PENANG
2030

A FAMILY-FOCUSED GREEN AND SMART STATE
THAT INSPIRES THE NATION

# THE CHIEF MINISTER'S INVITATION

"

My fervent hope with Penang2030, a vision and an approach that has been worked out after consultation with stakeholders at all levels, is that it will encourage citizens to participate in policy making and to take responsibility for their own future. Getting the general population involved and interested in policy making is really about encouraging them to be proactive and to exercise greater control over their lives. The government's job is to advise, stimulate and facilitate citizen participation, and steer matters towards the common good.

With help from Penang Institute and Think City, and other advisors that my office has access to, my government would like to herewith present *The Penang2030 Guide* to the public. It is an evolving document that expresses my goal to not leave anyone behind as Penang moves on towards to greater heights. It also aims to inspire the rest of the country through its willingness to collaborate with stakeholders for the good of the state and the country.

Penang2030 is in many ways my invitation to everyone concerned with the wellbeing of Penang to work with each other and with the many arms of the government, to make Penang a place that is even more enviable than it already is.

In that ambition alone, Penang2030 is already unique. It is not a blueprint filled with projects that the government promises to carry out, even if there are many projects already planned for the coming years. Instead, it is an opening of the door to the private sector, to civil society, to academicians and to individuals, to participate in discussions with the government and in the formulation of projects adapted to Penang's special conditions.

The language used in this guide, in this invitation to you, may be technical in some ways, but we have tried to use terms meaningful to people who are concerned about their society and their fellows, and about our common future.

I have put in place channels through which the people of Penang can easily express their thoughts, and these will keep the state government and its agencies informed about how they are doing over the next decade.

Sincerely,
**CHOW KON YEOW**

CONTENTS

# PENANG2030: DEMOCRATISING POLICY MAKING

A new era began for Malaysia on May 9, 2018, when a change in government at the federal level happened for the first time in the country's history. This surprised both victors and losers. The losers are having to step back, take a deep breath and re-strategise for an uncomfortably new terrain. The winners also find themselves thrusted into a state of affairs which, though of their own making, is not something they are fully prepared for.

To Malaysians in general, hope and doubt interweave in their hearts and minds. For the people of Penang, progress towards this new beginning has been a staggered one, the state having changed government already in 2008. Ten difficult years resisting the federal government and building public confidence in the possibility of an alternative path developed a style of governance best remembered through the CAT slogan—Competence, Accountability and Transparency. Of great significance to the future of nation building are the initiatives taken during that decade in the offering of state scholarships, the development in Penang of STEM education and the establishment of organisations for the facilitation of start-ups, among other long-term policies. "Green" initiatives were also taken, some with impressive impact, such as the banning of retail shop plastic bags.

These initiatives pave the way for Penang to take a leading role in nation building post-GE14. Penang2030 reflects the understanding of the new state government that its policy thinking must now complement what has gone before—by being more people-centric than state-centric; and by being more trusting than suspicious.

Now that the barrier to collaboration between federal and state is drastically lowered, the focus on the state as the defender of democratic values and of multicultural inclusivity which had been a key strategy in Penang, must shift towards the nurturing of democratic mind-sets and behaviour. More concretely, politicking must give way to technocratic practices, and initiatives for growth must seek a healthier balance between state and society; public sector and private sector; and short and long-term goals—for Penang and for Malaysia.

Democracy is something to be savoured on a daily basis—as empowering of the individual, and as an exercise in personal freedom. Its players are not political parties and politicians alone, but are people in general. In order to make Democracy a way of life, public space must therefore be widened, and not only through freedom of speech, progressive and scientific education, a competent and responsible mass media, and transparency and predictability in the rule of law, but as a cultural and gratifying experience.

Penang2030 takes into consideration the sociological, political, economic and cultural challenges that the people of Penang in particular and Malaysians in general now face. It seeks to be inclusive on the one hand, and open-ended on the other; it is a platform for concerned citizens to realise their own ambitions and ideas—with the public sector as their associate and not their adversary.

# PENANG 2030

## A FAMILY-FOCUSED GREEN AND SMART STATE THAT INSPIRES THE NATION

**THEME**

**A**
Increase liveability to enhance quality of life

**B**
Upgrade the economy to raise household incomes

**C**
Empower people to strengthen civic participation

**D**
Invest in the built environment to improve resilience

**STRATEGIC INITIATIVES**

**A1**
Address housing affordability and diversity

**B1**
Advance readiness of local manufacturing industries for the digital age and the green economy

**C1**
Uplift vulnerable communities and reduce inequalities

**D1**
Balance development through effective spatial planning

**A2**
Continue to improve public safety and cleanliness

**B2**
Modernise and diversify sustainable agriculture

**C2**
Boost participation of youth, women and seniors in community life

**D2**
Strengthen mobility, connectivity and digital infrastructure

**A3**
Enhance welfare and care systems

**B3**
Create a variety of quality tourism products across island and mainland

**C3**
Create more platforms for public involvement in social development

**D3**
Integrate municipal services with smart technologies

**A4**
Diversify recreation, sports, arts and culture facilities

**B4**
Foster an ecosystem that nurtures creative industries and niche business services

**C4**
Accelerate programme delivery and institutional reform

**D4**
Implement climate change adaptation plans

# GIVING WORDS TO IDEALS

Thanks to the good governance the state has enjoyed over the past decade, Penang is today well placed to move ahead quickly in the new atmosphere that the change in government at the federal level in May 2018 has created. Penang will continue to lead.

We will show the way by relying on the dynamism, the innovativeness and the passion of the people of Penang. By being consultative, facilitative, and interactive, Penang state government will take Penang to new heights.

Setting the tone and the direction for the next decade is an approach—more than a blueprint—to policy making that is called "Penang2030: A Family-focused Green and Smart State that Inspires the Nation".

Each of the terms included in that phrase is highly significant.

(1) First, our policies will be **FAMILY-FOCUSED**. By that we mean to say that apart from being people-centric, we are aware that our family is central to everything we do. Thinking of the individual as part of a family and generating knowledge that sees the family as the basic unit of society, will allow for the development of support systems for the needy which will be sustainable and effective. Gender, religious and educational issues are all of concern to us.

(2) Second, the word **GREEN** signifies the government's awareness that there is really no alternative to balanced development. The economy needs to develop to face new challenges brought by Industry 4.0 and other conditions, but the managing of these changes must protect and improve the natural and cultural assets we already have. A well-kept balance between economic growth and ecological protection can help make Penang the model state that we all want it to remain.

(3) Third, we have to get **SMART**. We should invest wisely and effectively in the new digital world that is upon us. All our experts agree that proper management of the digital revolution in the state is key to its future progress.

(4) Fourth, our policy making considers the state of Penang as a whole. No part of Penang is to be left behind. Pulau Pinang and Seberang Perai make up the **SMART STATE** that we want to create over the next decade. The Penang Strait should not separate the two parts but instead join them.

(5) Finally, Penang2030 is meant to **INSPIRE**. A government that inspires the people makes achieving a common goal much easier, and with much greater impact. We cannot plan for what an inspired population will achieve, but we know that an inspired population is a happy one—and a creative one as well.

Penang2030 enshrines FOUR THEMES and they are not listed in any order of priority as each theme is equally important.

| LIVEABILITY | ECONOMY | PEOPLE | BUILT ENVIRONMENT |
|---|---|---|---|
| We intend to Increase Liveability in order to enhance quality of life | We intend to Upgrade the Economy in order to raise household incomes | We will be working to Empower People in order to strengthen civic participation. Empowering people will be the hallmark of my administration | The state government will continue to Invest in the Built Environment in order to improve its resilience |

Beyond all the more technical aspects of the projects that we are taking on, the key to the success for Penang2030 are the following:

- Involving as many levels of stakeholders as possible in pushing not only for economic and infrastructural advancement in Penang but also for cultural development.

- Coordinating projects and communicating positive changes and setbacks to the public.

- Upholding principles of good governance to inspire the nation.

THEME

**A**

INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

THEME

# A

## INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

With its deep history of cosmopolitan modernity, diverse population and hybrid culture, Penang is globally recognised as one of the most liveable cities in the world. It is among the safest places in Malaysia to live in.

However, to retain and develop Penang's reputation as an attractive home for the young and the old, the state needs to be inclusive in its policies and to be comprehensive in caring for the needs of its citizens. In short, upholding and upgrading the quality of life in a rounded and progressive manner has to be a top priority for the government.

Affordable homes for low- and middle-income households are therefore a major focus in policy making for the coming years. To enhance safety and cleanliness and to make recycling part of Penang's culture, new technologies will be applied in tandem with measures to encourage public participation.

Quality of life for Penang's people involves family welfare and therefore, problems faced by women, by the elderly, by the young and by the vulnerable community will be given special attention. Putting the family first is Penang2030's way of working towards an inclusive and caring society.

Staying healthy is a family-based undertaking, and sports and recreation for different ages are a priority.

