PENANG GREEN AGENDA 2030

Title: Land use and Planning

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EXECUTIVE SUMMARY

Land use planning in Penang consists of 3 main types of documents, namely the Structure Plan (state-wide land use plan), Local Plans (prepared by local authorities), and Special Area Plans (addressing specific areas such as George Town and the Botanical Garden). Land use plans are generally drawn up by consultants hired by the responsible agencies. Government departments make sure that the tight timeline is adhered to and that the legal procedure is followed strictly to avoid being challenged in court. Currently, the new Structure Plan (RSNPP) 2030 is yet to be gazetted and the two Local Plans by MBPP and MBSP are still being prepared and finalised.

The Land Use and Planning (LUP) Working Group revisits current land-use practices and planning processes in order to create a green, resilient, and liveable Penang by the year 2030. The Working Group looks into multiple issues ranging from the planning process, enforcement, public participation, data reliability and accessibility, public engagement, and climate resilience. It also explores the use of a bottom-up approach as well as the use of technology and advanced mapping to improve land use planning in Penang.

There are various challenges regarding land use planning for sustainable development in Penang. Firstly, there is no real understanding and assessment of optimal land use for Penang (especially on Penang Island where land supply is limited). Planners also do not use modelling of alternative scenarios to choose the most suitable land use pattern that maximises utility while minimising negative impact. As a result, land development is driven mainly by what the developers and landowners want. And as environmental and social impact assessments are required only on a project basis, the long term cumulative impact of land development in a particular locality is not assessed prior to the provision of development consent.

There is also a challenge of using relevant, precise, and up-to-date spatial and non- spatial data for effective land-use planning – they are not always available. Population forecast is used as the basis for future land-use decisions, which may result in a focus on quantity (of space, services, etc) rather than the quality of life. Lastly, meaningful public participation in land use planning is still lacking: government agencies tend to follow the technical specification but not the spirit of public consultation provided for in the 172 Act. Even after land-use plans are finalised, local governments sometimes have to accommodate changes or overlook enforcement because of political interference.

The LUP Working Group proposes the following **four recommendations** to promote sustainable land use in Penang:

1. Leadership on Sustainable and Resilient Development (2020)

To spearhead the transition towards a more sustainable development-oriented land use, Penang needs its leaders, not only at the political party level but also senior government officers, to commit to achieving sustainable development goals and empowering people's voices and opinions. This can be achieved by raising awareness and being clear about the economic and social benefits of an early transition. There will be reservations and even

push-back from some decision-makers but if a strong leadership on sustainable development is established across Government, the impact on Penang's future land use will be considerable, resulting in more forward-looking and balanced land-use choices. The right leadership is ranked by the WG as having the greatest impact on land use planning, above and beyond all the other recommendations. The WG also thinks it is not too difficult to achieve this if clear instructions and vision can come from the top of the Government such as the Chief Minister and the Executive Councillors (EXCOs). This is now possible with the introduction of Penang2030, a personal vision of the Chief Minister to make Penang "A Family-Focused Green and Smart State that Inspires the Nation". All of the themes under Penang2030 have been explicitly linked to the SDGs and all government departments are required to work together to achieve the Penang2030 goals. Work can also be built on the strong foundation established by Datuk Maimunah Mohd Shariff, current UN-Habitat's Executive Director, who worked as Mayor for both the local Governments in Penang.

2. Effective Collation of Reliable Data (2020)

Ideally, Penang should have a complete digital blueprint that covers the whole State and a centralised database so that information can be collected, updated, and shared systematically. The availability and utilization of quality data (accuracy, validity, reliability, timeliness, relevance, and completeness) will have a considerable impact on land use planning, especially if it is coupled with scenario modelling where different choices of land use are assessed to allow policymakers to choose the most suitable option for Penang. It is not too difficult to make sure each department keeps a set of reliable data and shares them with the planning department. This can be done either through upgrading the current system (such as building on PeGIS's new capacity i.e. ArcGIS server) or building a new centralised database. This can become one of the flagship initiatives under the new Penang Digital Transformation Master Plan.

3. Planning Advisory Team That Is Transdisciplinary and Consists of Non- Governmental Entities (2025)

To increase the transparency and effectiveness of the planning process, the State and Local Governments in Penang should consider forming a formal or informal group that will work alongside the planning departments and consultants in drafting Structure and Local Plans. The team must be transdisciplinary with stakeholders from a range of backgrounds and not just planners. It should also consist of Non-Governmental Entities such as professional bodies and civil society to make sure that experts outside the Government can have a say in designing Penang's development pathway. Including the input from this wide range of stakeholders, the planning process can become more dynamic, inclusive, and informed which in turn will ensure that a more balanced and optimized land-use regime can be achieved. The interdisciplinary team can be set up for the review of the Structure Plan and Local Plans in the future.

4. Climate-Proof and Biodiversity Sensitive Planning for Penang (2025)

With the worsening impact of climate change, Penang is on course to suffer from more frequent and severe floods, sea level rise, storms, landslides, and water and food insecurity. It is essential that Penang is prepared for the challenges through a forward-looking and resilience-focused land use planning. To reduce CO2 emissions, Penang should prioritise a public-transit oriented transportation growth model. In addition, having a detailed mapping of Penang's current and future vulnerability and disaster-prone areas will help identify suitable land-use choices. More importantly, understanding the overall impact of the structure and local plans (and cumulative impact of individual development projects) through the use of **strategic environmental assessment (SEA)** will allow the state to adopt a more proactive and scientific approach. This will ensure Penang gets the most value out of its limited land in relation to social, economic, and environmental productivity. Similar to the leadership on sustainable development, WG ranks this recommendation as having a very high impact on land use planning. This is not a low hanging fruit but can realistically be achieved by the next five-year review of the Structure Plan.

