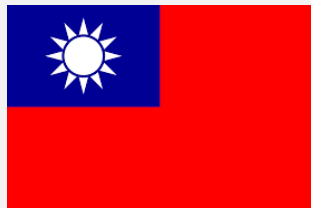


**TAIWAN**

# STUDY TOUR REPORT

3 -17 NOVEMBER 2019



Delegates at the Australian Office, Taipei with Australian Representative, Gary Cowan



**Australian Institute  
of International Affairs**  
*Victoria*

## Contents

Background .....	2
China .....	3
Formosa .....	4
Taiwan .....	4
Relationship with China.....	5
The Hong Kong situation .....	6
The Taiwan-Australia Relationship.....	7
Trade .....	8
Relationship with USA.....	8
The Economy.....	9
Some Background .....	9
Policy: Ministry of Economic Affairs (MoEA) .....	9
New Southbound Policy .....	12
The Indigenous Peoples of Taiwan .....	13
Road and Rail Infrastructure.....	14
Water Resources, Water Supply and Irrigation.....	17
Health in Taiwan .....	22
Population .....	23
Education.....	26
Same Sex Marriage in Taiwan.....	34
Meetings in Taiwan .....	35
Delegates .....	36

## Background

We were warmly welcomed by all whom we met in Taiwan. A list of people and organisations visited is listed at the back of this report. We found all the Taiwanese with whom we met to be very open and frank with us on all matters. They are keen to engage with the World; but are being prevented from doing so in many cases because Taiwan is not a country recognised by the United Nations. This affects trade, it cannot belong to UN bodies. It has many wonderful sites which would otherwise be recognised as UNESCO World Heritage Sites.

Our Study Tour to Taiwan coincided with the Hong Kong riots and with the lead-up to the January 11, 2020 elections in Taiwan. It also occurred during the US China Trade squabbles and China's recent curtailment of the number of Chinese Mainland visitors to Taiwan.

One might have thought that Taiwan would be suffering because of these factors. Although its economic growth rate has dropped marginally to 2.64% per annum, we observed and experienced some optimism about its economic future.

The one underlying feeling amongst some of the people with whom we met was a concern about what China may do next. China is by far Taiwan's largest trading partner [30%]. China therefore can easily affect Taiwan's economy.

We were a Delegation of 13 from Queensland, South Australia and Victoria. We came from many backgrounds. This was an advantage in that sometimes we shared different interpretations from the same meetings. Some had lived in Taiwan many years ago. That gave the whole Delegation a terrific perspective of the changes which have occurred in Taiwan over the past four decades. The list of delegates is at the back of this Report.

We were most impressed by the strides made in the economy since the Japanese occupation. In particular, its infrastructure is most impressive. The population of Taiwan (23.6m) is about the same size as that of Australia. Yet the country is a bit less than half of Tasmania.

Taiwan has a good education system where universities have close links with businesses; thus, students can have a seamless move from university to career.

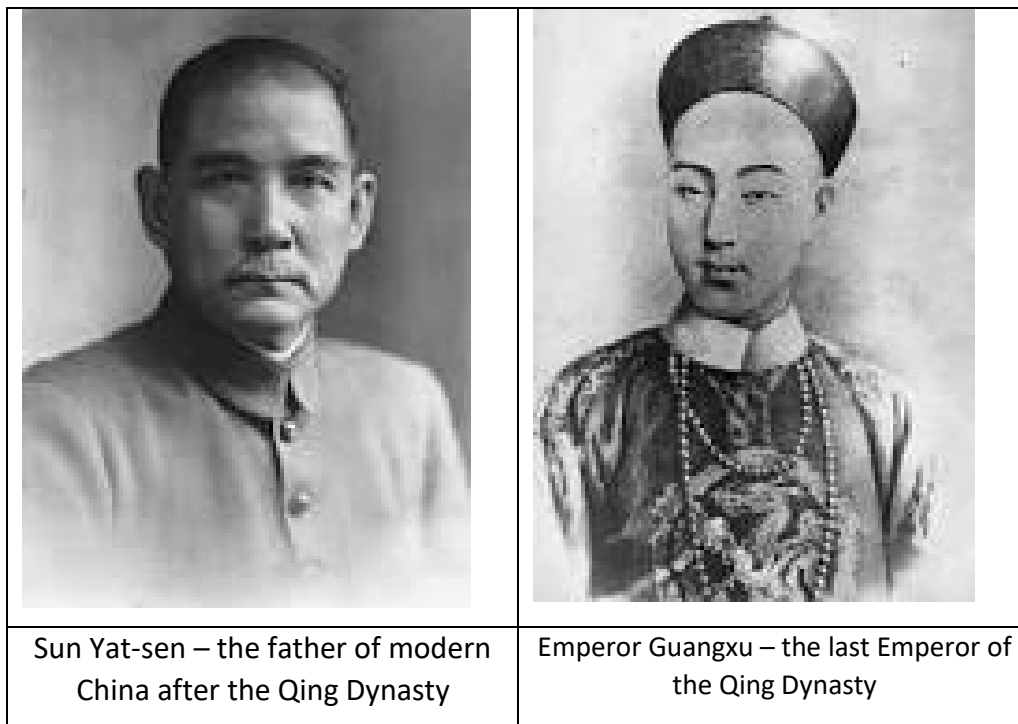
Above all, Taiwan is a fiercely independent liberal democracy. As such, finally, and importantly, we were made aware that Taiwan is a very western-oriented country and deserves more respect and recognition worldwide.

### Patrick Moore

*"Taiwan's 23 million people are wise and will show their firm will to protect  
Sovereignty through Democratic means"*

## China

It is impossible to understand Taiwan without first looking at China; albeit briefly.



“China” (the Middle Kingdom) has been occupied variously by the Mongols, Manchurians, the Ming and Qing Dynasties and several Dynasties preceding those.

The Qing Dynasty ruled China from 1644 until 1912. At one stage the Qing Dynasty ruled an area almost 50% larger than present day China. It was overthrown by the Xinhai Revolution and became the Republic of China. Its first President was Sun Yat-sen who is revered in Taiwan.

In 1949, the then ruling party, the Chinese Nationalist Party (KMT) lost the Chinese Civil War to the Communist Party of China (CCP). The KMT subsequently retreated to Taiwan.

China continues to regard Taiwan as a part of China. Taiwan was ruled by the Qing Dynasty from 1683 to 1895 when the Japanese ruled it until 1945. The first known record of Taiwan in China was an expeditionary force which landed in Taiwan in 239AD.

President Xi Jinping of China wants to leave as his legacy “One China”. However, only around 10% of Taiwanese (mostly older citizens) support unification between Taiwan and China.

*“The only similarity we have with China is that we both use chopsticks”.*

## Formosa

The Republic of Formosa lasted from May 1895 (when it seceded from the Qing Dynasty) to October 1895 when the Japanese took over the country following the treaty of Shimonoseki. Formosa means Beautiful Island; and most certainly it is. It is a land of geographical contrasts from the plains on the West, the mountainous area in the middle to the rugged coastline on the East. It was a well-positioned seaport and thus drew the attention of European trading Nations.

Since 1624, Taiwan has been occupied by the Dutch, Spanish, Qing Dynasty, and the Japanese, followed by the KMT, when Chang Kai-shek left mainland China following the successful Communist revolution. Fort San Domingo in the North has been occupied by nine nations (including Australia for a short time)!



Fort San Domingo with the flags of those countries who have occupied it. The Australian flag is third from the right between the Japanese and US flags.

Formosa became known as Taiwan from the beginning of the 20<sup>th</sup> Century.

## Taiwan

Taiwan was ruled under martial law from 1949 until 1987.

There are two main political parties:

- The KMT which favours a close relationship with China, and
- The DPP which leans towards an independent Taiwan

In 1991, China and Taiwan concluded 23 cross straight agreements covering trading, investment and a consular agreement. The ambiguity of the 1992 Consensus remains.

There will be an election for the Presidency and the Parliament on January 11, 2020. Initially there were two candidates running for the Presidency: the incumbent, President Tsai and Han Kuo-yu representing the KMT. Motivated by a forecast falling population, a new policy (666) introduced by the KMT is for payments to families who have a second and third child. President Tsai has selected former Mayor of Tainan, William Lai, as her running mate. Lai has previously antagonised China by asserting Taiwan's independence. More recently, he said: Taiwan is already an independent sovereign country". China has since lashed out saying that that would be disaster for Taiwan.

Recently, James Soon of the People First Party put his name forward as a Presidential Candidate. He has previously stood as a Presidential candidate.

China does not want Taiwan to stray too far from the delicate position embodied in the 1992 Consensus. There have been and continue to be allegations that China is “involving itself” in the current election. This has come to the front recently with the attempted defection of Liqiang Wang to Australia. Wang said that he was sent to Taiwan to spread disinformation about President Tsai.

