prepared for seeing a high risk for brown-outs & blackouts. One must wonder how the energy situation was allowed to get to this critical stage.

- The aforementioned 2-2 unscheduled shutdown caused the legislature to DEMAND that Premier Lai submit a Taiwan Energy Report before the end of May. This report must provide accurate data on Taiwan's energy status, what the government is going to do about Taiwan's energy situation and infrastructure, and a timeline for improvements and solutions. We at AmCham K would certainly share an intense interest in seeing this report, as we are sure business leaders have to plan their company's future growth versus the risks that come with not knowing if the energy essential to sustain that growth will be there.
- Taipower announced that it wants to build installations 11&12 in Taichung using natural gas. However, they are promoting it in a rather odd way; building 2 units to replace existing coal units without increasing power output. No new capacity! It doesn't have to be this way. The latest generation of natural gas turbines can increase power by some 50% over the coal equipment they would replace. This would mean that once such a system was installed at 11&12, it could then shut down 3 coal installations without any loss in capacity, or shut down 2 coal installations and still have as much as 500 megawatts more being generated than before. As such a conversion project would move forward, more coal installations could be shut down for conversion without any decrease in energy reserve capacity, and at the end of what could be completed in about 12 years, Taichung could be producing as much as 9000 megawatts of electricity with emissions equivalent to about 2700 megawatts of coal burners, or a little more than half of the current levels now occurring in that city.
- In other news, Taipower recently announced that it was planning to build a new coal power plant up near Taipei. The backlash was severe and immediate, so it looks like that plan is dead in the water despite continuing efforts to push

it through. One cannot help but wonder why such a decision was even entertained. Do they have no ideas for alternatives? Are they uninterested in better solutions? Do they not understand or agree with the science proving the negative consequences of continuing to create pollution at these levels? Are they attempting to direct public opinion to believe that only nuclear can be the answer for Taiwan, with all other options unattractive or unprofitable (for them at least)? These are not accusations but rather concerns raised by numerous business leaders that any of these might be the case.

- Geothermal is finally getting some traction in Taiwan. Taiwan has an abundance of hot springs, which means it is an excellent candidate for geothermal. However, in the past, concerns over the aesthetics of geothermal prevented anything from happening. This is changing; it was announced in late March that two geothermal plants will be built in Yilin County. Totalling a mere 8mw, with the first in Renze making 2mw and costing NT\$600million, these won't make much of an impact (estimated at about 3000 households' worth of electricity).

But it might prove to show how geothermal is something that can become a part of Taiwan's renewable energy future. Let's hope that a serious effort is made into creating facilities that will showcase the latest technologies, minimize disruption to the local aesthetics, and prove that geothermal is a viable candidate to play a significant role in Taiwan's future energy portfolio.

- And finally, a new effort is underway to have a referendum on the next ballot asking people if they are willing to extend the use of nuclear power past the current 2025 deadline for decommissioning and making Taiwan nuclear free. The confluence of so many issues and conflicting interests in relation to nuclear power in Taiwan raises questions among the general public and the commercial sector, and highlights the need for leadership to achieve rapid and large-scale solutions

WHERE WE ARE TODAY

Today, with the Tsai administration in place and a legislative majority of the same political party, the DPP (or Democratic Progressive Party) has put a major focus on;

- In each, there are questions, concerns and often public objections that have delayed progress.
- Project funding is also a significant factor due to the fact that Taiwan's energy sector was built on a foundation of mature technologies, traditional fuels and

low energy cost; meaning that significant investment and capital spending is needed for modernizing its aging infrastructure.

1. Making Taiwan Nuclear-free;

Technically, since Taiwan has no plans to purchase additional fuel rods, the island can already be called “nuclear-free”. Recently, after more than 600 days of being offline, the 2nd power plant at the second nuclear facility (2-2) was approved for operation again with the promise of an almost 3% increase in reserve capacity. However, it automatically shut down and now there are no real estimates for when it might come back online.

Overall it is safe to predict that the threat of power shortages or blackouts this summer. Even if all Taiwan’s nuclear power plants were hypothetically to come back online, there is still the major issue of getting rid of the nuclear waste. The bottom line: denuclearization on Taiwan is proceeding and a power crisis is pending. Alternative power sources are needed urgently.

2. Eliminating coal and heavy oil and replacing it with LNG;

There are 2 common approaches to dealing with this issue. The use of either coal or heavy oil (bunker oil) is not a very clean choice.

a. Integration of emissions filtering/capture components that will lower emissions to be more in line with that of LNG. This might be a good solution as either a stop-gap or long-term option where a total conversion to LNG is impractical or logistically extremely difficult;

b. Full modernization and conversion to LNG using state-of-the-art equipment with flex-fuel capabilities. While this is obviously the more expensive option initially, in a long-term application this would likely prove to be the best choice as it would be useful for decades.

3. Enhancing the amount of renewables throughout Taiwan and its off islands;

Greater incentives and subsidies where needed, as well as more understanding by the public are essential for increasing the use of renewables throughout Taiwan. Smart Grid Technology is a very important part of this also as it would help to minimize extraneous costs and maximize efficiency.

At the same time, there needs to be a greater level of acceptance from all participants in the installation, use, financing and payment structure (including FITs).

Obviously, Taipower is in the business of selling electricity, not just making it. However, purchasing electricity at prices slightly lower than off-peak rates (making

sure to consider any applicable overhead), should be adequate for a government-owned corporation.

4. Initiatives and development for both solar and wind power;

Taiwan has about 90% of its population living on 35% of its available land. As a tropical island and with an incredibly mountainous topography that makes Taiwan act as a virtual wind tunnel for Asia, Taiwan sees plenty of sunshine and wind, as well as its fair share of rain. Tainan, Kaohsiung, Pingtung, and Penghu are all areas that enjoy a very high percentage of sunny and windy days, making them excellent solar and wind energy candidates.

Questions about solar and wind power include regarding stability of supply and durability to extreme weather. Solar and wind power is most suitable where they do not sustain expensive and disruptive damage due to natural disasters. Typhoons, humidity and salt water all create challenges for solar and wind power equipment and components

To date, Taiwan's solar power capacity roll-out is nowhere near fast enough to meet the government's energy goals for 2025. Substantial acceleration – and at large scale – is necessary for private investment into the solar power and windpower sectors in order for Taiwan to reach its 2025 goal. To this end, government incentives and subsidies should be considered to get this industry working at full capacity and keeping it there while Taiwan looks to create some 23GigaWatts of new solar power by 2025. Bring whatever partnerships are needed to get Taiwan involved in wind power components and related industry jobs and businesses; looking to the US, Japan and other international sources for large scale investment in and partnership with solar, wind and all green energy related industries.

5. Improvements in energy conservation;

Taiwan has made great strides in energy conservation. But more can be done.

LED lighting – has been seeing great gains in reducing municipal consumption as virtually all traffic lights, and an ever increasing number of street lights are being changed out to LEDs. Incandescent lighting has long since been replaced with fluorescent, but steps to replace that with LED lighting are slow to be adopted. LED lighting can be significantly more environment-friendly to manufacture than fluorescent, can last much longer, is much less harsh, and can be “tuned” to varying colors and levels of warmth. The government at all levels here should lead by example; changing to 100% LED lighting in all government offices and schools, incentives should be strengthened to make it easier and more desirable for industry, commercial facilities, and residential implementation with the goal of full LED integration.

It is also worth noting that incentives to trade in old and polluting cars, trucks and motor scooters should be made stronger. Instead of trying to make it more expensive to purchase new (or newer) vehicles with the idea that such measures will deter people from buying; in real life, it has a rather different effect of making it so that people hold on to their old polluting vehicles longer because they can't afford the high cost of trading them in for a new one. New vehicles are not only cleaner, but more efficient and safer. Safety in transportation is a very important issue here that needs to be addressed and enhanced. The added advantage of coupling environmental and safety benefits to a more modern average vehicle usage in Taiwan should make this a topic worthy of very serious consideration. With all the new driver safety systems coming online in new vehicles, there is added reason to incentivize trade-ins.

Especially interesting are the prospects of electric vehicles which are rapidly becoming more useful with each new model. Charging stations are an important factor in making EVs mainstream. 5G network integration and smarter traffic control will also improve safety and energy efficiency, resulting in cleaner air, improved health, lower stress, and better air quality.

In the summer of 2016, Tesla Motors entered the Taiwan market, with its first store at the Shin Kong Mitsukoshi A11 branch in Taipei's Xinyi District. Tesla has been delivering vehicles to Taiwan customers ever since. At the same time, it began developing a network of charging stations. Tesla recently opened its first super charger station in Kaohsiung to add to its complement of conveniently located stations around the island. Taiwan is the 25th global market for Tesla and its sixth in the Asia-Pacific region.

Tesla has a long history with Taiwanese components suppliers, using induction electric motors from the Taiwanese firm Fukuta Electric and Machinery Co. Other Taiwanese firms included in Tesla's supply are K. S. Terminals Inc., a major supplier of automotive connectors, and Hota Industrial Mfg. Co., a maker of transmission-system parts and other machinery that is now Tesla's exclusive supplier of reduction gear sets.

According to the regional director of Tesla Hong Kong and Macau, who is overseeing the Tesla business in Taiwan, the company's expansion into Taiwan was due to Taiwan's roles as a "technology hub and a trend-setter for the region.". She was also quoted as saying, "We already have over a dozen products in our car that are made in Taiwan," and, "I see landing Tesla in Taiwan as not only benefiting Tesla by giving us a new market, but also as helping the overall industry to move forward."

6. Development of Tidal and Geothermal Power;

Tidal power is practically a no-brainer for any island and Taiwan should be no exception.

With the Pacific Ocean on the east coast, and the Taiwan Straits on the west, there is more than enough variety of currents and tides to produce considerable amounts of energy. In addition, as global sea levels are already rising, and will continue to rise for the foreseeable future, coupling tidal power with sea-walls or other means of dealing with higher water levels makes this a mandate. To completely protect Taiwan's coastlines and its residents, a long-term solution is needed. Additionally, any real solution will take years to complete and require lots of funding. Integrating a power generation component not only adds value but it helps to offset the cost of such an ambitious project.

Geothermal power for Taiwan is another natural. The island known for its many hot springs is also home to a major untapped energy resource, since "hot springs = geothermal". Geothermal is clean, renewable and powerful. So why hasn't it gained traction in Taiwan? The answer is in aesthetics. Locals are under the impression that installing geothermal means destroying the natural beauty.

While that used to be true, it should no longer be the case. It should be possible to have geothermal facilities blend in seamlessly into the local environment with little or no noticeable distraction.

The six previous examples are areas where innovation, creativity, local knowledge and understanding can make a world of difference in helping Taiwan towards a goal of enjoying a safe, secure, clean and competitive environment for generations to come.

At the same time, the large variety of programs and projects mentioned here represent significant benefits to equipment manufacturers; engineering, procurement, and construction companies; subcontractors, visionaries, suppliers and entrepreneurs who are willing to understand the people of Taiwan and their needs, the strategic importance of Taiwan as a key access point to and from Asia, the long-standing bilateral relationship between Taiwan and the US as well as the mutual benefits that await those who make the effort and commitment.

"Will Hydrogen be an energy solution for Taiwan?"

The short answer is yes, but only in a limited way (at least until technology can find a more efficient, environment-friendly, and cost effective way of allowing hydrogen to be used as a major source of generating electricity or use as a fuel). To put it simply, it takes electricity to produce hydrogen in a form in which it can be used as an energy carrier.

For small applications in fuel cells such as EVs (electric vehicles), batteries for small appliances, etc., this technology is becoming more mainstream. It does hold good potential but more development is really needed before it can become a replacement.

The most important area perhaps where hydrogen might see a place in benefiting Taiwan is in fuel cell vehicles supported by solar or wind powered hydrogen refilling stations.

Smart Grid Technologies

With Taiwan's current energy sector situation, the need to become more energy efficient, more competitive, and greener while still maintaining a reasonable cost of living for all its residents as well as the business community, major investments by the local and central governments and private entities is essential. While this is a major task, it is doable. And it is Smart Tech that will play a vital role in Taiwan's Smart Cities programs. Smart Grid technology will improve reliability, efficiency, environmental impact, safety and security. It allows for a more seamless integration of renewables, expands economic opportunities (jobs & businesses) in new products and services, digital grade quality of power to help minimize production losses, self-healing potential, resilience against natural disaster, and therefore better quality of life. Digital real-time monitoring and management of power will help spot inefficiencies and offer quick responses to power outages because Taipower will know instantly the location and extent of problems. Additionally, with more and more appliances coming equipped with connectivity, the Smart Grid will become one of the most important and useful components in helping Taiwan to take full advantage of its strong technology.

The 4 cornerstones of Taiwan's energy future are modernization of existing power plants, expansion of solar and water power, development of additional renewables such as tidal and geothermal, and the full integration of a state-of-the-art Smart Grid.

Solar, FITs and renewable deployment

Sunshine, especially in southern Taiwan, is perhaps one of the island's most important natural resource that has yet to be properly realized. Several activities are needed to get this abundant resource working for us.

Taipower is not the only thing that is effectively holding back the development and integrations of the massive 20+ gigawatts worth of new solar power as outlined in numerous government agendas, reports and goals. Although they might be part of the problem, they seem to receive the bulk of negativity.

The key to unlock the solar energy market domestically is in ensuring that such large scale projects are economically viable for private companies, both domestic and foreign. As of now, there are precious few, if any, solar projects which are fully commercialized, only small scale pilot projects and demonstration projects; and this is some 8 years after being initiated. Why is that?

Taiwan's current lackluster incentives in an international context would help in making the point that the incentives (specifically the FIT) are nowhere near high enough to offset the risks (regulatory, FIT rate visibility, land, and Taipower) involved in accelerating large-scale, multi-GW quanta of new solar capacity.

It is no wonder the industry is not developing faster!

Taiwan started right, with a ground-mounted large-scale FIT of near NTD12/kWh (US\$0.40) in 2010 ... but then Taipower acted against the timing of completion and connection while lobbying to reduce the FIT down dramatically, resulting in early developers being stuck with NTD7/kWh (US\$0.25) rather than the NTD12/kWh that they banked on. People lost their shirts; hence the news stories about bankrupt Pingtung solar projects at that time.

Subsequently, after the debacle of 2010-2012, nothing moved on the Taiwan capacity side; but the FIT kept being lowered on some unrealistic bureaucratic logic: essentially benchmarking to other countries lowering their rates as they achieved massive capacity level and capex costs reduced. This despite the fact that the reduced FIT regime post-2012 was clearly not attractive enough for anyone in their right mind to pursue solar at scale.

So, FITs went from NT\$12/kWh in 2010 (good but not great), to as low as NT\$4.409/kWh in 2017 (unprofitable and therefore unacceptable). This is not helping.

