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PERSPECTIVE

RESEARCHERS AT ISEAS – YUSOF ISHAK INSTITUTE ANALYSE CURRENT EVENTS

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Public Perceptions of Climate Mitigation and Adaptation Measures in Southeast Asian Cities

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Slum-dwellers in North Coast Jakarta putting up a makeshift walkaway to adapt to coastal flooding, 2019. Photo: author

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EXECUTIVE SUMMARY

- The Southeast Asia Climate Outlook 2020 Survey, conducted by ISEAS – Yusof Ishak Institute, examines Southeast Asian urban residents' perceptions of climate mitigation and adaptation measures in their respective cities.

- It finds that most Southeast Asian urban citizens are aware of climate programmes in their cities, particularly promotion of public transport, recycling measures (including prohibition of single-use plastic), air quality measures, and flood protection.

- Measures such as tax incentives on hybrid and electric vehicles and physical conservation measures (i.e. building restrictions in riverside and coastal areas) are less well-known to the public.

- The survey gauges a certain climate measure's popularity among urban residents and identifies which attract substantial public attention. More research is needed to appraise policy efficiency and to evaluate city government performance in this area.

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INTRODUCTION

In recent years, development experts have extensively emphasised the linkage of urbanisation to climate change. Urban areas worldwide have significant carbon footprints from intensive industrial activities, transportation emissions, and energy consumption. Seventy-five per cent of global greenhouse gas emissions are generated in urban areas.[1] Simultaneously, urban populations are increasingly experiencing catastrophic impacts from climate change such as floods, heatwaves, rising sea levels, and extreme weather events.

The nexus of urbanisation and climate change is a significant concern to Southeast Asia. Today, half of Southeast Asia's population live in urban areas. This number is expected to increase to 60-75% by 2025.[2] While megacities such as Jakarta, Manila, and Bangkok will keep growing, significant growth is predicted to happen as well in medium-sized cities of between 200,000 and 2 million, such as Phnom Penh, Da Nang, Vientiane, and Makassar.[3] The large and young labour pool and the consumer demands in these cities attract investments, and collectively drive the region's manufacturing, retail, services and ICT sectors.

However, Southeast Asian cities face many environmental challenges. A study by the Organisation for Economic Cooperation and Development (OECD) puts Ho Chi Minh City, Bangkok, Hai Phong, and Jakarta among the top 20 cities with populations increasingly exposed to coastal flooding by 2070.[4] One-quarter of the population in Manila faces risks from floods and landslides.[5]

Experts estimate that flood events in cities will cause significant asset damage. For instance, Bangkok's severe flooding event in 2011 almost paralysed the whole country's economy; the city accounts for 41% of Thailand's GDP.[6] More recently, retailers in Greater Jakarta incurred an estimated financial loss of more than US$ 71.91 million during the 2020 New Year's floods.[7]

Driving climate actions scalable to cities gained global agenda status when the Paris Agreement was signed in 2014. Development partners such as the United Nations, the World Bank, and the Asian Development Bank have been aiding cities manage the impact of climate change. Non-profit organisations such as the C40 Cities Climate Leadership Group (C40 Cities), 100 Resilience Cities, the Global Covenant of Mayor, the ASEAN Smart City Network, and the World Smart Sustainable Cities Organisations (WeGO) have emerged as impactful platforms for city governments to exchange best practices and funnel funding supports. Cities across Southeast Asia, in particular Jakarta, Manila, Singapore, Bangkok, Ho Chi Minh City (HCMC), and Hanoi, have been increasingly involved in these networks of local governments.

The commitment demonstrated by city governments across Southeast Asia is critical for sustaining the momentum. One crucial step are more targeted climate actions. For instance, cities can take scalable actions by incentivising the private sector to transition to low-carbon energy, providing rebates for citizens to transition to green electricity or low-carbon vehicles, and adopting sustainable practices in administering public investment projects. A benchmark of success should be the ability of cities to recover from environmental shocks or crises. Cities can invest in climate-proof infrastructure, practice sustainable urban planning, help communities better cope with disasters, and integrate early warning systems.

