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URBAN GOVERNANCE APPROACHES FOR LOW CARBON CITIES. THE CASE OF SHAH ALAM LOCAL GOVERNMENT, MALAYSIA

**Yusfida Ayu Abdullah¹, Nor Baizura Jamaluddin², Hamizah Yakob³,
Mohd Azren Hassan⁴, Na'asah Nasrudin⁵, Mohammad Yusup⁶, Zulkifli
Ahmad Zaki⁷ and Khalid Zanudin⁸**

*^{1,2, 3,4,5,6,7}Faculty of Architecture, Planning and Surveying,
^{1,3,4,5,6}Responsive Environmental Development (RED) Research Group,
UNIVERSITI TEKNOLOGI MARA (UiTM), SELANGOR, MALAYSIA.
⁸Fakulti Sains Sosial,
UNIVERSITI MALAYSIA SARAWAK, MALAYSIA*

Abstract

Climate change is an alarming phenomenon, and no conquering mechanisms or global winning standards are available to reduce carbon footprints. Nevertheless, local governments still strive to formulate successful tactics to sustain their cities, including Low Carbon City (LCC) initiatives. However, it is widely accepted that institutional frameworks and urban governance may influence the effectiveness of LCC implementation. In this paper, we impart how the notion of urban governance affects LCC implementation. The study aims to examine the perennial topic of the urban governance approaches to LCC that have been adopted by local governments, using the Shah Alam local government as a case study. Benchmarking exercises were conducted through a detailed literature review of the existing LCC initiatives, together with a focus group discussion (FGD). The FGD session was framed through purposive sampling, with participants selected from the local government of Shah Alam, the city's community, and the stakeholders involved in the LCC programs. The results demonstrated that urban governance is vital in implementing LCC through many approaches, like the institutional framework, practices, and delivery. Overall, the study findings suggest a crucial component in the Shah Alam local government's management of LCC implementation.

Keywords: Carbon Footprint, GHG Emissions, Action Plan, Urban Governance, Low Carbon City (LCC)

¹ Assoc. Prof. at Universiti Teknologi Mara (UiTM), Selangor, Malaysia. Email: yusfida@uitm.edu.my

THE BACKGROUND

This paper presents the outcome of a sequel to a Low Carbon City (LCC) study. This second study is interrelated with the first research project and, in fact, tied together as it complements the earlier study. Following on from that first research, the current study continues with a similar topic but was designed to enable further investigation and amplify the role of urban governance in LCC initiatives. The previous research established the essential need to embrace and achieve a Low Carbon City, including the elements of good governance and the institutional framework required to embody and administer an LCC initiative. Meanwhile, this study was streamlined to focus on the function of the LCC institutional framework and governance through practical strategies and programs. Hence, this study was conducted to accommodate the local government's use of more detailed tactics to ensure the efficacy of its LCC delivery. The aim was to examine the LCC practice and approaches adopted through urban governance by Shah Alam City Council (known as *Majlis Bandaraya Shah Alam* – MBSA). Before presenting the results from this study, this paper begins with the contextual background.

The Issues

To understand the issue of urban governance in regard to LCC, it is better to first comprehend the bigger perspective, i.e., to understand what leads to the concept of LCC. To date, no substantial and acclaimed development concept exists to reduce carbon footprints and eliminate Greenhouse Gas (GHG) emissions. Cities worldwide have introduced many approaches to address carbon footprints and reduce GHG emissions, yet no single method can be deemed a global and unified standard. A carbon footprint is defined as the total carbon dioxide emissions generated by human activities over a certain period. Carbon footprints are caused by food, consumption, transportation, and household energy (Energy Education, 2018). Carbon dioxide (CO₂) is said to form the highest portion of GHG emissions (United States Environmental Protection Agency, 2021). The LCC, on the other hand, means an urban sustainability practice that reduces carbon footprints, including from human activities, but incorporates a low-carbon society through partnerships involving governments, private agencies, and communities (Ismaila Rimi & Yakubu Aliyu, 2019).

As urban populations grow, cities are increasingly facing challenges, including the environmental impacts of climate change (World Bank, 2014). By 2030, it is estimated that 60% of the world's population will reside in urban areas. This would result in massive carbon footprints in urban areas if actions are not taken accordingly. Cities must seriously consider sustainable development approaches and adhere to global policies and strategies for sustainable development.