China obviously takes a strong interest in Taiwan’s elections. Newspapers are not necessarily independent. Neither are some Television stations. Indeed, three Taiwanese Television Stations have denied accusations by Liqiang Wang who defected to Australia. It is believed that China has some interest in the Taiwanese media! China has also been accused of modifying a DPP election video to give the view that the DPP supports a unified China. Both the KMT and DPP parties are trying to differentiate themselves to attract votes. To an extent, that means they have exaggerated some issues. Both parties fundamentally want to remain independent of China. Nevertheless, there are still a number of Taiwanese who would like a much stronger relationship with China along the “One Country, Two Systems” policy. However, given the recent upheaval in Hong Kong, I doubt whether that will come about in the near future.

It is a vibrant liberal democracy where about 70% of the population turns out to vote. Taiwan is formally recognised by only 15 countries. This dwindling number has happened because of an increased effort by China to isolate Taiwan. This effort not only encompasses Countries; but also World bodies such as the UN and WHO.

Taiwan has a strong military. It currently spends 2.2% of its GNP through its defence budget. Over the past 40 years, it ~~is~~ has ranked as the ninth biggest importer of arms globally.

## **Relationship with China**

Taiwan is regarded by China as a part of China, whereas Taiwan with its own government regards itself as an independent Country.

Taiwan suffers many cyber-attacks per day. The assumption is that many, if not all, come from China.

*“We receive up to 30 million cyber attacks per month.”*

Taiwan has to be particularly careful to not upset the position reached in 1992, which sets out the terms of co-operation between Taiwan and China.

In the 1980's, many traditional Taiwanese industries realised that labour shortage and costs would be a problem impeding growth. China was opening their markets and was looking for investments. With the cultural affinity to China and the wish to help China along, the Taiwanese shifted a very substantial portion of the manufacturing to the mainland. China benefited greatly from its relationship with Taiwan for many years. The main areas were those of research, industrialisation and technology. In recent years, this reliance has all but disappeared.

There is a very real underlying awareness of the potential threat of China to Taiwanese independence. Since the end of Japanese occupation in 1945, Taiwan has moved from a military dictatorship to a healthy liberal democracy.

China is certainly active in attracting talent from Taiwan; particularly in the hi-tech area. China is actively targeting the young and talented to work in China; thereby depriving Taiwan of that talent. It was also noted during our visit in Taiwan that the Chinese had purchased a large French hi-tech company for \$US 2 billion.

China is very adept with its soft power to achieve its objectives. This can certainly be seen through the number of Confucius Institutes attached to or co-located with Australian universities. It also effectively uses soft power with Taiwan with more recently people movement but also including trade and investment flows

*“The Taiwan China relationships is asymmetrical in that the Taiwanese military is focused on Defence whereas the Chinese military is not.”*

## **The Hong Kong situation**

It may be unwise to make a direct comparison between China's involvement in Hong Kong and Taiwan. Many Taiwanese argue that the two are totally different. They point out that Taiwan is self-governing and has its own military. This has never applied to Hong Kong which, under agreement between the UK and China, was handed back to China in 1997 under a one country, two systems

However, not only Taiwan, but the World, is watching the Hong Kong situation.

## The Taiwan-Australia Relationship

There was an Australian Embassy in Taiwan until it was closed following Australia's recognition of Beijing. Since then we have had a Representative Office in Taiwan. At any one time, there are probably about 20,000 Australians in Taiwan; mostly comprising about 17,000 dual nationals.

There is a strong bilateral relationship between Australia and Taiwan. Our Representative Office in Taipei is staffed by over 40 people. Even though there are Energy, Agricultural and other dialogues with Taiwan, everything is on an unofficial basis. Australia has to tread carefully to keep its relationships with China and Taiwan on an even keel. However, Australia is not backward in criticising China's human rights policies.

*"During our time in Taiwan I felt as though we were in a Western country; not an Asian one."*

Taiwan has Taiwan Economic and Cultural Offices (TECO) in Canberra (which covers Western Australia), Melbourne, Brisbane and Sydney. TECO's objective is to "promote bilateral governmental, parliamentary, trade, investment, education, culture and science & technology exchanges and interactions, as well as to provide consular services between Taiwan and Australia".

There is inadequate news coverage of Taiwan in the Australian Press. There is no permanent Australian Press in Taiwan. Bill Birtles from the ABC does cover Taiwan from time to time but is located in Beijing. Yet, Taiwan is important to Australia as it is a Liberal Democracy and also because of increasing two-way trade.

Queensland is the only State which has a Representative Office in Taiwan. In part, this may be due to the 30,000 Taiwanese Diasporas located in and around Brisbane. The TIQ has a good position in Taiwan. It attracts Taiwan investment to Australia and pursues trade opportunities. During our visit Taiwan received its first shipment of Australian LNG.



*Hartmut Hofmann thanking Gary Cowan (right)*





*AIIA Meeting with Trade Investment Queensland*

We hosted some New Colombo Plan students as well as others involved in the NCP. They showed terrific interest in the AIIA becoming involved in hosting NCP alumni. This is supported financially by DFAT.

## Trade

- Besides pursuing multi-lateral trade agreements, Taiwan is also pursuing bi-lateral agreements and indeed it does have one trade agreement with New Zealand and another with Singapore. These trade agreements deal not only with trade but also with non-economic matters such as use of internet, people movements and treatment of their indigenous peoples.
- As of June 2019, Taiwan has four free trade agreements with Panama, Guatemala, Nicaragua and El Salvador and Honduras.
- Australia's trade with Taiwan is growing; and will increase even more when Taiwan fully implements its switch in sources of energy. Two-way trade amounts to over \$15 billion per annum with Australia's current trade surplus equalling \$5.6B. Taiwan is Australia's 13<sup>th</sup> largest two-way trading partner. Taiwan's areas of interest lie in developing areas of technology, energy and investment in agriculture.

## Relationship with USA

The Taiwanese government knows it is dependent on the support of USA and believes that the Trump government has changed its assessment of China in principal. Following the opening of PRC under Deng Xiaoping in late 1970 it was assumed that with economic development the country would eventually become more democratic. However, since Xi Jinping came to power, the opposite seems to have happened. Many US companies order more and more especially IT equipment and components from Taiwan where they don't have to be afraid of IP violations etc. Companies like Google, HP and many more IT companies invest very sustainably in sophisticated R&D Laboratories in the country.

Recently Trump declared "the India Pacific Initiative" encompassing the four democracies USA, Japan, Australia and India as major defendant of the South China Sea. Following the suggestion of Japan, Taiwan is seen as a partner in implementing this strategy.

Recently, USA agreed to sell 66 F16V fighter jets and the Navy announced its intention to build 8 submarines in Taiwan.

## The Economy

### Some Background

We received a brief overview of the development of Taiwan. Its economy was until the arrival of the Japanese predominately based on agriculture. In 1940 they set up an export development zone south of Kaohsiung, however the big changes started after the arrival of the Kuomintang (KMT) since 1949. During the martial law period, Chiang Kai-Shek (CKS) allowed free enterprise to flourish. This started a small industrial revolution. Taiwanese people are very industrial people; even the big companies today started at that time as backyard operators and have grown out of family and extended family, like Evergreen, or Foxconn, which alone employs today 1.2 million people worldwide. But basically, even now the majority of companies are small to medium sized. This is in contrast to Japan and Korea, where huge conglomerates and/or Chaebols control the industry. Furthermore, the Taiwanese government placed over all the years a special importance on supporting R&D. (compare CSIRO with 7,000 staff to just one of many technology parks (which we visited) with over 35,000 employees).

Taiwan companies were and still are worldwide at the forefront of the IT technology. (There would be no iPhone without Foxconn.)

### Policy: Ministry of Economic Affairs (MoEA)

Taiwan has very limited natural resources. Consequently, it has total reliance on human capital. The Ministry of Economic Affairs is a mega-ministry with wide-ranging responsibilities covering Standards and Intellectual Property, Water Management and Water Enterprises, the Taiwan Sugar Company and all Trade activities. Its avowed goals are for diversification in exports through innovation and a focus on research.

While precluded from being a member country of the UN, Taiwan does participate as an individual member in some international organisations: e.g. **APEC** - joined in 1991 (two years after its inception) together with China and Hong Kong, and **WTO** – joined January 2002, where it ranks 18<sup>th</sup>.

Note that Taiwan's membership of APEC is available because membership is by virtue of being a separate economy, rather than a separate state.

Paradoxically, the current "Trade War" between China and the US has created beneficial economic outcomes for Taiwan. For example, America is happy to trade with Taiwan across all items but not with China. Also, some Taiwanese companies are considering moving their manufacturing facilities back from China to Taiwan so that they are not subject to US trade sanctions. Up to 150 Taiwanese companies (of about 650) are predicted to make this move. The Taiwanese government offers support in areas such as financial assistance and provision

of land. Overall, it is anticipated that 50,000 employment opportunities will be created. This will have a major benefit as while the overall unemployment rate in Taiwan is 3.5%, the rate for young people is closer to 12%.