1. Background

1.1 Penang Green Agenda 2030 and Land Use Planning

In 2017, the Penang State Government launched the Penang Green Agenda (PGA) 2030 with the aim of identifying a sustainable development pathway for Penang. The main objective of PGA is to help the Penang State Government achieve the UN Sustainable Development Goals (SDGs), to which the Malaysian Government is a signatory. The other main objective of PGA is to instill a forward-looking and participatory approach to decision making at all levels of Government.

PGA Phase I was completed in 2017 when the Penang State Government solicited public opinion on the current and future challenges in relation to the overall development and liveability of Penang. Based on the outcome of the survey, the Government identified ten key focus areas, encompassing social and environmental issues that are important to Penang's future development. PGA Phase II involves initiating a policymaking process for the ten key focus areas that together will form the roadmap for sustainable development for Penang.

PGA has identified Land Use and Planning as one of the key focus areas that are instrumental in helping Penang achieve the SDGs by 2030. Land use and planning are some of the most important factors in determining the direction of Penang's development from now until 2030. It not only sets out the priority of land use over the next few decades but also the physical parameter of Penang's growth. Land use and planning touch upon all aspects of development in Penang including the types of economic activities, the state of natural and cultural heritage, the provision of infrastructure, and the physical living conditions of its people. This in turn determines the dynamism of Penang's economy and its liveability not only for current but also future generations.

The main focus of the LUP Working Group is to increase the efficiency of land use planning in order to accommodate the rapid urbanization in Penang. Among the issues that the WG look at are basic assumptions and approaches for sustainable land use planning, the issue of land use efficiency, governance innovation as well as the role of land use in promoting a green economy in Penang. The launch of the LUP WG also coincides with the formulation of Penang's Structure Plan 2030 (RSNPP 2030), which is currently being finalised.

1.2 Current Situation and Practices in Penang

In Malaysia, planning processes are mainly a top-down approach where the authorised agencies will complete the planning and publish it for the reference of related agencies and interested parties. 'Rancangan Fizikal Negara' (RFN) or the National Physical Plan reflects the nation's goal in terms of land use planning and development, which is then referenced in the State planning instrument 'Rancangan Struktur Negeri' (RSN) or State Structure Plan. The RSN in turn guides the making of 'Rancangan Tempatan (RT)' or Local Plan as well as Rancangan Kawasan Khas (RKK) or Special Area Plan. The sequence of land use planning is provided in Figure 1.