Part of the strategies to address the issues of climate change and practise sustainable development is to practise Low Carbon City (LCC) intervention. At a local government level, the local authorities can integrate sustainable development for their cities through the LCC strategies. LCC initiatives and strategies can position cities as key players in tackling climate change. However, it has been stressed by the World Bank (2014) that the success of the LCC concept relies on strategic planning. To do this, an LCC requires a robust institutional background and structure. Good governance involves the element of effective coordination and, to achieve LCC status, municipalities play a highly significant role in administering the implementation. This condition was highlighted as far back as 2014, yet the issue of whether there is a need for a specific entity or unit to govern LCC implementation is still being addressed, even in Malaysia.

Kearn and Paddison (2000) claimed that the issues or challenges of urban governance include interurban competition, a homogenising global culture, the interrelationship between all levels of authority, as well as the need to attempt cross-border corporation and trans-frontier networking. Interurban competition between city authorities to obtain investment has caused a change in the basic concept of urban governance from the welfare state model to the economic development model. The common issues faced by urban governance are providing adequate access for the poor, developing practical solutions to complex challenges, and, most importantly, addressing the local context in terms of economics, politics, and social relations (Pierre, 2011). Other than that, urban governance issues also include the inconsistency of implementation, the absence of dedicated units at all levels, and the shortage of capable people (KASA, 2021). Lee (2019) stated that many Malaysian cities had established their LCC action plan, and 52 local authorities had signed up to the LCC Framework Program, which focuses on strategies at a local level. In 2020, the Malaysian government produced an important LCC policy, the National Low Carbon Cities Masterplan (GTALCC, 2020). The LCC Masterplan was created to encourage selected cities in Malaysia to venture into the LCC concept and practice in their city development. The government, therefore, streamlined several cities into specific target groups aiming for carbon neutrality by 2050 (for Group 1, containing 15 cities) or in 2050 (for Group 2, with 11 cities, and Group 3, consisting of seven cities). Shah Alam City fell into the Group 1 category, obliging it to achieve carbon neutrality by 2050. The government also stated that a "governance and implementation framework" should become one of three (3) key drivers of the LCC, besides urban planning and community participation. In this sense, it is accepted that the governance component plays a vital role in ensuring the efficacy of an LCC initiative. Apart from that, the government also accentuated the essential application of technology in LCC implementation, which involves the

practice of green technology in governance, whereby technology can bridge multiple mandates and policy directions.

To date, there is no structured or specific database system at the local governments of either Shah Alam or Petaling Jaya just for low-carbon city data purposes. Data are fragmented across the departments within the local authorities, which causes difficulties in retrieving, recording, or measuring the performance of the low-carbon index. This issue was highlighted in the National Low Carbon Cities Masterplan (Ministry of Energy, Science, Technology, Environment, and Climate Change, 2020). There is a need to change the conventional way of recording and retrieving data for low-carbon cities. At present, data are kept by separate departments according to the subject matter. This conventional way of data recording must be changed. A structured database system (of green technology) may ease the operations and processes involved in the administration and management of such an initiative.

The government also suggested a strategy to develop a single window and seamless links to data, information, and resources; and to provide a common set of performance management metrics for evaluating emissions in the delivery of a low-carbon city intervention. In addition, it was claimed in the National Green Technology Master Plan 2017-2030 that one (1) of the five (5) Strategic Thrusts to mainstream green technology is the strengthening of the institutional framework (Ministry of Energy, Green Technology and Water, 2017). This means a green technology form of institutional framework is required (Ministry of Energy, Science, Technology, Environment and Climate Change, 2020). The Sustainable Energy Development Authority (SEDA) Malaysia has also emphasised technical issues such as the difficulty of obtaining specific data exchange, the lack of integration across internal departments and external agencies, the lack of comprehensive and up-to-date information, the absence of key elements, and the unstable system of the existing track.

This paper, therefore, aims to examine the LCC initiative carried out by a local government in Malaysia, namely Shah Alam City Council (or *Majlis Bandaraya Shah Alam*), and the approaches for urban governance adopted to ensure the effectiveness of the LCC implementation.

LITERATURE REVIEW

The Concept of the Institutional Framework and Urban Governance Approach

Generally, an institutional framework is seen as an organisation with a complete system, rules or standards, decision-making procedures, and programs, which assigns roles to governance nodes and guides the interactions between the people involved. Meanwhile, governance means the way an organisation governs and practices or conducts its actions, including the power, authority, and interaction

processes of the parties involved (Patrick, Serrat, & Agyare, 2019). An institutional framework is a broad concept that concerns the functions of governments, private enterprises, political jurisdictions, judicial systems, legislative bodies, and regulatory agencies. The institutional system refers to the structure of government and its agencies, independent think tanks, and private sector services (Jeyasundar, Ali & Zhang, 2020). An institutional framework often represents the contact points between a project and the host government. As the basic structure of the local institutions, the institutional framework is essential in many respects for the viability of projects (Clews, 2016). It can also be referred to as a set of formal organisational structures, rules, and informal norms for service provision. Such a framework is seen as the precondition for successfully implementing intervention tools; it therefore requires careful attention (Peters, 2020).