Further, climate actions need support from citizens. Citizens can alter behaviour to reduce their carbon footprint, and taking action at the individual level to generate a collective vision. The buy-in of citizens is vital to the success of environmental programmes. Lessons can be learned from bike sharing and e-scooter start-ups in Singapore, Malaysia, and Indonesia. The programmes were touted as a broad and smooth reduction of dependency on motorised-vehicles, the largest contributor of carbon emissions in the urban context. However, these have not been sustained due to the absence of infrastructure investment, to a general failure to comply with regulations, and most importantly, to the failure to generate user loyalty.[8]

In light of the vital need for coordination between policy and citizen participation, this paper seeks to identify urban citizens' perceptions of climate actions in their cities. Drawing from the Southeast Asia Climate Outlook 2020 Survey carried out by ISEAS – Yusof Ishak Institute, this Perspective gauges various climate actions and their popularity, and identifies climate actions that have received significant recognition in Southeast Asian urban centres.

STUDY AND DESIGN

The Southeast Asia Climate Outlook 2020 Survey, conducted by the Climate Change in Southeast Asia Programme at the ISEAS – Yusof Ishak Institute, is the first to examine Southeast Asian attitudes and perceptions on climate issues.[9] It was conducted online from 3 August 2020 to 18 September 2020 and drew 502 respondents of different backgrounds from all ten ASEAN member states, and managed to collate attitudes towards energy transition and urban food security, as well as views on climate governance and regional cooperation.

Respondents came mostly from capital cities and economic centres. The five most represented cities (see Figure 1) were Singapore (17.0%), Bangkok Metropolitan Region (15.3%), Jakarta Metropolitan Area (13.0%), Greater Kuala Lumpur (7.0%), and Yangon (5.9%).

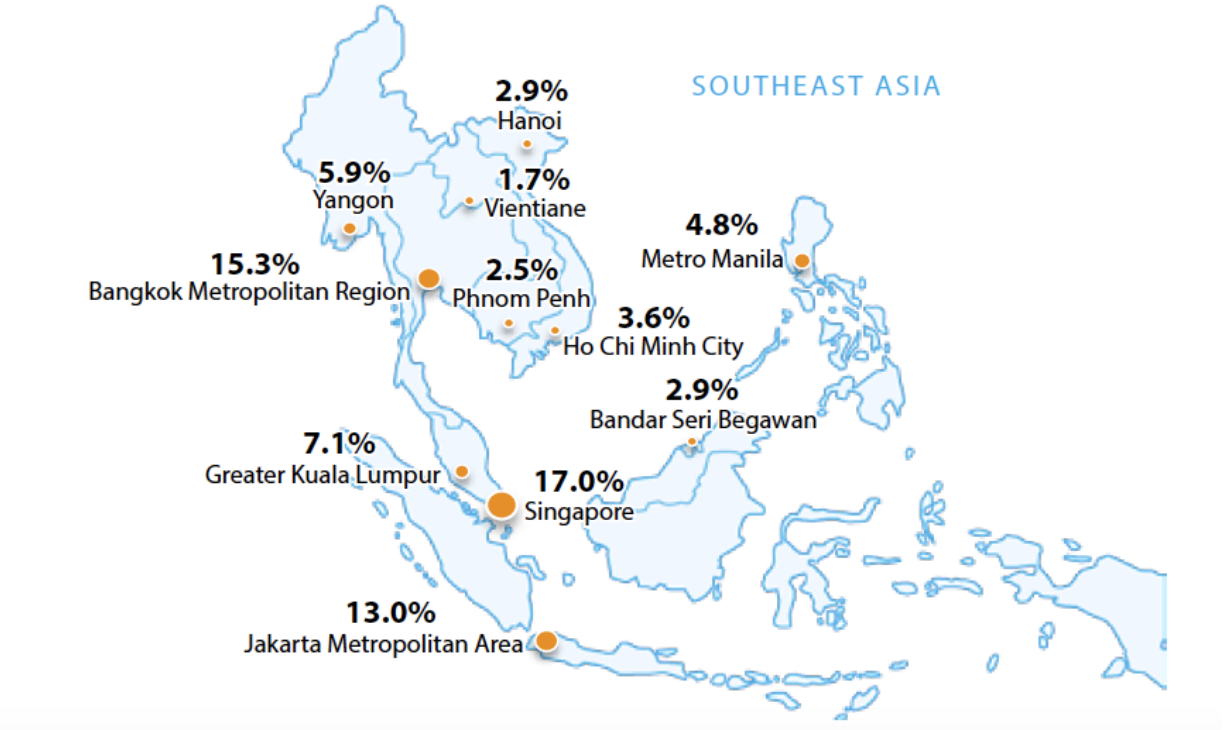
In the survey, *climate mitigation* refers to efforts to reduce or prevent carbon emissions, the use of new technologies and renewable energies, improving energy efficiency of older equipment or buildings, or changing management practices or consumer behaviour.[10] *Climate adaptation* in turn considers changes in processes, techniques and structures to moderate potential damages or benefit from climate change opportunities.[11] The survey gives nine examples each of climate mitigation measures and climate adaptation measures, inviting respondents to identify those implemented in their cities (see Table 1).

