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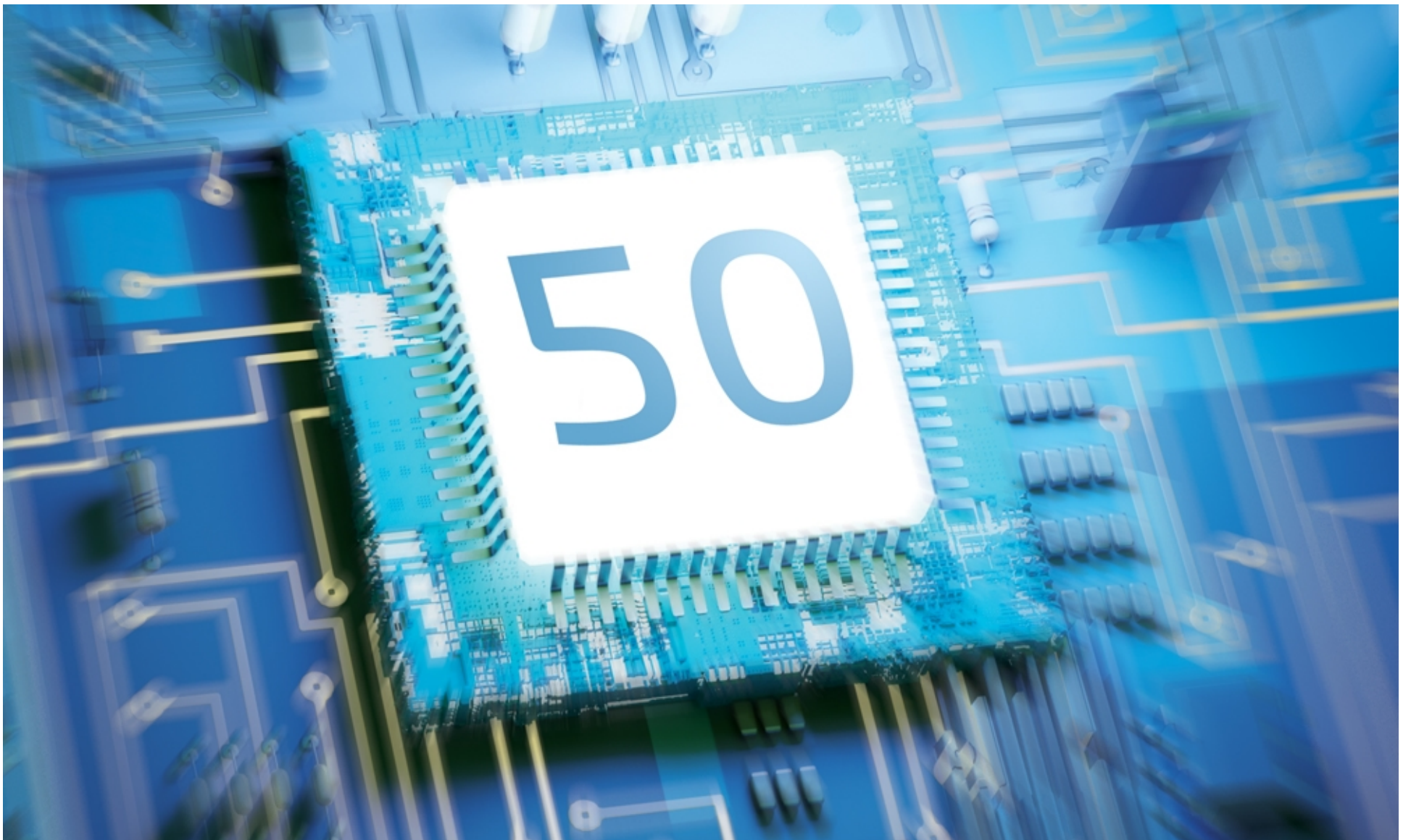
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More 2

After 50 Years: No Slowing Down in Penang's Industrialisation

By Ong Wooi Leng

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THE PLAN TO establish Penang as a manufacturing hub was initiated in the early '60s under the first Chief Minister of Penang, Wong Pow Nee, following the recommendation of the 1964 Munro Report – Penang's first development master plan. Penang's earliest industrial estates were set up in Province Wellesley and infrastructure provisions were made to attract capital investment to the mainland.^[1]

Unfortunately, this attempt, aggravated by the complete loss of Penang's free port status and problems with the import-substitution industrialisation strategy, failed to reverse the deteriorating economic situation.^[2]

Wong lost in the 1969 general election to Dr Lim Chong Eu (later titled Tun). Guided by the second Penang master plan, Lim shifted the focus of the state's economy from import-substitution industrialisation to export-oriented industrialisation, and through the Free Trade Zone Act 1971, and with support from the federal government, export processing zones were established to house international and local manufacturing companies.