Urban governance, on the other hand, means a "self-organising network, characterised by interdependence, resource exchange, rules, and significant autonomy to the state" (Rhodes, 2018). This includes the concept of continuous interaction between the network members caused by the need to exchange resources and the negotiation process. Pierre (2011) described urban governance as a process whereby local institutions implement their programs with the involvement of civil society to gain potential and influence in urban politics. It is also seen as a multi-level activity involving higher tiers of government that seek to shape what they do and have connections with lower levels of governance at the locality and neighbourhood levels. They often seek relations with such institutions to form new alliances of cooperation and are the subject of regulations and expectations from such bodies (Kearn & Paddison, 2000). Apart from that, urban governance searches for new ways to be creative, build strengths, and access and utilise resources. This is particularly true at the scale of the locality and neighbourhood.

An institutional framework ensures the efficient flow of data between system components. The crucial parts of this framework include the governance framework (two (2) tiers of institutions), the organisational framework (planning authorities), the legislative framework (planning laws), and the administrative framework (structure). These frameworks determine the management and regulation of urban development (Mallo, 2015). The relationship between the institutions of governance and the components of the institutional framework and its structures would ensure central control and domination at any level of government. In the long run, these will contribute to the performance of the authorities (Mallo, 2015). Therefore, an institutional framework needs its structures, administration, governance, and management to ensure the effectiveness of the authorities' activities.

Examples of Urban Governance for LCC in Other Countries

This study also examined some practices governing LCC in other countries. In Germany, the National Urban Development Policy was created in 2007 after the Leipzig Charter on Sustainable European Cities (BVMBS, 2012). Prepared by federal, regional, and local officials, this policy is managed by the Federal Ministry of Transport, Building, and Urban Development (BMVBS, 2012). The policy established a national framework for better urban governance for sustainability. Significant outputs have included creating funding streams for innovative urban projects, developing an online portal for sharing best practices, and establishing a board to advise ministers on implementing national urban development policies.

Meanwhile, in Mexico, the municipal governments oversee urban planning, water distribution, waste management, roads and transit, and public spaces in Mexico's cities. State governments set property tax rates, which vary widely. Cities depend heavily on federal funding (UCLG & OECD, 2016). Mexico's climate change policy is also well developed. Mexico passed a Climate Change General Law in 2012 and introduced the 10-20-40 National Climate Change Strategy in 2013 and the Climate Change Mid-Century Strategy in 2016. The government also created the National System on Climate Change to coordinate climate action across federal, state, and municipal levels. The national policies aim to reduce emissions by 22% below business-as-usual levels by 2030 and 50% below 2000 levels by 2050 (SEMARNAT, 2013).

Meanwhile, China has varying levels of governance like the national, provincial, prefectural, county, and local governments, as well as its urbanisation and carbon emissions goals. One aspect of urban governance was introducing the 13th Five-Year Plan, which aims to increase the urban population, amount of affordable housing, and number of urban jobs. The plan suggests more significant policies, resources, and coordination between all levels of government to achieve these goals (China, 2016). Table 1 summarises the urban governance approaches adopted to lower carbon emissions.

Table 1: Urban Governance Approaches for LCC in Selected Countries.