**8th**
most liveable city in Asia
*(ECA International 2010)*

**2nd**
best place in the world to retire
*(Conde Nast, 2016)*

**75.5**
life expectancy at birth, 3rd highest in Malaysia
*(DOSM, 2018)*

## OVERARCHING STRATEGIES

### ADDRESS HOUSING AFFORDABILITY AND DIVERSITY

by increasing housing availability, ownership and the number of low and mid-range homes, and undertaking urban renewal of low-cost housing

### CONTINUE TO IMPROVE PUBLIC SAFETY AND CLEANLINESS

by redefining policies on community safety, waste management, and marine, river and coastal protection; investing in smarter infrastructure and encouraging community participation

### ENHANCE WELFARE AND CARE SYSTEMS

by promoting active ageing, increasing the quality of care for everyone and developing youth through a coaching programmes

### DIVERSIFY RECREATION, SPORTS AND ARTS FACILITIES

by developing a green connectors network, investing in museums and galleries, and in sports for all

THEME

# A

## INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

## A1.
Address housing affordability and diversity

Penang has diverse housing assets, ranging from coastal condominiums to affordable high-rise dwellings and suburban landed houses. Diversifying the housing stock and encouraging rent-to-buy, co-living and low-cost housing schemes will be of great help to the people of Penang. Existing state and local government-owned housing assets will also undergo a regeneration process and to review the shifting eligibility of home owners of these properties.

It is also important to work closely with Bank Negara Malaysia to ensure that accessibility to housing by the lower income group is as unhindered as possible. Alternative loan options must be made available to this group.

**>1/3 of Penang's unsold housing units are above RM500,000**

PENANG'S UNSOLD HOUSING UNIT (RM)

■ Below RM250k   ■ RM250k - RM500k   ■ RM500k - RM1mil   ■ > RM1mil

H1 2017: 1,105 / 4,106 / 3,951 / 3,157

H2 2018: 2,286 / 3,479 / 5,231 / 1,869
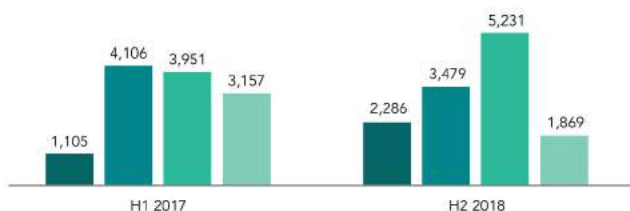
*Source: NAPIC*

**Mismatch between housing supply and demand (2016)**

■ Maximum Affordable House Price   ■ Actual Median House Price

RM '000

| | Maximum Affordable House Price | Actual Median House Price |
|---|---|---|
| Penang | 291 | 355 |
| Kuala Lumpur | 454 | 530 |
| Johor | 302 | 340 |
| Malaysia | 282 | 313 |

*Source: National Property Information Centre (NAPIC), Department of Statistics Malaysia (DOSM) and Bank Negara Malaysia (BNM) estimates*

## KEY INITIATIVES

1. Scaling up rent-to-own and co-living/micro-housing schemes

2. Increasing the number of homes for hardcore poor

3. Redeeming and rejuvenating low-cost housing schemes

4. Improving the housing situation for middle-income families

## TARGETS

**180,000**
total number of low-cost houses

**3,000**
families benefiting from urban regeneration housing schemes

**1,000**
rent-to-own units made available by the government

THEME

# A

## INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

## A2.

Continue to improve public safety and cleanliness

Penang has a crime rate that is only half that of Kuala Lumpur's. This is a good sign but that does not mean that we cannot do better.
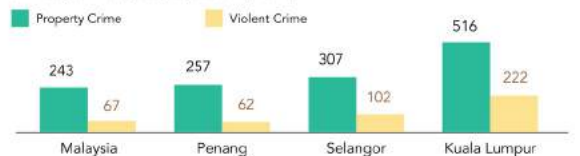
Reducing crime requires a multi-faceted response, which includes community policing, infrastructure investments and social programmes to promote strong community and family bonds. "Eyes on the street" initiatives that encourage activities in public spaces, improved lighting, and crime prevention through urban design have proven successful elsewhere, and will be adopted in Penang.

General hygiene and cleanliness in our streets, shops, rivers and coastal waterways are necessary if we are to raise our level of liveability. It is true that Penangites recycle one third of their waste, but much more still needs to be done. As much as 40% of waste collected daily are organic waste and our water basins are of moderate quality.

New technologies, systems and behaviours will be adopted to improve general hygiene and cleanliness.

**Incidence of crime in Penang is 2 times lower than Kuala Lumpur**

Crimes per 100,000 population (2017)

Property Crime / Violent Crime

| | Malaysia | Penang | Selangor | Kuala Lumpur |
|---|---|---|---|---|
| Property Crime | 243 | 257 | 307 | 516 |
| Violent Crime | 67 | 62 | 102 | 222 |

Source: DOSM

**1,100 tons waste collected in Penang daily**

Other waste 60% — Organic waste 40%

Source: Local Government Division, Penang

## KEY INITIATIVES

1. Adopting 'Waste to Energy' technologies

2. Providing assistance for community-based 'gotong-royong' efforts to clean up neighbourhoods, public areas, riverbanks and beaches

3. Establishing 'eyes on the street' programmes to foster safer communities

4. Enforcing installation of grey-water and organic waste recycling facilities at commercial properties

## TARGETS

**300 tons**
of organic waste channelled to "Waste to Energy" plant

**50%**
household recycling rate

**100%**
marine quality stations rated as good

THEME

A

INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

THEME

# A

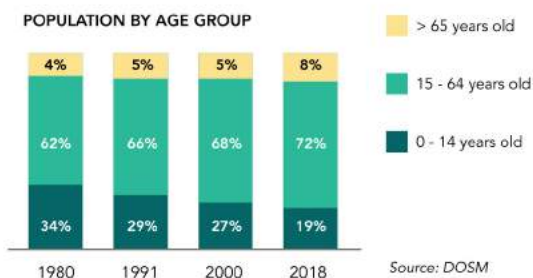## INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

## A3.

Enhance welfare and care systems

In the next decade, the number of Penangites aged over 60 will nearly double. This will place pressure on healthcare services and increase demand for aged care. Loneliness and increased homelessness amongst the elderly are also of concern.

While the government will expand its daycare and mobile nursing services, it will also incentivise the private sector to invest in quality aged care. There is also a great need to implement active-aging programmes.

The needs of the young will not be ignored, and programmes will be started to help vulnerable families and children. Society at large, including schools and civil society organisations, will be roped in to work together with state resources to help the needy at an early stage. Mentoring initiatives are being encouraged.

**Penang's population is aging where the median age has increased to 31.6 in 2017 from 29.6 in 2010**

POPULATION BY AGE GROUP

- > 65 years old
- 15 - 64 years old
- 0 - 14 years old

| | 1980 | 1991 | 2000 | 2018 |
|---|---|---|---|---|
| > 65 years old | 4% | 5% | 5% | 8% |
| 15 - 64 years old | 62% | 66% | 68% | 72% |
| 0 - 14 years old | 34% | 29% | 27% | 19% |

Source: DOSM

**A caregiver in Penang takes care of a higher number of senior citizens**

NUMBER OF SENIOR CITIZENS & CHILDREN PER CAREGIVER IN DAYCARE (2016)

▲ Senior Citizen
▲ Children

| | Penang | Kuala Lumpur | Malaysia |
|---|---|---|---|
| Senior Citizen | 6.6 | 5.6 | 4.9 |
| Children | 5.0 | 5.1 | 4.3 |

| 2016 | Children (0-4 y/o) | | Senior Citizens | |
|---|---|---|---|---|
| | Enrolments | Caregivers | Enrolments | Caregivers |
| Penang | 4,480 | 889 | 824 | 124 |
| Kuala Lumpur | 10,001 | 1,962 | 685 | 123 |
| Malaysia | 77,115 | 17,915 | 8,025 | 1,627 |

Source: Department of Welfare (2016)

## KEY INITIATIVES

1. Adopting an active ageing policy for Penang

2. Developing a network of proactive day-care facilities for young, old and the needy

3. Collaborating with private sector actors to develop a Penang-based international-standard caregivers training institute

4. Encouraging youth life-coach programmes

## TARGETS

**50% INCREASE**
in social and recreational activity amongst the elderly

**1,000**
youths to have participated in life-coach programmes annually

**1,000**
kids to have benefited from 1-senior-1-kid coaching programme annually

THEME

A

INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

THEME

A

INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

A4.

Diversify recreation, sports and arts facilities

**THEME A**

Increase liveability to enhance quality of life

A4:
Diversify recreation, sports and arts facilities

THEME

**A**

INCREASE LIVEABILITY TO ENHANCE QUALITY OF LIFE

Not only is Penang renowned for natural sites such as Penang Hill, the Penang National Park in Teluk Bahang and the Botanic Gardens, it has produced many sports personalities of world class, such as Datuk Lee Chong Wei and Dato' Nicol David, just to mention a few. In the arts, we have prominent figures such as Dato' Jimmy Choo and Mr Tan Twan Eng.

Since George Town made the UNESCO World Heritage list, the culture and arts space has also flourished further. However, the provision of gazetted open spaces is only half that of World Health Organisation (WHO) standards. Furthermore, many of the existing natural reserves and green spaces are disconnected, and access to the waterfront has over the years become more difficult for the wider community. These trends will need to be reversed.

Investing in recreational amenities must underpin efforts to create a healthy community. In parallel, spiritual and mental wellbeing should be elevated through continual investment in arts and cultural experiences.