Feed-in-Tariffs are an essential part in the development and deployment of renewables anywhere in the world. Unfortunately, Taiwan doesn't have the best track record.

Type	Capacity	FIT Price (NTD)	FIT Price (US Cent)
Roof-top Type	1~20 KWP	6.1033	19.07
	20~100 KWP	4.9772	15.55
	100~500 KWP	4.5388	14.18
	> 500 KWP	4.4098	13.78
Ground-Mounted	> 1 KWP	4.5467	14.21
Floating	> 1 KWP	4.9403	15.44
<ul style="list-style-type: none"> • If high-efficiency modules are used, the FIT prices will be marked up by 6%. • Regional pricing is adopted. FIT prices in northern parts and island townships of Taiwan are further marked up by 15%. 			

Taiwan's 2017 FIT Rates

In Japan, FITs were increased up to (about NT\$12) US\$0.36/kWh in 2012 post-Fukushima. That worked: 34GW of new capacity invested by multiple new market participants from across the industrial and international spectrum, literally creating a major new global market for solar demand while successfully enabling the build-out of huge increments of renewable energy capacity. As the capacity targets were achieved and the risks to developers were demonstrably lower, the FIT was reduced to (about NT\$8) US\$0.24/kWh in 2015 and (about NT\$7) US\$0.21/kWh in 2016. Even after achieving 34GW of cumulative new capacity, by any measure a great success for Japanese energy policy, their FIT is STILL 40% higher (a US\$0.06/kWh premium) vs. Taiwan's, where the acceleration of solar is currently the core national policy priority. Capex costs are roughly similar; rural land costs likewise similar. What is wrong with this picture??

Another thing to consider is the growing market demand for cleaner energy, which should be of considerable interest to the Chamber and local businesses alike, as well as government agencies whose focus is with foreign investment in Taiwan.

US Examples

Apple aims to use only renewable energy to power its facilities, and already does so in 24 countries including the U.S. Apple and its suppliers expect to generate over 2.5 billion kilowatt hours per year of clean energy by the end of 2018, the company said. It's building solar panels into the roof of its new headquarters and aims to sell excess energy in the market.

Technology companies are among the biggest buyers of clean power, led by Google parent Alphabet Inc. Facebook Inc. and Microsoft Corp., who joined forces with more than 60 companies and a series of environmental groups to develop 60 gigawatts of renewable energy by 2025, enough to replace all the coal-fired power plants the U.S. that are expected to retire by 2020.

US Corporations agreed to buy nearly 3.7 gigawatts of power generated by clean-energy projects in 2015 and another 2.5 gigawatts last year, almost all from wind and solar, according to Bloomberg New Energy Finance.

Companies using renewable energy tend to sign deals with a fixed rate over 20 or 30 years, according to Bloomberg New Energy Finance analyst Kyle Harrison. "It gives them stability into what they're paying for their energy prices but it also gives them the potential to save money in the longer term," Harrison said.

As these companies exert more pressure on their local governments to provide clean energy, where will Taiwan fit into their plans, and how many jobs are at stake if Taiwan fails to meet their needs? The recent news of Microsoft, Google and Intel all looking to expand their presence in Taiwan should be more than enough incentive for Taiwan to expand its renewables.

Taiwan's solar manufacturing industry is in a unique position that has yet to be fully appreciated. When this industry is seeing downturns in sales, which hinder new development, and which all too often leads to loss of jobs; the local and central governments should be working together with those manufacturers on local infrastructure projects that will result in better technology developed, greater global competitiveness by Taiwan, increases in reserve capacity, cleaner air, improved health, a better image for Taiwan in international settings, more stable and secure energy.

The high price for land used for solar farms is also part of the problem. Efforts have been underway on both the local and central government levels to resolve this situation and hopefully more will be done to bring land costs into the range where solar farms will be more viable. Alternative sites including dual-use and multi-use locations that can not only support the addition of solar, but actually benefit from it need to be identified and supported. Unusable land, such as flood plains should be reevaluated for use as solar farms. Contaminated sites that are required to remain unused for a period of 20 years or more should also be good candidates for solar.

Even adding solar covering for above ground and overhead rails should be considered for use in making more electricity from the sun. Many of these bring with them added benefits of blocking the heat of the sun from forcing air conditioning units to work harder, water to evaporate faster, algae to grow faster, and more while making more energy.

Finally, the counterproductive royalties included in operating costs paid to local governments are also greatly hindering deployment, with some looking quite excessive. When new solar farms already represent benefits to their communities, such as jobs and the economic boost they bring, cleaner air, lower health related problems, and sustainable electricity prices, it is counterproductive to charge them a royalty. A single percentage in royalties actually represents a much higher cut in profits. This means the power provider must find ways to cut costs by not hiring as many staff, pushing its suppliers to lower their prices (more jobs lost and industry development hindered), and can even cause projects to be delayed or cancelled.

If solar is to succeed in Taiwan, and if Taiwan hopes to be a shining global example for solar energy, it is imperative to be more flexible, to create greater incentives and cooperation with all those involved in the solar energy field.

Potentially positive activities related to Taiwan Energy

Premier Lai Ching-te said that green energy is a new driver of transformation in Taiwan's energy structure and an engine of economic growth following a Ministry of Economic Affairs (MOEA) briefing on progress and results of its green energy technology and industry innovation plan at a recent Cabinet meeting. The premier instructed the MOEA, Ministry of Science and Technology and other related agencies

to actively work together to advance a virtuous cycle in which industry needs increase research and development momentum, which in turn drives industrial development.

In order to achieve a nuclear-free homeland, hit the 2025 target for producing 20 percent of Taiwan's energy from renewable sources, carry forward the development of the green energy industry and technology, and create "green" jobs, the government is actively promoting both solar and wind power. These efforts have now moved beyond the planning stage and into concrete actions.

With respect to solar power, a program to encourage broad public adoption of rooftop solar panels was launched based on an earlier two-year solar power promotion plan that achieved good results with rooftop panels. Originally aimed at installing 3 GW of capacity by 2025, the target date for the new plan has been moved forward five years to 2020 in order to hasten the early arrival of energy security, a green economy and sustainable development for Taiwan.

Premier Lai Ching-te also said the government is committed to making Taiwan a global model for the development of offshore wind power. He directed government agencies to actively support the nation's energy policy and help developers expedite the construction of wind farms. Application procedures should be streamlined and review processes conducted in parallel to ensure all associated tasks are completed swiftly and efficiently.

As part of the effort to transform Taiwan into a green energy "silicon island" and a nuclear-free country, the Executive Yuan is aggressively promoting a raft of energy transformation projects including the Four-year Wind Power Promotion Plan.

The plan initially aimed to install 3 gigawatts (GW) of offshore wind power by 2025, but that target has been raised to 5.5 GW by the Ministry of Economic Affairs (MOEA) in consideration of energy security and industrial development needs. This will speed Taiwan toward its objective of generating 20 percent of its power from renewable sources if it is completed in time.

With international heavyweights lining up to invest in prospective wind farm sites, the MOEA should conduct thorough selection and bidding processes and ensure that the allocation mechanism is fair, equitable and transparent, the premier said. The ministry should also continue matching international developers to domestic operators to help Taiwan build a self-sufficient supply chain for the offshore wind power industry. The Taiwan Power Co. was also asked to step up its efforts and deliver all related power grid projects on time and to quality requirements.

Smart City News

President Tsai Ing-wen and local tech leaders hailed the "smart city" as a catalyst for the next stage in Taiwan's economic development at the opening ceremony of the 2018 Smart City Summit & Expo. In her opening speech, Tsai emphasized the importance of technology and creativity in the Artificial Intelligence of Things (AIoT) through which Taiwan can develop solutions to many of the challenges faced today. These include how local governments can best apply artificial intelligence solutions in the fields of disaster relief, renewable energy, transportation and senior care. The president pointed to both private sector and government investment so that Taiwan will not fall behind in the age of AIoT but rather be able to use smart technology to bring about an economic transformation.

Keeping Taiwan Energized

The extensive blackout on August of last year, coupled with issues that led to the scheduled shutdown of one nuclear power plant and the automatic shutdown of a second one only a day after it was restarted following more than 600-days offline is causing increased worry over the upcoming summer seasons. With so much of Taiwan's production responsible for a healthy economy (over 50% of exports are from the electronics and machinery sectors alone), it is no wonder why reliable power is now essential for companies involved in high-tech, high volume, low margin, energy intensive industries that are taking the place of heavy industry. Indeed for them, any downtime can easily result in massive losses.

The August outage happened when a worker for state-run petroleum company CPC interrupted the gas supply to the gas-fired power plant in Taoyuan. Even though the interruption lasted for only two minutes, it caused all six units at the power plant to shut down, putting 6.6 million households and businesses in the dark, with some for more than five hours. The outage caused at least NT\$90 million in damages, most of the largest manufacturers escaped by having independent power generation within their science or industrial park, or by their own power generation system.

That blackout occurred during a hot spell in which temperatures were above 36° C for much of the summer, with peak demands above 36,000MWh regularly, coming all too close to the system's maximum 37,420MWh capacity.

The fact is that when you are barely generating enough electricity, you cannot maintain equipment or distribution components properly, at the same time that you

are pushing the entire system to operate under maximum load for extended periods of time. This adds to the stresses each component is exposed to, which only increases the risk of failure. Even when the lights don't go dark, brown-outs are happening without you knowing. A brown-out is when the power company cannot produce all the electricity needed to satisfy demand, and chooses to lower voltage in an effort to prevent more drastic steps. Unfortunately, this puts a burden on every electric appliance running at the time. Air conditioning and other energy intensive equipment will run hotter and harder in a brown-out, which can shorten its service life if the situation occurs frequently. Modern electronics can be very delicate, and are easily damaged from spikes and drops in voltage.

Taiwan's policy plans for its 6 nuclear power reactors (2 at each of 3 locations) to continue to operate until the end of their scheduled lifecycles. For the reactors at Jinshan that meant retirement dates of December 5, 2018 and July 15, 2019, respectively, with the Kuosheng reactors following on December 27, 2021, and March 14, 2023. Retirement of the last two reactors, at Maanshan, on July 26, 2024, and March 14, 2025, would mean Taiwan has achieved the goal of becoming "nuclear-free," although it will still have decades of decommissioning work ahead of it and will need to care for the waste forever. More coal

Despite the government's push for promoting renewable energy sources, burning coal increased to over 40% of power generation last summer, along with oil and diesel. Gas-fired power generation increased but less dramatically, as the supply is severely limited by terminal and pipeline capacities.

Taiwan has virtually no natural resources of traditional fossil fuels. LNG tankers deliver their loads to specialized terminals in Taichung and Kaohsiung's Yungan with a third in Taoyuan repeatedly delayed for environmental-impact reasons.

Taiwan's recent heavy reliance on coal also violates its commitment to reduce its greenhouse gas emissions (GHG) as specified in the GHG Reduction Act of 2015. The Act stipulates the goal of reducing GHG emissions to no more than 50% of the 2005 emission level by 2050, while its stated targets in the spirit of the Paris Accord (to which Taiwan cannot be a signatory due to lack of United Nations membership) is to reduce its GHG by 50% from the business-as-usual level of 428 metric tons by 2030. That means Taiwan would emit only 214 metric million tons of GHG by 2030 – a 25% decrease from the current volume.

The new 800MW ultrasupercritical unit 1 at the Talin coal-fired power plant in Kaohsiung has already reached full power ahead of schedule, along with both

800MW ultrasupercritical Linkou in New Taipei City. Unit 3 at Linkou is still under construction. At the Tatan gas-fired power plant that went down during the blackout, the 600MW combined-cycle gas unit 2 is already at full power, while unit 1 came online in late September and is ramping up to full power now. Together with a series of additional upgrades scheduled for next year, “the new projects will add to the capacity and we can forecast that the power supply for next year should be much better than this year,” says Taipower spokesman Lin. However, the conscious decision to lean more heavily on coal only makes it more difficult to clean up the air, land and water surrounding Taiwan in the coming decades while these new coal burners operate through their service life. Is this a wise investment?

Nevertheless, delays in getting power projects approved by regulators and the seeming aversion to anything other than old tried and true standards, explaining why Taiwan has such slim reserve margins. Taiwan’s ambitious energy transformation is going much slower than needed. Taiwan currently has over 1GW of installed solar power capacity, but of the planned 1.54GW of additional solar power scheduled to be installed between July 2016 and July 2018, only about 400MW is currently in place. Plans for offshore wind are meanwhile being challenged by the local fishing industry and environmental groups. The Taiwan government is calling for 20GW of installed solar PV and 5.5GW of installed offshore wind to generate power by 2025. Without some serious commitments, this is likely not going to happen. And while we are all waiting, our businesses and factories continue to scale back in an effort to conserve, instead of expanding with incentives that allow them to become more efficient and more productive while employing more workers. Waiting for that miraculous Taiwan spirit to return with nothing to support such growth is only going to make Taiwan less competitive and productive.

D. Air Quality – A Solvable Problem for Southern Taiwan

Another issue which increasingly affects southern Taiwan – and a comment that echoes across all of AmCham K's membership – is the need to improve southern Taiwan's air quality.

The problem of air pollution, especially during the October – May months of the Northeast Typhoon, is increasingly severe in southern Taiwan and is compounded by the natural air currents of Taiwan's incredible Central Mountain Range.

Huge southwestern eddy currents in Kaohsiung and Pingtung trap the incoming pollution and prevent circulation ... ironically, once south beyond the ridges of Fangshan or east toward Taitung, the air is typically pristine.

China's air pollution increasingly impacts Taiwan and substantially worsens southern Taiwan's air quality problem. This is a problem we share with Hong Kong: ironically, the largest new source of air pollution in both locations is China. However, unlike Hong Kong southern Taiwan has the additional factors of high mountains to hold in the bad air, as well as a not insignificant amount of domestic heavy industry and power production.

The issue of bad air quality in southern Taiwan is now extreme: this problem is frequently raised by AmCham K members and their families as a serious issue for their quality of life.

Indeed, certain AmCham K members and allies have been forced to relocate away from southern Taiwan in order to protect their families and young children from the pernicious effects of PM2.5 and general air pollution.

For Hong Kong, with a relatively small component of domestic pollution there is little that can be done except to wait for the wind to change; however for Taiwan, we can make major improvements by reducing the domestic component contributing to bad air quality.

The keys for Taiwan to improve its domestic air quality are consistent with the themes of this White Paper: Smart, Clean, and Green.

Green energy is potentially the largest and most direct solution for improving air quality in Taiwan. Rapidly expanding the deployment of Green energy power generation in southern Taiwan – including large-scale solar, wind, geothermal – and relatively Clean power generation – *potentially LNG / FSRU – offer the*

immediate means to reduce air pollution from Taiwan's existing coal-fired power facilities while at the same time supporting Taiwan's denuclearization. At the same time, as already highlighted in the "Energy" section above, Green energy brings multiple additional benefits.