Table 1. List of Questions on Climate Mitigation and Climate Adaptation

Which of the following climate change mitigation measures has your city implemented?	*Which of the following climate change adaptation measures has your city implemented?*
Promotion of Public Transport	Air Quality Measures
Vehicle Emission Control	Coastal Protection
Tax Incentives on Hybrid Vehicles	Flood Protection
Installation of Bike Lanes	Disaster Early Warning System
Renewable Energy Adoption	Natural Disaster Evacuation/Emergency Plan
Recycling Measures (including prohibition of single-use plastics)	Green Restoration in Public Spaces
Energy Efficiency Measures	Physical Conservation Measures (i.e. building restrictions in riverside and coastal areas)
Green Building Standardisation	Climate Proofing of Infrastructure
Land Use/Zoning Regulations	Water Catchment Measures

Source: Southeast Asia Climate Outlook 2020 Survey, ISEAS – Yusof Ishak institute

Figure 1. Most Represented Cities in The Southeast Asia Climate Outlook 2020 Survey



Source: Southeast Asia Climate Outlook 2020 Survey, ISEAS – Yusof Ishak institute

FINDINGS

Figure 2 below illustrates climate mitigation perceptions in 11 observed cities. When asked which climate mitigation measures they have observed in their respective cities, most of the respondents mention the promotion of public transport. This is the top choice in Singapore, Greater Kuala Lumpur, Vientiane, HCMC, and Jakarta Metropolitan Region. More than 70% of respondents from these cities confirm that their cities have promoted public transport.

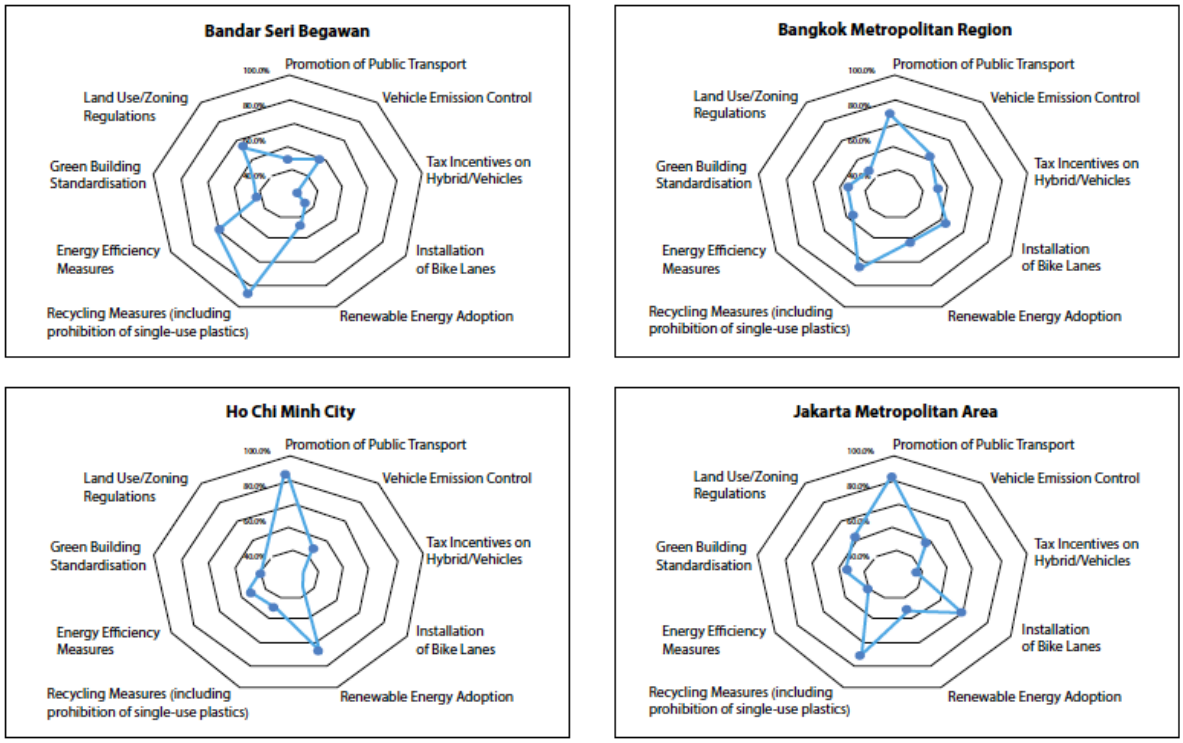
Recycling measures including the prohibition of single-use plastics is also a popular choice, especially in Bandar Seri Begawan (BSB) and Greater Kuala Lumpur. At least 70% of respondents from those cities agree that their cities have demonstrated efforts to recycle waste.