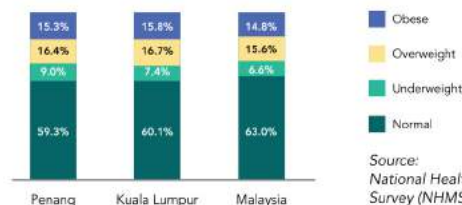**Penang's current open space target is low**

Adoption of Open Space Target

**4m²/person**
PENANG

**8m²/person**
SINGAPORE (target by 2030)

**9m²/person**
WORLD HEALTH ORGANIZATION (WHO)

Source:
WHO, PLANMalaysia,
Singapore Green Plan 2012

**40% of Penang's adolescents are not within the normal BMI range**

Distribution of Adolescents based on BMI (2017)

| | Penang | Kuala Lumpur | Malaysia |
|---|---|---|---|
| Obese | 15.3% | 15.8% | 14.8% |
| Overweight | 16.4% | 16.7% | 15.6% |
| Underweight | 9.0% | 7.4% | 6.6% |
| Normal | 59.3% | 60.1% | 63.0% |

Source:
National Health & Morbidity Survey (NHMS)

## KEY INITIATIVES

1. Creating state-wide green connectors network including coastal and riverine parks

2. Investing in a museums and galleries network

3. Developing an arts and culture masterplan

4. Implementing a state-wide One Sport One Month programme

## TARGETS

**100 km**
of additional waterfront promenade

**50% INCREASE**
in physical activity rates amongst adolescent children

**DOUBLE**
the number of community-based arts/cultural productions

THEME

# B

UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

The manufacturing output and investments in Penang are among the highest in the country; tourism has significantly increased; and a creative start-up scene has emerged. To become a high income state, however, Penang must fully embrace the digital age and Industry 4.0, and move up the value chain by investing in both talent and technology concurrently. This requires diversification in tourism, agriculture and manufacturing drivers, and incubation of new creative and social enterprises.

Further strengthening the manufacturing industry and shared services sector, green technology, attracting new skills, developing SMEs, and incentives for business with social purpose will be game changers to create a robust job market and attract talents globally.

**RM10.8 billion**
total foreign and domestic direct investment in Penang (2017) (2nd highest state)

**USD 12,468**
Penang's GDP per capita (2017), which is 1/5th of Singapore's

**RM5,409**
Penang's median household income (2016), only 60% of KL's

## OVERARCHING STRATEGIES

**ADVANCE READINESS OF LOCAL MANUFACTURING INDUSTRIES FOR THE DIGITAL AGE AND THE GREEN ECONOMY**

through investments in STEM, TVET and lifelong learning, capacity building for SMEs and green technology

**MODERNISE AND DIVERSIFY SUSTAINABLE AGRICULTURE**

by positioning Penang as a Green Valley, moving up the agriculture value chain, harnessing technology and encouraging urban farming

**CREATE A VARIETY OF QUALITY TOURISM PRODUCTS ACROSS THE ISLAND AND MAINLAND**

with a tourism masterplan to balance tourism, attract higher-value tourist segments and improve customer services

**FOSTER AN ECOSYSTEM THAT NURTURES CREATIVE INDUSTRIES AND NICHE BUSINESS SERVICES**

by developing talents, attracting skilled Penangites back and incentivising start-ups and social enterprises

THEME

# B

## UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

# B1.

Advance readiness of local manufacturing industries for the digital age and the green economy

## INDUSTRY 4.0



Industry 4.0 is the vision of the industrial production of the future

- Autonomous robots
- Artificial intelligence
- Simulation and virtual / augmented reality
- Horizontal and vertical systems integration
- The Industrial Internet of Things
- Cybersecurity
- The cloud
- Additive manufacturing
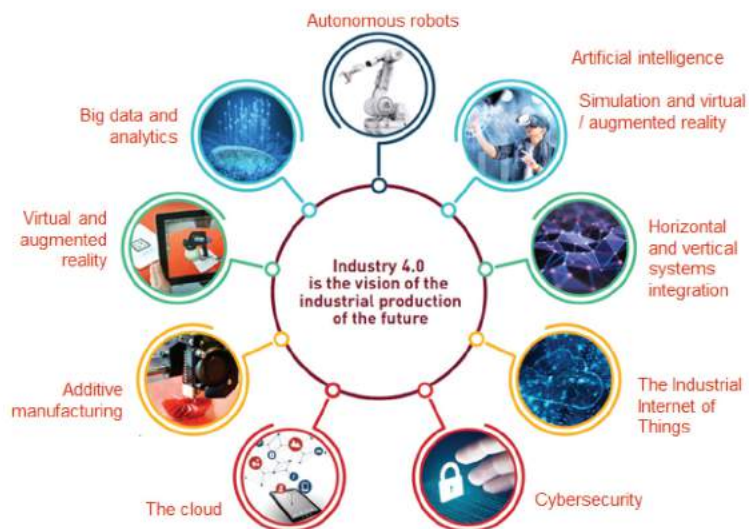- Virtual and augmented reality
- Big data and analytics

THEME B | Upgrade the economy to raise household incomes | B1: Advance readiness of local manufacturing industries for the digital age and the green economy

THEME

B

UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

Over the past 40 years, Penang's manufacturing sector has evolved from semiconductor assembly lines to become an advanced technology ecosystem. The original E&E multinationals remain and now have large research and design centres. Medical devices, diagnostics and aerospace sectors have emerged, and green technology manufacturers (e.g. solar) are also taking a foothold.

The marriage of the arts and sciences has also sprouted gaming and animation companies, and software and hardware integration has led to a budding start-up community.

While manufacturing accounts for 45% of Penang's economy, much of it is still based on backend processes. To move up the value chain, there is a need for industries to fully embrace automation and digital age phenomena such as robotics, the Internet of Things (IOT), artificial intelligence (AI) and machine learning.

To do this, they need an enabling ecosystem supported by a skilled workforce and relevant technologies.

**Penang should leverage the national readiness for the future of production**
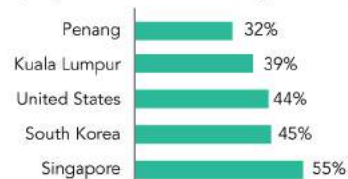
Readiness for the Future of Production (2018)

| Component & Indicators | Ranking: Malaysia | Singapore |
|---|---|---|
| Drivers of Production | 22nd | 2nd |
| Technology & Innovation | 23rd | 6th |
| Human Capital | 21st | 2nd |

Source: Readiness for the Future of Production 2018 (WEF)

**Only 32% of employed persons in Penang are tertiary educated**

Employed Persons with Tertiary Education (2017)

| | |
|---|---|
| Penang | 32% |
| Kuala Lumpur | 39% |
| United States | 44% |
| South Korea | 45% |
| Singapore | 55% |

Source: International Labor Force Organization, DOSM

## KEY INITIATIVES

1. Establishing a shared laboratory to scale up STEM/TVET practical training courses, upskilling & reskilling, and lifelong learning

2. Introducing a capacity-building programme to help transition SMEs to Industry 4.0

3. Working with industries to develop and apply green technologies

4. Implementing a greening programme to encourage climate change adaptation initiatives in industrial parks

## TARGETS

**1,000**
SMEs participated in capacity-building programme to transition to Industry 4.0

**ZERO NUMBER**
of manufacturing firms reporting talent recruitment as an obstacle for growth

**50**
new green technology patents registered by Penang-based firms

THEME

# B

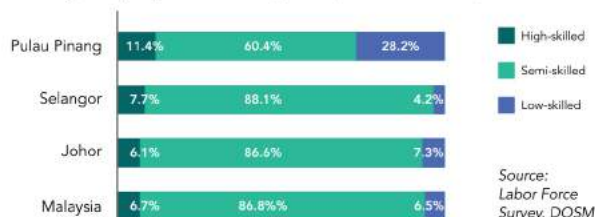## UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

## B2.

Modernise and diversity sustainable agriculture

Agricultural activities cover more than a third of Penang's total area. The state is recognised for its aquaculture and high-yield paddy production, and has high proportions of high-skilled workers. There is also a burgeoning urban agriculture movement, and a growing interest in niche agriculture-based tourism products. Be that as it may, agriculture contributes less than 2% of GDP.

The focus must now be towards modernising and diversifying the agriculture sector to increase yield and produce higher value products. Greater collaboration between farmers, fishermen, agro-preneurs and rural-based startups is needed. Food security and food sustainability can be improved through high-yield agricultural practices and through fostering urban farming and harnessing technology.

**Share of Penang's low-skilled workers in agriculture is 4 times higher than the national level**

**Penang's Employed Persons by Skill (December 2015)**

| | High-skilled | Semi-skilled | Low-skilled |
|---|---|---|---|
| Pulau Pinang | 11.4% | 60.4% | 28.2% |
| Selangor | 7.7% | 88.1% | 4.2% |
| Johor | 6.1% | 86.6% | 7.3% |
| Malaysia | 6.7% | 86.8%% | 6.5% |

Source: Labor Force Survey, DOSM

**Penang has the highest yield of paddy crop per hectare after Selangor**

**Average Paddy Yield per Hectare (tonnes/hectare)**

| Malaysia | Penang | Selangor | Taiwan | China | Japan |
|---|---|---|---|---|---|
| 4 | 5.8 | 6.4 | 5.9 | 6.4 | 6.7 |

Source: Paddy Survey Report, Penang State Department of Agriculture, CEIC

## KEY INITIATIVES

1. Positioning Penang as a high-tech Green Valley, aquaculture industrial zone and halal hub

2. Introducing 'Feeding Penang' initiatives to create more localised and urbanised farming and to ensure food security

3. Enabling investment for R&D and talent development in the agricultural sector

4. Driving Agriculture 4.0 through collaboration between farmers, fishermen, agro-preneurs and rural-based start-ups to develop digital know-how to bridge the gap between raw skills and technology

## TARGETS

**20% INCREASE**
in agricultural productivity

**100**
new urban farming enterprises

**20% DROP**
in average food miles

THEME

B

THEME

# B

## UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

## B3.

Create a variety of quality tourism products across island and mainland

THEME B | Upgrade the economy to raise household incomes | B3: Create a variety of quality tourism products across island and mainland

THEME

B

UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

Penang is a leading tourism destination. It has rich cultural and heritage assets, famous street food, nature-based offerings, beach resorts and developed tourism services and infrastructure. Domestic, cruise and medical tourism are also on the rise.
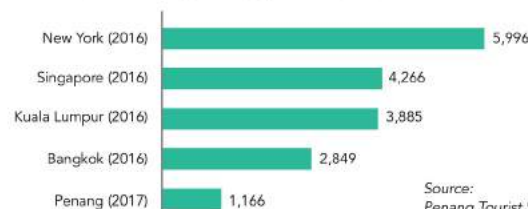
However, the tourism boom of recent years is putting pressure on the state's infrastructure and amenities, and average tourist spending and length of stay are relatively low. To better manage tourism, a greater variety of quality products across the island and mainland is needed to attract higher-value tourists.