Country / Target	Approaches
Largely Green House Gases emissions neutral by 2050 (near-term goal of reducing emissions by 40% by 2020)	<ul style="list-style-type: none"> • A national building code that emphasises energy-efficient buildings and brownfield development • A program for refurbishing existing building stocks • Targets for renewable energy generation • A national energy tax and sectoral energy policies contribute to Germany having the highest levels of energy efficiency in the world. • Reducing reliance on coal for energy, reducing the need for heating oil, limiting transportation emissions, and improving industrial efficiency
National Urban Development Programme (set out goals of reducing emissions 22% below business-as-usual by 2030 and 50% below 2000 levels by 2050 relative to business-as-usual).	<ul style="list-style-type: none"> • Controlling urban sprawl and consolidating existing cities • Creating an urban development model that makes well-being for city dwellers and guarantees social, economic and environmental sustainability • Designing and implementing normative, fiscal, administrative and regulatory instruments for land use management • Promoting a sustainable mobility policy that ensures the quality, availability, connectivity and accessibility of urban trips • Avoiding human settlements in risk zones and reducing the vulnerability of urban populations to natural disasters • Consolidating the National Regional Development Policy based on local economies' capabilities and potential
National New Urbanization Plan 2014–2020 (reduce the carbon intensity of the economy (CO ₂ emitted per unit of GDP) by 18%, and energy intensity (energy consumption per unit of GDP) by 15% over the five years to 2020)	<ul style="list-style-type: none"> • The establishment of a national emissions trading scheme (ETS) • One of the guiding visions is of an “ecological civilisation” characterised by low-carbon development • Pursuing low-carbon urban development through low-carbon city pilots • Participating cities created low-carbon development strategies, established GHG inventories, and implemented a range of low-carbon initiatives, including energy efficiency, distributed energy, and public transit systems • Promoting renewable energy • Public transport facilities and green buildings

Source: Broekhoff, D., Piggot, G., & Erickson, P. (2021).

Shah Alam's Early Approach To LCC

Malaysia, a small country in Southeast Asia, has long supported the international urban agenda for sustainability and tried to make cities better places to live. Shah Alam, situated in the State of Selangor, Malaysia, is one of the many major cities that sought and adopted a recognised approach to tackling the carbon footprint issue, i.e., the LCC concept. Shah Alam, a famous city with almost 120 million search results from the Google search engine (Google, 2022), is a highly urbanised Malaysian city that aspires to strengthen its sustainability approach by adopting the LCC concept in its development and plan. This effort is not a novel sustainability scheme for the city, but an extension of the many initiatives introduced by the city in early 2000.

The past 40 years have witnessed massive growth in the urban development and economy of Shah Alam, which has transformed the city into an industrial city. Population growth increased tremendously due to industrial activity, and new housing schemes were expanded. The city grew tremendously and was estimated to have 617,149 inhabitants in 2022 (Population Hub, 2022). The profound changes in human activities and the built environment escalated the development of infrastructure and urban transportation, making the city unable to escape the issues of carbon footprints and increased carbon emissions. To make things worse, the demand for mobility and accessibility increased at the same rate for cities like Shah Alam (Abd Rahman and Abdullah, 2016). Scholars have claimed that transportation contributes significantly to carbon emissions (Nasrudin et al., 2020). This inevitably affects the environment and the urban dwellers' quality of life. A low happiness level is thought to result from low satisfaction with living conditions (Abdullah and Zulkifli, 2015), while mental illness increases due to a poor physical environment, which includes poor air quality (Marzukhi, Ghazali, Leh and Abdullah, 2020).

The Malaysian government has pledged to protect its environment and commit to promoting a sustainable environment and living conditions. One government initiative is the creation of the National Low Carbon Cities Framework and Assessment System (LCCF) in 2011 by the Ministry of Energy, Green Technology, and Water, intended to be practised by local governments. The LCCF was designed to introduce a framework for promoting sustainable development that would reduce carbon emissions through four (4) main development aspects: the urban environment, urban transport, urban infrastructure, and building (KeTTHA, 2011). Local authorities applied the framework and assessment guidelines to measure the baseline and reduction in the carbon count. The initial purpose of the LCCF is to encourage cities to move towards zero-carbon in the future. Following the establishment of the LCCF, the Shah Alam City Council (SACC) has taken a step further by formulating its own LCC Action Plan for 2017 to 2030.

However, when the LCCF was introduced in 2011, the role and responsibilities of the local authorities in terms of administration and management were not addressed extensively. Also, the context and composition of the subject matter are specifically designed to calculate carbon emissions. The concept of LCC development and the elements of governance were not covered. Furthermore, before then, no document in Malaysia could guide an LCC scheme. Apart from that, preliminary work also revealed the absence of mechanisms and studies focusing on urban governance for LCC for local governments in Malaysia.

Before 2017, it was rare to find documents produced by local authorities referring to their experience of attempting to pursue an LCC concept in their cities. Moreover, no LCC action plan has been produced by any local authority in Malaysia, except for Subang Jaya. Shah Alam, however, took its chance and initiated her first ever LCC Action Plan, which comprises five (5) strategic development thrusts: (1) Transportation and Mobility; (2) Built Environment; (3) Waste Management; (4) Energy and Water; and (5) Administration and Management through Green Technology (Majlis Bandaraya Shah Alam, 2017). The LCC Action Plan produced in 2017 was a city council strategy to complement the LCCF imposed by the government. Nevertheless, in this action plan, the strategies drawn in relation to administration and management were not comprehensively interpreted. For that reason, SACC decided to review its 2017 LCC Action Plan and produce a newly enhanced action plan to systematically address the components of governance such that they would suit the capacity of the city and the local context in regard to LCC.