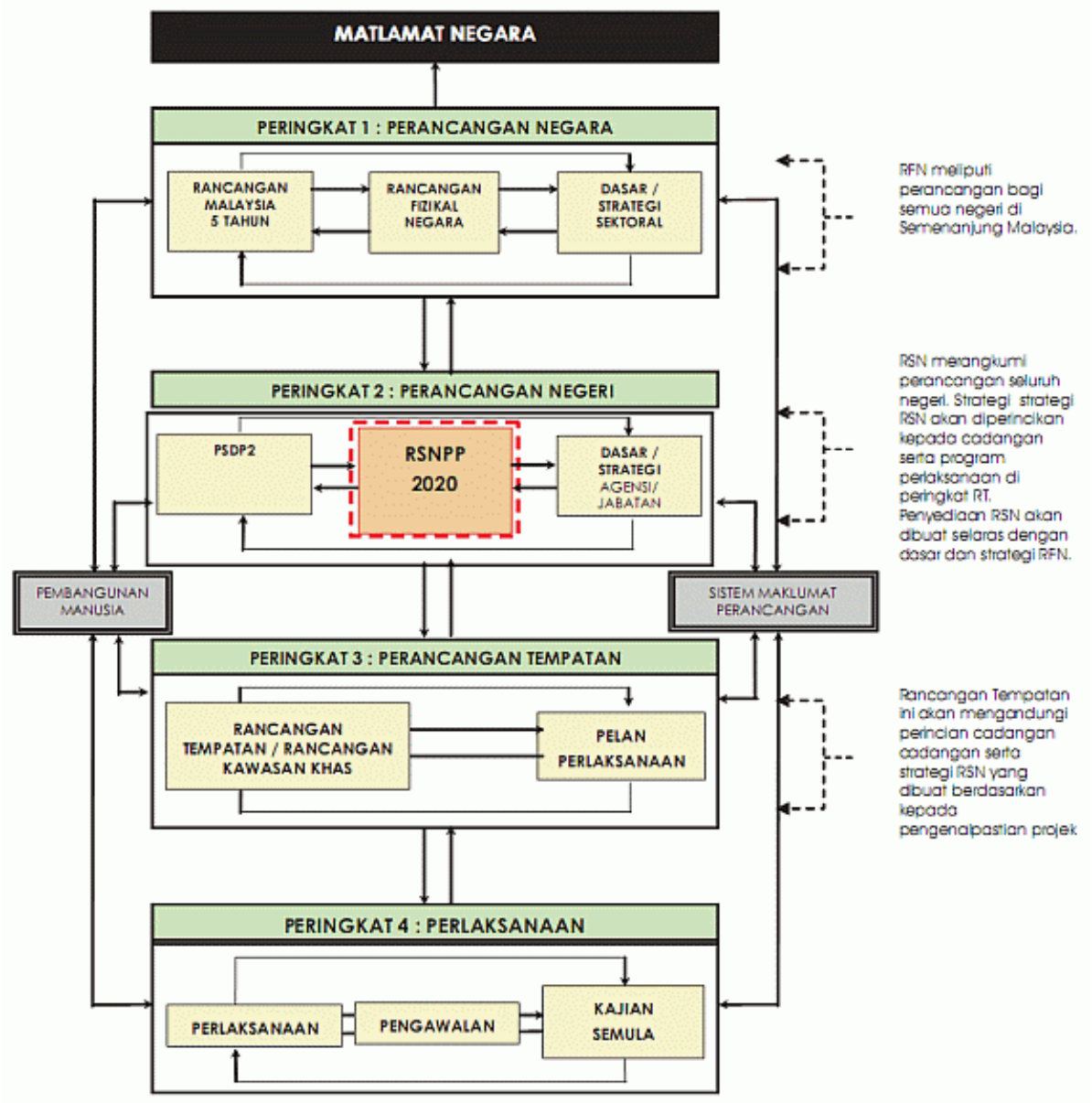

Figure 1 Preparation of the National Development Planning[1]

Under the Town and Country Planning Act (172 Act), Jabatan Perancangan Bandar dan Desa (JPBD) or PlanMalaysia is responsible for managing state spatial planning along with other government agencies such as the Pihak Berkuasa Tempatan (PBT) or Local Government, Unit Perancangan Ekonomi Negeri (UPEN) or State Economic Planning Unit, Pejabat Tanah dan Daerah (PTD) or Land and District Office, Jabatan Kerja Raya (JKR) or Public Works Department, Jabatan Pengairan dan Saliran (JPS) or Department of Irrigation and Drainage, Jabatan Pertanian or Department of Agriculture dan Jabatan Alam Sekitar (JAS) Department of Environment. Each related agency is required to comply with the planning and goals stated in the latest RFN, which currently is RFN3. RFN is compiled by the Majlis Perancang Fizikal Negara (MPFN), which is responsible in ensuring that land use planning and resource

[1] Rancangan Struktur Negeri Pulau Pinang 2020. <http://jpbdgeoportal.penang.gov.my/jpbd/RSN/>

use are well-balanced and sustainable at the state and country level.[2] At the state level, RSN will guide the planning of state activities and development through identifying the urban and physical boundaries of an area and establishing the type of development of different areas, which then act as the basis for a comprehensive development plan for Penang.

Land use plans are usually prepared by accredited consultants registered with the Menteri Kewangan or Ministry of Finance, who answer the call for tender by the government. In preparing the land use plan, the winning company will hold consultation sessions with various stakeholders (usually government agencies) through focused group discussions. There will also be technical working groups according to sectors (e.g. housing, flood, MPKK). Currently, there are two stages of public consultation involved in preparing development plans (RFN, RSN, RT, SAP). The first stage involves gathering opinions from targeted groups and people on the ground to determine the scope and main content of the plan. A SWOT analysis will then be prepared and issues arising are then categorised into sectors. In the second stage, the completed draft is then subjected to public consultation.

Rancangan Struktur Negeri Pulau Pinang or RSNPP is a written document consisting of strategic planning principles and proposals on land use development while providing Penang with directions to move forward. The first RSNPP - known as the RSNPP 2020 - was gazetted in 2007.[3] RSNPP 2020 contained provisions to guide and protect the development of sensitive areas such as slopes. This, however, has not stopped an ever-increasing development pressure on environmentally sensitive areas, in particular, hill land and slopes in recent years. The two fatal landslides of 2017 and 2018 that resulted in 20 deaths are a testament to how fragile these areas are.[4]

To improve the existing RSNPP, PlanMalaysia, along with related agencies, has prepared RSNPP 2030 which aims at driving Penang towards a sustainable, competitive, and high-income economy. The publicity and public participation process for RSNPP 2030 was held for 2 months starting October 2018 to give the public time to review the plan and give feedback. This was in line with the requirement in Act 172 (section 9) where the public is given the opportunity to contribute towards the planning. The latest amendment in Act 172 also requires that social impact assessment (SIA) has to be submitted at the planning permission stage. The manual of SIA has been prepared by PlanMalaysia @ Semenanjung Malaysia; however, the process is still under discussion and any implementation has to be approved by the Government before it can be included in the planning process. An SIA was prepared for the Penang South Reclamation-land project. The State Government has gazetted RSNPP 2030 on October 2019.[5]

For RTs or Local Plans, proper zoning and plot ratio density will be incorporated during the planning permission stage. In addition, projection and simulation are used to guide the

[2] PLANMalaysia@Pulau Pinang, Rancangan Fizikal Negara (RFN).
<http://jpbd.penang.gov.my/index.php/ms/perkhidmatan-3/rancangan-kemajuan/rancangan-fizikal-negara-rfn>
[3] "Penang 2030 Plan draft goes on two-month display". *The Star*, 19th September 2018.
<https://www.thestar.com.my/news/nation/2018/09/19/penang-2030-plan-draft-goes-on-twomonth-display>
[4] "Chronology of landslides in Penang since 2017", *The Sun Daily*, 20th October 2018.
<https://www.thesundaily.my/archive/chronology-landslides-penang-2017-DUARCH585459>
[5] "Penang Structure Plan 2030 gazetted". *The Star*, 14th December 2019,
<https://www.thestar.com.my/metro/metro-news/2019/12/14/penang-structure-plan-2030-gazetted>

planning process. Local planning bodies (the Planning Departments of Local Governments) adhere rigidly to the process laid out in Act 172. When and the number of consultations to be held, as well as who can be consulted during the drafting process is spelled out in the Act. There is always the concern that if the process is not followed strictly, the planning bodies will risk being challenged in court. This covers not only omitting one or two steps in the planning process but also doing something in addition to that which is provided for in the letter of the Act. This rigidity reduces the opportunity for abuse of power and allows planning bodies to defend themselves if a dispute rises; however, it discourages governance innovation and flexibility. Major changes to the local land use planning process need to be officially sanctioned by the Act, although some minor procedural amendments can be adopted by the State Government.