### Penang received 6.4 million tourists in 2016

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Local Tourists (Penang) | 3.0 | 2.6 | 3.6 | 3.5 | 3.5 |
| International Tourists (Penang) | 3.1 | 2.1 | 3.2 | 2.9 | 2.9 |

Source: Ministry of Tourism Arts & Culture

### Average tourist spending per visit in Penang of RM1,166 is relatively low

**Average Tourist Spending per Visit (RM)**

| | |
|---|---|
| New York (2016) | 5,996 |
| Singapore (2016) | 4,266 |
| Kuala Lumpur (2016) | 3,885 |
| Bangkok (2016) | 2,849 |
| Penang (2017) | 1,166 |

Source: Penang Tourist Survey Report 2017, Mastercard

## KEY INITIATIVES

1. Positioning Penang as a centre for health, halal, culture, business and eco-tourism

2. Attracting investments into high-value tourism products and destinations

3. Encouraging local education providers and tourism services to work towards a higher quality of customer service

4. Launching a targeted marketing campaign for the international and domestic market

5. Enhancing engagement and experience of locals through domestic tourism to promote sustainability

6. Developing secondary and tertiary town as unique tourist destinations

## TARGETS

**DOUBLE**
average tourism spending

**5**
new international high-value destination products

**DOUBLE**
visitor satisfaction levels

THEME

# B

## UPGRADE THE ECONOMY TO RAISE HOUSEHOLD INCOMES

## B4.

Foster an ecosystem that nurtures creative industries and niche business services
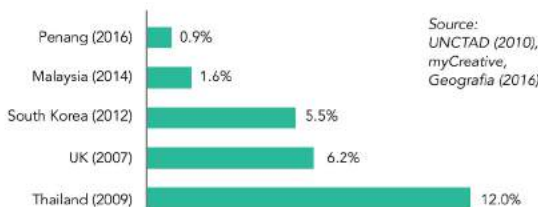
To diversify Penang's economy, new drivers of growth are required to tap into local strengths and emerging global trends. The global business services (GBS) segment has emerged as a significant revenue contributor to the services sector. The segment saw a record investment of RM4.1 billion for Penang in 2016, according to the Malaysian Investment Development Authority (MIDA). GBS hubs are one-stop centres for services such as financial transactions, data analytics, information technology support and human resources for companies that outsource these tasks.

The emerging creative sector in Penang includes tech start-ups and culture-based activities. However, its contribution to GDP is less than 1%. A coordinated effort that mirrors the success of the manufacturing industry is required. A longer-term strategy will involve enticing creative talent to stay or return to Penang, and to ensure that workplaces are family-friendly. Penang also has great potential to become a location of choice for social enterprises to headquarter their regional operations.

**Penang's creative and cultural economy accounts for less than 1% of GDP**

Contribution of Creative & Cultural Sector to National GDP/GVA (%)

| | |
|---|---|
| Penang (2016) | 0.9% |
| Malaysia (2014) | 1.6% |
| South Korea (2012) | 5.5% |
| UK (2007) | 6.2% |
| Thailand (2009) | 12.0% |

Source: UNCTAD (2010), myCreative, Geografia (2016)

**Penang has one of the highest number (5,291) of active registered societies per capita**

Population to NGO ratio

| Malaysia | Penang | Selangor | Taiwan | China |
|---|---|---|---|---|
| 334 | 386 | 391 | 407 | 601 |
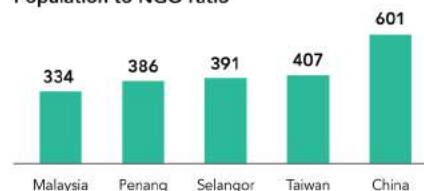
Source: www.ros.gov.my/semakan-status-pertubuhan

## KEY INITIATIVES

1. Establishing a culture and design cluster to develop creative talent, products and services

2. Developing Penang as a start-up and social enterprise-friendly state

3. Business outsourcing in Penang

4. Encouraging co-working spaces, e-commerce and digital business

## TARGETS

**TOP**
regional destination for setting up social enterprises

**50%**
creative start-ups continued operating for 3 years

**5%**
contribution from creative industry to GDP

THEME

C

THEME

C

# EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION

SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY
4 QUALITY EDUCATION
5 GENDER EQUALITY
8 DECENT WORK AND ECONOMIC GROWTH
10 REDUCED INEQUALITIES
16 PEACE, JUSTICE AND STRONG INSTITUTIONS

A major goal of the Penang government is to reciprocate the confidence Penang's population has shown it in the last decade by exhibiting confidence in the people's ability to contribute to future policy making. Studies have shown that the GDP per capita can no longer be the sole indicator of a nation's wellbeing.

People empowerment through programmes for capacity building, life-long education and enhanced participation in decision making will be carried out alongside institutional reforms where programme delivery, democratic accountability and responsibility are concerned.

To be sure that the impact of the government's policies are positive and strong, a Happiness in Penang (HIP) Index will be carried out every 2-3 years to assess the government's performance and the socio-economic situation of the population at large.

**31%**
of Penangites disagree that local government is working in their best interests
(Arcadis/TC, 2016)

**<1%**
of Malaysians are registered volunteers
(dosomethinggood.com, 2012)

**77%**
of Penangites are very happy or happy (highest in Malaysia)
(TheEdgeProperty.com-Lafarge Happiness in the City Index, 2017)

## OVERARCHING STRATEGIES

**UPLIFT VULNERABLE COMMUNITIES AND REDUCE INEQUALITIES**

through capacity building programmes such as community leadership, raising literacy and improving life skills for the young

**BOOST PARTICIPATION OF YOUTH, WOMEN AND SENIORS IN COMMUNITY LIFE**

through the empowerment of civil society organisations, especially among youth and students

**DEVELOP MORE PLATFORMS FOR PUBLIC INVOLVEMENT IN DECISION-MAKING**

through an increase in transparency on public data

**ACCELERATE PROGRAMME DELIVERY AND INSTITUTIONAL REFORM**

through the digitisation of the state government's machinery where decision-making is driven by big data

THEME

**C**

**EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION**

**C1.**

Uplift vulnerable communities and reduce inequalities

Although Penang has a relatively low incidence of poverty (0.1%), 16% of its households are still financially vulnerable. Many B40 households have not been afforded the opportunity for higher education. Inequity is also of concern, and the median income gap between B40 and T20 households is approaching RM10,000 per month.
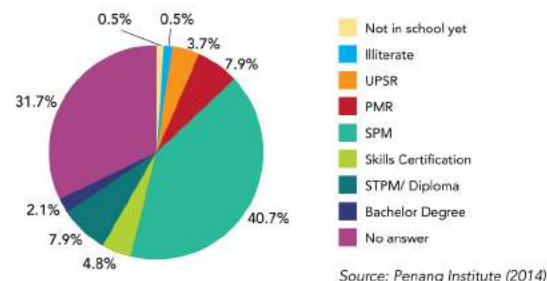
Poverty is a multidimensional phenomenon that varies by gender, age, culture, and other social and economic contexts. It needs to be understood accordingly, with aspects such as education, living standards and health being considered. A comprehensive and multidimensional investigation into economic poverty and socio-cultural vulnerability in Penang is required.

More immediately, capacity building and skill training is to be implemented for vulnerable communities alongside the scaling up of literacy and life skills programmes. Programmes to improve current welfare services will be initiated.

### Gap between Median Household Income Group (RM)

T20, M40, B40

Penang: 12,268 / 6,382 / 3,286
Kuala Lumpur: 20,201 / 10,564 / 5,344
Malaysia: 13,148 / 6,275 / 3,000

Source: DOSM (2016)

### Profile of Low Income Household Education Level (2014)

0.5% Not in school yet, 0.5% Illiterate, 3.7% UPSR, 7.9% PMR, 40.7% SPM, 4.8% Skills Certification, 7.9% STPM/Diploma, 2.1% Bachelor Degree, 31.7% No answer

Source: Penang Institute (2014)

## KEY INITIATIVES

1. Implementing community leadership programmes
2. Scaling up effective literacy and life skills programme for at-risk youths
3. Undertaking a comprehensive baseline study of vulnerable families and individuals
4. Undertaking a review of the current welfare system in Penang

## TARGETS

**50% REDUCTION** in gap between median household income groups

**HALVING** the number of people dependent on government welfare (monetary) aids

**30% INCREASE** in government recurrent and capital spending to sectors that benefit the poor and the vulnerable through reskilling programmes

THEME

C

**EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION**

**C2.**

Boost participation of youth, women and seniors in community life

**THEME C**

**Empower people to strengthen civic participation**

**C2:**
**Boost participation of youth, women and seniors in community life**

THEME

C

EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION

Boosting the participation of youth, women and seniors in community life is key to improving their happiness and wellbeing.