Another side effect of the trade war is that Taiwan is concerned that China is making products and labelling them as Made in Taiwan!

Nevertheless, Taiwanese companies employ still more than 25 million people in China.

Taiwan businesses initially set up many operations in China and other South East Asian countries because of the relatively low wages in those countries compared with Taiwan. However, in recent years the wage differential between China and Taiwan has narrowed; thereby giving further reason to moving these facilities out of China.



*Taipei - a thriving metropolis*

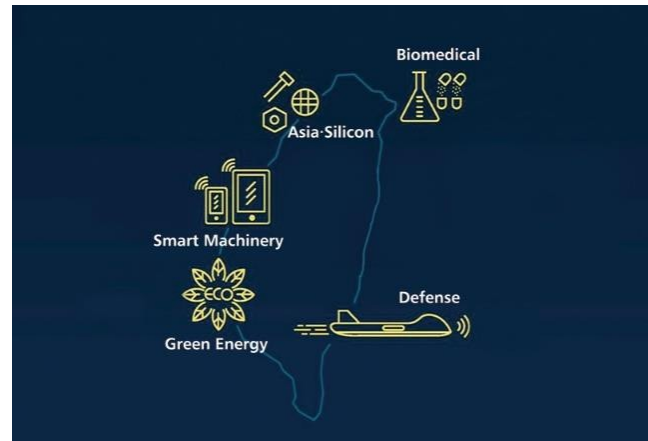
This uber ministry is responsible for policy and laws concerning foreign investment, intellectual property, energy and minerals, water resources, trade, intellectual property. It also controls four State Owned Companies in Sugar, Gas, Electricity and Water.

There has been some concern expressed regarding the Government taking the lead in development specific sectors of the economy.

The MOEA has overseas offices in Asia Pacific, America, Europe the Middle East and Africa. Taiwan has particularly strong links with Japan in the Health, high-Tech and Smart Machinery technologies.

## 5+2 Policy

President Tsai, in her first Presidential Campaign, floated Taiwan's 5+2 program for economic development. At first, it consisted of Biomedical, Asia Silicon, Smart Machinery, Green Energy and Defence. Since then, the President has added Agriculture and the Circular Economy (better use of resources and recycling). This policy extends the Industry 4.0 program of former President Ma.



## Asia Silicon

Taiwan is attempting to develop a Silicon Valley in Taiwan. It has already attracted companies such as Google and Facebook. Cisco is likely to set up a similar centre.



*Nankang Software Park Presentation*

Much of this strategy comes about through Taiwan's Education System where STEM education holds much higher importance than in Australia. Our visit to the Nankang Software Park demonstrated the effectiveness of this Strategy. The Park is an umbrella organisation in which companies with sales exceeding \$50 billion are co-located. There are several such parks in Taiwan.

## Green Energy

Macquarie Bank is firmly established in Taiwan and is looking to develop offshore wind farming costing up to \$US 800 million. The total cost of the Formosa 1, 2 and 3 projects will be over \$2.0 billion. Taiwan is looking to change the contribution of certain fuels for energy. It will phase out its three nuclear reactors, reduce the contribution of coal from 50% of energy requirements to 35% and increase the contribution of LNG from 20% to 35%. And green energy to provide 20% of power requirements.



*Formosa 1 Wind farm (Source Google)*

## Smart Machinery

This is probably the furthest developed of the 5+2 industries.

Smart Machinery covers Machine Tools and Integrated Circuit Technologies. One company in Taiwan is the third highest producer of chips in the World.

## New Southbound Policy

The New Southbound Policy (NSP) is a further initiative of President Tsai to enhance cooperation and exchanges between Taiwan and 18 countries in South East Asia, South Asia and Australasia. Aspects for cooperation will include Trade, Technology, Agriculture, Medicine, Education, and Tourism.

Clearly, this policy was created to reduce dependence on Mainland China. While President Tsai may indeed be weaving a “tangled web”, she cannot be accused of intending “to deceive”. The “Go South” is not new: it was initiated in the mid-1990s. In 2016, President Tsai rejuvenated the NSP and it has served to balance China’s regional influence. Achievements may be exemplified by increases in trade of 5.5% in the Indo-Pacific and of 56% in Tourism over the last year.

## Agriculture

Agriculture contributes about 3-4% of GDP and about 2.5% of total exports – particularly bananas to Japan.

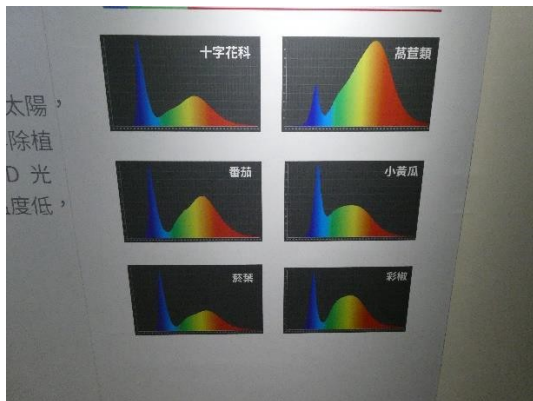
Taiwan has been successful in attempting to become self-sufficient in plant-based food over recent years. The YES HEALTH iFarm was established by Mr. Winston Tsai, a businessman, who believed that people should have access to safe, tasty and nutritious food. It is a private enterprise. It has no government funding. Seven years was spent in research before construction commenced.

YES HEALTH iFarm continuously researches and monitors innovative methods of food production. A number of new technologies have been patented. It has over 30 patents.

The farm is situated in suburban Taipei and maximizes a small site by growing the plants using hydroponic methods over 14 different levels; each being 1.4 hectares in size.



Each level is lit independently by various spectrums of LED light.



This photograph shows the best light frequencies to use for different vegetables. For instance, the top right is for lettuces and the middle on the right is for cucumbers.

Tap water is used but is filtered to remove chlorine. The water is continuously recycled through a large pool in the grounds of the farm.

Oxygen is pumped into the water using patented technology and ultra-fine bubbles prevent bacterial growth. Thus, heavy metals are reduced and nitrates decreased. The plants are fertilized with an organic soybean compound. No pesticides are used. At this time, 30 plant varieties are produced.

The farm has daily sales of one tonne of fresh produce. This is sold in markets and to restaurants and at the farm shop and café. It tends to focus on the production of out-of-season products.

There are plans to share the technologies adapted at the iFarm to countries around the world, to help them to produce healthy, cheap food in intensively farmed enterprises. In particular, discussions are presently being held in the UK.

## The Indigenous Peoples of Taiwan

There are 16 distinct indigenous peoples of Taiwan. The greatest concentration is in the mountainous areas and the East Coast. This is because they were pushed from the plains on the West of Taiwan when successive nations came to Taiwan. It is interesting to note that one clause in the Taiwan New Zealand Free Trade Agreement concerns the treatment of indigenous peoples!

The indigenous groups comprise about 2% of the total population although the number of “hybrids” is not known. The indigenous peoples have reserved seats in the parliament.

The language groups of the Taiwanese indigenous peoples and the language groups of Polynesians have some similarities. It is thus conjectured that the Taiwanese indigenous peoples spread to the SSW but avoided Australia (because of ocean currents).



## Road and Rail Infrastructure

Taiwan is largely an urbanised country. It has high population densities. Its 3 major cities have populations of about 3 million each. Many smaller cities each have populations of about 1 million. Efficient transport between these cities is important for the country's economic growth. Therefore, an extensive road and rail network has been built, with the first railway being constructed in 1891 during the Qing era.

Taiwan's topography is more than two-thirds mountainous. The island was formed through volcanic events in the north of the island and the uplift of sediments in the centre and south caused by the relative movement between the Philippine Sea and the Eurasian tectonic plates. The uplift is ongoing. The resultant mountain ranges average an increase in elevation at a rate of about 5 mm per year. There are 286 mountain summits over 3,000 metres above sea level on the island, with Yushan being the tallest mountain in both Taiwan and East Asia. Because of the mountainous topography the construction of road and rail networks require numerous tunnels, railway viaducts and bridges.



There are three major north-south geological fault lines along the length of Taiwan. The persistent seismic activity along these faults makes for very high road and railway construction and maintenance costs. The Government has an annual budget of about \$AUD150 million for the maintenance of earthquake impacted public buildings and infrastructure.

Due to the seismic activity and the mountainous topography of Taiwan, there are no simple construction methods for the development of major road and railway networks. The layers of fractured and friable unstable rock encountered along road and railway alignments, especially where deep cuttings are necessary, need to be stabilised with rock-anchors, vegetation and retaining walls. Elevated roads, viaducts and bridges are designed to withstand seismic events.