In Penang specifically, land use planning has to incorporate the need to preserve local heritage and cultural values that are cherished by citizens. There are also guidelines in place that are meant to improve land use conditions in Penang such as the Guideline for Transit Oriented Development (TOD) included in the '*Draf Rancangan Tempatan*' (DRT) or the draft Local Plan of MBPP. However, since it is not yet gazetted, the DRT content is not included in this report. In addition, Special Area Plans or Rancangan Kawasan Khas (RKK), which are detailed plans that cater to the uniqueness of a certain area can act as guidelines that are able to preserve certain areas in Penang. Currently, RKK Taman Botani and RKK Bukit Bendera are in the process of being gazetted while RKK Tapak Warisan Dunia George Town has already been gazetted. MBPP and MBSP Local Plans are currently being formulated.

In terms of the current planning processes in Penang, there are a few limitations and challenges such as data availability and accessibility. Poor availability of data has become a constraint to planners and as such a BigData initiative is taken as a positive approach in solving the issue. Utilization of BigData for housing is currently ongoing in Penang and there is an opportunity to build BigData for affordable housing, traffic systems, and waste management. At present, Penang is undertaking the initiative to digitalise information and create databases that can contribute towards smart planning for the future.

Penang Geographic Information Centre (PeGIS) collects and manages various spatial data. Some of the data are made available online for the public to access while some restricted data are only available for government and related agencies. Pinang Island Map (PiMAP) is another platform that provides the public with zoning information in Penang Island. Detailed data, however, are only accessible to government staff. Spatial maps provide detailed information and come with the flexibility of expressing points of interest such as maps on flood sensitivity, economic growth, traffic movement, and such. This encourages agencies to start collecting data and collating them for use between different departments. In addition, PEGIS, PLANMalaysia, George Town World Heritage Inc. (GTWHI) and Jabatan Ukur dan Pemetaan Malaysia (JUPEM) or Department of Survey and Mapping Malaysia are some of the agencies that are currently developing their own geoportals for public use. Penang is one of the leading states in the country in terms of geographic information system (GIS) databases and initiatives and currently is working on improving the utilisation of GIS databases between its agencies. PLANMalaysia recently upgraded its geospatial information system from Geoportal to the ArcGIS server, which is accessible by the GIS server. It serves as data collection and storage only for now.

2. Long Term Goal

The Working Group has suggested that the concept of "liveability" should replace that of the population as the basis for land use planning. The manifestation of liveability can be seen through a successful public transit-oriented system and the ability for the public to live in Penang comfortably. Liveability should also be used as one of the yardsticks in guiding future planning.

3. Main Challenges and Gaps

The LUP Working Group identifies several challenges and gaps in land use planning in Penang. Penang's State and the Local Government need to address the issues in order to increase land use efficiency in the future. The challenges and gaps listed are categorised as structural, referring to issues that are directly related to governance and non-structural issues. A few future threats are also addressed in a separate sub-section.

3.1 Structural Challenges

3.1.1 Despite some progress, Penang still lacks meaningful and effective **participatory governance** where there is a deep engagement of citizens in Governmental decision- making processes. There is also an ongoing problem in ensuring legitimate representation from the public on the one hand while avoiding unhealthy domination by a small group of very vocal people on the other. Another aspect to consider is the fact that Government representatives need to make difficult choices that may not be supported, and seek compromise among competing interests. In addition, public consultation incurs costs that have to be borne by the agencies.

- Current development plan (RFN, RSN, RTD, SAP) processes incorporate only a small portion of public feedback compared to other stakeholders (e.g professional bodies, industry players, etc).
- Excluding the George Town UNESCO area, the pre-submission stage for planning is not widely utilized yet for RT and RKK.

3.1.2 There are questions regarding **meaningful collaboration** with the relevant stakeholders at both the initial and final drafting stages, which include the following:

- Academicians and professional bodies are currently consulted during the public participation process (after the draft has been completed). However, there is a need to include them throughout the whole process especially at the initial stage i.e. while preparing the draft.
- The involvement of civil society at the initial drafting process is still lacking.

3.1.3 Currently, land use planning relies on various geospatial and non-geospatial data provided by various departments, which are the "custodians" of data. Some of the **data may not be updated often or are even contradictory** (e.g. it has been pointed out that maps in the Penang Hill Special Area Plan show contradictory information about designated forest areas). There is also a lack of capacity to continuously update and share relevant data with the planning department. Furthermore, not all data pertinent to the sustainable use of land is currently used for planning information about physical vulnerability and socio-economic

conditions. Which may indicate how current land use impacts on liveability. Currently, the public does not have access to or are not aware of the information that is available. The technology and process involved in developing and maintaining the blueprint will be very costly.