By 2030 there will be an additional 185,000 seniors in Penang, whose energies and knowhow can be tapped. In fact, youths and the elderly combined will be almost equal in numbers to the working population. Although not directly involved in economic activities, their contribution to meaningful daily activities can be substantial and should not be ignored. Volunteerism, if encouraged among them, will be a unique and positive game-changer for Penang society and its general happiness level. Youth participation in decision making and civil society will lay the foundation for the next generation of leaders.

Equally important is increasing female participation in the workforce and the number who own and run businesses. Women's leadership and entrepreneurial programmes will be established.

**Labour Force Participation Rate in Penang (%)**

| | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|
| Male | 80.6 | 80.6 | 79.9 | 79.2 |
| Total | 71 | 69.9 | 69 | 67.5 |
| Female | 61.3 | 59 | 57.9 | 55.7 |

Source: DOSM

**SME Ownership by Gender (2015)**

| | |
|---|---|
| Kelantan | 40% |
| Kuala Lumpur | 13% |
| Penang | 16% |
| Malaysia | 21% |

Source: DOSM
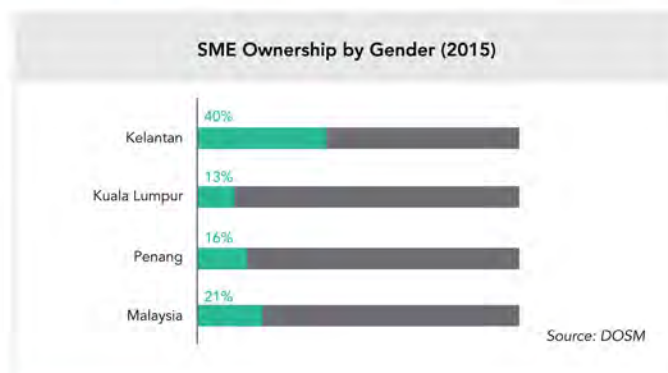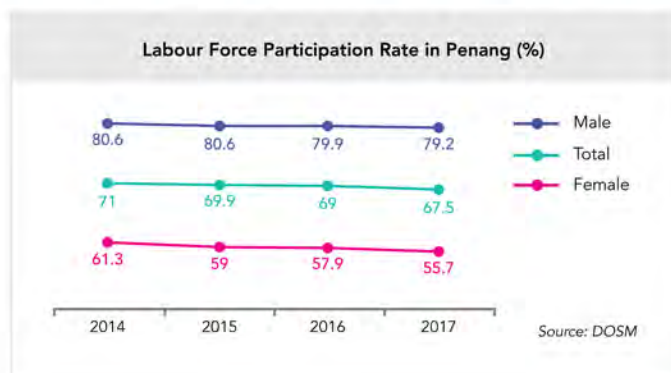
## KEY INITIATIVES

1. Embedding volunteerism programmes in society

2. Establishing start-up and entrepreneurial programmes for youths, women and vulnerable community

3. Implementing leadership and empowerment programmes

4. Starting programmes for lifelong learning centres

## TARGETS

**20,000**
registered youth volunteers

**40%**
of SMEs owned by women

**1,000**
seniors volunteered annually for coaching and training programmes

THEME

C

EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION

THEME

# C

## EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION

## C3.

Develop more platforms for public involvement in decision making

Voter participation rates in Malaysia have increased in recent years, and the national change in government in 2018 has many hoping for a more transparent and participatory style of government.

While Penang state government has greatly enhanced its online presence and sought to provide platforms for its citizens, less than 3% of the population use online consultation platforms. Malaysia is mid-ranked in e-government (48th) and e-participation (32nd) by the United Nations.

To inculcate participatory democracy among Malaysians and specifically Penangites, participation should start from the lowest level of governance, for example with strata property management and community leaders.

With technology advancement, public involvement in decision-making can be enhanced through smart technologies channelling information to relevant government apparatus.

**Voters Turnout Trend**

86.80%

84.34%

77.89%

GE12 (2008)    GE13 (2013)    GE14 (2018)
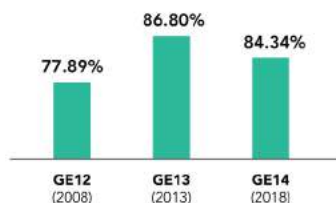
Source: EC & Media Releases

**Internet use among Penangites to participate in defining civic and political issues is below the national level**

Percentage of Individuals using Internet to participate in Online Consultations or Voting to Define Civic or Political Issues (2017)

Selangor — 11.8%
Kuala Lumpur — 5.4%
Penang — 2.8%
Malaysia — 6.4%
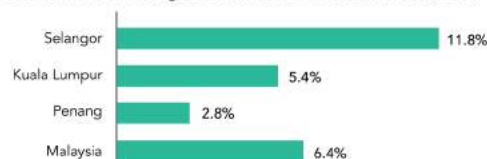
Source: DOSM

## KEY INITIATIVES

1. Reviewing government standard operating procedures to ensure equal access for the public to services and information

2. Improving community participation in strata property management as the basis of governance

3. Developing a one-stop online community engagement forum

4. Undertaking a biennial happiness survey to measure the sentiments and concerns of the Rakyat

## TARGETS

**1,000**
youth leaders participated in leadership programmes annually

**50%**
of Penangites using online community engagement forums

**DOUBLE**
the happiness level of Penangites

THEME

C

**EMPOWER PEOPLE TO STRENGTHEN CIVIC PARTICIPATION**

**C4.**
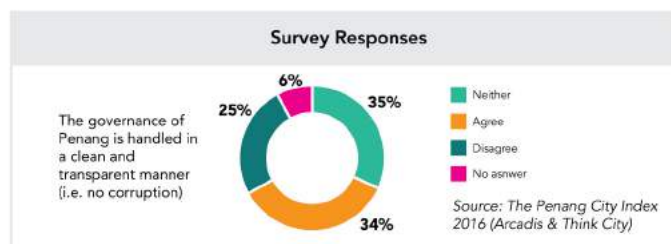
Accelerate programme delivery and institutional reform

As with the manufacturing and agricultural sectors, the digital revolution can transform the delivery of government services. In fact, from road navigation to flood mitigation to free group chats, things that were not possible 10 years ago have become the norm. Social media or virtual communities have in fact changed how humans now interact and communicate. Therefore, it is essential that institutional reforms be carried out through the digitisation of government agencies, in order to keep up with the changes.

With the help of smart technologies, AI and big data analytics, government agencies can undergo a full review of roles, responsibilities as well as standard operating procedures to accelerate programme delivery across all government initiatives.

A state government Big Data Unit is to be developed and the skills and knowhow of civil service in this area greatly enhanced. This will be aided by the tech industry through the adoption of an open data policy. A review of how technology and big data can streamline services will also be undertaken.

### Survey Responses

The governance of Penang is handled in a clean and transparent manner (i.e. no corruption)

- 6% No answer
- 25% Disagree
- 35% Neither
- 34% Agree

Legend:
- Neither
- Agree
- Disagree
- No answer

*Source: The Penang City Index 2016 (Arcadis & Think City)*

### Open Data Barometer Ranking

| | Year 2014 | | Year 2016 |
|---|---|---|---|
| Malaysia | 41st | ↓ | 53rd |
| Indonesia | 36th | ↓ | 38th |
| Singapore | 29th | ↑ | 23rd |
| Australia | 10th | ↑ | 5th |

*Source: Open Data Barometer*

## KEY INITIATIVES

1. Accelerating e-governance and adopting an open data policy

2. Setting up a Big Data Unit for data mining and training for heads of departments and agencies and education institutions.

3. Reviewing all government departments' guidelines, rules, regulations, by-laws and policies to become relevant to current practices

4. Streamlining activities and expenditures across state and local government to increase efficiency and efficacy in the use of funds

5. Developing capacity-building activities that reflect a broad spectrum of purposes and outcomes to enhance the efficiency and effectiveness of government officials

## TARGETS

**FULL ADOPTION**
by all agencies of the government's digital transformation programme

**5-STAR**
in efficiency of delivery systems

**30%**
policy reviewed annually

THEME

D

INVEST IN THE BUILT ENVIRONMENT TO IMPROVE RESILIENCE

THEME

# D

## INVEST IN THE BUILT ENVIRONMENT TO IMPROVE RESILIENCE

As global weather patterns become increasingly uncertain, it is important that Penang invests in infrastructure and services that build its resilience and reduce its vulnerability.

To address car dependency and urban sprawl, a new city development model is needed – one that better balances development between island and mainland and leverages new and existing public transport systems.

The state's digital and regional connectivity is to be upgraded to ensure economic prosperity. This can help propel a transformation of government services towards full adoption of smart technologies.

An overarching climate change adaptation framework will provide the necessary policy environment and attract partners to spearhead initiatives that inspire the nation into action.