Clean and Smart technologies should be deployed far more in the Taiwan industrial sector to reduce emissions and enhance compliance. Too often AmCham K has noticed that the Taiwan power sector gets (well deserved) blame for air pollution while Taiwan's heavy industry sector inexplicably escapes blame. The fact is that Taiwan's industrial sector, large and small, is all too often culprit of illegal emissions and a source of domestic air pollution and PM2.5. AmCham K supports improved and active regulatory compliance initiatives for the industrial sector to enhance use of Clean technologies to reduce emissions.

E. Water Supply – Storage, Treatment, Reuse, Conservation

In addition to Taiwan's power crisis and increasingly serious air quality problems in southern Taiwan, sustainable water supply is also a major concern. Across southern Taiwan stable supplies of clean water for users across the household, industrial and agricultural sectors is a major problem, with water shortages a recurring concern every year prior to the rainy season.

Taiwan's recurring water shortages are ironic considering that the country has tremendous annual rainfall. The fact is that given Taiwan's lack of adequate reservoir storage with the silting up of aging reservoirs, exacerbated by mis-use of mountain slopes on Taiwan's naturally steep topography, more than 80-85% of Taiwan's rainfall flows straight from land to sea: a tremendous waste of Taiwan's naturally plentiful supply of rainwater, and additionally a serious hazard from flashfloods and landslides.

Furthermore, regions such as Pingtung are faced with serious problems of groundwater depletion, salination and resulting degradation of both water supplies and arable land. The source of the problem here, too frequently, is illegal wells and unauthorized over-use of natural groundwater – a practice well known in southern Taiwan across the industrial, agriculture and fish farming sectors. Depletion of groundwater not only damages the water supply but also encourages salination and degradation of farmland – another waste.

Finally, similar to the source problems of Taiwan's power crisis, its impending water crisis is likewise exacerbated by wastage. We understand and agree with the government's objective of encouraging water conservation and more efficient use; as with the power sector, the key to encouraging conservation lies in allowing water prices to rise, especially for more wasteful industrial sectors. As costs rise, any enterprise or private user would adjust practices to be more efficient to save money – and water.

AmCham K enthusiastically supports efforts by the central government and southern Taiwan regional authorities to solve Taiwan's water problems ASAP: de-silting of Taiwan's extensive but aging reservoirs is a start, albeit a costly and technically challenging one. The challenge is worthy of attention, and international engineering experience in maintaining older water reservoirs should be referenced wherever possible.

Similarly, aside from desilting of existing reservoirs, creative – though potentially expensive – storage solutions such as the Pingtung underground reservoirs are also worth exploring. Similar to Japan's experience, these can be helpful for recharging and storing groundwater and agricultural-use water while also providing a tool for flood mitigation.

Improved compliance and active management of mountain slope use should be encouraged as Taiwan attempts to mitigate the immediate run-off and loss of rainwater and the subsequent flashflood issues. This is of course a challenging problem given Taiwan's incredibly mountainous terrain; and we are aware that the central government is already attempting to solve the problems of mountain slope mis-use. AmCham K encourages the government in this regard, as it is a worthy challenge.

In contrast, mountainsides covered with Betelnut groves that damage topsoil and promote run-off are not helping - this is a sight all too often seen across southern Taiwan.

Finally, if water prices for industrial and agricultural heavy consumers can be adjusted enough to create an incentive for more efficient water use, there are multiple technologies in the US that could be immediately helpful to upgrade the cleaning and re-use of agricultural wastewater.

For example, AmCham K members include firms with world-class expertise in converting agricultural and food production waste into a combination of Clean water and Green energy. One key for deployment of these technologies is economic feasibility.

F. Tourism – Smart, Diversified & Naturally Beautiful

In three consecutive years, more than 10 million tourists have visited Taiwan. The Grand Hotel Taipei, one of the Taiwan's landmarks and benchmarks to look to, has celebrated profits in 15 year's high. Ironically, however, South Taiwan Tourisms did not benefit from the record high tourists to Taiwan; they suffered from an avalanche-style drop in the number of tourists. The cruel fact is that 80% of the Tourists stayed in North part of Taiwan -- no matter they are self-guided tourists or group tours.

City/County	2015		2016			2017		
	No. of Tourist	% of All Tourist	No. of Tourist	% of All Tourist	Annual Growth Rate	No. of Tourist	% of All Tourist	Annual Growth Rate
Kaohsiung	3671672	35.17	3014659	28.20	-17.89	2230615	20.77	-26.01
Pingtung	3439909	32.95	2744195	25.67	-20.22	1830028	17.04	-33.31
Tainan	539737	5.17	549480	5.14	1.81	489726	4.56	-10.87
Penghu	52199	0.5	19243	0.18	-63.14	16109	0.15	-16.29

Source: Tourism Bureau

Many private-sector tourism associations have offered lots of suggestions to the officials yet they have decided to help by themselves. For example, East Kaohsiung Tourism Industry Association (EKTIA), found by B&B's, shops, farmers...etc. in nine districts of east Kaohsiung. This area accounts for 71% land of Kaohsiung (and even 1/4 of Yushan Mountain) but only 4.7% of Kaohsiung's population. With little resources, they've promoted the natural beauty of this area in various forms of media with hot-springs, butterfly valley, firefly valley, etc. They also compared landscapes with Yosemite National Park with the Mountains, Rivers, hot-springs...etc. proudly.

Based on the aforementioned facts, not only the Central Government but also the local officials need to promote Tourism in South Taiwan with better and more effective strategies.

Smarter:

First, to note the news is not universally bad: the opportunities for growth and profits are clear for tourism industry players who build their products and promotion around a strong and distinct core offering: e.g. first class hot springs at Sunmoon Lake (Yunping), a unique mountain environment at Alishan (Alishan Binguang), or surfing B&Bs in Kenting and Taitung.

The price points of these offerings are different, from reasonable to high end / expensive; but the keys to success are consistent with Taiwan's goals for a healthy industry: good service, a distinct product, and a well-balanced target market.

With regard to target market, we would highlight the latter should ideally consist of diversified sources and a long-lasting niche.

In many regards, this is the kind of strategy many private independent Taiwanese companies pursue already. We would recommend the Taiwan Government and its regions, as well as other Taiwanese private companies, learn lessons from Taiwan's own success stories and those from abroad in the US and elsewhere; wherever possible, the government's role should ideally focus on disseminating information and encouraging Taiwan's companies and entrepreneurs, as well as high quality international market players, to grow their businesses rather than necessarily relying on government supports.

There is, of course, a role for government to play in all this: we would recommend that the ideal government stance is one of coordinated promotion, provision of quality infrastructure, and clarification of regulatory environment.

Coordinated Promotion: While industry associations exist, sometimes it is a challenge for small and medium private companies to collaborate for larger international promotions and events that could benefit all of them. There is clearly a valuable role for Taiwan's government at all levels to play in promoting international marketing efforts for Taiwan.

Notably, promoting international events which are coordinated with international organizations that have a compelling niche link to Taiwan's tourism attractions is a potentially attractive and targeted opportunity.

Taiwan already has shown some success stories in this category: the Taitung international balloon festival is now globally famous and attracts a geographically diverse, activity-focused niche of international visitors while also spreading information and images globally showing Taitung's beautiful scenery. Furthermore, it is not promoted in isolation; rather, it is coordinated with international balloon organizations, which further promotes Taiwan's profile and reputation internationally.

Likewise, international surf competitions in Taitung and Pingtung since 2014 have dramatically increased Taiwan's international profile as an attractive destination for surfing and water sports enthusiasts around the world and across

Asia. Visitation to south and east Taiwan's naturally beautiful surf sports has increased greatly, featuring visitors from Japan, Korea, Hong Kong and even Australia. Likewise, the proliferation of Taiwan surf-related videos and blogs in a variety of languages on international online platforms from Instagram to YouTube to Facebook and beyond is an encouraging trend. More should be done to actively push these promotions further.

Similarly the formidable Taiwan "King of Mountain" bicycle race highlights Taiwan's extraordinary mountain environments and attracts a healthy mix of biking enthusiasts from across the world.

More should be done to promote international awareness and ensure easy access to multi-lingual, online information.

Across the spectrum of Taiwan's tourism offerings, more can be done to follow these success stories and to expand their international impact. South Taiwan features not only ballooning and surfing; it also features stunning hiking and mountain climbing environments; beautiful hot springs (e.g. Baolai, Guanziling, Sichongxi, Zhiben, Antung to name merely a few); extraordinary butterfly valleys (e.g. Meinong, Maolin and more); compelling history and culture (e.g. Tainan and Chiayi, the "Old Towns" of lesser known smaller towns from Xinhua to Qishan, the "Immigrant Villages" of Taitung and Hualian, the Hakka communities of Meinong, etc.); unique centers of indigenous cultures and Austronesian links; some of Asia's richest environments of endemic bird species; the world's highest elevation historic railway and the spectacular destination of Alishan.

And also to recommend healthy focus on upgrading quality for diverse individual travelers from across Asia (including China, Japan, Korea, HK, Singapore and Europe) rather than relying on low class polluting mainland groups.

In addition, technology can play a role in improve the "Smart" element of south Taiwan tourism. For example, language is often a barrier for small and medium tourism firms to address new and diversified markets. Assuming the quality and product are good and distinct, then new using smart tech (and even just basic online marketing) to improve promotions and language access (e.g. it's surprisingly difficult to find English or Japanese info or book hotels in south Taiwan even though tech like Google Translate is available)

Cleaner:

Suggest local and central government improvements to infrastructure and regulations to ensure tourism waste and waste water is treated well to keep the tourism sector CLEAN (e.g. in Kenting for example waste water is poorly treated which damages the cleanliness of the local ocean and beaches, which after all is the main attraction. Likewise for the mountains.

Greener:

Suggest gov't incentives to encourage hotels and tourism facilities to all install solar panels to generate their own electricity as much as possible, to improve the GREEN aspect of south Taiwan tourism too.

G. Human Resources – Smart & Waiting for Global Perspective

Education Contributed by John Stephenson

“I know no safe depository of the ultimate powers of society but in the people themselves; and if we think them not enlightened enough to exercise their control with wholesome discretion, the remedy is not to take it from them, but to inform their discretion by education. This is the only correction for abuses of constitutional power.”
Thomas Jefferson, circa 1820

The above quotation rings so true today in democratic Taiwan. Not only is education vital for democracy to survive and thrive, it is imperative in Taiwan's political posturing and survival. A real and holistic education of the children of Taiwan is the only way that Taiwan can continue to develop democracy, gain worldwide recognition, and evolve in to a 21st century country.

Currently the focus on education in Taiwan has been centered on gaining knowledge; then through standardized testing, showcasing that knowledge to the broader world. This educational policy has done little to benefit Taiwan and has in some ways caused the great brain drain that now plagues the country. There have been very few substantial, substantive or radical changes over the last few decades to Taiwan's educational system and policies. The educational paradigm that Taiwan finds itself in must be changed immediately for Taiwan's long term economic and political interest. Radical, bold new educational policies must be implemented within the educational system for Taiwan to grow and thrive.

The chamber recommends that Taiwan first explore, reflect and reevaluate its educational policy in terms of desired outcomes. The idea of standardization does help Taiwan both economically and politically. Not all students learn the same. You cannot expect a child with low confidence, from a poor broken family to do well in a system primed under standardization.

Secondly, having the knowledge and doing well on test does not translate to application or innovation in the marketplace. It may look good on international education reports but has little impact in the long term for the economy of the country, and in fact can become a drag on the economy as we see in Taiwan. Lastly, standardization kills creativity and risk taking which is the lifeblood of both economic development and political innovation.

Taiwan must rethink its desired outcomes and create an educational system that meets the needs of the society and country rather than placing Taiwan's name on meaningless international testing results.

Some of the suggested changes the chamber feels would help Taiwan are as follows:

- Reduce the number of days that children are in school. Currently, Taiwan students are in school over 200 days a year, and during breaks, more than 90 percent attend “fu dao ke” or review courses for the next semester. This adds to the total number of days a student is in school, making it almost impossible for them to join in activities or clubs that they may find more interested in or just time for them to play, reflect and grow mentally in other areas. The focus has and is on memorization of facts and knowledge which leads to little innovation or creativity. The school year should be no more than 190 days and extra classes and bushibans should be banned from operating during vacation days.
- Taiwan students in upper grades should travel within country or to Southeast Asian countries for service learning projects. Students need to get out of the classroom and do more than shovel dirt or plant a few plants at a local farm. They need to get out of the country and learn about neighboring countries; thus giving them a more global perspective of the world around, the issues facing their neighbors, and gain more understanding the geopolitical landscape around them. This is very common for international and western schools but seldom used or implemented on a national level in Taiwan. Only a few students travel from Taiwan annually and most of those are going to international recognized events which again lead to very sparse political leverage for Taiwan. Having thousands of students travel and work on service projects in neighboring countries would bring a much larger benefit for Taiwan politically as well as develop a much more holistic and broad-vision Taiwan student.
- Bringing in more international students to Taiwan for secondary studies at colleges and universities and then helping them find jobs and or invest in new companies in Taiwan will only help growth. Taiwan has now started to bring in and subsidize students from Southeast Asian countries, which is a start in the right direction. However, Taiwan can and should expand this program worldwide as Japan, Hong Kong and Singapore are doing. Many US high school students cannot afford the tuition even in their local states back in the US. Offering them an education in Taiwan would not only benefit them greatly but also help Taiwan. Taiwan would gain new ideas and perspectives,

become more diverse, and create more links with and understanding of the countries of foreign students. Currently, when talking with universities, there seems to be an image problem. Many think it is not possible to attract undergraduate students from the US unless for language study. Recent trips by chamber members to the US reveal a different story. Many students in the US would be interested in gaining an undergraduate education in Taiwan; especially if they could learn the language.

They desire an English curriculum with a Chinese language component and competency test for graduation. A program like this promoted in high cost education countries could benefit Taiwan greatly.

- A second way to add to the Taiwan's international recognition would be to bring in interns from US colleges and Universities for summer and winter vacations. Creating a program to bring in students from overseas colleges for short term work stays in Taiwan companies would benefit Taiwan in a number of ways similar to the ones mentioned above.
- Taiwan should also do more to attract more high school travel to Taiwan. Many high schools in the US with Mandarin programs are traveling to China for language and cultural tours. Many of these programs are partially funded by the Confucius center in China. However, the question should be asked as to whom or which country does this benefit most? Obviously it would be in Taiwan's benefit to bring in more high school students for short term cultural and language study in Taiwan. Efforts should be made to better coordinate such programs with the US government and funding should be geared towards such programs. It is an easy sale for Taiwan. Being smaller, cheaper and with more traditional Chinese heritage offers a much better program for US high schools. The problem seems that current authorities don't seem to recognize the value in such programs as they must be implemented across a number of departments. Such inactions don't raise the international recognition of Taiwan. However, the chamber feels this is a very attractive and low-cost method of gaining long term understanding and recognition of Taiwan's history and current political plight.
- More interaction between government authorities and businesses should be taking place to ensure and direct educational systems to meet the needs of businesses. Currently, Taiwan is suffering a massive exodus of talent as they go abroad for better educational programs and ways to apply the knowledge they have learned in businesses. This is a big risk for Taiwan and more should be done to develop programs both educationally and with business and government cooperation to make sure that programs are developed to

increase and train the correct type of workers needed and also give them a chance to innovate and develop the knowledge they learn in an applicable way. Currently, there is an over emphasis with the academic community on gaining PhDs and academic research and not enough emphasis on innovation and development in the marketplace. Taiwan must do a better job of coordinating the needs of business with education or risk continued talent flight to other countries.

