

CEMENTING POSITION AS A TECH HUB

BY KIRAN JACOB

PENANG has earned the moniker of “Silicon Valley of the East”, with five decades of deep-rooted strengths in semiconductor and electronics manufacturing. Now, the state is looking to cement its position as a tech hub in the region.

The state government has said it is developing the supply chain for front-end manufacturing equipment as well as encouraging research and development and design and development.

Penang has a lot going for it in its pursuit of establishing itself as a tech hub. Industry players point to its robust supply chain, skilled talent pool and deep ties with multinational corporations as key advantages.

Additionally, the state remains an attractive investment destination. It recorded investments worth RM17.3 billion in 2024, with 182 projects that will create about 16,254 job opportunities.

Moreover, its Bayan Lepas Free Industrial Zone is home to many global tech giants, including Intel,

Advanced Micro Devices and Keysight Technologies, as well as local players such as ViTrox Corp Bhd. These companies form the backbone of Penang’s thriving electrical and electronics cluster.

The state is also a key focus under initiatives like the National Semiconductor Strategy and Malaysia Digital. Initiatives like the Penang Silicon Design @ 5km+, which was launched in 2024, and the Penang STEM Talent blueprint were also introduced to push it in the right direction.

Nevertheless, gaps remain. For one, industry players say talent shortages in areas such as chip design and automation pose a risk to future growth. On top of this, regional competition is heating up with Vietnam, Indonesia and Singapore aggressively scaling their tech ecosystems. Alongside this, local industry players need to be supported to scale and compete globally. This means Penang must expand its talent pipeline, promote homegrown champions and leverage its geopolitical positioning to stay ahead. ●



BECOMING THE GO-TO INVESTMENT DESTINATION IN THE REGION

THE ongoing trade tensions between the US and China present both challenges and opportunities for Penang, which stands out as an attractive option for supply chain diversification.

To capitalise on this, the state needs robust federal government-level trade policies, strategic international diplomacy and investment incentives, says Penang's infrastructure, transport and digital committee chairman Zairil Khir Johari. He says the state government is open to collaboration with agencies, whether under the federal or state government, but progress in foreign policy requires intervention from the federal government.

For example, there is a need for the federal government's involvement when it comes to trade pacts with countries like the US or China. The federal government's incentives are key to attracting high-value semiconductor investments, he adds.

"I think a lot of investments have to come in from the federal government [policies]. If you look at other countries [such as] China, India and even Singapore, the way they've been able to attract some major investments, particularly in semiconductors, is [through] the incredible incentive packages that they're offering. That's not something a state government can offer," says Zairil.

"I think committing substantial resources is the only way for us to achieve success, bearing in mind that when Penang succeeds, Malaysia succeeds as well."

Lim Chong Seng, director of ecosystem development at Digital Penang, believes that the state can position itself as a neutral and stable hub by diversifying its investor

base, increasing market access to other regions and emphasising its mature ecosystem for non-partisan supply chain diversification amid global trade tensions.

"Leveraging Malaysia's non-aligned trade pacts, the state can attract firms seeking geopolitical risk mitigation, particularly in advanced manufacturing and industries with global market and supply chains. Proactive diplomacy and tailored incentives for firms exiting volatile regions will strengthen its appeal," he says.

To attract top-tier investors to Penang, it needs targeted state-level incentives focusing on research and development (R&D) grants for advanced semiconductor design and materials, fast-tracked approvals for high-value investments and specialised talent development programmes directly aligned with the National Semiconductor Strategy, says Ong Wooi Leng, head of the socioeconomics and statistics programme at Penang Institute.

To do this, she suggests implementing a significantly accelerated and transparent permit and approval process for high-value semiconductor projects with a single point of contact in the state government.

Penang needs a one-stop investment facilitation centre where applications and approvals for trade, immigration and business registration can be made given that the state accounts for more than a third of Malaysia's exports, says Ong.

The state can accelerate projects like the Penang Light Rail Transit and the Penang Silicon Island initiative, which will improve connectivity and expand industrial zones, to enhance the state's appeal as an investment destination, notes Alvin Gan, head of management consulting at KPMG in Malaysia.

"Malaysia's neutral geopolitical stance and Penang's well-established semiconductor ecosystem make it an

ideal destination for global companies seeking stability and resilience in their operations," he says.

LEARNING FROM COUNTERPARTS
Penang can draw valuable lessons from other tech hubs such as Johor and Singapore.

Johor, for one, is solidifying its ambition to become a regional economic powerhouse with initiatives like the Ibrahim Teknopolis, which is focusing on Fourth Industrial Revolution technologies, artificial intelligence and sustainable technologies. This is in addition to the Johor Sustainable Development Plan 2030 and development of major technology parks in the state such as the Sedenak Tech Park, which is creating a conducive environment for high-tech industries.

Across the Causeway, Singapore's government-led efforts to integrate digital technologies across sectors to improve urban living and enhance economic competitiveness have played a key role in positioning the city state as a global leader in digital infrastructure, data-driven governance and technological innovation, notes Gan.

Singapore's Smart Nation initiative, which was launched in 2014, remains central to its rise as a leading regional tech hub. How can Penang emulate this in its pursuit to become a tech hub?

Gan says there are opportunities for cross-state or cross-border collaborations, such as with Kedah's Kulim High-Tech Park or international partners to jointly offer coordinated incentives, robust infrastructure and streamlined processes.

On the other hand, Singapore's experience highlights the importance of being seen not just as a hardware producer but as a trusted global innovation partner, he says. Penang can adopt similar strategies in smart manufacturing, semiconductor technology and green supply chains to enhance its own competitiveness.