As of October 2019, there are 29,811 bridges in Taiwan. Box girder construction (concrete and steel) for bridges and elevated roadways is common. Since about 2000, cable stay bridges have become common where large spans are required.



The New Taipei Bridge (cable stay) has a height of 136 m and a length of 1100 meters spanning the Tamsui River. The bridge was completed in 2010.



There are more than 71 significant road tunnels with a combined length of 387 km constructed on 1403 km of expressways. The Xueshan Tunnel or "Snow" longest tunnel in Taiwan, located on the Taipei - Yilan freeway. The tunnel was constructed at a cost of about \$AUD4 billion and took some 15 years to construct. The tunnel is a marvel of civil engineering. While excavating the tunnel, engineers encountered difficult geological

problems like fractured rock, six major geological faults and high-pressure groundwater inflows. The Road authorities have developed traffic management systems to monitor traffic flow and minimise traffic accidents in their tunnel systems. Traffic regulations and associated infringement fines for noncompliance are managed through extensive camera with number plate recognition software, Regulations include lane changing and not complying with minimum distances between vehicles.

The current railway network comprises conventional lines, rapid transport system, high speed rail and urban metro systems. The conventional rail system that circumnavigates Taiwan Island is 1064.5 km long and has 228 stations. The Taiwan High Speed Railway (THSR) from Taipei south to Kaohsiung is now some 384 kilometres long.





The THSR network, including 12 stations, reaches almost 90% of Taiwan's population. It was constructed over 6 years. Construction of the all-new high-speed line began in 2000, a 345 km route with trains capable of 300km/h, leading to massive travel time reductions between eight major cities along the Taipei- Kaohsiung corridor. The end to end journey time was cut from four hours to just 90 minutes

About 300km of the line's total length is built either in 48 tunnels, the longest being 14

kilometres, or on viaducts. About 70% of the line is on viaducts and 20% in tunnels. The route includes steep gradients to cross the terrain. An interesting feature, considered necessary because of the densely populated corridor through which it passes, is the protection of the environment which included bridges for animals to traverse the line, development of tree preservation areas and habitat areas devoted to the preservation of the pheasant-tailed Jacana, a type of bird that is considered endangered in Taiwan.

The project is one of the largest privately funded rail construction projects in the world. The total project cost (1998) was \$AUD 25 billion. It was funded by the Taiwan High-Speed Rail Corporation (THSRC) under a 35-year concession agreement, signed in 1998.

The project was awarded the first prize for the "Outstanding Civil Engineering Project" awarded by the AsiaCivil Engineering Coordination Council in Sydney in 2010.



The AIIA study tour participants were very impressed with the air, road and railway infrastructure that they travelled on and especially the maintenance of the structures, pavements and railway stock. It was obvious to the AIIA participants that the Government and its public works authorities as well as private industry plan for the future to ensure that the infrastructure keeps abreast with expected growth and most importantly, have well thought out maintenance programs and funding in place. It was interesting to note that in well patronised tourist areas, such as the Alishan National Forest Recreation Area industry has instilled electric vehicle charging points.

## ***Water Resources, Water Supply and Irrigation***



*Paddy fields in suburbia!*

### **Physiography & Climate**

Straddling the Tropic of Cancer, Taiwan is a small, north-south elongated island covering 35,980 km<sup>2</sup>, lying some 180 kilometres across the Taiwan Strait from the south-eastern coast of mainland China. It is roughly half the size of Tasmania but with a population of 23.8 million, some 1 million less than that of Australia. The terrain is divided into two main parts: the western third comprising flat to gently rolling plains where 90% of the population live; with the eastern two-thirds of the island dominated by the rugged forest-covered Central Range of mountains. Taiwan has the largest number and density of high mountains in the world with 286 mountain summits over 3,000 m above sea level. Mount Yushan (3,952 m) is the highest, both in Taiwan and East Asia. The island's mountainous terrain is the result of a geological upheaval 4 to 5 million years ago resulting from its sitting on the fault line of two major convergent tectonic plates. Taiwan is seismically active with an average of 2 to 3 earthquakes with a 6.0-7.0 magnitude and 22 with a 5.0-6.0 magnitude each year.

Most of the population live in a series of abutting cities along the western plains. The cities, with the capital Taipei in the north, abound with high rise office, commercial, industrial and apartment buildings. Population density is 649 people per km<sup>2</sup> making it the world's 17<sup>th</sup> most densely populated country. Within this vast conurbation is interspersed the island's agriculture, with paddy fields and other irrigated crops growing within an essentially urban environment.

Taiwan's climate is subtropical, except for the very southern part of the island, which is tropical. Average annual rainfall is about 2,500 mm, much of which comes in the form of typhoons. At least three to four typhoons hit Taiwan every year, providing much of the water supply, but also causing damage, flooding, and landslides. Rainfall is distinctly seasonal, with the wet season from May to October and the dry season from November to April. The typhoon season (July – November) roughly coincides with the wet season. Rainfall from typhoons accounts for some 50% of annual rainfall and 75% of annual runoff. Without the typhoons the island would face serious drought. The steep topography and intense rainfall results in

## Water Resource Management

Responsibility for development and management of the nation's water resources falls to the **Water Resources Agency** under the Ministry of Economic Affairs. Although Taiwan's annual precipitation is 2.6 times the world average, per capita water availability is less than one seventh of the world average due to the large, dense population and small river catchment areas. Because of the steep terrain, the seasonal and intense rainfall and the rapid run-off, the availability of ample, suitable, water sources is problematic.



*Diverse irrigated crops*

Much of Central and Southern Taiwan has experienced droughts in past dry seasons due to low rainfall and heavy water use by agriculture and industry. These droughts have resulted in conflicts of water access by irrigators, and water supply restrictions on industries and households.

It is estimated that industry consumes about 10 percent of Taiwan's water, with 20 percent for municipal water supply and 65 per cent for agriculture. Although agriculture contributes only a few percent of GDP, farmers continue to be an important political demographic. In future, it is likely Taiwan will have to cope with recurrent water resource shortages, and with its dependence on energy imports and its current move to more sustainable energy sources, future water management will also likely face energy constraints.

## Surface Water Resources

Taiwan's average precipitation is 90,000 GL<sup>1</sup> per year. After evapotranspiration, evaporation, and runoff to the sea, it is estimated that the average annual water intercepted and productively used (including groundwater) is around 20,000 GL. The three rivers having highest average annual runoff are: the Kaoping River (7,600 GL), Tanshui River (5,800 GL) and Choshui River (5,200 GL), all of which are in western Taiwan.

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<sup>1</sup>Sydney Harbour holds approximately 500 GL

There are many small natural and artificial lakes in north-west which store runoff for irrigation, but which recently have more economic value as tourist attractions. These include Sun Moon Lake, Chengching Lake and Lungluan Lake.

There are around 50 reservoirs in Taiwan, 18 of which are classed as major reservoirs including the Tsengwen, Feitsui, Shihmen, Techí, Nanhua, Sun Moon Lake, Wushe, Wushe and Liuy Tan. There is a limit on further reservoir construction with most of the available viable sites having already been developed. As it stands, reservoirs make up only around a quarter of Taiwan's fresh water supply, with rivers providing nearly half and groundwater extraction another 30 percent.

The main problems facing surface water development are: (i) lack of storage capacity and (ii) siltation of existing reservoirs. Taiwan can store only about 1.5 months water requirement before running dry and depends on the normally frequent rainfall to replenish storage capacity. In recent times, however, this has not happened, and the country faced water shortages from 2002 to 2005, from 2009 to 2011, 2014 and 2015. This situation is exacerbated by the effects of severe siltation with consequent reduction in storage capacity from which many of the major reservoirs suffer. Siltation results partly from over-development of agriculture and other non-farm activities in catchment areas and subsequent erosion. It is reported that six of the major reservoirs have had their storage capacities reduced by up to one third. With less frequent but more intense rainfall anticipated in the future, landslides and increased erosion might be expected and the problem could worsen.

The usual solution to reservoir siltation is catchment stabilisation and dredging. But this is almost prohibitively expensive. The search for solutions continues, including expanding the use of desalination which has been used on a small scale by private companies in Taiwan for many years. The use of reclaimed wastewater and attacking non-revenue water and pipeline leakage are other areas that are being addressed.