Overall the educational system in Taiwan is good for bringing up knowledgeable standardized students. However, this is not the need of Taiwan now. Taiwan needs innovative, creative young people who not only boost the economic output through new ideas but can also interconnect with the rest of the world creating and cultural as well as economic bridge for Taiwan. In the long run, it will give Taiwan a better political understanding among other countries and help it better achieve its diplomatic agenda. Currently the educational system is lacking any influence in this area and is not producing the necessary populace to make this happen.

I-Shou International School

I-Shou International School is a renowned bilingual day/boarding school that provides an international education for the national and international community. An IB Continuum school (PYP, MYP, and DP), also accredited by the Council of International Schools (CIS) and the Taiwan MOE, we provide a continuous education from K - 12. A leader in bilingual education, our certified and dedicated teachers collaboratively implement innovative international teaching practices within a holistic culture of learning.

We can support students from a range of backgrounds as the school offers multiple pathways for students as they prepare for either national or international university entrance. Our graduates are attending universities in America, the UK, Canada, Australia, Japan, Europe, Hong Kong, and Taiwan. We can cater to and support a wide range of aspirations.

Our co-educational residential program, housed in state-of-the-art facilities, fosters student growth and a sense of community within a family style atmosphere. Students from across Taiwan enjoy the convenience of living on campus and access to additional teacher support.

The school provides innovative technology and Maker Education programs for advancing and sustaining relevant 21st century learning through student centered

inquiry-based teaching and learning. A vibrant extra-curricular program and House system promote positive student relationships, a sense of belonging, and school identity. As part of developing students to fulfill their roles as socially responsible global citizens, we have a program of Global Exploration Trips that extend learning and enable our Grade 6 to 11 students to gain a thorough understanding of global issues and the development of 21st-century skills.

We welcome all inquiries; please contact the school Advancement Office by writing to iis@iis.kh.edu.tw.

Kaohsiung American School

Kaohsiung American School (KAS), established in 1989, is a private, non-profit, Pre-K to Grade 12 institution offering a college preparatory program leading to a US high school diploma. The list of colleges and universities that KAS graduates attend is very impressive and includes such schools as UC Berkeley, Georgetown, U Penn., Bowdoin, Dartmouth, Middlebury, McGill, Columbia, the University of Notre Dame and numerous other highly ranked schools throughout the world. Many of our students also receive some very generous scholarships.

KAS is an International Baccalaureate (IB) World School and an IB MYP School, accredited by the Western Association of Schools and Colleges (WASC). KAS is a member of the Association of China and Mongolia International Schools (ACAMIS), the East Asia Regional Council of Schools (EARCOS), and the Council of International School (CIS).

The high school staff includes 25 classroom teachers and a college counselor, the majority of whom are from the USA and Canada. The 310 high school students (9-12) represent over 15 countries, including the USA, Taiwan, Canada, Japan, Singapore, New Zealand, the UK, France, the Philippines, and others. The total pre-K-12 KAS student enrollment is 795 students and has grown for 12 consecutive years. A high percentage of the student population is overseas-born Taiwanese holding a foreign passport. Most members of the class of 2017 are non-native speakers of English. KAS earned recognition as an IB World School in 2010.

A community service graduation requirement of 40 hours exists for all students; additional service hours are required for IB Diploma candidates. Extracurricular offerings include softball, swimming, and junior varsity and varsity ACAMIS athletics such as, soccer, basketball, volleyball, and track. Other extracurricular activities include the World Scholars Cup, Model United Nations, Cadenza Club, Flute

Ensemble, Baroque Ensemble, National Honor Society, International Club, and Student Council. In all, there are more than 40 different clubs and athletic teams offered at the high school level.

KAS recently completed in a major renovation and expansion of its campus creating a comprehensive, state-of-the-art learning facility. The new Campus consists of the academic and fine arts facilities, including a theater seating more than 400. The new athletic complex opened in November of 2016 and includes an indoor swimming pool and gymnasium, a dining hall, and a regulation size soccer field with cork infilled artificial turf, and other play fields. The new school was built to accommodate 800 students.

Morrison Academy

Morrison Academy was established in 1952 and offers a college-preparatory and American-based, Christian oriented education to expatriate children living in Taiwan. Morrison Academy was founded in Taichung, and sister campuses in Taipei and Kaohsiung were established in 1967 and 1974, respectively. Although established to serve the needs of the children of missionaries, Morrison Academy has attracted a large number of business children. It is currently the largest international school in Taichung and the largest Christian school in Taiwan. The school is recognized by Taiwan as an international school and is therefore restricted from accepting Taiwanese who do not possess a foreign passport. Graduates from Morrison Academy typically attend North American colleges and universities, and while a wide range of countries is represented in the faculty and the student body, teachers and students primarily come from the United States and Canada. Morrison boasts the longest teacher retention rate in Taiwan, no doubt a testament to the motivational level of its staff and their commitment to its Christian core ethic. The vision of Morrison Academy is that every student will experience a quality, biblically-integrated education so that each one will be equipped to have a dynamic impact on the world for Christ.

Located in the Kaohsiung suburb of Da She, Morrison Academy Kaohsiung, or MAK, has a beautiful campus. MAK recently expanded its student body and its facilities from a K-9 to a K-12 program, graduating its first senior class in the spring of 2016. As a K-12 school with high admissions standards and a maximum school size of 325 students, MAK is a tight-knit, family-oriented learning community. In 2017-18, MAK has an average class size of 19 students per class and a student-teacher ratio of approximately 7:1. High school athletic activities include varsity-level sports in soccer,

basketball, volleyball, and cross country. MAK's middle school offers similar athletic programs, and its elementary program provides a wide range of after school activities.

The school is currently accredited through two internationally-recognized accreditation associations: The Association of Christian Schools International (ACSI) and the Western Association of Schools and Colleges (WASC). Both organizations require exacting compliance with the strictest of standards for education and for facilities to ensure both excellence in educational quality as well as continuity with existing educational systems in the United States and other western-based educational systems. Please feel free to visit our campus for a tour, to visit our website, or to contact us at mak@mca.org.tw.

H. SOIL & GROUNDWATER – Waste Not, Want Not

A Much Needed Upgrade in Wastewater Technology

For southern Taiwan, new technology in treating wastewater is an essential addition to the growing issue of finding new ways to improve and increase the clean potable water availability while at the same time treating waste in an energy self-sufficient system that has been shown to reduce the carbon footprint by as much as 75%.

As noted in a recent article in Waste Water International, what is considered to be the Holy Grail in the industry is rapidly becoming a reality. And that reality is an energy positive, self-sufficient environmentally friendly waste water system.

An increasing number of wastewater facilities around the world are working towards developing innovative wastewater to energy technologies. Some have even been able to achieve 100% energy self-sufficiency.

This was achieved by boosting the renewable energy produced from a combination of anaerobic digestion of sludge, and biogas-fired CHP plants (combined heat and power). Throughout 2017, the company even reports that ‘full self-sufficiency’ was at various time realized, when the facility required no electricity from the grid in its operations.

These outstanding results were made possible via the integration of a number of innovative measures, including the installation of a cutting edge thermal hydrolysis process that is claimed to have increased biogas production by around 10 percent. An additional CHP unit to utilize the additional biogas is also in part responsible for the promising results.

These facilities process a total of 125 million cubic meters of wastewater and recycle about 60,000 tons of sludge each year. This total is equivalent to the waste produced by approximately 907,000 people living in the areas serviced by those facilities, and at a saving equivalent to NT\$ 83,950,511.

At the same time, a significant number of environmental improvements were made including recycling aggregate from the transportation of materials making for a 75% reduction in its carbon footprint.

With Taiwan’s constant need to clean potable water and increased energy capacity, the ability to treat its wastewater while generating all the electricity need to operate frees up power needed elsewhere.

Remediation of Soil and Groundwater Contamination

CPC stopped operation of its Kaohsiung refinery complex back in December, 2015. At about 270 hectares, this site continues to be one of the largest contaminated waste removal projects in Taiwan. After being in operation for more than 70 years, the level of contamination is severe and difficult to remove.

It has been estimated that restoring the site and groundwater will require 17 years or more, and cost around NT\$10 billion. What's more, during this time, the land will sit unused and unproductive. As an alternative, CPC, local and central government agencies and Taiwan's EPA are working together on what is called "Brownfield Development".

To hasten the pace of the cleanup and return the site to productivity and public access, the Taiwan Environmental Protection Administration (EPA) and the local KEPB, along with CPC and other local and central government agencies, are teaming up to take a different approach to the refinery cleanup. This risk-based approach – what's called "brownfield development" – which they say will speed up redevelopment of the lesser contaminate portions of the site, and as a result, lower costs. The problem is that a large percentage of the general public wants the site to be cleaner than what is called the "Control Standard".

Critics say that such requirements aren't always needed, and that each case should be handled according to the real risks it presents to health and the environment. This risk-based approach means the site evaluation is based on determining the source and type of contamination, the possible exposure to it by the population, and how it would make its way from the source to the consumers. While this approach might work for other areas around the world, Taiwan's land and water use have seen rapid and major changes as it has developed. As an example of this, the Kaohsiung gas explosion which occurred on July 31st, 2014 clearly illustrates how land use changed dramatically over the years and that those changes did not take into consideration existing risks. So, it is easy to understand the public's concern.

However, the methods of removal of contamination must be carefully devised and monitored so as not to take underground contamination and during the course of its removal and transportation, risk spills or exposure to the very public you are trying to protect. Fortunately, newer technologies and methods have seen outstanding result in the US where they were developed; and they should be fully explored and utilized in places where they would be most effective.

As an example, one such method is Phytoremediation, which has the advantage of relatively low cost and wide public acceptance. It can also be less than a quarter of the cost of excavation, or on site amendment! The disadvantage is it takes longer to accomplish.

There are many plants and trees suitable for phytoremediation, with the Willow tree being especially well-suited for the job, having the advantage of growing about eight feet a year and being suitable for remediation over a wide assortment of contamination, including petroleum products. This type of remediation is successfully used in other countries, in connection with the production of biofuel for energy generation, where they have cultivated large forested areas with willow trees. The trees are fed with contaminated fluids, which they absorb. The forests are split into areas with a recycling period of around five years. When a specific area reaches maturity, the area is cleared of its trees and new ones are planted. The trees that have been removed are then used as fuel in an on-site gasification plant, which produces CHP energy for the immediate area, with excess energy being fed to the grid. This could prove to be quite good for all those involved as it would clean up the contamination while producing fuel and energy. Anaerobic digestion is another method which has seen positive results. With the possibility of this site becoming a residential area at some point in the future, long after most people have forgotten what it once was, it should be important to consider these options.

Microplastics, Municipal Water Treatment and Water Conservation

Researchers have recently discovered that levels of plastic fibers in popular bottled water brands could be twice as high as those found in tap water. Tiny pieces of plastic have been found in over 90% of the world's most popular bottled water brands, by a study in the US. The World Health Organization (WHO) has announced a review into the potential risks of plastic in drinking water after a new analysis of some of the world's most popular bottled water brands found that more than 90% contained tiny pieces of plastic. A previous study also found high levels of Microplastics in tap water.

In the new study, analysis of 259 bottles from 19 locations in nine countries across 11 different brands found an average of 325 plastic particles for every liter of water being sold. In one bottle of Nestlé Pure Life, concentrations were as high as 10,000 plastic pieces per liter of water. Of the 259 bottles tested, only 17 were free of plastics, according to the study.

We are living on a plastic planet. What does it mean for our health?

According to the new study, the most common type of plastic fragment found was polypropylene – the same type of plastic used to make bottle caps. The bottles analyzed were bought in the US, China, Brazil, India, Indonesia, Mexico, Lebanon, Kenya and Thailand.

The brands tested were: Aqua (Danone), Aquafina (PepsiCo), Bisleri (Bisleri International), Dasani (Coca-Cola), Epura (PepsiCo), Evian (Danone), Gerolsteiner (Gerolsteiner Brunnen), Minalba (Grupo Edson Queiroz), Nestlé Pure Life (Nestlé), San Pellegrino (Nestlé) and Wahaha (Hangzhou Wahaha Group).

Microplastic pollution in oceans is far worse than feared, say scientists.

A spokesperson with Oceana, said: “We know plastics are building up in marine animals and this means we too are being exposed, some of us every day. Between the Microplastics in water, the toxic chemicals in plastics and the end-of-life exposure to marine animals, it’s a triple threat.”

While it is true that the science surrounding Microplastics is in its infancy, for an island like Taiwan where water quantity and quality are already an issue, this is cause for serious consideration. More and more, the water consumed in Taiwan is either bottled, recycled or both. And with Taiwan’s infrastructure which must be able to quickly remove water in times of typhoons, new ways of capturing and keeping pure water need to be developed.

A two-step solution should be developed; the first and easiest is to take further steps in banning the use of certain plastics such as disposable bags, drinking straws and food packaging, which needs to be combined with a public awareness campaign and stricter recycling regulation and enforcement. The second step is to look at integrating existing technologies in new ways.

As an example, combining solar and/or wind power, large scale dehumidifiers, and R.O. water filters into a system that pulls water from the air and filters it for use in drinking. Each of these technologies exists today. But, in sunny and humid environments like that in Taiwan and most locations in neighboring countries, this type of systems can bring high quality potable water to even the most remote areas.

I. TECH SECTOR – Lean, Mean ... and Green

AmCham K notes that Taiwan's high tech sector continues to be a vibrant driver for the country's economy and bolsters Taiwan's role in the global tech supply chain.

From semiconductors to new Smart, Clean and Green technologies, Taiwan's companies – large and small – are proven innovators. Taiwan's tech sector is admirably “lean” on managing costs, and “mean” when it comes to global competitiveness. Now it needs to be “green”, too.

Taiwan Tech Must be Green:

Here again, we note the importance for Taiwan to be Green. The largest tech industry customers for Taiwan's tech manufacturers are US branded tech titans such as Apple, Google, and others. Apple single-handedly drives a major portion of Taiwan's GDP growth and Taiwan's stock market capitalization.