METHODOLOGY

The study focused on urban governance at a local level. Previous scholars have demonstrated the use of qualitative measures when dealing with administration, management, policies, regulations, strategies, and principles (Ariff, Samsudin & Ahmad, 2021; Husin, M.Z., Usman, I.M.S. & Suratman, R., 2021; Dauda, Ahmad & Keling, 2020). The intention of the study was to examine the existing LCC policies and strategies that have been formulated and the actions taken by a local government to strengthen the institutional framework. This study, therefore, primarily applied a qualitative approach and concentrated on document reviews from secondary data, while it also analysed the primary data obtained from focus group discussions (FGD) involving 22 representatives from various backgrounds.

Therefore, this study embraced a sequential exploratory investigation to obtain the information from the participants systematically. The approach involved a two-phase design method, whereby the qualitative data was first collected from the existing literature, and this was followed by the FGD session. To investigate the strategies for urban governance employed by a local government in relation to LCC, the study also applied the case study method.

Greater attention was paid to a local government in the State of Selangor, Shah Alam City Council (SACC), also widely known as *Majlis Bandaraya Shah Alam* (MBSA). The data from the FGD was analysed by employing the ATLAS.ti software. This approach enabled the researchers to understand the significant criteria for urban governance when implementing the LCC initiative. In this paper, the acronym MBSA is widely used as this is the common name used by the local public. MBSA was selected as the case study based on its background and practice in regard to LCC efforts. Also, the Malaysian Government had targeted the city of Shah Alam as one of the many major cities in the country which should implement an LCC scheme. As mentioned earlier, the National Low Carbon Cities Masterplan created in 2020 (GTALCC, 2020) categorised Shah Alam into Group 1 of the many LCC targets, which deliberately positioned the city as one of the 15 in Malaysia that were to achieve carbon neutrality by 2050. Therefore, the Shah Alam local authority is striving to address the city's Low Carbon City planning and development, as well as meet the nation's aspirations.

Preliminary work included a detailed review of the existing literature on LCC, international LCC missions, and local policies and strategies. Content analysis was employed for the secondary data. The scoping method suggested by Arksey and O'Malley (2005) and the technique applied by Abd Rauf et al. (2021) were exercised through a systematic approach. The scoping method involved five (5) phases, whereby secondary data extraction involves: (1) data gathering (of related previous studies); (2) justification of the study objective (by framing the scope of the study); (3) grouping the secondary data into separate themes; (4) classification of the data according to subjects; and (5) designing the conceptual framework. The variables were identified from this preliminary task, as presented in Table 2 below. Those variables became the leading indicators for measuring the criteria that could aid the governance involved in administering and managing LCC initiatives at local government level.

To examine the variables connected to an effective LCC delivery, the study included an FGD session comprising 22 participants from 12 organisations. The researchers selected participants with knowledge of or experience in LCC from numerous backgrounds, including from the academic field, local authorities, developers, the State Economic Unit, Malaysian Federal Government Statutory Bodies, the Department of Town and Country Planning (Federal), and the Department of Town and Country Planning (State of Selangor).

The intention was to gather information, experience, and ideas from those involved directly in LCC efforts. The participants were selected using purposive sampling based on several criteria but which involved certain constraints: (1) the exact expertise involved in LCC governance is not available; (2) there were difficulties in getting participants from the field; (3) there were

time constraints; (4) the investigation required in-depth assessment; and (5) there is no specific sample size formula (World Food Programme, 2009). By employing the purposive sampling approach, the research team was not committed to restricting or justifying the number of participants used in the samples, provided that they might offer relevant inputs (World Food Programme, 2019).