3.1.4 There are concerns about the **lack of effective communication** between Government entities when it comes to land use planning, although some also feel that the focused group discussions conducted during the preparation of the plans represent adequate communication between Government entities.

3.1.5 Planners and local Governments are guided by Act 172 and some other by-laws that guide them in managing and planning development in Penang. Although there are a number of climate change, water saving, waste management, and green building related by-laws existing in Penang, overall, the **current planning system is reactive** rather than proactive. Consequently, rules and regulations should be reviewed and revised so that they do not quickly become outdated. Incorporation of best practices is very much needed, and reforming the Act and by-laws will need concerted effort and commitment. The content of by-laws can be changed by the Federal Government, and under Act 176, local authorities are allowed to make by-laws. Development plans (RFN, RSN, RT and RKK) are currently reviewed every 5 years, which ensures that public engagement is carried out only every 5 years.

3.1.6 **Environmental Impact Assessment (EIA)** should be independently prepared instead of being carried out by consultants that are hired by the developers, which is the current practice. Each Local Government needs a capable team of experts to assess the sustainability of all programmes since at the moment cumulative impact of development as a whole is not assessed. In addition to that, the EIA will be too technical for the public to understand and this will limit their feedback towards the project. The current process of EIA also involves considerable manpower and cost.

3.1.7 Local Governments in Penang face **budget constraints** since around 60% of the budget goes to waste management, leaving only 40% for other sectors.[6] There is also a need to improve the **capacity of the staff** and their knowledge on global issues (e.g. SDGs).

3.1.8 Currently, there are **no clear review and monitoring mechanisms** that monitor whether Local Plans or on-the-ground development actually adheres to the provisions or spirit of the RFN and RSN. However, some assessments will be carried out during the 5-year review period and any shortfall will be recorded.

3.1.9 The current RSN (RSNPP 2020) is quite **constrained in its visions and policy**. RSN generally also involves less public participation compared to RTs and RKK. In addition, RSN is often too technical for the public to understand.

3.1.10 Current **enforcement of the planning law** and policy is not strict enough and needs

[6] Mushtaq Ahmed Memon 2014, Penang's Work Plan and Efforts to Reduce Short-lived Climate Pollutants (SLCPs). <https://www.waste.ccacoalition.org/sites/default/files/files/events_documents/3.%20Case%20Study%20-%20Penang,%20Malaysia.pdf>

to be strengthened.

3.2 Non-Structural Challenges

3.2.1 Current projections indicate that there will be a **continuous increase in vehicle use** in Penang[7], which is the reason why several road projects have been planned over the next 10 years. However, land use planning should avoid catering to this increase and should instead incorporate methods to increase the use of public transport. This is in line with most of the major cities in the world that are trying to shift private transport modes to public ones.

3.2.2 There are concerns about the **undue influence of property developers** in the planning process. This is partly due to the fact that a proportion of Local Government's income comes from development-related fees, and there is also the perception that developers are good at "playing the system".

3.2.3 Although current land use plans, especially RFN 3, are already giving due weight to **social and environmental concerns**, implementation on the ground has not adequately reflected that in Penang due to political judgment and interference. Political leaders in Penang need to consider all aspects instead of just focusing on economic need.

3.2.4 **Liveability** is the sum of factors that add up to a community's quality of life. Since it is a subjective term that is hard to be translated technically, it becomes a loophole that can be exploited.

3.2.5 The world heritage sites in Penang focus too much on local heritage and culture and not enough on nature and the environment which is reflected in the RKK. There are currently **not many public spaces and trees** in town areas. More attention also needs to be given to the value and importance of urban trees, which may support unique ecosystems and take into account the positive effects of ecosystem services.

3.2.6 Some developments, whether legal or illegal, are **encroaching on hill slopes or sensitive areas** that should be off limits. Hillside development is exacerbating the flood problem in Penang and there is a crucial need to heed the warnings in terms of the consequences of hill and sensitive area development.

3.2.7 Existing **cycling lanes need to be joined up** to form an efficient network in order to encourage usage.

3.2.8 There are many instances of **illegal trespass and use of land**, especially on Government land.

3.2.9 Calls upon the improvement of tThe **attitude of the public** with regards to established laws and Government policy on land use. There is current disregard and lack of respect for land use regulations that create unwanted consequences and puts pressure on the enforcement capacity of Local Governments.

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[7] "Improve public transportation in Penang". *The Star*, 10th April 2012. <https://www.thestar.com.my/news/nation/2012/04/10/improve-public-transportation-in-penang>

3.3 Future Threats

3.3.1 Current land use plans have not taken into consideration the impact of climate change adequately and meaningfully. One of the concerns for Penang is the threat of rising sea-level on our rice growing fields, many of which are currently located near the sea on low-lying ground. In the event of sea-level rise, low-lying paddy fields near the sea will be deluged with salt water, which can kill crops and cause soil infertility. The high intensity of rainfall, frequent occurrence of heatwaves, longer drought period and other natural phenomena are a result of anthropogenic climate change. The cost of unpreparedness in facing this will be very high in terms of lives, property and money. Current land use plans, including the new RSNPP 2030 draft, have not incorporated the concept of 'resilience' against future threats brought on by climate change. They have also not included climate change adaptation measures.

4 Solutions

4.1 **Data availability, usage and consolidation**

4.1.1 A well-planned development requires a comprehensive set of data that can be utilized in a planning process and Penang should **implement open source data** that is accessible at least among the Government agencies.