So it should be Taiwan – more than any other country in the world – that should react the fastest and strongest when Apple and Google announced their “100% Green Supply Chain” initiatives in 2017.

What does this mean? Apple and Google – Taiwan's tech sector's largest customers – are demanding that their suppliers must use 100% Green energy in order to qualify as suppliers. These US companies take this mandate so seriously that today they own or co-invest in major solar and wind power plants around the world in order to provide Green energy to their suppliers ... but that is not possible in Taiwan up to now, where the multiple hurdles described in the Energy section hold back Green energy investment. Unless Taiwan can fix its domestic Green energy problem to ensure Taiwan tech manufacturers have access to 100% Clean and Green power, the tech sector risks losing its biggest customers to greener competitors in China, Korea and beyond.

Taiwan must accelerate large-scale, rapid Green energy options in order to provide a strong and stable outlook for the Taiwan high tech sector and the sector's ability to continue to provide world-class products and services to their largest US corporate customers.

Taiwan science parks post record operation results in 2017

STSP's Tainan City campus is one of the core contributors to a record revenue result of NT\$2.46 trillion for Taiwan's three science parks in 2017. Taiwan's three science parks posted combined record revenues of NT\$2.46 trillion (US\$84.4 billion)

in 2017, up 3.58 percent year on year, according to the Ministry of Science and Technology March 27.

Hsinchu Science Park in northern Taiwan led the way with NT\$1.02 trillion in total revenues. Although down 1.98 percent from the year before, this drop was offset by a 5.93 percent increase at Southern Taiwan Science Park in Kaohsiung and Tainan cities to a best-ever NT\$878.76 billion. Central Taiwan Science Park in Taichung City gained 11.13 percent to NT\$563.83 billion.

Glad that southern Taiwan could help!

Taiwan replaces Singapore as world's 3rd largest IC exporter: MOF

Taiwan was recently ranked as the third largest integrated circuit exporter in the world in 2016, overtaking Singapore, according to the Ministry of Finance.

In its latest report on global IC exports, the ministry said Friday that Taiwan's outbound semiconductor sales increased by an annual 10.6 percent in 2016 to US\$86.12 billion. The figure accounted for 13.6 percent of the global IC exports in 2016 and lifted Taiwan one notch higher in the world rankings to third place, displacing Singapore.

Hong Kong, an international trade hub, topped the rankings with IC exports of US\$111.86 billion, accounting for 17.6 percent of the global total, according to the report. China was second with IC exports accounting for 14.1 percent of the global total, with South Korea ranked fifth with a 9.1 percent share, ahead of the United States with 6.6 percent.

Of course, this is just one of many key sub-sectors within the high tech industry; AmCham K commends the private companies of Taiwan and their counterparts in the Science Parks, research institutes and government for continuously exploring new markets and subsectors for Taiwan's tech sector to grow and strengthen its position in the global tech world.

J. Agriculture - Fruit & Fish Need Smart Promotion & Compliance

Southern Taiwan's agriculture and fisheries sectors are major players in the regional economy. From the Irwin mangos of Pingtung to the milk pineapples of Tainan; and from the international delicacies of Karasumi (Wuyuzi / Botarga) to the world's largest tuna fleet; southern Taiwan's agriculture and fishery sectors are large-scale and feature world-class products.

Southern Taiwan is a proud world leader in agricultural produce, especially with a spectacular record of some of the world's best tropical fruits. Taiwan's mangos, papayas, pineapples, guava, wax apples, sija, jujubes, bananas, pitayas and tea are extraordinary in their quality and variety. However, like southern Taiwan tourism, more can be done to promote Taiwan produce to the world: Smart and social media marketing and new trade channels should be explored to showcase Taiwan's highest quality fruits in the international markets - such as Japan and US - where they can fetch the highest prices and market recognition. AmCham K members have never seen another country with such consistently high quality and variety of fruit and tea as Taiwan, complemented by deep local cultures worthy of promotion.

As Taiwan considers more international promotion of its core agricultural products, it must also strictly ensure quality and compliance - like the French Champagne appellation system, any rumors of tea blending or contraband produce can be damaging to branding across the entire sector, so compliance and quality are key. "Product of Taiwan" should be an international brand of pride. It also should demand high enough market prices to sustain the sector and justify its land use.

In agriculture, southern Taiwan can and should make better use of Clean and Green solutions wherever possible: for example, drone usage for management of farm fertilizers and security on fish farms can have multiple benefits while improving efficiency; and more importantly, for waste-intensive sectors like Pingtung pig-farming, large-scale solutions for biomass energy and waste-to-water conversion and reuse can potentially improve water use while contributing to Green energy supply.

However, in all of these cases the pricing and regulations of water and power - once again - create disincentives for innovative large-scale Smart, Clean and Green solutions.

At the same time, the agriculture sectors are a major user of Taiwan's key resources: agriculture is the southern Taiwan's single largest user of water and

land. This is important as we consider Taiwan's impending power crisis and the need to carefully allocate and prioritize land use as well as water conservation. Low value or damaging agriculture products - such as Betelnut - are unhelpful, and land and water use should be rational and consistent with a fair market at all times to ensure efficiency.

Meanwhile from an international compliance perspective, more needs to be done by Taiwan to ensure that its fishery sector acts sustainably and in compliance with international laws for management of the world's fishing resources.

K. HEALTH SYSTEM

Leave No One Behind website: Taiwan's help to attain universal health coverage

The Leave No One Behind website details Taiwan's decades of contributions to medical care and attaining the WHO's goal of universal health coverage. The website was launched April 2 as part of government efforts to demonstrate the nation's commitment to achieving the World Health Organization's goal of universal health coverage. The Chamber applauds the work and hopes the WHO will show courage in seeing the need for Taiwan to take part in the 71st World Health Assembly—the decision-making body of the WHO—May 21-26 in Geneva.

L. BIOMED – THE NEXT BIG THING

Is biomedicine the next trillion-dollar industry?

According to the Ministry of Science and Technology (MOST), under the combined efforts of a number of ministries and agencies to promote the biomedical industry, initial progress has been made in such areas as research and development of new pharmaceuticals and medical devices, an improved regulatory environment, capital market adjustments, cultivation of talent and the rise of an overall industry ecosystem. Healthcare is becoming a critical part of society as a whole, and economically as an industry. As science and technology continue to provide breakthroughs, we look to Biotech and Biomed to become major economic drivers for Taiwan. With the completion and opening of the National Biotechnology Research Park, efforts to strengthen development should begin by improving technology research and development together with related knowledge and innovation. These advances are essential not only for Taiwan's own healthcare requirements, but also in continuing to develop a robust medical-tourism industry.

M. POLICY COMPLIANCE & CLARITY

Compliance & Clarity: Regulations & Enforcement

AmCham K happily commends Taiwan's commercial and civil law and court systems which are world-class. Legal standards and the clarity, independence and transparency of court rulings have improved greatly over the past 20 years. This is a tremendous boon and relief to international investors in southern Taiwan, and provides a happy contrast to the poor rule of law environments in some other parts of Asia, most notably China. Taiwan should be commended and extremely proud of its achievements in the rule of law realm.

However, as far as bylaws and certain industry-related compliance is concerned, AmCham K suggests that more consistent enforcement in a more clear regulatory environment should be a high priority for Taiwanese regulatory authorities at all levels. Inconsistent enforcement or unclear rules – or both – are frequently noted in industry circles in everything from smuggling to traffic safety, and from unregistered structures to illegal fishing. Inconsistent enforcement of unclear regulations facilitates illegal and grey market activity contribute to a negative perception overseas vis-a-vis Taiwan compliance.

One area highlighted later in this White Paper by member JTI: From cigarette smuggling to packaging and ingredient regulations, we often hear of compliance issues hurting the image of an industry and undermine efforts to create a clear and consistent regulatory environment. We include a full text contributed by JTI in the Appendices for your reference.

N. FOREIGN RELATIONS (US/TAIWAN TRAVEL ACT, etc.)

Congratulations: Taiwan ranked third in global transformation index

AmCham K would like to highlight Taiwan's extraordinary progress as one of Asia's freest and fairest societies. Taiwan's transformation into a pluralistic society built on core values of democracy and freedom is an outstanding case study for the world. It is too easy to forget that so much of this progress has been achieved in such a short period of time; after all, democracy was only introduced by Taiwan in the 1990s. Taiwan is extraordinary in this and all Taiwanese people should be proud of the society they have built.

This year, Taiwan is ranked third best in the entire world, out of 129 developing and transitional countries in the Bertelsmann Stiftung's 2018 Transformation Index – an index that measures each country's performance in terms of political and economic transformation. Taiwan scored second out of the 129 countries in economic transformation and third in political transformation and governance performance, giving its overall ranking of third.

The scores were derived from a number of benchmarks, including political and social integration, the stability of democratic institutions, rule of law, market organization, currency and price stability, international cooperation and consensus-building. The Czech Republic and Estonia ranked first and second, respectively in that index which looks at the transformation efforts between February 2015 and January 2017. It found that Taiwan remains a top performer in promoting democratic politics and liberal market policies, according to the report.

Similarly Taiwan consistently ranks as the best in East Asia in rankings of freedom of speech and freedom of press rankings published annually by the Reporters Without Borders and other international NGOs. It was within many people's living memories that the 1979-1980 Kaohsiung Incident was sparked around the Formosa magazine publishing office in central Kaohsiung. To progress from that incident to today's international ranking as the freest speech society in East Asia is truly outstanding.

Overall, these reports confirm that Taiwan continues to maintain a high degree of stateliness, meaningful elections, the absence of undemocratic veto actors, stable democratic institutions and a vibrant civil society, and does extremely well in guaranteeing its citizens political rights and civil liberties, freedom of speech and

freedom of the press. This is extraordinary and commendable within the community of nations worldwide.

Taiwan Travel Act fostering closer ties with US

AmCham K warmly welcomes the recent passage of the Taiwan Travel Act in the US, including its formal ratification by the President of the USA. This is potentially a great platform for expanding US-Taiwan ties and communications.

Taiwan Premier Lai Ching-te expressed thanks to the people, government and Congress of the United States for the passage of the Taiwan Travel Act and their firm and long-standing support of Taiwan across all areas.

The U.S. and Taiwan are important allies, and bilateral relations have continued to flourish and grow stronger and steadier with each passing year. As a member of the international community, Taiwan is committed to upholding the many responsibilities that come with that status.

AmCham K applauds efforts on both sides to ensure that this trend never reverses or suffers from outside influences.

China's 'incentives' policy & 'Brain Drain'

In response to China's incentives, AmCham K recommends that steps should be taken to ensure that Taiwan continues to enhance its own market environment – for example with the creation of a multi-billion dollar Green energy market – so that Taiwanese companies and professionals prefer to stick with Taiwan to profit together with these healthy growth industries rather than be tempted by short-term double-edged pay-offs from China.

As for perennial concerns about Taiwan-China “brain-drain” and, more recently, China's 31 incentive measures for attracting Taiwanese business and talent, these would not be cause for concern except that there are other factors in Taiwan that already contribute to loss of badly needed talent and human resources.

AmCham K notes that many young Taiwanese professionals understand the potential positive trade-offs of wage growth with Taiwan's high domestic standard of living, low relative cost of living. In fact we believe more young professionals in Taiwan should be aware of the positive combination of living standards and living costs on offer in southern Taiwan: there is an opportunity for both companies and professionals to gain and grow in southern Taiwan. However, at the same time, wage growth and career improvement depend across Taiwan on the existence of attractive and growing markets for growing companies.

In response to China's latest incentives, the Executive Yuan unveiled a comprehensive plan consisting of four major policy directions: attract and retain talent in Taiwan by building a quality education and work environment, maintain Taiwan's advantages in global supply-chains, deepen capital markets and strengthen the cultural audiovisual industry.

As China attempts to lure away the brightest minds from each field, Taiwan must tackle the challenge head on aggressively to not only attract new talent to Taiwan, but also to keep the existing talent here through enhanced work conditions, quality of life improvements and attractive and competitive pay.

The Executive Yuan's response plan includes eight strategies:

1. Increasing rewards for academic researchers, including by establishing 65 centers of excellence under the Ministry of Education's higher education development plan, steering Ph.D. degree holders into jobs in priority industries, and raising research stipends for principal investigators.

2. Promoting innovative growth, including by earmarking NT\$100 billion (US\$3.4 billion) from the National Development Fund to create the Industrial Innovation and Transformation Fund, as well as proposing a variety of methods by which companies can list publicly, helping new startups that have yet to turn a profit gain access to capital markets.
3. Strengthening employee reward mechanisms, such as by easing restrictions on reward tools to help companies retain the skilled workers they need.
4. Providing a better environment for medical professionals, such as by examining manpower allocation for emergency and critical care departments, reviewing national health insurance payment standards, and promoting graded medical care systems. Laws will be drafted to require health care institutions to devote 5 percent of annual profits toward the improvement of salaries and benefits for health care professionals. The government will also formulate ways to prevent and handle medical malpractice cases.
5. Strengthening trade secret safeguards including by amending the Trade Secrets Act, investigating and prosecuting trade secrecy violations, and helping businesses set up control and protection mechanisms.
6. Pushing industrial innovation and upgrading, with the objective of maintaining Taiwan's strong advantages in global supply chains. This includes providing subsidies for businesses to acquire smart machinery facilities and software, using artificial intelligence to expedite the development of the "five plus two" innovative industries, and helping domestic industries form strategic alliances with global corporations.
7. Building momentum in the stock market and raise its profile internationally by, for example, improving the efficiency of initial public offering reviews and simplifying the review process. In addition, the Executive Yuan will promote more diversity in the securities markets by increasing avenues through which large, unprofitable firms can list, and establishing a dedicated single point of contact to guide companies seeking a listing. The government will also expand the scale of local capital markets by actively assisting Taiwan-listed enterprises to register their overseas subsidiaries in Taiwan.
8. Strengthening and develop the local multimedia sector, including by adding NT\$6 billion (US\$205.3 million) to the NT\$4 billion (US\$136.8 million) already invested by the National Development Fund into Taiwan's cultural content industry. A cultural industry financing system will also be established to draw in private-sector funds. The Executive Yuan will additionally set up a cultural content promotion institute to

speed development of original cultural content and applied technology, and infuse the culture industry with interdisciplinary energy.

AmCham K believes that these initiatives and more are positive moves for Taiwan. And wherever possible – such as in the potential for Taiwan to create a giant new Green energy market – Taiwan should review its regulatory bottlenecks to see where new markets can be created that can help to vault Taiwan into the global forefront of Smart, Clean and Green innovation while promoting job growth, businesses and international investment in Taiwan.

Taiwan approved as nation eligible for US 'Global Entry' trusted traveler program

In recent news, conveyed by AIT and announced by Premier William Lai on March 23, Taiwan has been accepted into the “Global Entry” program established by the U.S. Customs and Border Protection Department; further demonstrating the US support for Taiwan. This means that in the future, Taiwanese citizens who join the Global Entry program when traveling to the United States will face less difficulty at immigration upon arrival, making for faster entry and more convenient travel.