Meanwhile, vehicle emissions control is popular among respondents from Hanoi and Singapore. Half of the respondents from Hanoi affirm that they recognise this policy being applied by their city government. The agreement rate is higher among respondents from Singapore (72.8%).

Interestingly, Singapore is the only city where more than 75% of respondents have noted their city implementing renewable energy adoption and green building standardisation. In cities such as Phnom Penh and Yangon, less than 17% of respondents have done the same.

The survey also finds that tax incentives on hybrid /vehicles are the least known policy among respondents. Only 41.7% of respondents from Singapore are aware of tax incentives on hybrid vehicles measures in their city – and this is the highest rate among the observed cities. In Bangkok Metropolitan Region, Greater Kuala Lumpur, and Hanoi, only 30-40% of respondents know of such measures in their cities.

Figure 2. Climate Mitigation Perceptions in Southeast Asian Cities



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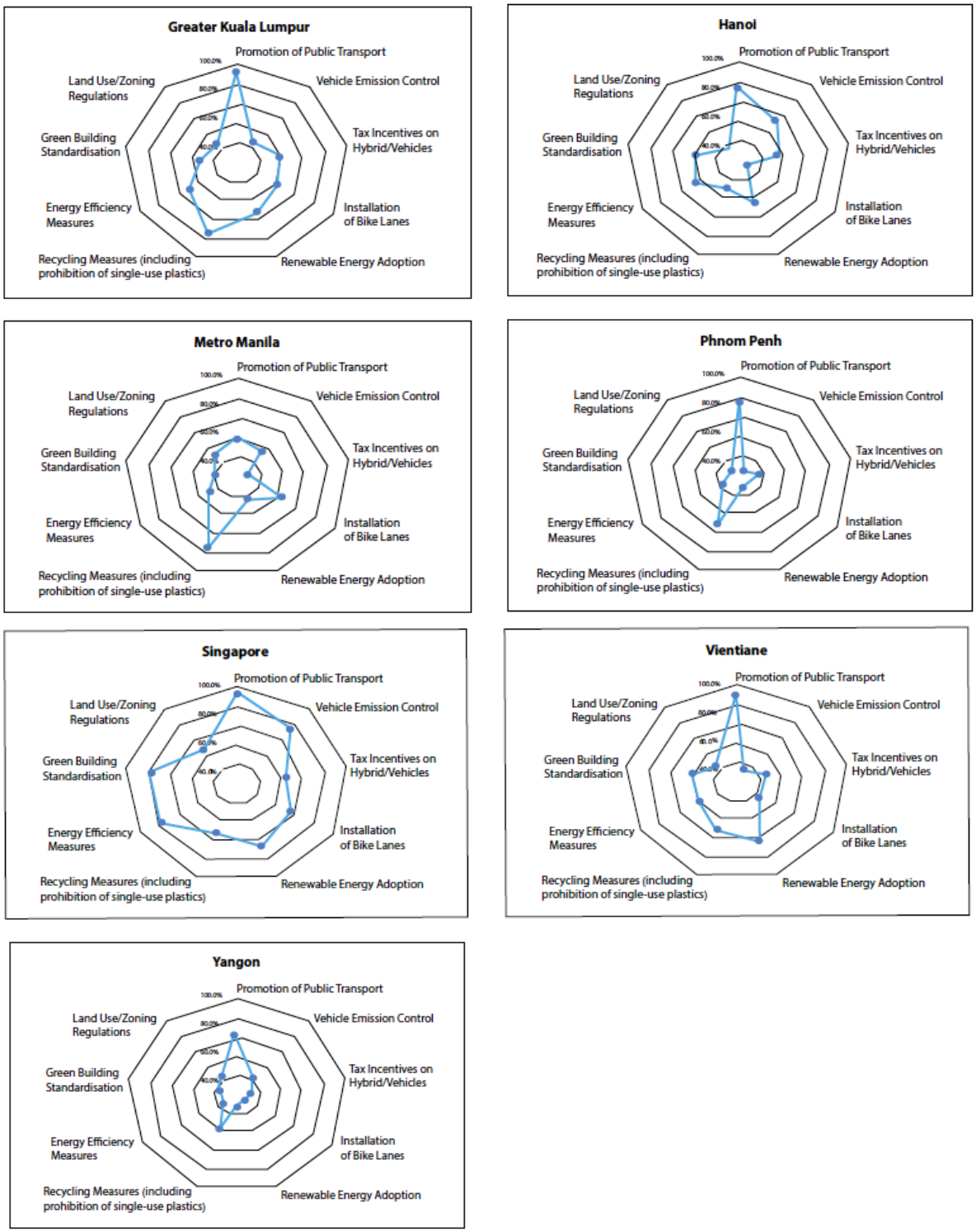