4.1.2 Processed satellite imagery is currently made available by PEGIS and data that are not confidential are also available to the public. The public needs to be **informed and educated about the data available** to encourage more public participation and scrutiny in land use planning.

4.1.3 The State Government needs to increase data accountability by ensuring that the data shared is reliable in terms of its accuracy. A **centralised data centre** can help to minimise this problem and at the same time reduce the instances of conflicting data between agencies that may currently cause misunderstanding and misinformation. There is also the opportunity for Penang to start mapping its data. In order for this to happen, Penang has to improve data readiness and be prepared to convert its data from non-spatial into spatial form.

4.2 **Collaboration**

4.2.1 The State, as well as Local Governments, should encourage the involvement of **transdisciplinary teams** in the planning process in order to take into account a variety of views before the final decision is made.

4.3 **Public participation/participatory governance**

4.3.1 The State and Local Governments need to invest in promoting more effective public participation in land use planning:

- Public consultation should take place from the very **beginning until the end** of the procedure instead of only when the plan has taken shape.
- The State Government should provide **capacity building** to Government agencies to carry out a meaningful public consultation, including through engaging with public engagement specialists in the process and making sure that the public consultation approach is not so technical as to prevent understanding by the public.

- In order to carry out a more effective public consultation, an **incentive** might need to be given and involvement from the ADUN might increase the amount of feedback from local people.
- The Government should work with stakeholders to **increase public awareness and knowledge** on ways to engage in meaningful public consultation.
- It is also suggested that the **feedback from the public be published**.
- Public meetings and consultation should be scheduled in more public-friendly ways, for example during non-working hours.

4.3.2 Encourage **community participation in coastal planning** especially by those who reside in - and are affected by the development around - the coastal area.

4.3.3 Calls upon the Planning Department to utilise **local knowledge** in planning and ensuring that planning takes into account local knowledge of risks and vulnerability in that particular area.

4.4 **Local Government empowerment and capacity building**

4.4.1 The Penang State Government should explore the use of **land value capture (LVC)** to increase the local income that can support infrastructure building or public services.

4.4.2 The State Government should work with the Local Governments to design and carry out **capacity building programmes** on sustainable development issues for Government officials, and these should involve all departments in order to create a common vision of the future for Penang within the Government.

4.4.3 There should be a clear **monitoring and review framework that is transparent** to all parties and it should be coupled with strict enforcement. This can be achieved by utilising technology and creating an open platform for collaboration.

4.5 **Political will**

4.5.1 The Penang State Government should **build up support and understanding of politicians as well as civil servants** for sustainable development. This can be achieved through the platform of Penang2030 where the vision of a more balanced growth is incorporated into all major policy initiatives, civil servant training programmes and key performance indicators (KPIs).

4.6 **Environmental impact assessment for structure and local plans – base data**

4.6.1 EIA or Strategic Environmental Assessment (SEA)[8] should be carried out at development plans level (e.g. RSN and RTs) that **assesses the overall impact of the development plans**. This will then help to guide planning decisions on the ground especially in relation to understanding the cumulative impact of projects in a locality. This plan-level "strategic impact assessment" will supplement the current project-level EIA and enable local planners or decision-makers to make informed choices with regards to what type of development is most suitable for a particular area, instead of just focusing on a particular

[8] Patricia Rodriguez Fortun 2018, Strategic Environmental Assessment. <https://europa.eu/capacity4dev/public-environment-climate/wiki/strategic-environmental-assessment>

plot of land.

4.7 **Local culture and characteristics as a basis for planning**

4.7.1 Future public transportation planning has to **consider the suitability of the area**. For example, the Bus Rapid Transit (BRT) is suitable to be operated in the Mainland but not some parts of the Island due to limited land space. Another factor to be taken into consideration is the cost it takes to build a dedicated lane for the BRT and there is also the problem of compensation costs that might be more expensive than the road construction itself.

4.7.2 Penang should design urban solutions based on the **characteristics of the city** that fit the need and the uniqueness of a particular area itself.

4.7.3 Heritage is one of the reasons that Penang is unique. In order to maintain it, **development should be controlled** along urban tourist routes by maintaining the presence of historic buildings along these routes.

4.7.4 Penang should **incorporate the element of water** as a transport mode while Penang's infrastructures are being transformed to support the heritage route. It should be sustainably managed and conserved while at the same time safeguarding oceans, seas, river and marine resources. Planning should integrate evaluation on both water and land.

4.7.5 Planning for tourism should **promote and protect the natural and cultural assets** in Penang.

4.8 **Use of technology**

4.8.1 The State and Local Governments should **utilise new technologies** such as Artificial Intelligence (AI) or open source software to enhance enforcement of planning rules and regulations.

4.8.2 Technology can also be applied in choosing the most cost- and environmentally-efficient pathway before a development plan is agreed by making use of **scenario modelling to predict or project** the impact of such development. Scenario modelling in land use planning will help decision makers to choose a plan that is the least risky to the local community, economy or infrastructure.

4.9 **Liveable city including transport link & affordable housing**

4.9.1 In order to create a liveable Penang by 2030, the Government should set **goals to increase land use efficiency**. Local Governments should also articulate land use principles or values that can be used as a reference by stakeholders. The overall impact of land use in Penang should be measured by using a set of indicators that emphasize the economic and social aspects.

4.9.2 Penang should promote integrated land use and land transportation planning that can **increase population density** in certain areas in order to promote economic efficiency and reduce the need for urban sprawl.