**8%**
share of household income for transport, 50% higher than Hong Kong

**1.5°**
forecast increase in maximum temperature in George Town by 2030

**19.8 mb/s**
average 4G speeds compared to 44.3 mb/s for Singapore

## OVERARCHING STRATEGIES

**BALANCE DEVELOPMENT THROUGH EFFECTIVE SPATIAL PLANNING**

by adopting a network city model defined by compact human development, pedestrian-friendly streets and comprehensive public transport linkages

**STRENGTHEN MOBILITY, CONNECTIVITY, AND DIGITAL INFRASTRUCTURE**

by upgrading external and internal connectivity and bridging the digital divide

**INTEGRATE MUNICIPAL SERVICES WITH SMART TECHNOLOGIES**

for more efficient and transparent city management, real-time

**IMPLEMENT CLIMATE CHANGE ADAPTATION PLANS**

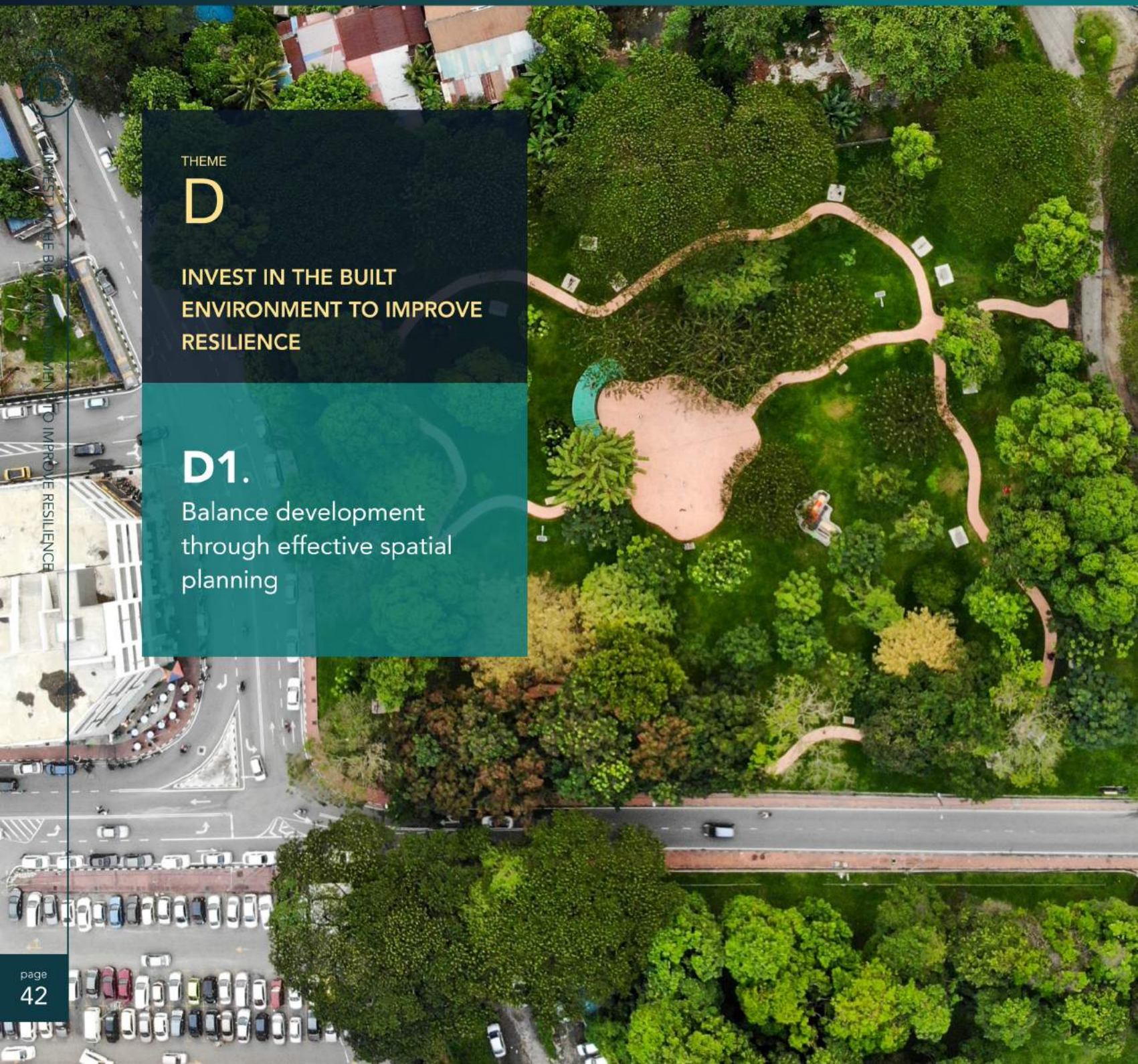to address climate change and embrace the green economy

THEME

# D

## INVEST IN THE BUILT ENVIRONMENT TO IMPROVE RESILIENCE

## D1.

Balance development through effective spatial planning

Urban sprawl in Penang has led to heavy reliance on private vehicles, and to longer commutes, congestion, high transportation costs and loss of valuable green spaces. It has also led to the 'hollowing out' of many urban and suburban centres.

A new spatial planning model is required which can lead to the development of compact, human scale and walkable neighbourhoods with good public transport options.

Car dependency can be lowered through a revitalisation of suburban town centres, creation of a new city core via the revitalisation of the George Town and Butterworth waterfronts and the reconfiguration of industrial parks.

**Penang island is 2.2 times more dense than the mainland**

Population Density (2016)

**2,700** pax/sqkm — Island

**1,300** pax/sqkm — Mainland
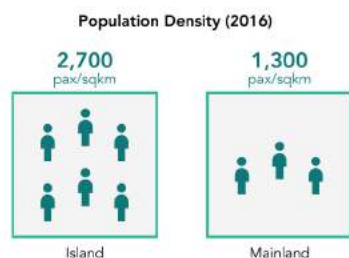
Source: Penang in Numbers

**Penang island received 1.8 times more development applications than mainland**

Number of Development Applications Received by Councils ('000)

| 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------|------|------|------|------|------|------|------|------|
| 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |

● Majlis Bandaraya Pulau Pinang   ● Majlis Perbandaran Seberang Perai

Source: PLANMalaysia

## KEY INITIATIVES

1. Adopting a network city model for the spatial development of Penang

2. Upgrading industrial parks and other employment hubs with public amenities and facilities to minimise travel time

3. Revitalising the waterfronts in Butterworth and George Town

4. Rejuvenating suburban neighbourhood centres to be more self-inclusive as places to live, work and play.

## TARGETS

**80%**
new development in brown-field sites

**10**
suburban neighbourhood centre regeneration programmes

**30 mins**
average commute time

THEME

D

THEME

# D

## INVEST IN THE BUILT ENVIRONMENT TO IMPROVE RESILIENCE

## D2.

Strengthen mobility, connectivity and digital infrastructure

Penang's mobility and connectivity infrastructure is to undergo a major overhaul through public and private sector investments. These will facilitate future economic prosperity and provide families with greater mobility, and business and employment opportunities.
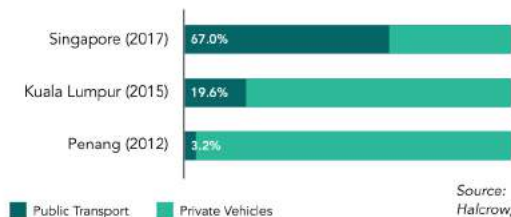
A major driver will be improved public transport infrastructure including light rail and high speed ferry services. A continuous programme to improve first and last mile connectivity will also be undertaken.

Penang International Airport will be expanded to cope with medium-term demands, while a longer-term solution is investigated.

Digital connectivity is also vital if Penang is to break out of the middle income trap. Partnerships with key providers are to be established to make Penang the region's first gigabit state.



**Public transport usage in Penang is very low**

Public Transport and Private Vehicle Modal Share during Peak Hours (%)

Singapore (2017)  67.0%
Kuala Lumpur (2015)  19.6%
Penang (2012)  3.2%

■ Public Transport   ■ Private Vehicles

Source: Halcrow, SPAD, LTA



**Penang International Airport has exceeded its capacity of 6.5 million since 2016**

Passengers handled in Penang International Airport (2017)

■ Domestic
■ International

3.12 million (43%)    4.07 million (57%)