The approval for “US Border pre-clearance” is indicative of the safety protocols and thoroughness of Taiwanese border control checks meeting the standards required from the U.S. Customs and Border Protection Department for ports of entry into the United States.

Taiwan opted into the preliminary stages of the global entry program in 2012, and was formally approved for membership in November of last year. Now that “US Border Pre-clearance” has been approved, some airports in Taiwan will begin considering how to integrate the “Global Entry” program into the customs and immigration facilities of the airports. Taoyuan International Airport is expected to create a special area for overseas customs clearance in the future. Will Kaohsiung International Airport follow suit?

New NIA Rules

On Nov. 7, .2017, the Act for the Recruitment and Employment of Foreign Professionals was approved by the Legislative Yuan of ROC, marking a milestone in Taiwan’s talent recruitment system.

Related file: Act for the Recruitment and Employment of Foreign Professionals

https://www.ndc.gov.tw/en/Content_List.aspx?n=153CD4D68F158AC8&upn=5B5A04F11B784895 .

The Act for the Recruitment and Employment of Foreign Professionals proposes to relax the regulations regarding visa, employment, stay and residence for foreign professionals; and to improve their treatment relating to insurance, tax, and retirement. The Act aims to build a friendly environment that attracts foreign professionals to come to work and live in Taiwan, so as to promote industrial upgrading and transformation, and enhance Taiwan's international competitiveness. The key measures proposed by the Act are listed as follows:

1. Relaxation of regulations on work, visa, and residence:

- (1) Foreign special professionals are able to apply for "Employment Gold Card", which is more convenient for foreigners to transfer work or seek jobs; the term of such work permits have been expanded from 3 years to five years.
- (2) Foreign freelance artists are allowed to obtain work permits without applying for them through employers.
- (3) Cram schools in Taiwan are allowed to hire foreign teachers with expertise or professional skills for teaching.
- (4) Foreign professionals looking for jobs in Taiwan are eligible to apply for employment-seeking visa.
- (5) The required minimum duration of stay of 183 days per year for maintaining permanent residency is abolished.

2. Easing of provisions concerning stay or residence of parents, spouses, and children

- (1) The requirements for spouses, minor children, or disabled adult children of permanent resident foreign professionals applying for permanent residence are eased.
- (2) When senior foreign professionals apply for permanent residence in Taiwan, their spouses, minor children, or disabled adult children are eligible to apply simultaneously.
- (3) Requirements are eased for foreign professionals' adult children who meet the specified conditions to apply for work permits without going through an employer.
- (4) The visitor visas for the lineal ascendants of foreign professionals are extended to allow for a stay of up to one year at a time.

3. Providing benefits on retirement, insurance, and tax

- (1) Foreign professionals who have been approved for permanent residence shall be included in the retirement pension system under the Labor Pension Act. A foreign professional who is currently employed as a full-time, qualified, paid teacher in a public school in Taiwan may opt for either a one-time lump sum pension payment or a monthly pension.
- (2) The requirement of a full six months of residence in Taiwan for spouses, minor children, or disabled adult children of foreign professionals to participate in National Health Insurance as insured persons is abolished.
- (3) Foreign special professionals who work in Taiwan and have salary income of more than NT\$ 3 million a year can deduct half of their salary for taxation for the first 3 years.

To enhance the efficacy of the Act, NDC is now making efforts to coordinate related ministries to complete relevant regulations and measures. The Act and subordinate regulations are expected to be implemented before the lunar new year of 2018. At the same time, NDC will also move forward to its next step to coordinate related ministries to actively formulate policies to attract foreign talents and kick off a new round of global talent recruitment action.

O. AmCham K & Southern Taiwan MOUs

AmCham K constantly explores new and innovative ways to promote US-Taiwan commercial cooperation in southern Taiwan while integrating US companies and our international members into the friendly communities of southern Taiwan.

In 2017-2018 AmCham K has pioneered a new platform for US-Taiwan commercial cooperation in southern Taiwan via two major Memoranda of Understandings (**MOUs**) with southern Taiwan regional governments.

These MOUs represent the first platform agreements of their kind between Taiwan regional governments and US business associations. These pioneering MOUs also coincide with AmCham K core themes of **Smart, Clean and Green**.

The two MOUs include:

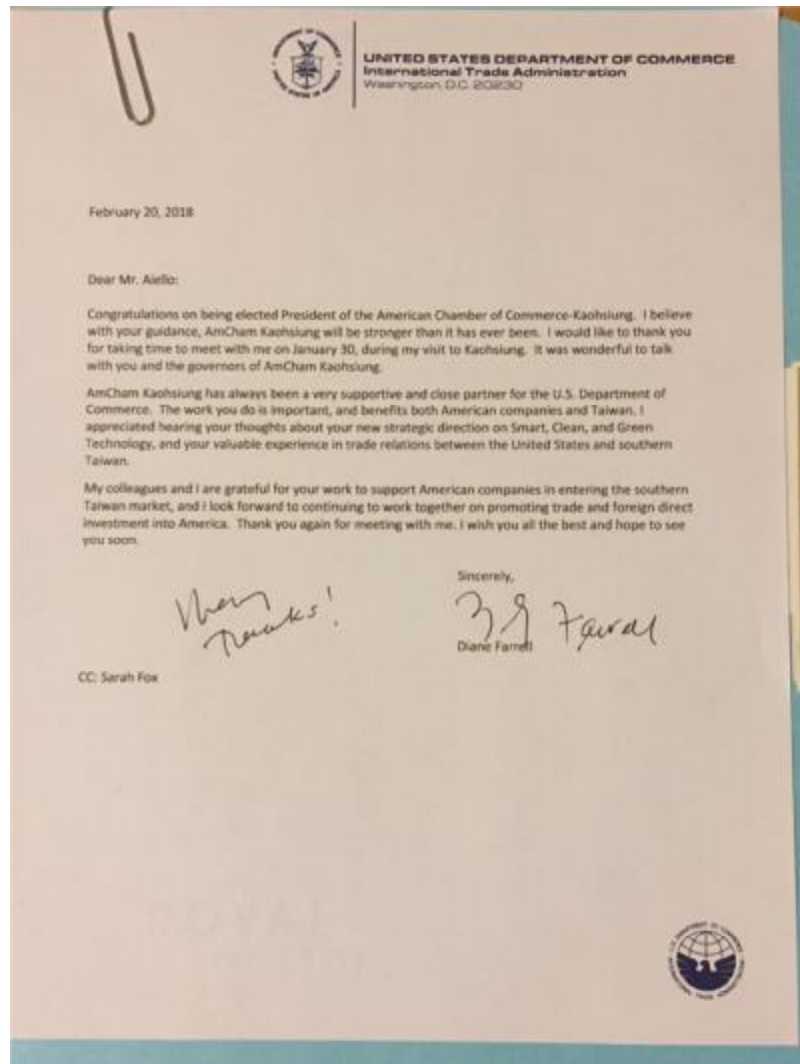
a) At the 2018 **Smart** Cities Forum in Kaohsiung, **AmCham K** signed the most extensive MOU in history with 7 major southern Taiwan regional governments, including **Kaohsiung, Tainan, Chiayi, Pingtung, Taitung, Yunlin and Penghu**. The MOU is to promote US-Taiwan commercial cooperation in Smart city initiatives and to introduce global standard open bidding practices for regional infrastructure project tender processes to welcome US enterprise participation.

And

b) At the 2017 **Green** Energy Forum in Tainan, **AmCham K** and **Tainan** City Government signed the MOU to facilitate US firm bids on the development of Green energy and infrastructure-related projects under the tender processes of the Tainan City Government.

AmCham K hopes to use these two MOUs – and more MOUs in future for more sectors of southern Taiwan's economy – to actively promote mutually profitable US-Taiwan commercial cooperation and investment for the economic growth and betterment of southern Taiwan.

AmCham K's innovative approach to promoting US-Taiwan trade and investment, proactive dialogue and community cooperation, were recognized by the US Government Department of Commerce Deputy Assistant Secretary for Asia, Diane Farrell, during her historic visit to southern Taiwan in early 2018.



AmCham K is as committed as ever to our home in southern Taiwan and we look forward to introducing more and more world-class US and international companies to our home region.

P. POLICY GUIDELINES

Policy guidelines set out by Premier Lai - in his oral policy report to 4th session of 9th Legislature, on September 26th, 2017.

I. A pragmatic, deliberate approach to governance

The cabinet is to take a pragmatic, no-nonsense approach to its work. The concepts of clean governance, diligence and love for country will guide the government to work pragmatically and deliberately to promote policies that benefit the nation and people. The government will lead Taiwan ahead confidently and in the right direction.

Taiwan presently faces a myriad of challenges, including industrial restructuring, barriers to investment, adjustments to a new labor system, transitioning to new sources of energy, and social issues arising from a falling birth rate and aging population. Issues such as transitional justice, pension reform, judicial reform and tax reform also attract considerable attention, and the government will confront these matters with honesty, formulate pragmatic policies, seek realistic solutions, and track progress and results. By enhancing the government's effectiveness, we will accelerate our nation-building efforts, re-energize economic development, and raise both Taiwan's competitiveness and the people's standard of living.

II. Six economic stimulus measures

First, the government will lead the way in raising salaries.

The central government's 2018 general budget has incorporated a 3 percent pay raise for public employees—civil servants, teachers and military personnel—to encourage corresponding increases in private-sector wages. Higher salaries for all will boost the economic outlook, expand domestic demand and lead Taiwan into a virtuous cycle of economic growth.

Second, the government will reform the tax system.

There exists a national consensus that Taiwan should have a fair, reasonable, streamlined and convenient system of taxation. The government has already started with reforms aimed at optimizing the tax system. We are working on a draft revision to the Income Tax Act, which will include cuts for salary earners and mid-to-low income taxpayers, as well as a suitable tax reduction for small and medium-sized enterprises as well as startups. We will also narrow the unfair gap between the taxes paid by domestic versus foreign investors, and anticipate that this adjustment will revitalize the capital market and advance industry upgrades. Over 5.42 million taxpayers will benefit from our tax plan, which will be delivered by mid-November to the Legislative Yuan for review and voting.

Third, the government will drum up investments in Taiwan.

The Premier will convene an inter-ministerial meeting on accelerating investment in Taiwan to demonstrate the government's resolve to improve the economy. The government will solve, one after another, the key problems hindering industrial development, and remove barriers to investment. We will construct a friendly environment for business creation and operations, including ensuring a

steady supply of water and electricity, availability of land, and the training and retention of high-skill talent.

Fourth, the government will promote deregulation.

Taiwan is a small country in a fiercely competitive global environment, and so we must demonstrate greater initiative and greater flexibility. To build economic momentum, the government's first priority for deregulation will be finance and banking laws. We will also loosen employment regulations to allow enterprises to better compete for and retain top talent. And we will follow up by reviewing administrative controls. Where such rules and regulations exceed the scope required by legislation, we will make changes aimed at removing barriers to corporate investment, and thus create a healthy environment for investors.

Fifth, the government will speed up the promotion of the Forward-looking Infrastructure Development Program.

To meet the demands of the next generation of national development, the Legislative Yuan has already passed a special bill and the first-term special budget for the Forward-looking Infrastructure Development Program. The program calls for action in eight areas: railway projects to provide safe and fast transportation, water environments to build resilience against climate change, green energy infrastructure to ensure environmental sustainability, digital infrastructure to create a smart and connected nation, urban and rural projects to balance regional development, child care facilities to help reverse declining birth rate trends, infrastructure to ensure food safety, and human resources infrastructure to nurture talent. The government will take the lead on investments in these areas, lighting a match under the economy and expanding domestic demand.

Additional projects target people's everyday lives. These include installing smart meters, building facilities for a smart electric grid, reducing water loss in the public water supply system, promoting a demonstration project for potable tap water, expanding the use of mobile payment systems, raising the percentage of energy-saving appliances in homes, and encouraging the production of electric cars and scooters. The Executive Yuan has listed all of these projects as important points to promote.

Sixth, the government will continue to pursue the "five plus two" innovative industries policy.

Another goal is to transform production and the structure of industry, from the manufacturing-intensive focus of the past toward a new direction of innovative and high-value-added production. The government will continue to carry out innovative industry projects promoting an Asia Silicon Valley, intelligent machinery, green energy technology, biomedicine, national defense, new agriculture and the circular economy. The ultimate objective remains enhancing the international competitiveness of Taiwan's industry through cooperation with international groups and local governments, bringing in high-level talent, transferring new technologies to Taiwan, building industrial clusters in Taiwan, harnessing the power of system integration, and attracting investment from domestic and foreign sources alike.

III. Five nation-building objectives

1. "Cultural Taiwan"

Culture is the soul of a nation, so the government must nurture Taiwan's unique culture, demonstrate confidence in it, and enhance its competitiveness from the local level on up to the international level. The Cabinet-level board of cultural affairs will continue leading inter-ministerial efforts to promote the nation's cultural policies and incorporate cultural considerations into their respective policy formulation. Our focus is to truly deepen Taiwan's culture and nurture Taiwanese subjectivity.

The government will continue implementing a historical sites restoration plan that is designed to breathe new life into tangible cultural assets while forging unique urban and rural landscapes. We will also help local governments to integrate each region's unique culture into their businesses, tourism industries, agricultural products, and lifestyles, cultivating the "Cultural Taiwan" brand for the world to see.

To promote the cultural and creative industries, the government has set up a platform to connect the film, television and music industries with the financial sector, putting them in touch with the resources needed to tap overseas markets. We are also working with local governments and businesses to establish an international film and television production center, build experimental facilities for innovative cultural and creative technologies, and provide service platforms for young artists and emerging industries to create and exhibit their works and conduct transactions.

The government is also endeavoring to ensure linguistic equality among different ethnicities and develop a multicultural society. Following the implementation of the Indigenous Languages Development Act, which designated indigenous languages as official languages, we submitted draft amendments to the Hakka Basic Act to the Legislature to recognize Hakka as a national language as well.

2. “Green Silicon Island”

As countries worldwide switch to new sources of energy, Taiwan has defined its own goals for reducing carbon and becoming a nuclear-free country. The government will tap new energy sources, conserve energy, store power and integrate smart energy systems, all of which will transform Taiwan into a safe, clean and sustainable “Green Silicon Island.”

Among government's efforts are a two-year solar power plan, a four-year wind power plan, and other renewable energy projects such as biogas development. These programs will spur the development of innovative technologies and create jobs for local communities. And to make Taiwan a key player in Asia's green energy industry, we are building the Shalun Green Energy Science City as the heart of Taiwan's green energy industry ecosystem.