Source: Southeast Asia Climate Outlook 2020 Survey, ISEAS – Yusof Ishak institute

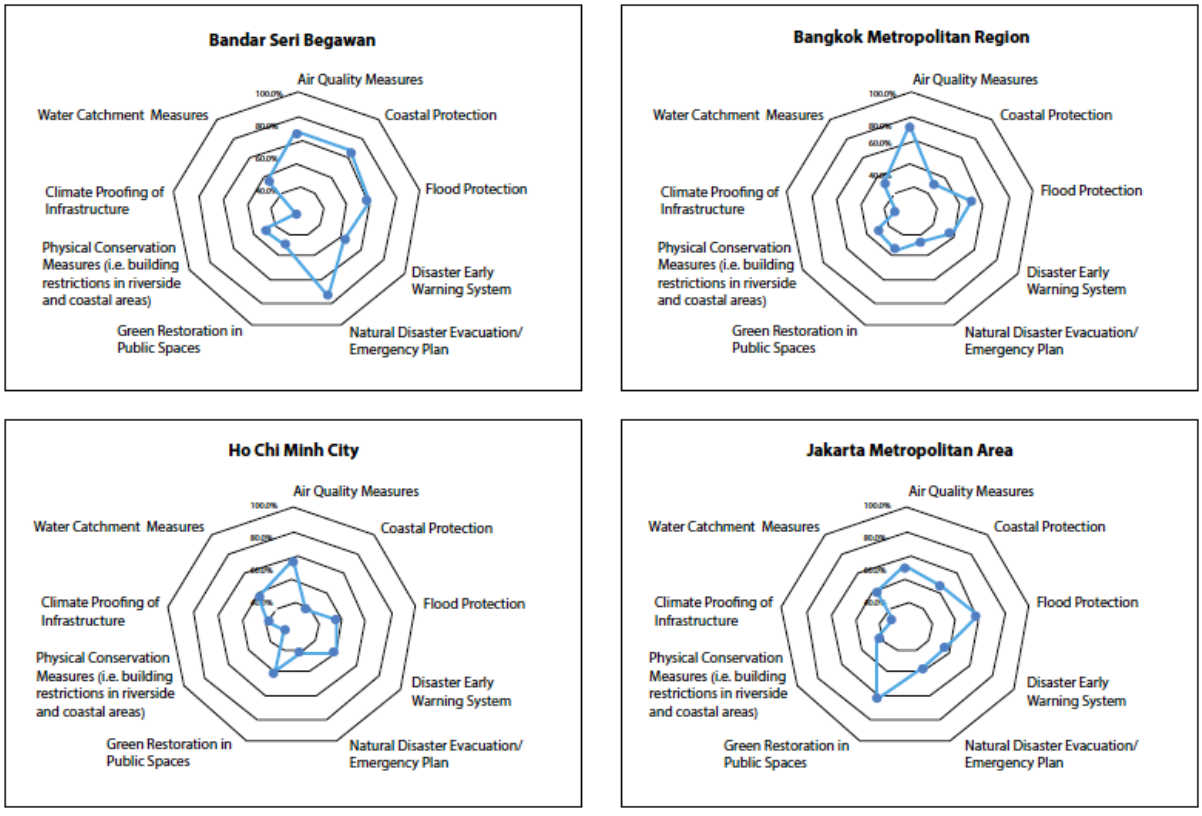
Figure 3 below exhibits climate adaptation perceptions in 11 observed cities. Most respondents are able to identify air quality measures and flood protection as climate change adaptation measures. Cognisance of air quality measures is impressively high in Hanoi—92.9% of the respondents know of these.