4.9.3 Penang should also look into promoting more **mixed use** instead of single use land zoning system that will improve efficiency in energy and water use, transportation, infrastructure and waste management.

4.9.4 The State should fully **utilise urban space and green areas** that should characterise urban development in Penang going forward.

4.9.5 The State also needs to **control and manage the city skyline** that currently is only considered with regards to the coastal development areas.

4.9.6 Another new concept that should be incorporated in land use planning is "**Network City"** where urban centres are well connected to each other, either physically or digitally. This lessens the pressure to increase density in a particular urban centre. However, this raises the concern of encouraging urban sprawl.

4.9.7 In terms of land reclamation, Penang should only allow **land reclamation on suitable areas** that are strictly assessed and monitored by the authorities.

4.9.8 The State Government should also look into the concept of "**house affordability"** instead of affordable housing. The concept encourages the construction of houses that are 'affordable' to the majority of the people instead of only providing low-cost housing as the only option for the public. In short, housing should also be made affordable to medium-income earners and not only focused on low-income earners.

4.9.9 Penang should stop using 'population' as the main assumption for land use planning; going forward, all land use plans should also be guided by the liveability, economic needs and long-term visions of the State.

4.9.10 Penang needs to improve its **streets and roads management and enforcement**. For example, land within 250 feet from the beach supposedly belongs to the public.[9] However, some hotels located by or next to the beach have claimed the beach as property of the premises and have restricted access by the public.

4.9.11 There should be **strict and efficient enforcement** in resolving the issue of illegal land use. Local authorities should also encourage people to conduct urban farming on suitable unused public land to promote a sense of community, green the environment and create unique urban ecosystems.

4.9.12 The State should also consider giving **land use priority to green economy (GE) sectors** as part of the effort to transform Penang's economy to a more sustainable one.

- In terms of renewable energy (RE), the State can consider **setting aside land** such as brownfield areas that can be used for solar farms.
- In terms of waste management, Penang needs to **limit the growth of landfill sites** and start focusing on the construction of waste management facilities such as the

[9] 4th Land Use and Planning Working Group Meeting on 28th September 2018.

recycling centre.

4.10 **Resilience**

4.10.1 In preparing Penang to be a resilient state, the relevant authorities should **map out disaster-prone areas** showing a detailed physical characteristic of these areas. This will result in better planning of social and economic activities and function as a vulnerability risk assessment.

4.10.2 In light of the Living Planet 2018 report, planning should also take into account biodiversity issues. Climate change and declining biodiversity be considered when it comes to addressing resilience. **"Nature-sensible" planning** that takes Penang's physical characteristics, as well as natural elements (e.g. rainfall, water flow etc.) into account will ensure a more balanced development.

4.10.3 Resilience also means **robust infrastructure planning and construction** to ensure that the right infrastructure is built at the right place and properly safeguarded in the event of disasters. This will also **safeguard and increase** local biodiversity that will protect Penang's food and resource security.

4.11 **Future-proof planning**

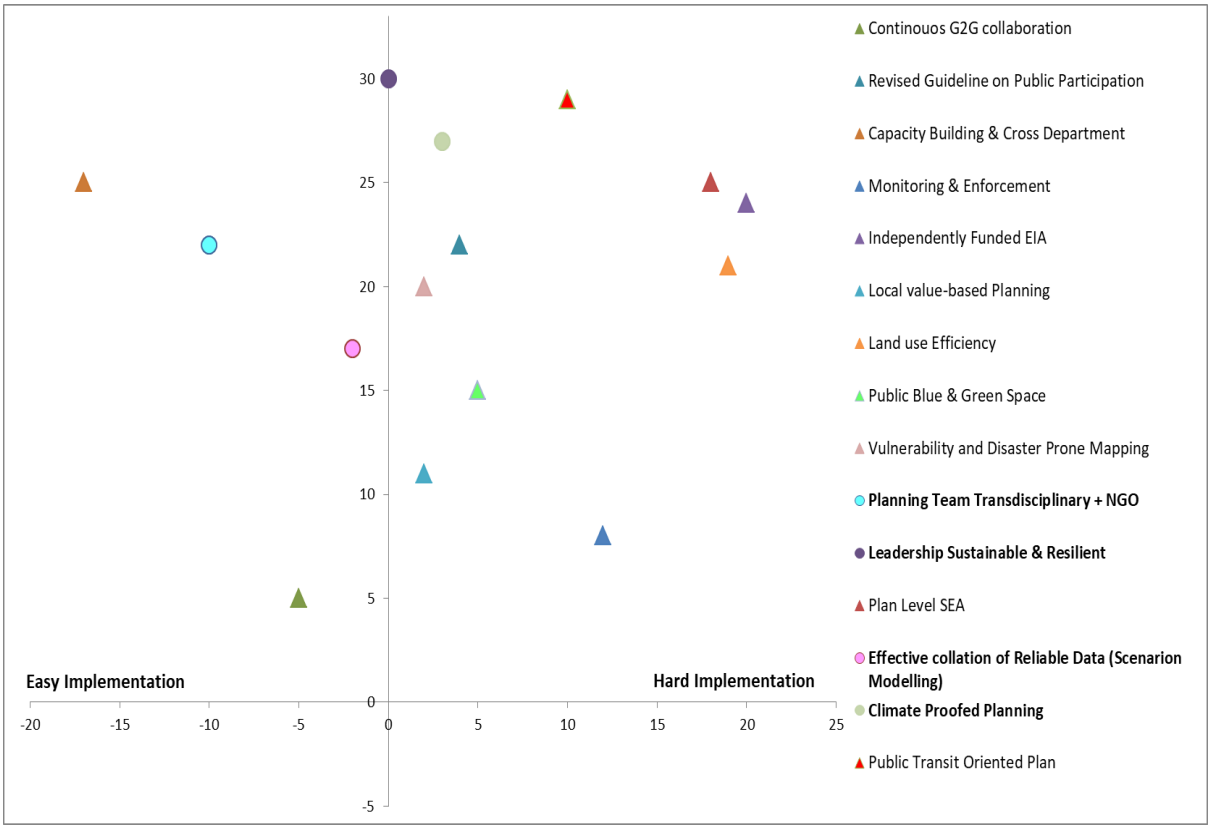
4.11.1 Moving forward, Penang needs to consider future changes that will occur due to **advancement of technology.** For example, in anticipation of more shopping being done online, Penang should perhaps reduce its forecast for physical business floor space. Penang should also explore the construction of "vertical factories" to overcome space limitation problems on the island.