This initiative was auspiciously congruous with the global needs of the time – electronics firms in developed countries were looking for lower-wage countries in which to base their labour-intensive, low value-added operations. Penang fit the bill, and would benefit greatly from it.

“When Tun Abdul Razak was here for a visit, we showed him the area which would later become the Free Trade Zone. He pointed at it with his cane and declared it just that – a Free Trade Zone. He was Director of Operations then (for the National Operations Council), so he had that kind of power,” recalls Dato' Seri Chet Singh, the first General Manager of Penang Development Corporation (PDC) and a key figure in Penang's industrialisation .^[3]

National Semiconductor was the first multinational company to set up in Penang.



Photo by: Penang Development Corporation (PDC).

“We showed them the land and other things we had. They moved in, followed by AMD, and then Hewlett-Packard. Intel came later. Penang was actually Intel’s first plant overseas,” says Chet. “I think they were impressed by the enthusiasm of the people they met in Penang. They talked to the job trainees and found them well-trained. It was a very fertile ground for investments. All that was needed was some organisation to make things accessible.”

Founded in 1968, Intel Corporation chose Penang as its first international manufacturing site in 1972. “From what I’ve heard from previous Intel leaders I’ve worked with, there were a few contributing factors. First, the state government was actively pursuing manufacturers back then. Both the state and federal governments provided strong partnerships, supporting infrastructure, incentives and policies for companies to set up in the Penang Free Trade Zone,” recalls AK Chong, the Managing Director of Intel Malaysia.

“Second, the level of education was an advantage because Intel needed qualified and trainable workers. Fluency in English was also a fundamental requirement for communication, collaboration, conducting business internally and engaging with Intel’s partners and suppliers. To maintain our competitive advantage, we must therefore continue to invest in and improve our language skills.”

“Third, Penang was already an international destination at the time with an airport and an active shipping port, so there was existing infrastructure to build on for export-oriented manufacturing operations.”



(Left) Dato' Seri Chet Singh a/l Karam Singh. (Right) AK Chong, the Managing Director of Intel Malaysia.

Penang's Industrial Development

The Eight Pioneers brought in input-oriented jobs in component assembly and machine operations that significantly eased unemployment in Penang, which declined from 16% in 1970 to 3.5% in 1982. Pre-pandemic in 2019, it was at two percent. Many other multinational manufacturing firms continued flocking to the FTZs, including those from the medical devices and textile and apparel industries.

"I wouldn't say that I am fully satisfied with our achievements so far because that would cause complacency to set in... No matter what new milestone we achieve, there is always room for improvement. But one thing is for sure, I am happy that Penang did so well in manufacturing, particularly in the electrical and electronics (E&E) sector. That has always been our key area of strength," says Chow Kon Yeow, the current Chief Minister of Penang.

"Our robust industrial ecosystem not only helped us to accelerate the breakthroughs in the E&E industry but also strengthened our position as a medical device hub in the region. It is no surprise that Penang has the highest concentration of medical technology companies in Southeast Asia."



A signboard in Bayan Lepas pointing drivers towards the Free Industrial Zone.

Given the growing influx of investments and encouraging industrial policies, the amount of investment created per employment tripled in the 1990s compared to the amount generated in the 1980s. From 1981 to 1990, about RM49,800 worth of capital investment was created for each employment. This increased to about RM160,000 from 1991 to 2000 and then twice as much (at RM344,000) from 2001 to 2010. By the next decade, it reached RM580,000 per employment (refer to Statistics, Figure 2).

From mid-1980s to the 1990s, foreign investment moved into higher value-added activities such as quality control and automation. Later, throughout the 2000s, multinational corporations (MNCs) expanded their facilities by moving up the manufacturing value chain and undertaking research and development (R&D) activities, along with engineering design services and development, advanced test equipment, as well as contract manufacturing. These laid the groundwork for increased technological adoption including digital solutions for Industry 4.0 and integrated engineering service providers.

In the late 2000s, the State's economy also expanded into ancillary services activities such as business services, engineering design services and logistics services to complement the semiconductor and life sciences industries in the country.