BUILDING A STRONG TALENT POOL

SKILLED talent is key to Penang's industrial growth and global competitiveness. This is why there should be state-level initiatives to attract and retain international semiconductor talent such as fast-track visa processing, relocation assistance and community integration programmes.

Ong Wooi Leng, head of the socioeconomics and statistics programme at Penang Institute, says this can be done by offering incentives like five-year visas to these specialists.

Malaysia must ease restrictions on hiring foreign expert labour that are highly skilled professionals in sectors such as semiconductor design and advanced manufacturing, says Penang's infrastructure, transport and digital committee chairman Zairil Khir Johari. He says greater flexibility in immigration policies and targeted corporate and individual tax incentives could help attract and retain such talent.

Penang's high quality of life and retirement appeal can be leveraged to attract senior professionals globally, says Jaffri Ibrahim, CEO of Collaborative Research in Engineering, Science and Technology (CREST).

"Wages are an important factor, but [it is not the only component]. Housing is equally important. So is quality of life. When you're a highly skilled talent, you also want a good life. You want to have a good education for your children. You want to have good medical facilities. So all of these things have to come into play," says Zairil.

Additionally, local companies need to be put on the map to attract talent. The poor visibility of locally



"I think committing substantial resources is the only way for us to achieve success, bearing in mind that when Penang succeeds, Malaysia succeeds as well."

Zairil, chairman of Penang's infrastructure, transport and digital committee

grown firms in Penang means that job seekers are either unaware of these companies or choose to go down the multinational corporation (MNC) route, he notes. This can stifle the retention of local talent.

The state actively promotes local industry leaders such as ViTrox Corp Bhd and Greotech Technology Bhd. Zairil says government-linked investment companies like Khazanah Nasional Bhd should also help local companies to grow strategically in addition to the investments being made.

"When these [companies] become regional, global and international names, they basically become an MNC, and people will be very proud to work for them," he says.

Penang must also invest in its workforce to change the perception of cheap labour, says Khooi Chu Boon, director of small and medium enterprise (SME) and community development at Digital Penang. To do this, upskilling in artificial intelligence and other emerging technologies is essential. Moreover, self-reliant research and development capacity must grow.

For instance, CREST's Engineering Talent for the Semiconductor

Industry programme aims to train 60,000 engineers by providing industry-aligned curriculum, placements and hands-on projects to equip the next generation of talent. This is in addition to The GreatLab programme that engages students in high school and the tertiary level to promote careers in the electrical and electronics industry.

Meanwhile, Digital Penang is exploring partnerships with universities and colleges to launch micro-credential programmes tailored to SMEs and start-ups, which offer flexible and industry-recognised training in niche fields like financial technology (fintech) and smart manufacturing.

It is working closely with TalentCorp Malaysia to amplify national talent strategies, unlock recruitment incentives and attract top-tier professionals to support Penang's growing tech ecosystem.

Another initiative is 42 Penang by Sunway Education and Khazanah Nasional. The sponsored coding school is designed to empower the next generation of digital talent through an accessible learning model.

Ong says there should be state-funded scholarships and bursaries for students pursuing degrees in semiconductor-related fields, with a commitment to work in Penang upon graduation.

In this regard, the Penang Future Foundation scholarships are awarded by the state government to deserving Malaysians to pursue undergraduate studies. Upon successful completion of their studies, the sponsored scholars must work in Penang in organisations of their choice in the private or public sector.

Other initiatives include the Penang STEM Talent Blueprint. In fact, Minister of Investment, Trade and Industry Tengku Datuk Seri



PATRICK GOH/THE EDGE

Zafrul Abdul Aziz has said the blueprint will be incorporated into the National Semiconductor Strategy, which has set a target to train and nurture 60,000 highly skilled workers by 2030.

PSC WANTS TO INSTIL INTEREST IN STEM FROM A YOUNG AGE

A “true” tech hub enables innovators to transform ideas into real-world solutions, says Datuk Ooi Peng Ee, CEO of the Penang Science Cluster (PSC). This is why PSC seeks to develop creators of technology from a young age.

The goal is to prepare students to solve real-world problems with technology, which is an essential skill in an era where creativity and adaptability will distinguish human workers from artificial intelligence (AI) systems, he says.

PSC, which was established in 2010, aims to cultivate interest in

science, technology, engineering and mathematics (STEM) among primary and secondary school students while fostering innovation and entrepreneurial thinking. PSC is an industry-led initiative in collaboration with the state government.

To do this, PSC collaborates with industry players and receives grants from foundations and support from the state government. Some of the industry partners include Keysight Technologies, Agilent Technologies, Motorola



“A ‘true’ tech hub enables innovators to transform ideas into real-world solutions.”

Ooi, PSC



“Penang needs a one-stop investment facilitation centre where applications and approvals for trade, immigration and business registration can be made.”

Ong, Penang Institute

Solutions and ViTrox Corp Bhd.

PSC employs a “funnel strategy” that starts with hands-on, science-based activities to generate initial interest, explains Ooi. Interested students can then join longer-term tech mentorship programmes guided by industry engineers, which culminates in participation in competitions, including the annual Penang International Science Fair (PISF). Factory visits are organised to expose students to high-tech companies and potential STEM careers.

The PISF is a science and technology exhibition held annually to showcase technologies from the industry. The science fair features numerous hands-on workshops and activities designed to spark interest in STEM as well as competitions that provide a platform for students involved in PSC programmes throughout the year to demonstrate their learning and achievements.

PSC engages with more than 100,000 students annually through its various programmes and activities. In 2024, it engaged with 115,009 students. Some of its programmes include Tech Mentor Lego Robotics and embedded systems, coding and radio astronomy programmes.