Table 2: Variables for Study and Relationship with Urban Governance Criteria

Variables	Criteria
LCC Guideline	Guide or instruction to deliver LCC efforts.
Low-Carbon Zone	Areas where the most polluting vehicles are regulated. Generally, vehicles with higher emissions cannot enter the area.
Champion	A champion facilitates change, can see the mission for change, and supports the team in integrating the new transformation. A champion is key to a successful outcome of organisational change.
Job Description	It is a record or written statement that informs all the related job information. It will portray the job content, environment, and conditions.
Capacity Building	Capacity building engages in cultivating and intensifying an organisation's skills, talents, practices, and resources, along with changes in attitudes and behaviourism.
Funding	Money that a government or organisation provides for a particular purpose.
KPI	A Key Performance Indicator is a measurable value portraying the achievement of certain aspects of an organisation.
Work Plan	A strategy or schedule is proposed for a specific project.
Database Centre	A physical facility stores applications and data with a computing and storage resources network.
Partnership	A formal agreement between two or more parties or organisations or people
Green Procurement	The purchase of goods and services will only bring minimal adverse environmental impact.
Green Finance	A sustainable financial system that serves long-term the need for an environmentally friendly financing system.
Benchmarking	Benchmarking enables an organisation to learn from the best standard of performance.
Monitoring	To watch and check a situation for a certain period

Source: Adopted from Urban Access Regulations in Europe (2022); Weebly (2022); iEduNote (2022); United Nations (2022); Collins (2022); Klipfolio (2022); Lexico (2022); Cisco (2022), Byju's (2022); GEP (2022); Green Finance Platform (2021); InspireOne (2022); Cambridge Dictionary (2022)

RESULTS AND DISCUSSION

It has been observed that all cities in Malaysia must adopt a sustainable development approach, and one of the mechanisms for doing so is practising the LCC concept and practice. Nevertheless, the pre-requisite highlighted by the government suggests that LCC initiatives be carried out through a structured institutional body (GTALCC, 2020). Furthermore, to ensure the effectiveness of an LCC intervention, the green technology element must be practised in urban governance. Following that manifesto, Malaysia is now striving to ensure her cities have Low Carbon City status by 2050. Shah Alam, a highly urbanised city, was placed in Group 1 of the target cities and therefore aims for carbon neutrality in 2050. Group 2, on the other hand, is targeted to attain a 66% reduction in absolute GHG emissions in 2045 and carbon neutrality in 2055. Meanwhile, Group 3 is required to achieve carbon neutrality by 2060.

In the context of the Malaysian scenario, the study revealed several critical issues concerning the current practice of the institutional framework and urban governance for LCC initiatives in the country, including for the city of Shah Alam. Part of the challenges that the cities in Malaysia are facing is the mainstream and fragmented institutional structure with which to administer the implementation of LCC programs. Local governments also face issues in applying green technology for LCC administration and management.

In Shah Alam, LCC projects and programs have been the responsibility of the city council's Planning Department (under the Sustainable Unit). They are being carried out through teamwork with other technical departments within the city council. This approach is seen as a haphazard institutional structure yet valued as an effective practice by the city council since the Planning Department has achieved tremendous records by addressing LCC initiatives through multiple programs and activities. MBSA introduced its first LCC Action Plan in 2017 as an approach based on sustainable development and carbon neutrality. However, in late 2020, the city council decided to enhance the action plan, beginning with a systematic review of that action plan to fit the current situation and the city council's new goal. This study was well timed as it corresponded to the National LCC Masterplan launched in the same year.

Based on the evaluation, MBSA learned that several strategies had not been not fully achieved. The Green Technology Council had not been established exclusively. Still, the role of the Sustainable Unit (under the Planning Department) was tightened and the Sustainable Meeting Committee was used as its new name. Initially, MBSA aimed to establish a specific LCC working committee. However, the projects were monitored by the departments responsible. Therefore, any meetings were initiated by the departments overseeing the projects. Because of that, the target to have four superior meetings according to the strategy outlined in the 2017 action plan was not met. In practice,

the monitoring was typically carried out through a fixed monitoring procedure but only for the Low Carbon City Framework calculation and based on the department's project, and the Sustainable Unit was not invited to these meetings. As such, some essential data or records were not captured by the Sustainable Unit. The review also exposed the importance of having a centralised database system for LCC projects, which the city council had fallen short of at that particular time. The first action plan also suggested the formulation of a comprehensive MBSA Green Technology Policy, but this had not yet been achieved in 2020. Other than that, several other shortages were determined, including the provision of incentives to developers who complied with green building requirements or recognition for GBI compliance.