Advanced Micro Devices (AMD), Cypress, Intel, Jabil and ams OSRAM are a few of the many MNCs synergising their manufacturing and business services operations in Penang, while Cisco Systems, Clarivate, Teleperformance, IHS Markit and Swarovski have joined the shared services ecosystem focusing on high-value global business services (GBS) such as business intelligence, data analytics and robotic process automation. There are, in total, more than 60 GBS companies in Penang.



Penang’s significant economic growth could not have been possible without dedicated support from the local supply chains. As of April 2022, about 41 Penang-based companies were listed on Bursa Malaysia, with Inari Amertron, ViTrox, Greatech Technology, UWC, Pentamaster, Mi Technovation, Dufu Technology and Kobay Technology holding more than RM1bil worth of market capitalisation.^[4] Most of the local founders of these companies were formerly from the workforce of MNCs. All of them are thriving, with strong linkages in engineering services and manufacturing projects endowed by the Penang-based MNCs.

“The local ecosystem has been crucial to the growth of the industry. This is one of the advantages of Penang and Malaysia. The local supply chain has grown alongside the technology sector,” says AK Chong.

“Over the past 50 years, Intel has had the privilege to play a role in building up the local ecosystem to enable them to keep up with the needs of the industry. We’ve also seen many entrepreneurial leaders establish successful businesses of their own after accumulating experience at MNCs like Intel.”

Chong advises local suppliers and manufacturers to look beyond supporting the industries in Penang and Malaysia, and to set their sights further on the global market. “Working with global players is important to increase capability, capacity and skills, and these will ultimately translate into cost, quality and competitiveness in the long run.”

As part of its strategy to bridge the skills gap between local suppliers and MNC requirements, Intel Malaysia undertakes two broad approaches. First, they work closely with Malaysian Investment Development Authority (MIDA) and Malaysia Productivity Corporation (MPC) on an artificial intelligence programme for SMEs. Second, a targeted approach for specific capabilities and skills is developed through a localisation strategy for the outsourced functions, in which Intel matches a local supplier with a global supplier to establish a centre of excellence.

Institutional Roles

Penang Development Corporation (PDC) played the pivotal role in Penang’s industrialisation. Due to the constraints of state administration and the urgency for an effective institutional framework, PDC was established in 1969 to undertake the socio-economic development planning of the state; this included developing and managing industrial estates.^[5]



PDC building.

“One of PDC's main priorities is to generate employment opportunities. This is why, following the global market trend, PDC is focusing on technological intensity to provide employment for high income skilled workers instead of labour workers,” the current CEO of PDC, Dato' Aziz Bakar explains. “While our neighbouring countries have an advantage in cost competitiveness, Penang's resilient ecosystem and strong supply chains are the key reasons why Penang continues attracting high quality investors.”

“Activities in the industrial parks are very demanding and the phrase 'I want it yesterday' is often thrown around. We also work with local investors as much as foreign ones because we recognise how much the SME sector contributes to MNC operations. Domestic investors often face financial constraints and up-front investment limit, so we address these issues by diversifying our product offerings to them, which include small plots of land and ready-built units from semi-detached to terrace factories.”



(Left) YAB Chow Kon Yeow. (Right) Dato' Aziz Bakar, the CEO of Penang Development Corporation (PDC).



the State's Penang2030 aspirations, our subsidiary, PDC Telco, led by the Chief Minister, is actively planning and developing state-of-the-art infrastructure with local telco companies to cater to all stakeholder needs."

A sound relationship between federal and state agencies is important to produce effective policy and planning deliverables.

"I told people from Khazanah [the federal government's investment arm] that they should see Penang as a test tube or crucible. We have all the factors for development here: the infrastructure, the skilled workers, the expertise, the experience... Whatever they do here, whatever success they have here, will be of great benefit to the country as a whole. At that time, federal-state relations were different – there was mutual respect between the leaders then," Chet Singh reveals.

Chief Minister Chow believes that a mutual understanding exists between federal and state agencies. "I view both as complementing, rather than competing against one another. Two core areas where state and federal agencies often have contact or dealings with one another are industry and tourism."

However, Chow continues, "I am much more concerned about how we can improve federal-state relations and would like to explore ways where we can achieve decentralisation. One thing is for sure, the Covid-19 pandemic shed light on the need for federal devolution and a rethinking and restructuring of federal-state relations."

A key industry player in the region, Intel's Chong enthuses that policy reforms that support digitalisation and the modernisation of supply chain processes are needed. "Industrial and community infrastructure must be efficient and reliable to enable this growth. I urge the government to step up efforts to facilitate collaboration with the industry and academia to formulate strategies that position Malaysia strongly for growth and global competitiveness. Intel Malaysia is willing and eager to partner with the state and federal governments to propel our nation's growth. We must rise together to seize our future."