4.11.2 A long-term approach is needed in order to **prepare Penang for the future impact** of climate change.

5 Major Policy Recommendations and Milestones

The Working Group members have chosen four main recommendations from the list of solutions above. These recommendations are chosen based on their viability, impact and relevance. Some are low hanging fruits that can be achieved in the short term, while some need longer time to be realised. Each of the four recommendations is explained in more detail below.

The Working Group plotted the major solutions on a diagram consists of two axes: axis x (horizontal line) plots the ease or difficulty of implementing the solutions; axis y (vertical line) plots the impact of the solutions on achieving the objective of the Working Group, which is to increase Penang's resilience through integrated planning and reducing vulnerability.



1. Leadership on Sustainable and Resilient Development (2020)

To spearhead the transition towards a more sustainable development-oriented land use, Penang needs its leaders, not only at political party level but also senior Government officers, to commit to achieving sustainable development goals and empowering people's voices and opinion. This can be achieved by raising awareness and being clear about the economic and social benefits of the early transition. There will be reservations and even push-back from some decision-makers but if a strong leadership on sustainable development is established across Government, the impact on Penang's future land use will be considerable as it can result in more forward-looking and balanced land use choices. In fact, the right leadership is ranked by the WG as having the greatest impact on land use planning, above and beyond all the other recommendations. This is achievable if clear instructions and vision can come from the top of the Government such as the Chief Minister and the Executive Councillors (EXCOs). This is now possible with the introduction of Penang2030, a personal vision by the Chief Minister to make Penang "A Family Focused Green and Smart State that Inspires the Nation". All of the themes under Penang2030 have been explicitly linked to the SDGs and all Government departments are required to work together to achieve the Penang2030 goals. Work can also be built on the strong foundation established by Datuk Maimunah Mohd Shariff, current UN-Habitat's Executive Director, who worked as Mayor for both the local governments in Penang.

2. Effective Collation of Reliable Data (2020)

It is crucial that Penang have a complete digital blueprint that covers the whole State and a centralised database so that information can be collected, updated and shared

systematically. The availability and utilization of quality data (accuracy, validity, reliability, timeliness, relevance and completeness) will have a considerable impact on land use planning, especially if it is coupled with scenario modelling where different choices of land use are assessed to allow policy makers to choose the most suitable options for Penang. It is not too difficult to make sure each department keeps a set of reliable data and shares them with the planning department. This can be done either through upgrading the current system (such as building on PeGIS's new capacity i.e. Arc GIS server) or building a new centralised database. This can become one of the flagship initiatives under the new Penang Digital Transformation Master Plan.

3. Planning Advisory Team That Is Transdisciplinary and Consists of Non- Governmental Entities (2025)

To increase the transparency and effectiveness of the planning process, the State and Local Governments in Penang should consider forming a formal or informal group that will work alongside the planning departments and consultants in drafting Structure and Local Plans. The team must be transdisciplinary with stakeholders from a range of background and not just planners. It should also consist of Non-Governmental Entities such as professional bodies and civil society to make sure that experts outside of the Government can have a say in designing Penang's development pathway. With input from this wide range of stakeholders, the planning process can become more dynamic, inclusive and informed which in turn will ensure that a more balanced and optimised land use regime can be achieved. The interdisciplinary team can be set up for the review of the Structure Plan and Local Plans in the future.

4. Climate-Proof and Biodiversity Sensitive Planning for Penang (2025)

With the worsening impact of climate change, Penang is on course to suffer from more frequent and severe floods, sea level rise, storms, landslides and water and food insecurity. It is essential that Penang is prepared for the challenges through a forward- looking and resilience-focused land use planning. To reduce CO2 emissions, Penang should prioritise a public-transit oriented transportation growth model. In addition, having a detailed mapping of Penang's current and future vulnerability and disaster- prone areas will help identify suitable land use choices. More importantly, understanding the overall impact of the structure and local plans (and cumulative impact of individual development projects) through the use of **strategic environmental assessment (SEA)** will allow the state to adopt a more proactive and scientific approach. This will make sure Penang gets the most value out of its limited land in relation to social, economic and environmental productivity. Similar to the leadership on sustainable development, WG ranks this recommendation as having a very high impact on land use planning. This is not a low hanging fruit but can realistically be achieved by the next five-year review of the Structure Plan.