Source: MOT
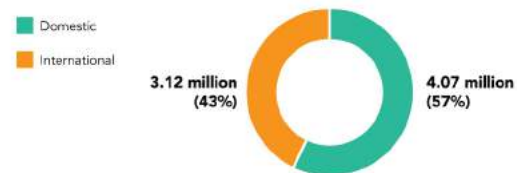
## KEY INITIATIVES

1. Encouraging the use of e-motorcycles to improve air quality

2. Establishing Penang as a gigabit state via a major upgrade of digital infrastructure

3. Prioritising the construction of a light rail and introduction of high speed ferry services and water taxis

4. Prioritising the upgrade of the existing airport

## TARGETS

**50%**
of total motorcycles are electric powered

**20%**
of trips made by public transport

**50% INCREASE**
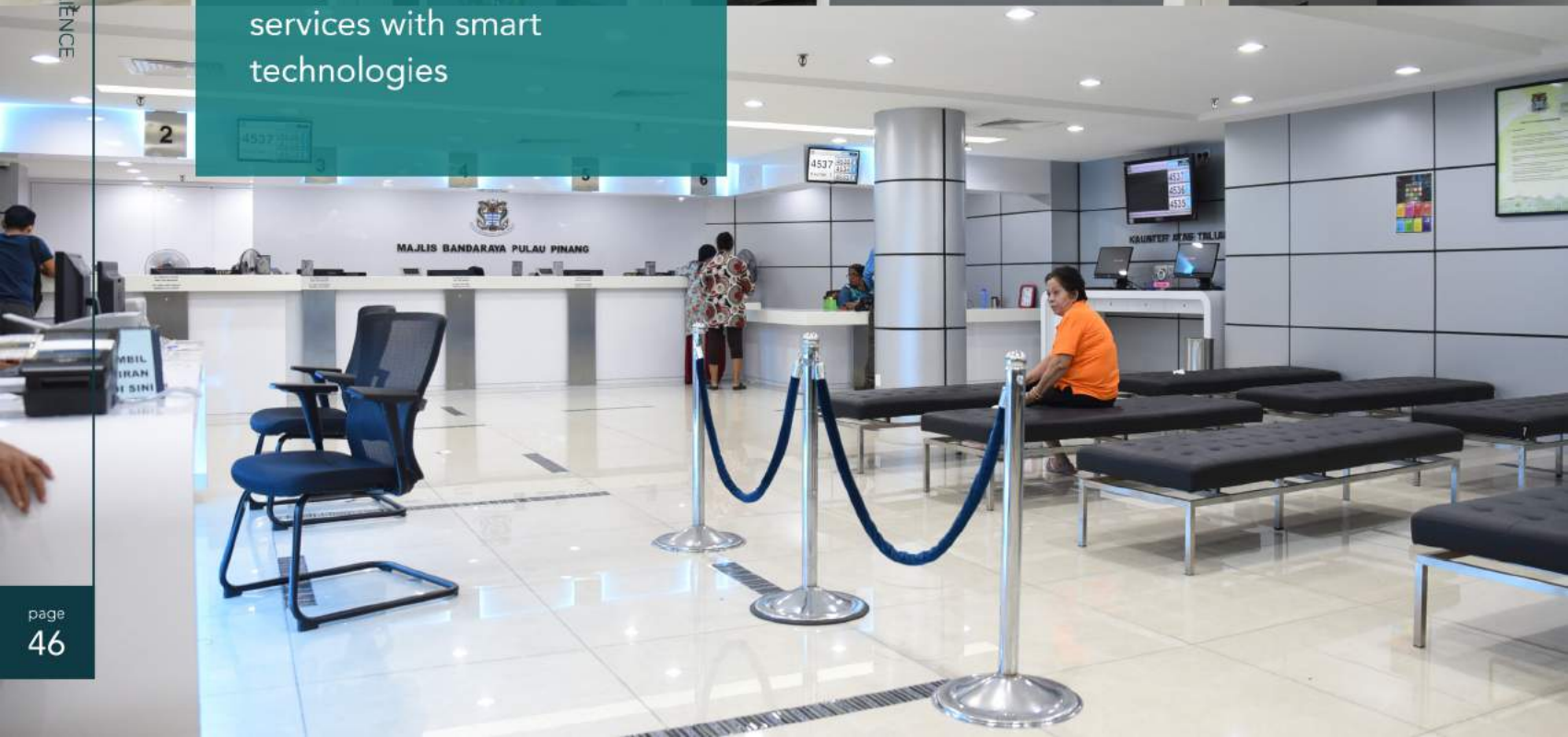in destinations reachable directly from Penang International Airport

THEME

# D

## INVEST IN THE BUILT ENVIRONMENT TO IMPROVE RESILIENCE

## D3.

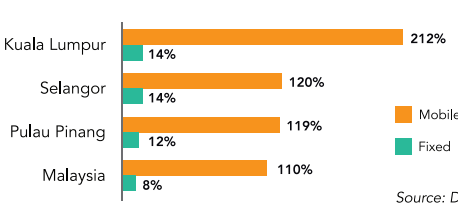Integrate municipal services with smart technologies

To improve the delivery of municipal and government services, smart technologies will be deployed by Penang Island City Council (MBPP), the Seberang Perai Municipal Council (MPSP) and other government agencies.

Sensors and other connected devices to collect data are to be installed to enable dynamic management for real-time monitoring and response. Community apps will be developed in parallel. This will extend to traffic management, electricity provision, water supply, lighting, parking and disaster management.

Energy production is to be diversified through the development of a solar industry – smaller-scale devices fitted to existing buildings and larger-scale solar farms. The local government, working together with Tenaga Nasional Berhad, can introduce development guidelines to encourage existing buildings to be retrofitted for solar energy or waste-to-energy production.

**There are 1.2 mobile broadband subscriptions for every 1 person in Penang**

### Percentage of Population Subscribed to Broadband Services

| | Mobile | Fixed |
|---|---|---|
| Kuala Lumpur | 212% | 14% |
| Selangor | 120% | 14% |
| Pulau Pinang | 119% | 12% |
| Malaysia | 110% | 8% |

*Source: DOSM*

**Cities in Penang have the highest potential for solar power generation in Peninsular Malaysia**

### Yearly Average Values of Solar Irradiance (kWh/m²)

| | |
|---|---|
| Kota Kinabalu | 1,900 |
| Bayan Lepas | 1,809 |
| George Town | 1,785 |
| Johor Bahru | 1,625 |
| Kuala Lumpur | 1,571 |

*Source: Energy Commission*

## KEY INITIATIVES

1. Mandatory adoption of smart technologies for the delivery of municipal services

2. Collaborating with local communities and NGOs on smart city initiatives

3. Implementing a smart reporting dashboard of key Penang indicators

4. Investing in renewable energy

## TARGETS

**100%**
of government agencies using smart technologies

**100%**
green and smart government buildings

**100%**
of new development deploying smart city technology

THEME

# D

## INVEST IN THE BUILT ENVIRONMENT TO IMPROVE RESILIENCE

## D4.

Implement climate change adaptation plans

Despite its reputation as the state that manages its water resources most effectively, Penang nevertheless faces serious challenges in coming decades where water security is concerned. Plans are therefore being laid to secure steady sources for clean water.

Penang is very vulnerable to climate change. The average temperature in urban Penang is predicted to rise by 1.5°C by 2030. A combination of increased temperature and flooding will affect the wellbeing of citizens and lead to cumulative economic losses of up to RM 6 billion by 2030.

Penang intends to lead the nation by developing Malaysia's first climate adaptation plan. This will be followed by initiatives focused on cooling urban areas through greening and flood-risk mitigation. Adoption of a 'sponge city model' – one that absorbs water naturally through more permeable surfaces – will go a long way towards reducing floods.

Existing disaster mitigation and management strategies will also be updated to incorporate the latest predictions on temperature and flooding associated with climate change.

**Penang's minimum temperature is expected to rise by 1.5°C by 2030**

Penang's Minimum Temperature (Altitude 3.3m) (°C)

26.6

+1.5°C

24.4 — 2014
24.4 — 2015
24.8 — 2016
25.1 — 2017
2030

Source: DOSM, Think City
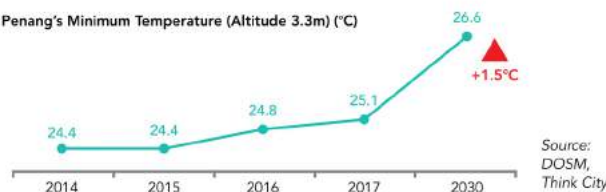
**Cases of flooding in Penang have doubled to 41 in 2017 from 20 in 2015**

Flood Incidents Reported by State

- Selangor
- Penang
- Kuala Liumpur

Selangor: 24.4 (2015), 24.4 (2016), 24.8 (2017)
Penang: 24.4 (2015), 24.4 (2016), 24.8 (2017)
Kuala Liumpur: 24.4 (2015), 24.4 (2016), 24.8 (2017)

Source: JPS

## KEY INITIATIVES

1. Partnering with international organisations to develop and implement climate adaptation plans

2. Piloting nature-based urban cooling initiatives

3. Adopting a sponge city approach to reduce flood risk

4. Updating disaster mitigation and management strategies to incorporate weather and flood risk

## TARGETS

**ALL**
new developments with GBI Gold certified from 2020 onwards

**30%**
of infrastructure construction materials recycled

**100%**
hotels in Penang to be green

**20%**
reduction in domestic water consumption per capita per day

**100%**
LED street lights with smart pole functions

**200,000**
additional trees planted in Penang

# FOUNDATIONAL PROJECTS - THEME A
# GREEN CONNECTORS & SPONGE CITY

The goal of the Penang Green Connectors project is to link different components of urban green spaces to create a network that will benefit biodiversity. The intended result is a comprehensive green infrastructure plan that includes linking coastal parks to pedestrian waterfronts, as well as urban river corridors to biodiverse peri-urban green spaces. It will be integrated with several other ongoing related plans, according (and contributing) to local policy. The Green Connectors project is also part of a broader strategy being developed to address climate change in Penang.

Climate change is the major threat cities—especially coastal and island cities—will face in the near future. This is particularly relevant for Southeast Asian cities, as the region was identified in 2018 by the Intergovernmental Panel on Climate Change (IPCC) as one of the three areas in the world which will be hardest hit by climate change. Cities all over the world are preparing for the coming impact and have begun implementing adaptation plans. A local specific response to climate change is of utmost importance, since different locations face different immediate threats. Penang's urban areas face two major threats: heat stress and flooding due to the increase in extreme rainfall.

The risk of heat stress is a new challenge, identified by the Urban Climate Change Research Network (UCCRN) in 2018. The urban areas of Penang will have to transition from the condition of not being at risk from heat stress in 2000 to becoming endangered in 2050. Addressing climate change will also become a public health priority, as was identified by the Asia Pacific Journal of Public Health in 2016. Equality-related issues should also be addressed, as the most vulnerable groups in the community will be the most exposed. Heat-related deaths among the elderly (65+ years) are projected to increase to almost 45 deaths per 100,000 by 2080, compared to the estimated baseline of under one death per 100,000 annually (1961-1990) in Malaysia. Not only the elderly are at risk, but also children, outdoor workers, people with chronic diseases, and the poorest families who cannot afford air conditioning or appropriate transportation.