## **Groundwater Resources**

Economic groundwater availability is directly related to geology. In Taiwan's eastern mountainous ranges, the hard, highly deformed, rocks contain limited groundwater stored in faults, joints and other interstices in the rock mass. Recharged by rainfall infiltration, this groundwater is slowly released to streams and rivers forming their base flows. But the discrete nature of groundwater in the rock mass, and its low storage capacity, means that groundwater in the eastern two thirds of the island is generally not economically extractable. The main areas with economic groundwater potential are along the western alluvial plain and abutting tablelands. Here groundwater has been developed over decades for municipal, industrial and agricultural (irrigation) use, where it is estimated groundwater provides some 20 per cent of Taiwan's water usage. Like all such sedimentary deposits, however, groundwater occurrence and quality is extremely heterogeneous, with viable groundwater being restricted to certain larger aquifers with high storativity, permeability, good quality and good recharge characteristics, conducive to larger scale extraction. These areas have already

been well identified and developed. Examples are the Choshui River alluvial fan plain, the Pingtung plain, the Ilan plain, the Taipei basin and the Huatung valley.

Urban growth along the western coastal plain has put the long-term security of water supply under stress. In some areas over-pumping of groundwater has led to land subsidence and in other areas abstraction has led to increased salinity through seawater intrusion. The future of groundwater development will likely not be one of expansion but rather focus on efficiently managing and regulating existing systems to both minimise adverse impacts and to help balance the competing demands for the island's limited water resources.

## Water Supply

Piped municipal water supply has a long history in Taiwan. The AIIA delegation visited the Tainan Shan-Shang Old Waterworks Museum which was recently renovated by the Tainan City Government. Built in 1922 during the Japanese rule, it is a national historic landmark. Drawing its raw water from a nearby stream, more than 100,000 people once depended on its sand filtration system for safe drinking water in Tainan City. The original offices, water quality control laboratory, water pumps, water purification equipment, and the electricity generation room remain in place.



*Old Waterworks Museum, Tainan - Water Filtration Units*

Today, all public piped water supplies and sewerage in Taiwan are administered by the **Taiwan Water Corporation**, operating out of a Head Office, 12 Branch Offices across the island and three Regional Engineering Offices. It is overseen by a Board, President, Vice- President and Chief Engineer and encompasses, via some 14 Departments, the broad range of activities required of a modern water supply and sewerage authority. It comes under the Ministry of Economic Affairs.

Raw water sources are obtained from reservoirs, rivers and groundwater sources. Distribution is essentially universal, treatment in most systems is to international standards and except in drought periods 24 hour per day service is provided to customers. **TWC** coordinates with the **WRA** in optimizing water resource allocations and preventing excessive groundwater extraction. It faces daily the problems described above of reservoir siltation, damage caused by landslides and flooding and groundwater quality deterioration.

The current average water per capita consumption in Taiwan is 271 litres per day. This compares with 161 litres in Melbourne and 185 litres in Brisbane.

## **Irrigation**

The climate, rainfall and landscape along Taiwan's western plain are such that, with irrigation, two or three crops a year are possible. However, the island's steep topography and high rainfall intensity result in rapid and very high wet season river discharges which can and do damage irrigation storage, diversion and other structures. And the low river flows in extended dry seasons commonly mean there is insufficient flow for irrigation in those times. So, irrigation in Taiwan is not without its challenges. But, in overcoming these challenges, Taiwan's irrigation systems have developed to be world class, contributing substantially to the country's economic development.

The history of irrigation in Taiwan goes back some 700 years to the Yuan Dynasty (1291-1379 of China. Gradual development through Dutch occupation (1622-1683) and succeeding Ming and Ching Dynasties saw the irrigated area in Taiwan grow to some 200,000 ha by 1895 when Japan annexed the island. Up until then, most irrigation canals had been built and maintained by individuals or by landowners and tenants, with no government involvement.

Between 1895 and 1945 the Japanese dramatically increased irrigation coverage, mainly for rice and sugar cane production, but war damage saw coverage at only around 300,000 ha by 1945. Post-war restoration and development quickly increased the coverage to a peak approaching 700,000 ha by the mid-1960s. This period saw a more technical and scientific approach to irrigation, the construction of several large irrigation systems and supervision and administration of all systems by government.

The impressive irrigation performance has been attributed to the design of the country's irrigation institutions which comprise Irrigation Associations (IAs) – parastatal organizations collectively owned by farmers, supervised by governments, managed by professional managers, led by local politicians chosen by farmers, and supported by a network of Irrigation Groups (IGs) through which farmers organize collective action for irrigation operation and maintenance (O&M) at the local level. This design combines professional management and government support on the one hand, and farmer participation and self-governance on the other.

But over the past 50 years irrigated agriculture, under the competitive pressures of growing water demand for commercial, industrial and municipal development, and expansion of upland crop irrigation, has decreased to be now around 400,000 ha and falling. Competition between sectors for Taiwan's limited water supplies is serious and is expected to worsen over time. The agriculture sector (mostly irrigation) uses the largest portion of the total water supply but as its GDP contribution is relatively low, irrigation planners and managers are constantly working on how to use the limited and decreasing water sources more economically and efficiently.

Existing irrigation and drainage facilities managed by irrigation associations include, roughly, 70,000 km of large and small canals/ditches, 1,600 diversion dams, 17,000 regulating gates, 17,000 offtakes, 4,000 flumes, and 2,000 groundwater wells.

## Health in Taiwan

Although we did not have any direct discussions re health on our Study Tour, we can make the following observations.

Taiwan is a country of over 23 million people of multiple ethnicities. Following the exit of the Japanese in 1945 they adopted a National Health Insurance System (March 1945) at that time covering 57% of population. Most GPs practiced independently and out of pocket expenditure was great. The NHI consolidated these issues into a single scheme. It is mandatory for citizens to join and the coverage rate is 99%.

It is funded by the government and premium paid by each person depends on their situation. The percentage of GDP for medical was 5% in 1994 (before the NHI system). In 2010 it was 6.2% and now about 9%, considerably less than JIL USA and other European countries.

They pride themselves that administrator costs are low under 2%. The department negotiates with hospitals and physicians to set a global budget. There is a panel review to keep costs down and maintain quality. Inappropriate treatment or procedure does not get paid.

It is a single payee system, government administrated achieving good accessibility, comprehensive population coverage, short waiting times, relatively low costs, an NHI data bank for planning and monitoring and evaluating services.

As mentioned above it is mandatory for all citizens in Taiwan to join. Foreigners are not covered by the scheme.

The National Health Research Institute also keeps a complete data bank from 1995 for research purposes (anonymised).

In Taiwan there is a high level of health seeking behaviour. It is part of the Taiwanese culture to take medicine and seek medical help frequently even for minor ailments. Diet is another. We saw very few overweight people.

Delegates drank the water and ate the local food without any problems. Cleanliness was notable throughout Taiwan; maybe the result of the Japanese occupation.

The average patient sees a GP 14 times a year. Seeing 50 patients a morning is common for GPs. A patient only gets 5 minutes; as a consequence, patients often seek a second and third opinion. There is no gatekeeper system, patients can make appointments and expect to see

a specialist within one or two days.

In Taiwan providers are primarily private and free to compete with each other and in some cases, there is a co-payment.

We did not visit any hospitals but on hearsay I was told they were first class and the quality of care excellent.

We were unsure about the quality of care in some of the more remote parts (and indeed we drove through some on the bus or train).

So, in summary,

- A National Health Insurance was introduced in Taiwan in 1995.
- The health system has good accessibility, comprehensive population coverage, short waiting times, low cost and national data collection for research and planning.
- Problems with the system include short consultation times and poor gatekeeping specialist services.

## Population

Taiwan's population is predicted to fall from over 23 million (currently) to 16.4million by 2099. This is a major security threat to Taiwan. It also weakens Taiwan's economic outlook in that the number of those employed will fall as a percentage of the whole population.

Taiwan's natural growth rate is 1.22 children per woman: the lowest on record. By way of contrast, Australia's natural birth rate is 1.74 children per woman. But the biggest contrast is that Taiwan does not have an immigration policy which can make up for its low birth rate.

The projected fall in the population also has serious security implications.

Population growth in Taiwan was at its highest in the mid-20th century as supporters of the defeated Kuomintang fled mainland China, but it has been steadily declining since. The birth rate in Taiwan is now below the rate needed to sustain population growth and current growth is caused by increased longevity. The latest estimates indicate that Taiwan's population will peak at 23.4 million in the next ten years and then gradually begin to decline.

There does not appear to be a firm strategy to obviate the problem. Taiwan is not open to planned growth through immigration. A focus on automation through R&D may be the option.



## **The New Colombo Plan**

We were fortunate enough to meet with a number of New Colombo Plan Scholars during our time in Taiwan. I have set out below the comments of one.

We informed them of the program the AIIA has with the help of DAFT to welcome the Alumni on their return and organise special events which they could attend at no cost. This program was received most enthusiastically by all of them.

### **Taiwan Reflections from a New Colombo Plan Scholar**

I have been living in Taiwan for 10 months. It has been a wonderful, eye-opening period.