In the meantime, the government will accelerate the installation of smart grid systems to make our grid less centralized and more resilient. We will maintain a stable and reliable electricity supply while shifting electricity use to non-peak hours, addressing the issue on both the supply and demand sides. Right now, we are installing smart electricity meters across the country and promoting a time-of-use pricing scheme, so that users can better manage their energy consumption, curb electricity use at peak times, and conserve energy.

The Diversified Waste Treatment Plan is underway to make waste treatment facilities more efficient. It is expected to generate an additional 180 million kilowatt hours of green energy each year. Bottom ash and slag residues from waste incineration will also be reused as materials in public works projects to ensure construction quality as well as environmental safety.

3. Smart digital nation

As a powerhouse of information and communications technology, Taiwan is shifting from hardware contract manufacturing to innovative smart applications. And as the government transforms into a digital nation for information applications, our young people will have more opportunities to engage in smart tech innovations.

To build a smart digital nation, the government will loosen regulations, invest in digital infrastructure, strengthen talent cultivation, and continue to implement the

Digital Nation and Innovative Economic Development Plan. Taiwan will leverage its competitive edge in semiconductor chips to harness smart technologies (including artificial intelligence, internet of things and big data analytics) to improve the quality of life as well as government efficiency.

In the development of smart cities, the government will consider the needs of each region as we implement a program to create smart living applications for urban and rural areas. We aim to not only solve local problems but also promote urban development.

The government will also develop Taiwan's smart electric scooters into a competitive industry and expedite innovative R&D for driverless vehicles.

When promoting financial technology, we will expand the use of mobile payments. Under our intelligent transportation systems plan, we will use technology to manage traffic, alleviate road traffic congestion, offer convenient transportation in remote and rural areas, and ensure traffic safety.

4. Just society

Justice is our nation's most fundamental value. The government will ensure a dignified life for every citizen and allocate resources in an equitable manner to guarantee a secure, peaceful way of life for all.

We will therefore continue the work of pursuing pension reform, judicial reform, tax reform and transitional justice, all with the goal of promoting social fairness and justice and ensuring the nation's sustainable development.

To reinforce our democratic values and protect direct civil rights, a draft amendment to the Referendum Act has been submitted to the Legislature, where it has been reviewed and listed as a priority piece of legislation for the current legislative session. A draft of the organization act of the National Human Rights Museum has also been sent to the Legislature for review. After the museum is established, it will be responsible for promoting education on human rights among other important tasks.

On the issue of same-sex marriage, the Executive Yuan will abide by Judicial Yuan Interpretation No. 748 regarding equal protection of the freedom of marriage. The government will forge the widest possible consensus and, with careful deliberation, submit reasonable and feasible legislation that will make marriage equality a reality in Taiwan.

To aid the disadvantaged children and help young people on their path of development, the government will continue to sponsor a child and youth education and development fund, as well as an education and employment savings account program for young people. We want every child to receive a proper education so that they can find meaningful employment and career development or start their own businesses later in life.

To guarantee a basic standard of living for all workers, the Executive Yuan has approved a raise in the national minimum wage. Starting January 1 2018, the minimum monthly wage will be raised to NT\$22,000 (US\$728), and the hourly rate to NT\$140 (US\$4.63).

In realizing housing justice, the government has begun the process of reviewing and amending the Urban Renewal Act to improve the overall environment for residential areas. We have also completed a set of complementary measures in the Statute for Expediting Reconstruction of Urban Unsafe and Old Buildings.

In indigenous transitional justice, the government will continue to protect the rights and interests of the indigenous peoples by expanding their autonomy and cultural and economic development.

The Executive Yuan has also submitted to the Legislature amendments to the Status Act for Indigenous Peoples, which would add a new classification to officially recognize members of the Pingpu communities.

The government will also reinforce protective measures for women, immigrants, and persons with disabilities to improve the welfare of all citizens.

5. Happy Homeland

In the sphere of public safety, the government has rolled out a new-generation anti-drug strategy outlining action plans to prevent illegal drugs and drug precursors from entering the country, aggressively pursue drug manufacturers, dealers and traffickers, reduce the population of new users, keep narcotics out of schools, and provide treatment and rehabilitation for addicts. We are also cooperating with other countries to combat cross-border telecom fraud, protect our citizens from monetary loss, and protect Taiwan's reputation abroad.

Food safety is the issue that concerns people the most in this country, so the government will tighten safety controls at the source of production, increase inspection rates, and require food producers to adopt self-management measures.

We will continue enforcing the five-point food safety policy to give consumers peace of mind.

With an eye toward conservation of land and water resources, together with environmental sustainability, the government is vigorously implementing an integrated coastal zone management plan as well as a national wetland conservation guide plan. The “national highway, green corridor” plan has been launched to turn highways and their surroundings into natural conservation areas as well. We are also in the process of revising the Mining Act to require all mines that lack environmental impact assessments to undergo a supplementary assessment.

To improve air quality, the government is promoting the Clean Air Action strategy for reducing average concentrations of PM2.5 (particulate matter smaller than 2.5 micrometers) year by year. Starting January 1, 2018, we will also expand restrictions on the use of plastic shopping bags, a measure that is expected to reduce plastic bag use by 1.5 billion bags each year and contribute to the creation of a sustainable planet.

The long-term care 2.0 plan is being rolled out in cities and counties across Taiwan to serve the needs of our ageing society. This plan will be reviewed on a rolling basis to ensure the quality of care services, allowing senior citizens to live happier and more dignified lives.

In terms of sports development, the government will carry out follow-up measures to the recently amended National Sports Act and increase the sports budget each year. The nation’s resources will be used to build a stronger environment for sports development and provide athletes and trainers with security for their future developments.

As we grapple with the problems of a society with fewer children, the government must move quickly and vigorously to create a supportive environment for childbearing and childrearing, ease financial pressures on young parents, build social housing to alleviate housing problems for young people, and raise the birth rate along with women’s labor participation rate. We will also adopt fresh thinking and adjust our strategies for the economy, industry and workforce development, and review our immigration policy to make our country stronger and more competitive.

Today's young people face four major challenges: low salaries, difficulties securing work, housing problems, and uncertainties about the future. It is therefore the responsibilities of the government to strengthen the technical and vocational education system, bridge the gap between the education students receive and the

skills employers require, as well as promote interdisciplinary learning across industry, academia, and research and development. The government will also ease education laws to promote alternative education, giving young people more space to start innovative businesses, more opportunities to participate in public affairs, and the freedom to choose their own education and career paths. All these efforts will help create a more dynamic Taiwan.

Q. CONCLUSION

This 2018 edition of the AmCham Kaohsiung White Paper has focused mainly on the two most pressing issues for Taiwan in general and specifically the south. One theme runs throughout these pages: southern Taiwan is rapidly trying to develop into a cleaner, more eco-friendly place where new business opportunities and job creation are on equal footing-with improving the environment at the forefront of all local and central government focus. Taiwan's central government has made great efforts in providing funding for numerous development projects.

Throughout all the issues and topics mentioned within these pages, opportunities abound for US business involvement. Taiwan's long standing commitment towards working with the US on matters of mutually beneficial business is stronger than ever. However, southern Taiwan needs to put additional efforts into understanding what foreign investors and enterprises want in their relationships with Taiwan. One particular area of opportunity that continues to have good potential is for Taiwan to act as liaisons or middlemen for US-China business opportunities, and as such, the true gateway into and out from Asia. Taiwan offers a number of advantages for companies who are looking to do business in the region, but choose not to because of concerns over IP rights or the lack of understanding of the language, laws, and culture. Taiwan has a long history with the US and many business relationships have been established and well-maintained throughout the years.

Taiwan is a vibrant democracy, operating within the rule of law, having standards and regulations that are often quite similar to those in the US. Politically, culturally, economically, geographically, strategically and logistically, Taiwan is a perfect partner with America, which does represent significant opportunities on all sides. For companies looking to Asia for the first time, for enterprises that are already in the region, or for those companies that left Taiwan for the unfulfilled promise of lower manufacturing and labor costs, Southern Taiwan is worth looking into.

Southern Taiwan offers six (6) key advantages, namely:

1. Excellent geographical position and logistics;
2. Outstanding sea and airports with a natural advantage of good year-round weather;
3. Comprehensive industry clusters;
4. Abundant manpower supply;
5. An extensive industry transportation network; and,
6. Complete provisions for foreign businessmen including excellent accommodations, restaurants, mass transit, and entertainment.

APPENDICES

I. Compliance Sample (Taiwan's Tobacco Industry – submitted by JTI)

Suggestion: Conduct a comprehensive and careful review of the Government's tobacco control law amendment proposal with a view to ensuring proportionate tobacco control policies in line with Taiwan's international trade obligations, high standards of intellectual property protection, and predictability of Taiwan's investment environment

On June 12, 2017, the Taiwan Government implemented a NT\$20/pack tobacco excise hike, as a key funding source for the long-term care scheme. This excise hike represents the largest tobacco tax hike in Taiwan's history – a 170% increase compared to the original level. Subsequently, however, the total excise revenue earmarked for long-term care scheme during the 2nd half of 2017 was only NT\$5.56 billion, falling far short of Ministry of Finance projection of NT\$23.3 billion per year.

At the same time, the radical tax shock exacerbated illegal trade. According to data released by National Treasury Administration, 20.86 million packs of illegal cigarettes have been confiscated in 2017, which is a staggering 111% increase compared to 9.9 million packs seized in 2016. In particular, the authorities seized 566 million packs of illegal tobacco in one single case at Kaohsiung Harbor in October 2017, marking the biggest illegal tobacco seizure over past years.

While the market remains highly unstable due to the surge in illegal trade, with the resulting excise revenue loss already having a significant impact on the funding for long-term care scheme, the Taiwan Government sent its Tobacco Hazard Prevention and Control Act (hereinafter "THPCA") amendment proposal to the Congress for 1st reading on Dec 29, 2017. This THPCA amendment proposal contains various extreme regulatory measures which, if adopted, would further stimulate illegal trade growth and deteriorate the erosion of tobacco tax revenue – a move in sharp contradiction with the Government's policy direction to fund long-term care scheme with the excise hike just half a year earlier.

We believe that proportionate regulation of tobacco products is both necessary and right to protect public interest. However, we are deeply concerned with various extreme measures, as proposed under the Government's THPCA amendment proposal and a number of lawmaker bills, as they lack evidence base, lower Taiwan's intellectual property protection standards, risk violating Taiwan's international trade obligations, and exacerbate the unpredictability of Taiwan's investment environment.

We are particularly concerned with three proposed measures: (1) Plain Packaging and enlarging the size of on-pack pictorial health warnings from the current 35% to 85% (hereinafter “85% PHWs”), which would highly standardize tobacco packaging; (2) total Flavor Bans, which would make all products taste the same; and (3) so-called “3-Strike Rule”, would terminate import/manufacture permission after 3 definitive violations of the existing tobacco promotion/advertisement ban within 5 years.

1. Plain Packaging & 85% PHWs

- Plain Packaging & 85% PHWs are a policy failure
Plain packaging and excessive PHWs have been in place in Australia since December 2012, but Australian government’s own data shows that these measures had failed to have any significant impact on the pre-existing rate of decline in smoking prevalence. After France followed the Australian example and implemented similar measures, the French health minister publicly acknowledged the failure of plain packaging in changing smoking behavior.
- Plain Packaging & 85% PHWs risk infringing intellectual property rights in violation of Taiwan’s international trade obligations
Plain Packaging and excessive PHWs would deprive legitimate enterprises of their most valuable assets – brands and trademarks – and as a consequence represent an infringement of these companies’ intellectual property rights. In fact, after Australia implemented plain packaging and excessive PHWs, these measures are being actively challenged by several countries (including Taiwan’s key diplomatic allies such as Honduras and Dominican Republic) at the World Trade Organization (WTO), for violations of the WTO’s Trade Related Intellectual Property Rights (TRIPs) and Technical Barriers to Trade (TBT) Agreements. The assessment by the WTO of the legitimacy of this legislation is to date still pending, and an appeal to the WTO panel report is anticipated. As a member of the WTO, Taiwan is urged to heed its international trade obligations in light of the ongoing WTO litigation, before rushing into Plain Packaging and excessive PHWs.
- Plain Packaging & 85% PHWs would increase illegal trade and reduce tobacco tax revenue

The implementation of Plain Packaging and 85% PHWs would make counterfeit and contraband products easier to make, distribute and sell which would result in a

significant increase in demand for illegal products, which would in turn significantly erode the Government's tobacco tax revenue.

2. Flavor Bans

- Flavor Bans have no effect on smoking behavior

There is no scientific evidence that flavors, including menthol, are a factor of youth smoking initiation and that adult smokers smoke flavored and mentholated products more than non-flavored products. The real solution is strict enforcement of the current minimum age law.

- Flavor Bans would risk violating Taiwan's international trade obligations

In 2012, the WTO Appellate Body rendered a final ruling which concluded that US measures imposing flavor bans constituted a technical barrier to international trade in violation of US obligations under the WTO TBT Agreement. A similar measure by Taiwan Government may risk subjecting Taiwan to unnecessary trade litigation.

- Flavor Bans would increase illegal trade and reduce tobacco tax revenue

Consumer demand for banned products will likely be met by illegal manufacturers and criminals engaged in illegal trade. This will undermine the important and sustained efforts the Government of Taiwan and its law enforcement agencies have contributed over many years to the fight against illegal tobacco products and its significant achievements to date, and make the illegal trade problem even worse.

3. "3-Strike Rule"

- Uncertain and unpredictable investment environment

The "3-Strike Rule", if passed, would not only be disproportionate and overly restrictive, but may also give rise to biased and selective enforcement and infringe the legitimate rights of foreign enterprises, thereby exacerbating the uncertainty and unpredictability of Taiwan's investment environment.

- 3-Strike Rule would eliminate the entire legitimate business in favor of illegal trade

The extreme "3-Strike Rule", if adopted, would exacerbate the existing problem of biased and selective enforcement, soon leading to the termination of all legitimate

business. Consumer demand for tobacco products would only be satisfied by illegal trade criminals, much like the situation in Brunei where illegal trade accounts for almost 100% of the market after the legitimate business was forced out of the market due to extreme regulations.

The Government should seriously consider the opinions received from all relevant stakeholders, base policy proposals on robust scientific evidence, conduct an accurate, timely and complete regulatory impact assessment inclusive of any alternative measures and a cost-benefit analysis of these different alternatives, and engage in a comprehensive and careful review of the THPCA amendment proposal, so as to avoid unintended negative consequences referred to above. Meanwhile, we encourage the Government to step up its enforcement against the surging illegal trade problem at a time when the market remains unstable due to the aftermath of the excise hike last year.