Meanwhile, more than half of respondents from Bandar Seri Begawan, Bangkok Metropolitan Region, Jakarta Metropolitan Area, Singapore, Vientiane, and Yangon agree that their cities have introduced flood protection measures.

Interestingly, respondents from Metro Manila identify climate adaptation measures through natural disaster management. As much as 62.2% and 87.0% of respondents from Metro Manila state that their city has implemented disaster early warning system and natural evacuation/emergency plans respectively. On this front, these are the highest rates among the observed cities.

Physical conservation (i.e. building restrictions in riverside and coastal areas) is the least known climate adaptation measure. None of the respondents from Bandar Seri Begawan are able to identify any such measures. In Metro Manila and Phnom Penh, less than 10% of respondents know of such policies being implemented in their cities. Although the rate is highest in Singapore, even there, it reaches only 45.7%.

Figure 3. Climate Adaptation Perceptions in Southeast Asian Cities



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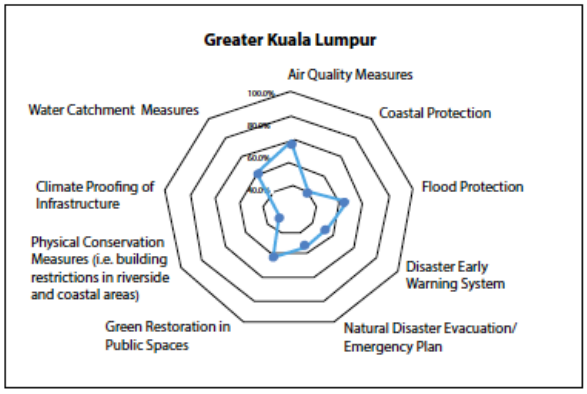