The Future of Penang's Industrialisation

Amidst the pandemic, Penang's GDP growth rate topped Malaysian states, at 6.8% in 2021. Five years prior to the pandemic, from 2015 to 2019, the manufacturing sector contributed around 43% to the GDP. This growth was mainly led by the E&E and optical products industries, which expanded by 16.5% in 2021, which was equal to more than one-third of Penang's GDP.

The state has seen a significant improvement in the wellbeing of society, with the incidence of absolute poverty plunging from 43.7% in 1970 to 0.1% in 2019 and its per capita GDP rising by five percent annually from RM26,833 in 2005 to RM58,527 in 2021.

Local large manufacturers are seen moving up the global value chain, focusing on machine integration and design development, test equipment, automation solution and contract manufacturing. These are all now part of the global supply chain for parts and components in electronics manufacturing. Smaller local manufacturers benefitted from these manufacturers through technical transfer and business opportunities.

Chow advises against Penang resting on its laurels. It should set its sights on expanding the E&E manufacturing footprint and becoming Industry 4.0-ready, as part of the industry engagement initiatives under Penang2030.

"Talent development is the main focus of the Penang state government. We wish to train more local talents in new deep technology areas such as AI, robotics, analytics and the life sciences."

Chong echoes this thought. "With the introduction of advanced packaging technology like 3D die stacking and high-speed embedded interconnects in integrated circuit (IC) manufacturing, there is a need to invest and seed more technical talent development with local suppliers."

PDC's main focus is currently on the development of Bandar Cassia as a new growth centre. Bandar Cassia is envisioned as a high-tech medical hub that is the focal point of medical services, not only for the state of Penang but also for the Indonesia-Malaysia-Thailand Growth Triangle (IMT-GT) as well as ASEAN.



Aerial view of the Batu Kawan industrial park. Photo by: tsyew @ 123rf.

“PDC is currently in active discussions with the Ministry of Health Malaysia (MOH) and National Heart Institute (IJN) to develop public and private specialist hospitals in Bandar Cassia. We want to make this new industrial city different from the other places in Penang,” says Aziz.

Additionally, improving public transportation has always been instrumental in addressing the underlying problems plaguing the state. “The Penang Transport Master Plan (PTMP) is a comprehensive and efficient strategy that integrates modern transportation systems to address the heavy traffic on our roads. There is still much work to be done, especially in areas where the federal government has the final say,” offers Chow.

Penang still lacks performing patents, however. From 2017 to 2019, only 28 companies were found to perform patents, only six percent of which were local companies. Meanwhile, just for comparison, places like Singapore and Dublin respectively had 538 companies and 164 companies involved.^[6]

“Penang can cultivate an environment that attracts and grows tech talent, spurs innovation and supports tech startups. If we can successfully create and sustain a thriving community of innovators, the impact can be exponential. Perhaps the next unicorn company will come from Penang,” says Chong.

Footnotes:

[1] Koay, S. L. (2021). *Reassessment of Penang's Industrialisation and Economic Transformation: From Chief Ministers Wong Pow Nee to Lim Chong Eu, 1960s-1980s*. National University of Singapore. Unpublished thesis.

[2] Koay, S. L. and Wong, Y. T. (2019). From Munro to Nathan: The Rise of a Modern Economy in Penang. In C. Singh, R. Rasiah and Y. T. Wong (Ed.). *From Free Port to Modern Economy: Economic Development and Social Change in Penang, 1969 to 1990* (pp. 37-56). Penang, Malaysia: Penang Institute and ISEAS.

[3] Ooi, K. B. (2019). *The man who industrialised Penang*. Penang Monthly, November 2019. Penang Institute.

[4] Ong, W. L., Yeong, P. J. and Lee, S. M. (2022). *Penang in the Global Economy*. (Accepted for publication)

[5] Singh, C. (2019). Penang Development Corporation and Penang's Catalytic Transformation. In C. Singh, R. Rasiah and Y. T. Wong (Ed.). *From Free Port to Modern Economy: Economic Development and Social Change in Penang, 1969 to 1990* (pp. 37-56). Penang, Malaysia: Penang Institute and ISEAS.

[6] Wong, C. Y., Sheu, J. and Lee, K. (2022). Dynamics or Dilemma: Assessing the Innovation Systems

of Three Satellite Platform Regions (Singapore, Dublin and Penang). *Eurasian Geography and Economy*.

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