Following the revision procedure, MBSA then developed a newly enhanced LCC Action plan, which framed a target of 45% absolute GHG emissions by 2035. The composition of the Shah Alam LCC Action Plan 2035 was an infusion of the many great ideas and expectations from the community, stakeholders, and city council staff. The strategies were improved and actions were comprehensively addressed. The new action plan design was consistent with the approach outlined in the National LCC Masterplan 2020. A major effort was made by the city council (led by the Sustainable Unit) in 2021 to systematically craft a document covering extensive actions and sub-actions for Shah Alam's LCC development. These actions included detailed programs with a specific timeline, particular collaborators, as well as the type of mitigation approaches. Strategies were classified into six (6) central cores of development: (1) Building, Water, and Clean Energy; (2) Urban Transportation and Mobility; (3) Solid Waste Management; (4) Urban Greening and Built Environment; (5) City Governance; and (6) Communication, Education and Public Awareness (CEPA). These essential key development subjects correlated with the key ideas for developing the national LCC. It can now be claimed that MBSA is a pioneering local government for having produces its LCC Action Plan in response to the National LCC Masterplan, which requires each city to formulate its climate change or LCC action plan. The Shah Alam LCC Action Plan 2035 was launched and published on the 21st of October 2021 and is now being sanctioned for implementation within Shah Alam's development. The city council believes it will become a powerful development tool for reducing carbon emissions in the city.

This study reveals that the role of urban governance is imperative in assisting the implementation of an LCC. The results from the FGD sessions demonstrate that the stakeholders highlighted how essential the role of a dedicated unit was in administering and managing LCC projects. The participants agreed that there should be a Champion to lead any LCC initiative. The Planning Department and the Sustainable Unit, which are directly involved in the LCC

plan for Shah Alam, were considered good entities for managing LCC projects. However, the participants claimed that the institutional framework could be further enhanced by considering the work plan and job descriptions extensively to alleviate the complexity of the roles and responsibilities. One participant stressed that the concept of a resilient city is very dynamic. Therefore, changes to an institutional framework are inevitable. Apart from that, every participant agreed that capacity building is the primary task when educating those involved in LCC projects and programs. They thought that changing mindsets and skills are the two (2) significant ingredients that would ensure the efficacy of LCC delivery. Urban governance plays a vital in conducting training, workshops, and benchmarking exercises.

Since the first LCC action plan in 2017, the city council has not demarcated any specific zones as low-carbon emissions areas. Still, it has designated many buildings in Shah Alam that should participate in the LCCF initiative. Building owners participate voluntarily by measuring the reductions in carbon from their activities and buildings. Nevertheless, the absence of low-carbon emission zones has not weakened the effort to promote a reduction in carbon emissions. The many city council activities and programs have facilitated these actions, including the provision of green elements and designs for city development. The FGD results featured several fundamental practices for MBSA that might improve the city's carbon-reduction performance, including creating standard guidelines for LCC development besides the existing planning guidelines for planning approval. Other essential features highlighted were the application of performance measurement for each LCC project through the assessment of Key Performance Indicators (KPI) and the need to practise continuous monitoring exercises for all LCC projects and programs. Figure 1 shows the Networking Mapping of the FGD results generated from the ATLAS.ti software.