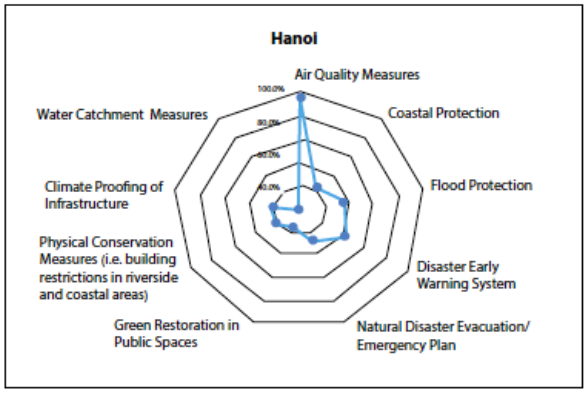

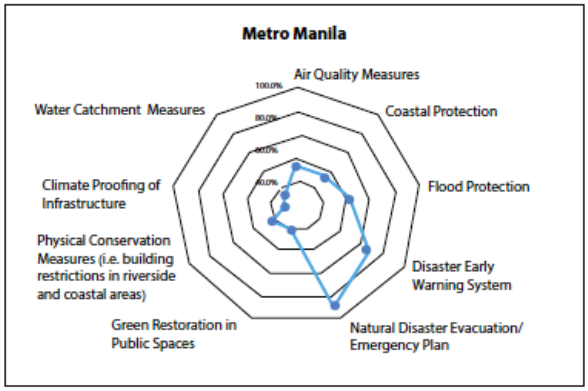

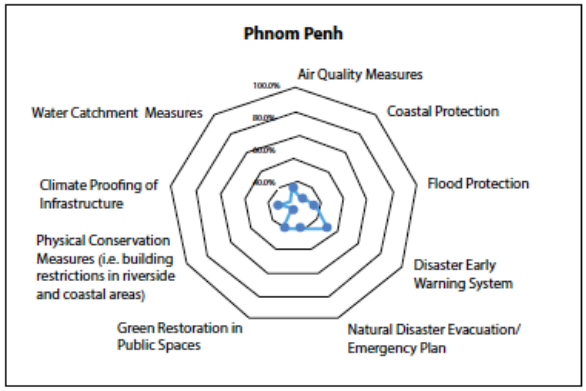

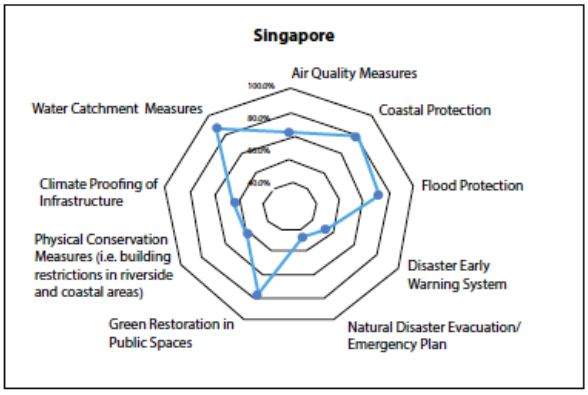

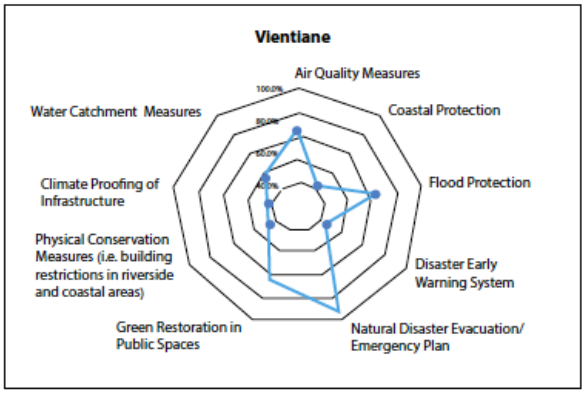

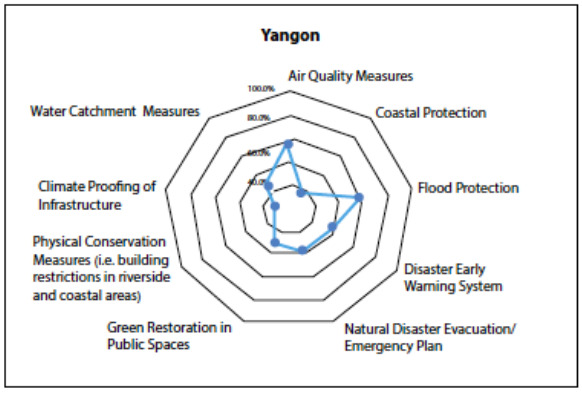

Source: Southeast Asia Climate Outlook 2020 Survey, ISEAS – Yusof Ishak institute

DISCUSSION

Overall, the survey captures rather diverse perspectives among the observed cities. Singapore has well-rounded responses, especially in identifying mitigation measures. More than half of the respondents from Singapore are able to observe seven out of the nine mitigation measures provided, for example, promotion of public transport, vehicle emission control, installation of bike lanes, renewable energy adoption, recycling measures (including the prohibition of single-use plastics), energy efficiency measures, and green building standardisation. In contrast, none of the respondents from Phnom Penh affirm that their city has introduced physical conservation measures and water catchment measures. This strengthens three presumptions. *First,* knowledge gaps on climate issues among urban Southeast Asians are significant. *Second,* the capacity of cities in the region to promote programmes vary greatly. *Third*, the observed cities have yet to implement measures of the suggested types in the fact of climate change. To be sure, this study does not explore the underlying reasons for respondents' views and only seek to capture popular opinions held by them.