The thing that stood out to me most when I first arrived in Taiwan was the convenience of the public transport. I come from Tasmania where, at peak hour, you are lucky to have a bus scheduled every half an hour in the CBD. In Taiwan, you are spoiled for choice with high speed railways which can take you from Taipei (the North) to Kaohsiung (the South) in under two hours, buses, ferries, a regular train, the mass rapid transport system, rental bikes, and taxis. As a result, it is fairly easy to travel across the island on weekends.

The locals are, in some cases, exceedingly friendly. In my experience as a foreigner, I only have to look slightly lost, and I will immediately have a kind stranger come up and offer their assistance.

The wonder of convenience stores is also worth noting. Living in Taipei, it quickly begins to feel like your life revolves around your interactions with your local convenience store. You can go there to buy takeout meals and snacks, withdraw money, pay your water, internet and electricity bills, purchase tickets for the high speed rail or performances and concerts, receive packages, print and scan documents, or purchase gifts – in some stores, you can even wash your clothes. And they are open 24/7. It truly is a level of convenience I have never experienced in Tasmania – and you are spoiled for choice, with what seems like a 7-Eleven or Family Mart on every street corner. In fact, Taiwan has the greatest density of convenience stores to population in the world, with a total of 10,199 convenience stores in 2016, approximately one convenience store for every 2,304 local residents.

Typhoons and earthquakes are also something I have had to adjust to during my time. There is no information on your arrival in Taiwan about these occurrences – it is one of those ‘assumed knowledge’ situations, where you quickly learn to adapt and seek advice from locals – for example, my classmate recommended that I keep a backpack filled with dry snacks, a water bottle, hard hat and powerful torch with spare batteries tucked away in my room at all times in case a serious earthquake, such as the one on Hualien, 2018, which killed 17 people, occurs. You also learn handy tips such as “keep your door open and turn off the gas in the event of an earthquake,” as the doorframe may warp and lock you in the room, or the gas may leak and poison you.

Outside of transportation and the forces of nature, the upcoming elections notably shape life in Taipei. In January 2020, Taiwan will hold both Presidential and Legislative elections. At the moment, front runners include Tsai Ing-Wen, incumbent president and member of the Democratic Progressive Party (DPP) and Han Kuo-Yu, the Mayor of Kaohsiung, representing the Kuomintang (KMT). Issues such as Tsai's cutting of generous public servant pensions, the impact of swing voters on Han's mayoral election, and the example of One country two systems in modern-day Hong Kong - and how all of these will affect the election, are all topics of frequent debate among university students in Taipei and Taiwanese media personalities. The people I have spoken to in Taipei seem concerned that Han's election will lead to Beijing's increased influence in Taiwan. However, they also believe his election is unlikely, and cite past examples of swing voters, who will swing back against him this time around. However, I have not had the chance to talk with people outside of Taipei to understand whether this is the general sentiment. It will certainly be an exciting period to be in Taiwan. Already, it is common to see political parades moving slowly down the street on the way to university: perhaps 100 people dressed in their party's colours, riding bikes, walking, or standing on open back truck, waving, playing music, handing out fliers and blaring slogans through a megaphone. They march, slowly down the road, blocking a lane and forcing traffic to move around them. In some cases, such as Han and his Han's Fans, politicians are treated like celebrities – with crowds of people coming in to see them. Even for minor politicians - they will make trips to a night market, and have an employee go before them, announcing their arrival and encouraging people to take photos. I have never seen anything like it in Australia.

The style of education is also something I have had to adjust to. For local students, the highest point of educational pressure is their university entrance exams. After that, once you have made it into your ideal university, you can relax – your future is to some extent, set. For example, at my first university, students would turn up half an hour late to class, walk directly in front of the lecturer without apologizing for their tardiness, plonk themselves down and immediately begin scrolling through their Facebook feed. Our teacher would say nothing. I once asked a teacher why she tolerated this level of disrespect. She said that in Taiwan, the students have greater power than the lecturers. If the students begin complaining about a lecturer due to their strictness, it will reflect poorly on the lecturer. Moreover, if a teacher fails too many of their students, the teacher will be called in to the chairperson's office to give an account of their actions. This is in part due to Taiwan's very competitive higher education environment. In 2013, there were over 160 universities for the population of 23 million in Taiwan, compared to 42 universities for 25 million people in Australia (2019). In the face of a declining birthrate and shrinking student numbers, schools must compete to attract students to their institutions, particularly if they are not among the top three universities in Taiwan.

Finally, I will mention the presence of foreign laborers, specifically female Indonesian caregivers who are employed within the private sphere of the home to care for elderly Taiwanese. I often come across the women in the park, watching on as their employer plays mahjong, or meandering through the shopping mall pushing their employer in a wheelchair,

or, on a weekend, gathering around Taipei Main station – a convenient meeting place for those living further out of the city – with fellow Indonesian workers to eat and chat.

## NCP Scholar

## Education

Education in Taiwan focusses more on STEM subjects than in Australia. The role of education is very important to its industrial development. Essentially, it is integrated. We also found that some universities have very close tie ups with industrial organisations. One often sees university students participating in these organisations even before graduation, thus stepping stone from university to industry is very easy.

Taiwan uses its Universities to extend its Soft Power. This can be seen through the opening up of scholar exchanges with other countries.

There is a strong desire for the Taiwanese to develop closer relationships with Australian educational institutions. Perhaps the only way this can be achieved is that for the Heads of Departments at both Australian and Taiwanese Universities to make the effort to get to know each other better. There is no doubt that some Australian universities would benefit from having a tie-up with some of the stronger research departments in various Taiwanese universities and industrial parks such as Nankang.

It would be difficult for non-Chinese speakers to attend University in Taiwan because there are very few courses taught in English. Taiwan does however have a policy of moving towards a multi-lingual society.

It would not be possible for any Australian University with close ties to a Confucius Institute to participate in such a program. That eliminates the University of Melbourne, La Trobe and Victoria Universities.



*The Delegation Meets with Professor Pan of the New Taiwan Normal University*

## Taiwan – Then and Now

I first went to Taiwan in 1979 on a three-year assignment with Ford Motor Company. I didn't know the language, nor the culture and knew very little about the government, except that Chiang Kai-Shek, who fled from mainland China in 1949 had died a couple of years before. His son, Chiang Ching-Kuo was by then president. Posters of father and son were omnipresent. My wife and four-year-old son travelled with me and, after an elaborate passport rigmarole at the airport, we were met by English-speaking local Ford staff and whisked into Taipei to the



Grand Hotel. In all my travels I had never seen so much marble as in the huge hotel lobby. Twelve floors of elaborate decoration and marble. We were delighted to be accommodated in corner suite 601, but we didn't realise it would take three months to find a suitable house, and the novelty wore off before long. Thankfully, there was a fine swimming pool nearby and an American Club that

was the centre of social life for many of the expatriates in Taipei, most of whom seemed to live on the north side of the city. There was also a kindergarten for expatriate children and the Taipei American School was excellent.

My wife was pregnant, so hospital facilities were a high priority for us. We were provided with documents that guaranteed Ford would pay for medical treatment; this was necessary because, for non-citizens, payment was required before treatment would be administered. We soon experienced the difficulties living in a controlled society when we needed to set up banking and driving licences. As well, we were told that, with Taiwan stamps in our passports, we would need to have separate passports if we planned ever to visit the Peoples' Republic of China. This was the first taste of the enmity between PRC and the Republic of China, as Taiwan was officially called.

The distance between PRC and Taiwan is only about 70 kilometres and ever since Chang Kai-Shek arrived in Taiwan with two million supporters in 1949 after defeat by Mao's communist



forces, there had been fierce military posturing across the Taiwan Strait. The migrants brought with them huge quantities of national treasures now housed in the National Palace Museum, fortunately for posterity considering the cultural revolution that took place on the Chinese mainland in the following decade. However, there was some strong resistance to the unwanted arrivals and to the Kuomintang party that set up

government. This sentiment is still evident – see <https://qz.com/922638/taiwan-weighs-whether-to-evict-former-dictator-chiang-kai-shek-from-his-own-memorial/>. The aboriginal community was no doubt even more concerned as the burgeoning population encroached further on traditional lands.

There had been small migrations, mostly from southern China over previous centuries and there were signs of the lack of integration still evident when Taiwan was still in the throes of becoming a developing economy. Ford was typical of large employers in satisfying the need for a range of skilled employees. Office workers with a reasonable grasp of written English were transported the 40 kilometres to the Ford plant in two full buses from Taipei each day. Production workers were either drawn from the local community or else single males recruited from further afield and housed in dormitories. Several different languages or dialects were to be found at the Ford plant representing the different elements of Taiwan society – Mandarin could be heard in the office, but Taiwanese and Hakka were dominant in the factories. There was a strong push from government for literacy in Mandarin, and sub-titles appeared on every screen of both television channels even though the dialogue was in Mandarin. Employment regulations protected working conditions, even if they seemed inferior to those in Australia, and all local employees belonged to a trade union. In my experience the arrangement worked well, and management consulted with the union over complaints or planned changes in production facilities or practices.