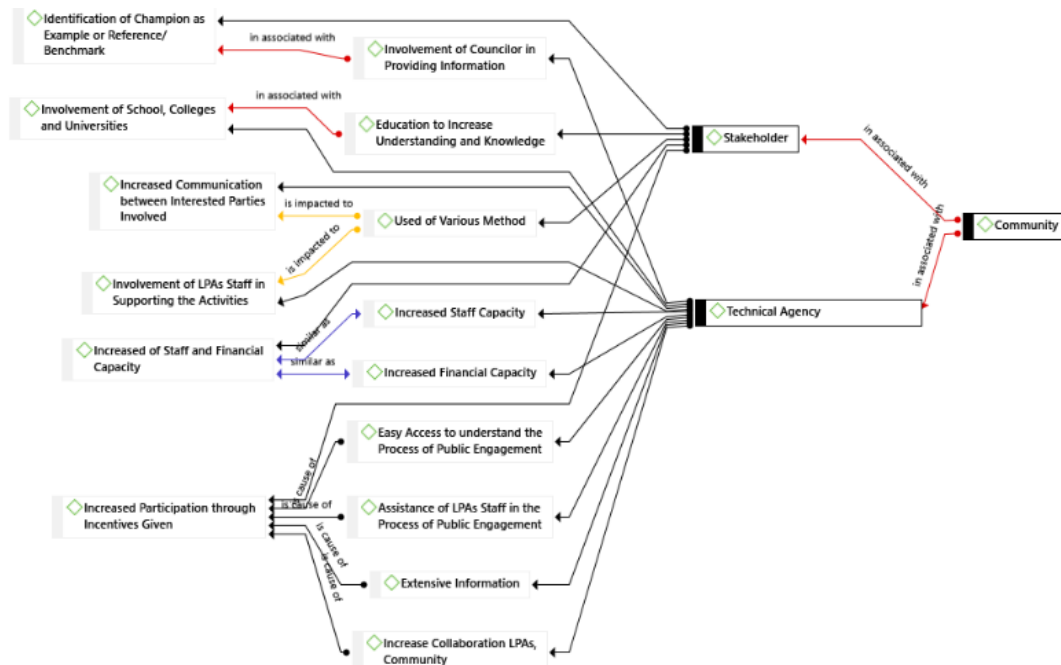


Figure 1: Network Mapping on Urban Governance for LCC Initiative from FGD.

Additionally, urban governance for the LCC initiative should allocate funding and consider green finance accordingly. The budget for LCC efforts should be revised periodically to ensure that projects and programs, capacity building, benchmarking, monitoring processes, and other related tasks that may improve performance can be strategically practised. Additionally, green procurement, which was also seen as a supportive measure by the participants, could encourage minimal adverse environmental effects. Another crucial aspect of urban governance for LCC is to incorporate working partnerships by having strategic partners for all projects and programs. All the FGD participants pointed out the need to engage with various parties and organisations, including the community of Shah Alam, since the consequences of LCC projects and programs affect the people and the environment. Including the community, stakeholders, and agencies would lead to the infusion of various ideas, skills, and expertise, as well as consider all aspects of the conditions and situation.

The study's findings provide critical perspectives on and interpretations of the roles and approaches involved in urban governance for LCC. The review of the related literature on LCC, examples of LCC action plans from other cities around the world, and the beliefs and inputs from the FGD were combined. They enabled the researchers to formulate an enhanced LCC Action Plan for the city

council. As mentioned earlier, the action plan put forward in October 2021 embedded the indicators into the strategies. The 2035 LCC Action Plan states its vision as "...a city that responds to climate change challenges and promotes LCC lifestyle to meet the global vision for sustainable agenda". The mission is "to effectively implement [the] LCC Framework to reduce carbon emissions in creating a better-quality living environment in Shah Alam".

The strategies encapsulate all the findings into six (6) strategic thrusts, including a city governance strategy, named *City Governance* in the document. The six (6) thrusts each have a specific *Game Plan*, resulting in 66 actions and 197 sub-actions. For City Governance (Urban Governance), the strategy was divided into two (2) Game Plans, namely, (1) the adaptation of Low Carbon City Principles in Policy and Guidelines and (2) Empowering Administration and Management. The objective is "to operate inclusive urban governance with emphasis on fostering low-carbon practice through multi-stakeholder governance, public participation and technology, and to provide efficient public services in forging LCC implementation".

The game plans for urban governance embrace all aspects of the indicators through 13 actions and 18 sub-actions. The actions for Game Plan 1 included developing inclusive LCC guidelines and a master plan for LCC zones in the city. Meanwhile, Game Plan 2 suggested measures like enhancing the institutional framework for LCC governance, human resource empowerment, interdepartmental coordination, strengthening partnerships with key players and stakeholders, identifying a Champion for LCC, creating an explicit database system for LCC, practising green procurement, a green financing system, diversifying the sources of funding and grants for LCC projects and programs, as well as practising continuous monitoring exercises. These actions are supported by many sub-actions, including periodic benchmarking, capacity building, and establishing work plans and KPIs for performance measurement. Through these arrangements, the researchers believe that the city council will improve its practice when implementing the LCC scheme.

CONCLUSION

This paper draws attention to the great awareness of the significant role played by urban governance in administering and managing LCC interventions. The outcome reflects the fundamental approaches by urban governance to enhance the performance of the LCC projects and program delivery. The study revealed several substantive factors and strategies related to the institutional framework and urban governance needed to achieve LCC development, including the provision of a database system for LCC, specific guidelines for LCC development, an institutional framework (job description, work plan, and partnerships), funding, the practice of green finance, monitoring, benchmarking,

and many other integral elements. The results and findings from the study were thereafter applied when making the Shah Alam LCC Action Plan 2035, which saw the formulation of 13 actions and 18 sub-actions for urban governance. Each action addressed in the action plan accommodated the ideas of the FGD participants and the findings from the secondary data analysis. Future researchers could evaluate the effectiveness of low-carbon city zones or measure the performance of the working partnerships and collaborative efforts involved in LCC projects and programs. The researchers also feel that future researchers could evaluate the effects of LCC on the community.

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