The survey also underlines that geographic characteristics make a difference. Respondents living in coastal and riverine cities are more inclined to say that their cities have implemented coastal protection and flood control. At least half of respondents from Bandar Seri Begawan, Bangkok Metropolitan Region, Jakarta Metropolitan Area, Singapore, Vientiane, and Yangon recognise flood control measures being undertaken in their cities. Where coastal protection is concerned, at least 66.7% of respondents in Bandar Seri Begawan and Singapore know of such plans in their city.

There are however certain possible distortions in the survey's findings. Some cities promote a specific measure intensively, and in such cases, their inhabitants tend to have noticed them, or at least discussions about them. For instance, 56.5% of respondents from Jakarta knew of the installation of bike lanes more intimately than of other climate mitigation measures such as vehicle emission control, tax incentives on hybrid vehicles, or renewable energy adoption. This may be due to the Jakarta city government revamping the city's streets with pop-up bike lanes during the COVID-19 lockdown. This programme was well received by the public. A transportation study by the Institute for Transportation and Development (ITDP) for example recorded a tenfold increase in the number of cyclists in Jakarta's city centre during the June lockdown.[12]

Since perceptions vary over measures and across cities, it is critical that the possible limitations of the survey be openly discussed.

Not all initiated climate measures are known to the public

Although one might be tempted to generalise that city governments have not comprehensively implemented climate measures if citizens have not recognised them, it is worth considering that policy relevance and popularity also shape public perceptions.

For instance, less than half of the respondents from Singapore (44.4%) managed to identify tax incentive on hybrids/vehicle, although the city-state has a relatively robust scheme. Singapore promotes rebate programmes such as the Vehicular Emission schemes (VES) to encourage buyers to choose car models with lower emissions. Recently, the government also rolled out additional measures such as rebates depending on the car's Additional Registration Fee (ARF)

as well as road tax adjustments on electric vehicles, including developing EV-charging infrastructure to make low-carbon vehicles attractive.[13] However, these programmes are still nascent and have as yet not been promoted intensively.

Similarly, only 43.5% of respondents from Jakarta agree that their city has rolled out coastal protection. This is despite the fact that a US$ 40 billion sea wall project, the National Capital Integrated Coastal Development (NCICD), was introduced already in 2015. This project's unpopularity was due more to politics than to a lack of promotion. The project received more resistance than support from the public due to funding constraints and incomplete socio-environmental impact studies. It was put on hold in 2018, and government officials and development experts are currently evaluating its feasibility.

Respondents tend to know only the most urgent measures

Some measures are perceived well because of the magnitude of the problems they seek to solve. This appears to be true in the case of climate adaptation measures in Hanoi and Manila.

For instance, as much as 92.9% of respondents in Hanoi are knowledgeable about air pollution measures undertaken there. This indicates that almost all Hanoi residents can relate to this policy and acknowledges the problem of air pollution being seriously addressed by the authorities. Hanoi is recognised for its polluted air. In fact, a World Health Organization's study in 2016 linked more than 60,000 deaths in Vietnam to air pollution.[14]

Likewise, the proportion of respondents that are cognisant of natural disaster management in Manila is high. More than 60% of those from Metro Manila agree that their city had implemented disaster early warning systems and natural evacuation/emergency plans. The Philippines' urban areas experience frequent deadly tropical storms, landslides, floods and other extreme weather events, due to its location in the typhoon belt and to its long coastlines. These vulnerabilities have therefore been central to the country's climate policy and action plan.

CONCLUSION

While knowing public perceptions of their climate actions is useful to city governments, they nevertheless still need to ascertain how successive and effective each of their climate policies is. Much research still needs to be done, and much thinking about climate issues on a case by case basis is required by climate practitioners and city governments. Examples of topics that need to be explored are: measuring public satisfaction, selecting priority programmes, and learning from how projects successfully increase public awareness and participation.

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