*There is a head sticking out of that water tank and there are three other people in the back of the truck.*

Australia had closed its embassy on Taiwan in the early 1970s without much effect (I received a letter from the Australian Tax Office telling me to collect my refund from the embassy long after it had closed!), but with the ‘normalization’ of relations with China, the U.S. withdrew a large part of their military support for Taiwan, leaving a small number of ‘advisers’ on the island. There was palpable disapproval of President Jimmy Carter for recognising Beijing over Taipei but in fact Taiwan still bristled with American armaments and various assurances were made that there would continue to be protection under the U.S. military umbrella, but I found it useful to be able to say, in Mandarin, “I’m not American.”

I don’t believe the change had much effect on the Taiwan economy. The shift from a low-tech, copy-based manufacturing economy was already well underway. Taiwan stepped up its efforts to differentiate itself and Pacific islands found their membership of the United Nations was worth money to a small nation needing friends. Even South Africa, where apartheid was still in place, established a strong presence in Taiwan and in reciprocation Taiwan citizens were recognised as ‘honorary whites’ in South Africa.

One consequence of the US military drawdown was that the University of Maryland, that had a substantial campus on the island, suddenly found themselves without any students and so they offered courses to expatriates. I immediately enrolled for a Master course under the tutelage a disciple of Paul Ehrlich, one of the gurus of the environmental movement. It was a highlight of my life.

Six months after our arrival on the island our second son was born at the Adventist hospital. The medical care was excellent, but privacy was not rated highly as curious local people would peer at the unusual patient. My working day was long, and the driving was difficult. There was a single freeway that ran from Keelung in the north to Kaohsiung in the south. Road courtesy was rare. The emergency lane filled with cars and trucks at the first sign of a hold-up. Somehow, my wife managed to keep us well fed and healthy and I was impressed to watch her shop at the market. She could negotiate prices and cooking information. She could argue with the bureaucratic bank and the telephone company. All transactions were in cash because credit cards were not available, and cheques were treated with suspicion. Sometimes one waited while a messenger was sent to the bank to change a cheque for cash.



*On Sundays the road outside our house was one huge traffic jam*



construction of an expanded assembly plant and foundry, but this only lasted a few months. Our work week was six-and-a-half days, leaving little time for family life.



taxis were dilapidated Datsun cars. Many were literally falling apart. Police generally had a sympathetic attitude to people struggling to make a living. There seemed to be a rule that in the event of a road accident, fault was assumed to be a car driver over a motorcyclist, and a motorcyclist over a bicycle.

A most noticeable feature of life in Taiwan at the time was the level of pollution. Taipei is surrounded by hills and pollution settles in the basin until blown away by strong winds. It was not unusual for the air pollution index to exceed 400 or sometimes 450. This applied to many of the other cities because of the high concentration of industrial activity. It was not strange to see rivers running a garish colour because of the lack of regulatory compliance. Nowadays, Taipei scores around 70. By comparison, Melbourne is usually below 50. Within days of my first arrival in Taiwan, I needed treatment for a very sore throat by the company doctor.

There were about ten other Australians working at the Ford plant, mostly engineers overseeing



My assignment in Taiwan was to develop a supply base with enough technological capability and quality to be able to build 270 passenger cars per day - a doubling of the production rate and with increased complexity. This was illustrative of the rapid change underway throughout the island. Coping with a mix of new vehicles and the variety of contraptions used by people to move goods was a challenge for the road authorities. Most

I was impressed by the business attitude of supplier company management I had to deal with. Ford had been building cars based on European design, but the expanded facility was for making cars and small trucks of Japanese design requiring a different approach to contractual arrangements and particularly a higher level of quality. This was made easier because many of the older owners of companies in Taiwan were fluent in Japanese, having been educated under the Japanese system because Taiwan had been a Japanese colony since 1896 after the Sino-Japanese war, until 1945 with the defeat of Japan in WW2.

Of course, it would have been easier simply to import components from Japan, but the Taiwan government was determined to increase technological competence by enforcing local content regulations. Ford benefitted from the regulations because manufacturing costs in Taiwan were lower than Japan. It fell to me to negotiate with government for licence to import componentry and equipment. Government would only grant an import licence for things that could not be made locally, and often only on the proviso that Ford would help local companies develop the technological capability for local supply. I made many visits to Japan to facilitate licence agreements and joint ventures. The fact that Chinese and Japanese language uses the same pictograms, meaning that Chinese people can read Japanese even if they cannot speak it, plus the familiarity with Japanese culture, made it possible for Taiwan to adopt Japanese manufacturing techniques much more readily than Australian companies. Taiwan's reputation abroad was still that of a country strongly supported by the United States as a bulwark against communism, and with a low-tech economy producing cheap, mostly plastic products of poor quality. Many Taiwanese young men were studying in the United States. It seemed that most families who could afford to, were sending their sons overseas to access higher levels of technological education. The government put out the message that there was a need at home to help build the country's expertise. Later, it was reported that thousands of PhD graduates were being employed at the newly built Hsin Chu campus set up with the objective of becoming a world class producer of consumer electronics. By late 1980s, that objective was underway.

The results of that policy are exemplified by the Taiwan Semiconductor Manufacturing Company - TSMC – that has acquired geostrategic importance as an unmatched supplier of computer chips of almost incomprehensible complexity. Apple and Huawei, TSMC's largest customers, buy their high-end chips from TSMC. Illustrating the importance of TSMC to the technological leadership of U.S. and China, the chairman and founder of TSMC says, "As the world is no longer peaceful, TSMC is gaining importance in geostrategic terms. Being the unmatched supplier of a world-shaping technology relied on by two great powers squaring off for a fight would be worrying under any circumstances. When one of those countries claims sovereignty over your country and the other is pledged to protect it – and may expect favours in return – the worry is correspondingly greater"<sup>1</sup>.

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<sup>1</sup> Reported in The Economist, December 2019

I returned to Taiwan for another three-year assignment in 1988 after a six-year absence, as part of the expansion of Ford's operations to be able to produce 500 cars per day at a high level of local content. Thanks to a highly educated, loyal and dedicated workforce this was achieved, and Ford in Taiwan became the most profitable Ford subsidiary worldwide.

Revisiting Taiwan 30 years later I found Taipei infrastructure was as good as any Australian city, coping with population density better than Melbourne.

Travelling from the airport to downtown Taipei it becomes obvious that so many new roads have been built in an area where there is little vacant land, and many of the new roads are built above existing roads. The traffic is more orderly than in the past, and it is evident that this is a result of better traffic management and facilities rather than heavy policing. Many of the cars look to be quite new. The wide range of luxury cars shows that, despite the improved quality of local product, the market has demanded choice, and more cars are imported. Ford in Taiwan is now producing only a fraction of the number of cars it produced in 1990 and is unlikely to survive for long.



The original North-South Freeway has been duplicated and a 300-km/h High-Speed Rail now links the cities on the West coast of the island. Even the cross-island road has been replaced by expressway, so that the road to the highest mountain is a well-maintained and safe highway. The road to the popular scenic lake, Sun-Moon Lake, in the centre of the island is accessed on excellent roads from both coasts, contrasting with the narrow and dangerous roads on which I travelled decades ago.

Downtown Taipei now has a variety of interesting architecture, with Taipei 101 standing out. It is a beautiful building, not only because of its 101 levels and its openness for tourists, but in its appearance, reminiscent of a tall bamboo plant.

For me the most spectacular change is the Mass Rapid Transport system in Taipei, all constructed within the past 24 years. The first line was built above ground on pillars, but all subsequent stations are underground. The system comprises 136 stations, including a line to the airport. The stations are designed for people to move easily and quickly using world-leading crowd control technology and electronic signage everywhere, in Mandarin and English. Some stations have signage in Korean as well, reflecting the growing number of tourists from Korea. I travelled extensively on the MRT and marvelled at the ease of movement, particularly with the frequency of trains. I seldom had to wait behind the glass safety screen for more than two minutes.



The Central Station in Taipei has been completely reconstructed and is now a complex incorporating the High-Speed Rail station, the Mass Rapid Transit system and the Central Bus Station. Each mode of transport is linked for easy access and transfer. There are restaurants and shops selling travelling needs throughout the complex. Signage is multilingual (including Taiwanese and Hakka, I'm told) and readily visible.

Buses used to be overcrowded, dirty and belching diesel fumes. Today, buses are clean and visibly more comfortable. All the buses I saw had large electronic screens at the front, side and rear showing the bus number, destination, route and timing information. Each screen alternates between Mandarin and English. Bus stops have electronic information boards too.