Footnotes

- (1) *"In the post-Fukushima global nuclear risk review by Nature magazine and Columbia University, Taiwan ranked the worst in the world (alongside Pakistan) in terms of nuclear proximity to population centers, with 10.2 million people, i.e. around 45% of Taiwan's entire population, living within 30km of 2 aging nuclear plants. (<https://www.nature.com/news/2011/110421/full/472400a.html>)"*
- (2) *"Additional power price adjustments and increased flexibility should be introduced to Taiwan's power pricing environment with a comparative eye on Asia's power market and global power pricing. According to the tables compiled by MOEA and BOE below [let's insert Emily's tables] for example Japan's power prices are on average 200-300% higher than Taiwan's; Taiwan's power prices are even 20-25% below China and Singapore. This is a counter-productive anomaly. If Taiwan wants to push energy efficiency and Green energy innovation while mobilizing private capital to adjust its power generation and grid profile to a Smart, Clean, Green structure, it has plenty of margin to move on prices in comparison to other countries."*

建議：建議政府全面審慎檢視菸品管制修法提案，確保菸品管制政策合乎比例原則，遵行台灣之國際經貿義務，依循智慧財產權保護的高度標準，以維護台灣投資環境的可預測性

台灣政府於 2017 年 6 月 12 日調漲菸稅每包新台幣 20 元，以挹注長期照顧所需財源。本次菸稅調漲相較原有菸稅金額，調幅高達 170%，為歷年來菸品稅捐最大調幅。然而，2017 年下半年指定挹注長期照顧的菸稅收入僅達新台幣 55.6 億，遠低於財政部原預期的每年 233 億收入。

同時，本次稅捐驟升惡化了走私交易問題。根據國庫署的資料，2017 年走私菸品的查獲量為 2,086 萬包，與 2016 年的查獲量 990 萬包相比，激增了 111%。其中尤以 2017 年 10 月在高雄港查獲的 556 萬包走私菸品為甚，是歷年來單一案件中，查緝量最高的一次。

然而，正值市場因為走私交易遽增而高度不穩定，繼而造成進一步菸稅稅收損失、而對長期照顧財源產生嚴重影響之際，台灣政府卻將菸害防制法修正草案送進立法院審查，並於 2017 年 12 月 29 日通過立法院一讀。該修正草案包含多項極端的規範，若經實施，將會進一步加劇非法走私問題、擴大政府的菸品稅收損失。政府此舉，與半年前調漲菸稅以挹注長期照顧財源的政策方向完全矛盾。

本會認為，適當及合乎比例的菸品規範有其必要性，期能藉此維護公眾利益。然而，針對政府及若干立法委員所提出的菸害防制法修正草案，本會深表擔憂，因其中多項極端規範缺乏科學實證基礎，該等規範將降低台灣的智慧財產權保護標準，並恐違反台灣的國際經貿義務，以及加重台灣投資環境的不可預測性。

本會特別關切其中三項規範：(1)素面包裝、以及將包裝上正反面警示圖文尺寸自現行之 35% 大幅擴大為 85%（下稱「85% 警示圖文」），將使菸品包裝難以辨識及高度標準化；(2) 禁止菸品添加香味料（下稱「禁止香味料」），使所有產品口味喪失區別性；(3)「三振條款」，即五年內違反現行菸品促銷或廣告規定經三次處罰確定者，處以廢止進口或製造許可之處分。

1. 素面包裝及 85% 警示圖文

- **素面包裝及 85% 警示圖文是無效的政策**

澳洲自 2012 年 12 月即開始施行素面包裝及比例過大的警示圖文，然而根據澳洲政府自行公布的數據，顯示素面包裝施行前既有之吸菸率下降速度，並未因該等政策而有所改變。而法國跟進澳洲實施類似規範後，法國衛生部長更公開承認素面包裝對於改變吸菸行為是無效的。

- **素面包裝及 85% 警示圖文將侵害智慧財產權，違反國際經貿義務**

素面包裝及面積過大的警示圖文，係對企業最具價值資產「品牌及商標」之剝奪，侵害企業的智慧財產權。事實上，澳洲實施素面包裝及過大面積警示圖文

後，已於 WTO 中受到多國提起訴訟(包含宏都拉斯及多明尼加共和國等台灣重要的邦交國)，指控該等措施違反世界貿易組織(WTO)之「與貿易有關之智慧財產權協定」(TRIPS)及「技術性貿易障礙協定」(TBT)。該訴訟目前仍在審議中，且未來 WTO 爭端解決小組報告公布後，亦預期另有上訴程序進行。

台灣作為 WTO 會員，向來恪遵國際經貿義務，允宜審慎考量前述正在進行中的 WTO 訴訟，不宜貿然實施素面包裝及面積過大的警示圖文。

- **素面包裝及 85% 警示圖文將助長非法走私交易並造成更多政府稅收損失**素面包裝及 85% 警示圖文的施行將促使仿冒、走私菸品的製造及配銷更加容易，導致非法菸品貿易更為氾濫，除對合法業者造成負面影響，亦將造成政府損失更多菸品稅收。

2. 禁止香昧料

- **香昧料對於吸菸行為並無影響**
沒有任何證據顯示包含薄荷菸在內之香昧料為促使青少年吸菸的因素；亦無證據顯示成年吸菸者傾向消費更多的加味菸或薄荷菸。真正有效的解決方法是嚴格執行現行法定吸菸年齡的規範。
- **禁止香昧料**
WTO 上訴機構於 2012 年針對美國針對禁止香昧料的規範做出最終裁決，認定該措施構成技術性貿易障礙，違反美國依 WTO TBT 協定應遵循的義務。若台灣貿然實施，恐有違反國際經貿義務之虞。
- **禁止香昧料將助長非法走私交易並減少政府稅收**
禁止香昧料後，消費者將轉向非法製造商及走私罪犯取得產品，進而破壞台灣政府及相關執法單位長年不懈努力查緝非法菸品的顯著成果，而使走私交易問題更加嚴重。

3. 三振條款

- **不確定及不可預測之投資環境**
此等「三振條款」一旦通過，不僅不合乎比例原則且過於嚴苛，並可能導致歧視性及選擇性的執法方式，損害外國企業之合法權利，從而加劇台灣投資環境之不確定性及不可預測性。
- **三振條款恐將迫使所有合法事業關閉，造成非法走私氾濫**
此等極端的「三振條款」一經實行，將使現有的歧視性及選擇性的執法問題更加惡化，並恐導致所有合法事業在短期內全面被迫關閉，消費者將轉向非法走

私罪犯取得產品。類似情況如汶萊，因為極端規範迫使合法事業撤出市場後，走私菸品的市占率已近乎 100%。

政府應正視利害關係人所提出之意見，確保任何決策均係基於嚴謹的科學證據基礎，且應執行準確、及時及完整之法規影響評估，包括各項替代措施評估及成本效益分析，並對菸害防制法提案進行全面審慎檢視，以避免前述負面後果。同時，在市場因去年菸稅驟升，仍處於高度不穩定之際，本會亦期許政府持續精進查緝執法，以加強打擊非法走私交易。

II. Compliance Sample – submitted by NIA

Taiwan's National Immigration Agency-Striving for international competitiveness

The National Immigration Agency has not only devoted itself to the protection of boarder security and the prevention of human trafficking, but also the promotion of services for foreigners in Taiwan. In order to actively promote the "New Southward Policy," the agency has worked hard to execute the protection of new immigrants and the recruitment of international talent.

The Immigration Agency continues to manage several projects this year, including:

Issuance of Employment Gold Card

Foreign special professionals who plan to engage in professional work in Taiwan may apply to the NIA to be issued with a 4-in-1 Employment Gold Card (personal employment pass) that combines work permit, resident visa, ARC and re-entry permit. This will be valid for 1 to 3 years, and when it expires, the holder can apply for its renewal. This Employment Gold Card gives the holder the fullest convenience in freely seeking, taking up and changing employment. (Article 8)

The Cultivation Program for Second-Generation New Residents

The Agency hopes to make the best use of foreign language and the benefits of others that new immigrants bring to Taiwan. They hope to increase the new immigrant participation and enhance their ability to compete in other international markets. Additionally, they hope to increase the public's understanding toward the immigrants.

The promotion of a swifter and smoother customs clearance

In order to comply with the government's policy, to attract more foreign tourists and strengthen our homeland defense, the Agency not only provides automatic customs clearance service, but also promotes a swifter and smoother customs clearance. The first e-Gate was launched at Kaohsiung International Airport. Tourists only need to pass a fingerprint recognition for clearance instead of filling out an application form.

Both the Immigration Agency and the Ministry of Foreign Affairs has deregulated the rules for Southeast tourists wishing to visit Taiwan. To make it easier to travel, the Agency now offers 30 day visa waiver to Thailand and Brunei. The option to use the Online Application system for Travel Authorization Certificate have been opened to Cambodia, Myanmar, Laos, and Vietnam. Originally, this was only available to tourist travelling from India and Indonesia.

Regarding the issue of residency of under-aged dependents, the Ministry of the Interior revised the relevant acts in 2014. Foreigners who qualify under the following terms: foreigners who have legally resided in Taiwan for more than 10 years and staying in Taiwan for no less than 270 days a year; foreigners who entered Taiwan under the age of 16, staying in Taiwan for no less than 270 days a year; or foreigners born in Taiwan, having resided cumulatively for more than 10 years (no less than 183 days a year) in Taiwan, may apply for 2 visa extensions each lasting no longer than 3 years, in order to assist in career planning or

application of a permanent residency status.

The Forum of NIA and the Foreign Embassies, Missions, and Organizations in Southern Taiwan

In order to provide better services and fully understand the needs and problems encountered by the foreign and immigrants in the southern Taiwan Area, and to promote the important government policies and to outreach the newly changed regulations, such as the protection of new immigrants and the recruitment of international. The Agency held the Forum and inviting the Foreign Embassies, Missions and Organizations in Southern Taiwan to participate. A great deal of questions and comments were addressed at the meeting and that came out as an excellent communication opportunity for the entities. It also benefited at all aspects.

In order to provide quality service, the Immigration Agency will keep respecting the core ideals of a multi-cultural society, and also keep improving the businesses and amendments.

內政部移民署南區事務大隊有關高雄美國商會

「2018 南臺灣白皮書」宣導內容

內政部移民署肩負把關國家門戶安全、落實移民人權保障之重要任務，除了致力維護國境安全，打擊人口販運，也積極推動各項外國人服務工作，落實政府保障新住民權益及延攬優秀國際人才政策，為「新南向政策」厚植人才資源。

提供「就業金卡」一站式線上申請服務

臺灣政府為吸引產業創新轉型所需之優秀人才，由國家發展委員會推動訂定「外國專業人才延攬及僱用法」，並自 2018 年 2 月 8 日正式施行，放寬外國專業人才來臺簽證、工作、居留相關規定，並優化保險、租稅、退休等待遇，建構更友善之工作及居留環境，提高外國專業人才來臺誘因；另內政部亦發布「外國特定專業人才申請就業金卡許可辦法」，並於 2018 年 2 月 8 日施行。

移民署為執行上述措施，以簡化程序、提升行政效率及服務品質為出發點，除訂定「外國或香港澳門特定專業人才申請就業金卡送件須知」及修訂「外國人申請永久居留送件須知」等規定，並建置「外國專業人才申辦窗口平臺」(Foreign Professionals Online Application Platform)，符合勞動部或中央目的事業主管機關公告之我國所需領域之特殊專長資格者，可在線上申請及審核具有工作許可、居留簽證、外僑居留證及重入國許可四證合一之就業金卡。持有者享有「無須受一定雇主聘僱」、「所得稅優惠」、「直系尊親屬探

親簽證停留期間放寬為最長 1 年」、「配偶及未成年子女得申請依親在臺居留」、「參加全民健康保險不受居留滿 6 個月限制」等多項優惠措施。

持續辦理新住民培力及各項便民服務

2018 年移民署持續運用內政部「新住民發展基金」補助經費，辦理「新住民子女海外培力計畫」、「新住民子女新星培育營」及「新住民及其子女培力與獎助學金計畫」等重要方案，以善用新住民及其二代語言及多元文化優勢，培育多元文化人才種子，促進新住民社會參與及國際競爭能力，並提升大眾對於移民議題的認識與理解。

此外，移民署不斷精進服務品質，自 2018 年 1 月 1 日起，外籍人士可以自然人憑證透過網路查詢有無被禁止出國。另為便捷查驗通關，於高雄國際機場建置「外來人口出境快速查驗閘門」（F-Gate），於入境查驗時完成指紋生物特徵擷取的外來人口，不需要透過申請，即可使用指定閘門系統快速通關查驗出境。

對於白天忙碌於工作、求學及照顧家庭而無暇洽公的外籍人士，移民署各直轄市、縣市服務站自 2018 年 3 月 27 日起，於每周二及周四的 17 時至 19 時，以預約方式提供延長服務，若遇到緊急之個案狀況，服務站更不受前述時間限制提供協處。而為了服務住在偏鄉或行動不便的外籍人士，移民署服務站也透過行動服務列車延伸服務範圍，多面向提供創新便民服務。

鬆綁法規，建立外籍人士生活友善環境

政府為落實「新南向政策」，鼓勵東南亞國家旅客來臺旅遊，大幅鬆綁來臺簽證相關措施，除了將泰國、汶萊及菲律賓納入 30 天免簽證國家（試辦至 2018 年 7 月 31 日）；另適用「東南亞國家人民來臺先行上網查核系統」有條件式免簽措施的國家，亦有印度、印尼、越南、柬埔寨、緬甸及寮國等 6 國。

關於在臺外籍人士之未成年子女居留議題，內政部在 2014 年已修正相關法規，外國人來臺依親居留，符合曾在臺灣合法累計居留 10 年，每年居住超過 270 日；未滿 16 歲入國，每年居住超過 270 日；以及在臺灣出生，曾合法累計居留 10 年，每年居住超過 183 日，當事人年滿 20 歲以後，仍可申請延期居留 2 次，每次最長不超過 3 年，以利留在臺灣規劃未來工作或申請永久居留許可。

另國籍法於 2016 年 12 月 9 日修正，內政部也放寬「歸化國籍之高級專業人才認定標準」，對臺灣有特殊貢獻或有助中華民國利益之高級專業人才，無需放棄原有國籍就可以申請歸化取得身分證。實施以來已有多名在臺灣生活多年的外國專業人才，順利歸化國籍成為正港的「臺灣人」，留在臺灣這個共同的家一起打拼。

舉辦南部地區 NGO 與駐臺機構及團體座談會

移民署南區事務大隊扮演該署於南部地區之政策延伸角色，特別於 106 年 10 月 30 日舉行南部地區外國駐臺機構及團體座談會，計有美國在臺協會高雄分處、馬尼拉經濟文化辦事處高雄分處、泰國貿易經濟辦事處及高雄美國商會等單位出席；另於同年 12 月 25 日舉行南部地區新住民照顧輔導 NGO 團體座談會，由楊署長家駿親自南下與 20 餘位團體代表進行交流。移民署希望透過類似活動，除了就該署近期開展之創新便民服務進行宣導，並充分瞭解各界建言，使移民服務工作能夠精益求精。