The project for the Green Connectors of Penang will, once implemented, substantially reduce risks related to the two major impacts predicted for the state. The major advantages associated with a green connectors network are usually considered to be to promote pedestrian circulation, recreation and sports, as well as corridors and habitats for wildlife which reduce threats to biodiversity.

The impact of reducing surface temperatures will be felt not only in the connectors' immediate location but also in the overall urban area, as they promote air circulation (also reducing air pollution) and decrease the urban heat island effect. With strategic planting, including selecting the most adequate species of trees and aligning their placement with natural wind corridors, reducing 1.5°C in the overall urban areas (6-8 years after construction of the projects) is an achievable goal. Besides the impact on the overall temperature, a reduction of 5-7°C can be expected in the green connectors areas, making them ideal locations for both recreation and sports.

The Green Connectors project will also significantly reduce flooding by adopting a sponge city approach. A sponge city is a city designed to passively absorb, clean and use rainfall in an ecologically friendly way, reducing both polluted and flood-inducing levels of stormwater runoff. With the sponge city approach, runoff will be reduced through water management that establishes differentiated and interconnected areas for fast flow, slow flow and retention/infiltration areas. These eco-corridors will include areas for water infiltration, bioswales, and strategically located retention areas and rain gardens. The use of predominantly nature-based solutions for water management will also reduce the pressure on existing drainage infrastructure and prioritise ecosystem benefits.

**Potential public-private initiatives:**
- Adoption of neighbourhood parks by corporates, SMEs or community associations.
- Research and adaptation of self-cleaning materials for landscape furnitures.

## FOUNDATIONAL PROJECTS - THEME B
# SME ADVANCEMENT

Small and Medium Enterprises (SMEs) are often considered the backbone of the Malaysian economy as they collectively employ more than half of the country's workforce. The Economic Census 2016 published by the Department of Statistics of Malaysia has indicated that Penang has at least 67,000 SMEs, of which 16% are owned by women.

Currently, under the Skim Pinjaman Harapan, managed by PDC, interest-free loans (maximum RM5,000) with a repayment tenure of two years are being offered to small entrepreneurs and to encourage participation of the lowest income group in trading. This is expected to substantively eradicate poverty in the state.

Going forward, this micro credit loan scheme can be diversified to cater for the different categories of SMEs. While some of the loans can remain interest-free, others can be scalable to low-interest loans or be accompanied by a matching grant of up to 50% of total investment required by the qualifying SME, to invest in digitisation or automation.

Given the economic integration process in the ASEAN region, the opportunities for SMEs such as those in Penang, who are long established and experienced, to expand in neighbouring countries, are promising.

The state and its agencies, as part of its People Empowerment programme, will help provide knowledge and training for SMEs wishing to venture beyond our national borders.

**Potential public-private initiatives:**
- Investment matching scheme.
- Angel investors.
- Partnership with higher learning institutions for technical or research assistance and testing.

# FOUNDATIONAL PROJECTS - THEME C
# HAPPINESS IN PENANG (HIP) INDEX

A country's progress is often measured using the metric of the gross domestic product (GDP) and the gross national product (GNP). As such, the influence of GDP and GNP is considerable when it comes to policy making and decision making. Undeniably, both metrics are important indicators of a country's economic health. However, they are limited when it comes to measuring social well-being. Sustainable development should therefore take a holistic approach towards notions of progress and give equal importance to non-economic aspects of prosperity.

A happiness index for Penang is being developed to understand and ascertain whether or not programmes and policies developed under Penang2030 improve the general happiness and satisfaction of the public. The development process of the happiness index will be guided by Penang2030's goals of creating a family-focused green and smart state that inspires the nation.

As a first step, four indices (FEEL) are chosen to measure the happiness of people in Penang. These are:
- **F**reedom index
- **E**nvironmental conservation index
- **E**conomics index
- **L**iveability index

The indices are based on the four main themes for Penang2030: liveability, economy, empowering the community, and environment; and these are adopted as the key pillars for the happiness index.

In accordance with these four indices, Penang Institute has developed 28 domains that will be used to define and analyse the happiness of Penang people; and within each domain, between 3-13 indicators are selected.

The four indices are equally weighted because each index is considered equal in terms of its importance as a component of the happiness index. The objective and quantitatively measurable indicators are given higher weightage, while the self-reported/subjective indicators are given lower weightage.

Since the Happiness in Penang (HIP) Index is to gauge the happiness of the people in Penang, the subjective input of the people of Penang is imperative—and necessary to its relevance and accuracy. It has been decided that a public survey is the most efficient way of understanding and learning about the sentiments of the people in Penang. It is also the most efficient way to quantify happiness among the people in Penang and to measure their level of acceptance of the programmes and policies developed under Penang2030.

The survey questions will be designed to ensure that all the indicators are covered, and are given equal importance in order to avoid biases in the study.

| Freedom/ Empowerment Index | Environmental Conservation Index |
|---|---|
| • Political freedom<br>• Community and civic participation<br>• Religious/cultural/ spiritual freedom<br>• Free speech<br>• Fundamental human rights | • Environment & biodiversity preservation<br>  - Coast line<br>  - Water supply<br>  - Hills<br>  - Trees<br>  - Green spaces<br>• Air quality<br>• Carbon emissions<br>• Urbanisation issues (quality of urban living) |
| **Economics Index** | **Liveability Index** |
| • Income<br>  - Household<br>  - Personal<br>• Financial security<br>• Home ownership (assets)<br>• Employment opportunities<br>• Salary/wages<br>• Inequality<br>  - Gender<br>  - Ethnicity<br>• Social mobility (between child and parent)<br>  - Generational mobility<br>  - Personal<br>  - Career growth<br>  - Self-growth<br>  - Salary satisfaction | • Affordable housing<br>• Community well-being<br>• Community interaction (families, friends, neighbours)<br>• Safety (men, women, children)<br>• Heritage conservation<br>• Sustainable development<br>• Cleanliness<br>• Transportation (urban connectivity)<br>• Cost of living<br>• Living standards<br>• Digital connectivity (internet access)<br>• Health<br>  - Diet/physical exercise<br>  - Mental health<br>  - General health<br>  - Medical attention needed<br>  - Life expectancy<br>  - Disability<br>  - Healthcare accessibility |

**Potential public-private initiatives:**
- Voluntary survey respondents for controlled sample.
- Voluntary open data sharing platform to contribute to Happiness in Penang Index.

## FOUNDATIONAL PROJECTS - THEME D
# DIGITAL PENANG

Penang Digital Transformation Masterplan envisions a Digitally Enabled and Enabling Penang; a Penang that will see a supportive environment for the pervasive use of digital technologies across the board. This plan identifies five pillars that are crucial to achieve this vision; encompassing broad strategies that deliberately identify stakeholders by their specific needs. These five pillars will see a future Penang that is underpinned by a digitally-integrated modern lifestyle. This includes more productive jobs with less working hours and higher wages; new and forward looking industries; and a personalised urban lifestyle experience that is only possible through digital technologies.

Three guiding principles are used to define the policy space in this plan:

(1) **Synergy**: Leveraging on existing initiatives and aligning them towards a unified goal;

(2) **Adaptive**: Make available space to manoeuvre and adapt within the confines of the five foundational pillars;

(3) **Constraints**: Acknowledge resource and mandate constraints in order to address them.

Five pillars have been identified to be crucial building blocks in achieving the vision:

(1) **Innovative Society**: Individuals who are curious, active learners and motivated to solve problems

(2) **Digitally Friendly Workforce**: A workforce that is equipped with the relevant skills to realise the digital vision of Penang

(3) **Digitally Enabled Businesses**: Businesses that both use and develop new digital technologies for productivity gains

(4) **Digitally Enabling Infrastructure**: A fast, reliable and secure internet connection; and new industrial clusters

(5) **Digitally Supported Government**: A digital government that aims to deliver greater public value

These five pillars will see a future Penang that is underpinned by a digitally integrated modern lifestyle which includes:

(1) High productivity jobs with less working hours and higher wages;

(2) High value-add industries that are new and at the technology frontier;

(3) Personalised urban living experience that is only possible through digital technologies.

In line with this plan, a coordination unit with the name of Digital Penang will be established to act as the platform on behalf of the State Government to ensure that the economic enablement through digital technologies is made possible in Penang.

**Potential public-private initiatives:**

- Enhance close collaboration between the education sector and industry to provide skills and stake out career paths that are attractive to young talents.
- Reskilling programmes for career advancement.

# EPILOGUE

### Penang and the larger global imperative

*United Nation's 2030 Agenda for Sustainable Development*

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. The Goals and targets, shared/adopted by the Penang government in partnership with UN Habitat, will stimulate action over the next fifteen years in areas of critical importance for humanity and the planet:

### People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

### Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

### Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

### Peace

We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.

### Partnership

We are determined to mobilize the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

The interlinkages and integrated nature of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realised. If we realise our ambitions across the full extent of the Agenda, the lives of all will be profoundly improved and our world will be transformed for the better.

The 17 Sustainable Development Goals (SDGs) are at the heart of the 2030 Agenda. They are the world's best plan to build a better world for people and our planet by 2030. The SDGs are a call for action by all countries -- poor, rich and middle-income -- to promote prosperity while protecting the environment. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, equality and job opportunities, while tackling climate change and working to preserve our ocean and forests.

Source: *https://sustainabledevelopment.un.org/sdgs*

**The SDG Happiness Pyramid**

Website
**www.penang2030.com**

Email
**secretariat@penang2030.com**