Crowd control also works on the streets. Because the main city roads are wide, with three or more lanes of traffic in each direction, it is difficult and dangerous to attempt to cross except at controlled intersections. Traffic signals at intersections show the number of seconds until the next change of lights and have a 'green man' sign for people to walk across the road. This means that people stop at the kerbside and move instantly when the signal to cross appears. The result is that drivers have some seconds of warning of the change of signals and slow down accordingly. I noticed that people often look at their cell phones while waiting at the kerb but do not use their phone while crossing the street.



*Restaurant receptionist – note the headset*

Electronic communication has been adopted to an even greater extent than in Australia. In a typical shopping centre restaurant, an electronic sign shows the waiting time. The reception desk person issues a numbered ticket representing one's place in the 'queue', so one is free to spend the waiting time doing other things. At the indicated time, the customer presents at the reception desk where the attendant uses a headset to communicate with a waiter who shows the customer to a table and takes the meal order. The system is so effective that all tables are occupied, and throughput is optimised.

Awareness of the public benefit of recycling and thoughtful garbage disposal is much better today. It is now common to see bags of sorted household waste awaiting collection. Streets are much cleaner, and particularly noticeable is the absence of cigarette butts. Smoking has reduced significantly throughout the community.

Petrol was more expensive in Taiwan than Australia decades ago but, even with a weaker Australian dollar, the price of petrol in Taiwan is about on a par with Australia.

Clearly, life for most Taiwan citizens is very much better than 40, or even 30 years ago. Pedestrians move easily because footpaths are free of potholes and obstacles. People are better dressed and have excellent personal facility. Government seems to have put public living standard high on its list of priorities and it is evident that most people accept the

concept of the common good.

After the study tour, I spent a week meeting old friends from my times of working in Taiwan; people in education, finance, industry and retirement. All, happily, have succeeded in life. None seemed concerned over recent incidents in Hong Kong. Hong Kong is seen as very different from Taiwan. At lunch with a group of elderly engineers, those who have prospered from investing in mainland China attributed the improvements evident in Taiwan to the former government, the KMT, not to the DPP, the political party now in government. Others refute this. Popular opinion is that pro-independence DPP is most likely to win the January 2020 election. Taiwan has given asylum to some Hong Kong protesters but has played down the extent to avoid provoking PRC.

I also met with people that had helped us in our home on both of our times in Taiwan. They all have good and fruitful lives, and in all cases their next generation are university educated. I wanted to meet up with a man named Tony whom I had met in 1979 when he had just returned to Taiwan after studying at UCLA in California. He was destined to take over the business built by his father. Our friendship was formed around his eagerness to practise his English (he also spoke Japanese, like his father) and my interest in improving the quality of the products his company supplied. At the time, I sensed that he would be successful in business, but I also sensed an innate fairness, second only to the family loyalty. His father died in 2003 but I was unable to attend the funeral.

A colleague from my days at Ford had travelled from the U.S.A and together we went to Taichung, about half-way between Taipei and Tainan. Tony met us at the station and took us (in his Bentley) to the factory where he proudly showed us the many improvements. He showed us a video from which we learned that his company owns 49 companies in mainland China supplying most of the carmakers there. He took us to lunch with his managers and to the traditional village funded by his family. After an excellent French dinner, he took us to his new house. I was astonished to see the six-storey home in exquisite gardens and a view overlooking Taichung city. I later learned he is one of the richest people in Taiwan, but his deportment was that of a contented man who loves his family, values his friends and his workers.

All that I did and all that I saw in my visit confirmed my positive emotions about Taiwan. I was shown incredible generosity and companionship that added substantially to a very successful study tour.

**David Lamb, December 2019**

## Same Sex Marriage in Taiwan

Same Sex Marriage in Taiwan the first Asian country to have this right legalised on 24 May 2019.

We visited both the Tong-Kwang Light House Presbyterian Church and the Taiwan Foundation for Democracy to learn more of the process leading to this proclamation.

Pastor Wong told us of the history of the Tong-Kwang church saying that it is the first Christian Church for homosexuals in Chinese society and was established in Taipei on 5 May 1996.



*Tong-Kwang Church Meeting*

It is independent of the Presbyterian Church of Taiwan and has LGBT welcoming programs. Members attend Taiwan Pride parades which have been held in Taipei and other towns in Taiwan since 2003. He spoke further on the progress towards this legalisation process with leadership from church members.

We met the Executive Officer of the Taiwan Foundation for Democracy who told us that the Foundation which was established in 2003 supported the movement for same sex marriage. A plaque externally on their building reads as follows:

“Marriage Equality Movement”

As political democratisation became firmly entrenched many activists hoped to realise in legislation the equal rights granted by the Constitution. The recent marriage equality movement is a successful outcome. Starting in the 1980's advocacy groups gradually gained ground through meetings and lobbying in the legislature. In 2017 Taiwan's Constitutional Court ruled, shown in the Judicial Yuan Interpretation no 748 that it is against the Constitution for the Civil Code to bar same sex marriage couples from marrying.



*Foundation for Democracy*

The Court also demanded that the executive and legislative branches complete the necessary legislation for the amendments to the related laws within two years. Thus, this statement explains the procedure leading to the legalisation passed in 24 May 2019. The legislation grants almost all of the rights available to heterosexual couples except that it only allows adoption of a child genetically related to one of the same sex couples.

## Meetings in Taiwan

### 4th November

#### Meeting with The Australian Office in Taipei

- Mr Gary Cowan - Representative, Australian Office, Taipei.

### 5th November

#### Meeting with National Taiwan Normal University

- Prof. Shu-Man Pan - Dean of the College of International Studies and Social Sciences,
- Ms Jessica Peichun Liu - Senior Staff

### 6th November

#### Yes iFarm - Guided tour

#### Nankang Science park

- Director Mr Tong Seng Yang

#### Tong Kwang Church

- Pastor Wong
- Administrative staff Gary

### 7th November

#### Taiwan Institute of Economic Research

- Dr. Chen Ho, Vice director
- Dr. Charles Chou
- Associate Researcher Dr. Lin
- Sophia Chen, Assistant Research Fellow

#### Department of Economic Affairs

- Ms. Cynthia Kiang - Director General, Department of International Cooperation, MINISTRY OF ECONOMIC AFFAIRS, R.O.C.
- Mr. Liao Hou-ming - Section Chief of Asia-Pacific Section
- Ms. Chen, Yen-Hsiu - Officer

#### NCP cocktail reception

Alex Matos, Executive Director of Australia New Zealand Chamber of Commerce in Taipei

#### NCP scholars

- Bethany Green
- Nancy Cai
- Miranda Lu
- Jessie Nguyen

### **13th November**

#### **Institute of National Policy Research**

- Mr Hung Mao Tien (Chairman)
- Mr Kuo (senior advisor)
- Ms Jessica Chang Secretary to the President

### **13th November**

#### **Trade Investment Queensland**

- Patrick Hafenstein – Commissioner for Taiwan

#### **Taiwan Foundation for Democracy**

- Director Mr. Bo Tedards.
- Assistant research fellow Sih-Wei, Li  
Taiwan Foundation for Democracy

### **14th November**

#### **Luncheon**

- Ms Fan, Deputy DG of Department for East Asian and Pacific Affairs
- Su-Hsien Cheng (Susan), First Secretary on Home Assignment  
Indo-Pacific Affairs Section, Ministry of Foreign Affairs, Taiwan
- Previous Director General of Taipei Economic Cultural Office Melbourne Elaine C. Y. Chen

#### **Australia Office**

- Ms Susan Moore Deputy Representative
- Matthew Robertson, Deputy Director of Economic and Policy Section

## **Delegates**

- Sue a'Beckett - ALAA - Associate of the Library Association of Australia
- Ian Binch - AGInst Tech, MAppSc, Hon FIEAust
- Sue Chapman - Lecturer in Commercial Law, University of Melbourne
- Man-Ting Chong - B. Arts (RMIT University) NAATI Certified Professional Interpreter (Mandarin)
- Kathie Derham Moore - LLB University of Melbourne, LLM Monash University
- Ann Gorey - M.Ed. Flinders University, South Australia
- Jonathan Hooper - MBBS1963 (University of Melbourne), FRCS (UK), FRCS, Ed, FRACS, FA (OrthA)
- Hartmut Hofmann - Dipl. Ing. (FH) Nuremberg University of Applied Science
- Thomas Kudelka - BSc (Hons), University of Tasmania; MBA, University of Melbourne
- David Lamb - BSc, Grad Dip Physical Distribution Management, MGA, CELTA (Camb) FIPSM
- Rosemary McCormack - Nursing and Midwifery
- Ray Miles - Dip. Civil Engineering, CPEng, FIE (Aust)
- Patrick Moore MA – University of Cambridge