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Community Practice in Low Carbon Lifestyle Towards Sustainable Development Goals in Kuala Lumpur

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Low carbon lifestyle programs have been introduced in the Kuala Lumpur Low Carbon Society Blueprint 2030 (KL LCSBP 2030) with the slogan "70 By 30: A Greener, Better Kuala Lumpur" as a city with lower carbon emissions in every aspect of life. The community plays an essential role in achieving a low carbon lifestyle by exploring their daily routines in adapting and applying green practices. The phenomenological research methodology will capture participants' lifestyles and the phenomenon's essence. This study investigates low carbon lifestyle practices among communities and stakeholders to reduce carbon dioxide (CO_2) emissions. It is also related to Sustainable Development Goals (SDGs) such as SDG 2, SDG 11, SDG 13, and SDG 17. Data analysis was done using the purposive sampling method from April to October 2021. Semi-structured interviews were conducted with three informants who are actively involved in Local Agenda 21 Kuala Lumpur (LA21KL) and two stakeholders. The NVivo 12 software was used to compile and analyse the initial code data, develop provisional categories, and incorporate them into themes. Three themes have been determined: Community Engagement and Empowerment, Sustainable Leadership, and Communication Strategies. Lifestyle practices have become part of community life, creating environmental awareness and contributing to Kuala Lumpur's carbon-neutral target of being a low carbon city by 2030.

1. Introduction

A low carbon lifestyle is a way people live, including their places, the things they own, the kind of jobs they do, and the activities they enjoy. The focal point of a low carbon lifestyle is to lessen people's carbon footprints and minimise the impacts of day-to-day lifestyle on producing harmful climate change. Climate change endangers the natural resources and sociocultural foundations of human civilisation and health (Pachauri, 2014). In the Paris Agreement, 187 countries agreed to limit global warming to less than 2 °C and possibly 1.5 °C (IPCC, 2014). To achieve the stated goal, greenhouse gas (GHG) emissions need to decrease globally by about 45 % from 2010 to 2030. Kuala Lumpur is also committed to becoming a low carbon city by 2030 and achieving net-zero carbon dioxide (CO_2) emissions by 2050 and a carbon reduction of 70 % compared to the base year 2010 (UTM-Low Carbon Asia Research Centre, 2018). This blueprint has produced ten Low Carbon Society (LCS) actions and potential carbon emission reductions achievable from implementing the actions in Kuala Lumpur. To achieve the carbon reduction target, there is Action 5, Community Engagement and Green Lifestyle in Kuala Lumpur Low Carbon Society Blueprint 2030 (KL LCSBP 2030), which emphasises the social aspect of the community. It unravels how community involvement and participation have successfully raised awareness of the importance of preserving the environment in line with efforts to reduce carbon emissions in Kuala Lumpur. This study aims to explore the community's experience with low carbon activities and their understanding of low carbon lifestyle. It focuses more on community participation and awareness regarding low carbon activities, and not on the amount of carbon reduction achieved. This paper will explore several community practices such as urban farming, rainwater harvesting, and composting as highlighted in the KL LCSBP 2030 programs.

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2. Literature review

2.1 Low carbon lifestyle

The low carbon lifestyle concept generally suggests a decrease in carbon emissions from all aspects of living (Wibeck, 2014). May and Marvin (2017) supported five routine behaviour domains in assessing individuals' low carbon lifestyle levels: food consumption, water and energy use, transportation, and waste management. Howell and Allen (2017) suggested the need for information campaign effectiveness in promoting a low carbon lifestyle and the barriers to practice at home and in the community. It is also being referred from the fundamental practice of 3R (reducing, reusing, and recycling) to changes in the level of consumption towards meeting basic needs (Nishioka, 2016). Whitmarsh et al. (2011) pointed out that a low carbon lifestyle was a simple and healthy behaviour model guided by ecological values. Howell (2013) believed that the essence is in reducing one's carbon footprint through lifestyle changes, while Yang and Li (2013) emphasised changes in the way people live, involving the transformation of values, consumption patterns, and cultural views to create a new way of life. The Intergovernmental Panel on Climate Change (IPCC) reported that behaviour, lifestyle, and culture support energy use and associated emissions, stabilising or reducing consumption, moving towards a sharing economy, and adopting other behavioural changes have a high mitigation potential (Edenhofer et al., 2014).
A low carbon lifestyle is essential in making economically viable plans for the community to reduce their carbon footprints (Schanes et al., 2016). The Theory of Planned Behavior (TPB) (Ajzen, 1991) suggests that behaviours are mediated by intention, i.e., not only attitudes but also social norms and perceived control of behaviours. For example, Kaffashi and Shamsudin (2019) revealed individuals were transforming into LCS and stretched the TPB of Malaysian citizens in their study. The community must be transformed to consume sustainable and relatively low carbon energy compared to the current practice. Ho et al. (2016) described the LCS promotion in different segments of residential, commercial, industrial, and government sectors, collaborative policies and development strategies should be done to change the behaviour and consumption patterns. The crucial factor is how to convey the message effectively so that people can understand, appreciate, and change their behaviours. The program introduces strategies and policies concentrating on the social contribution of all citizens, from the government, businesses and households. Low carbon behaviours use energy-efficient appliances, buying environmental-friendly products, eating organic and locally grown food, less car usage, seeking alternatives for short trips, better energy and water management and usage, waste segregation and recycling, as well as less food waste (Department for Environment Food and Rural Affairs, 2008). In combating major climate change problems in our daily lives, a transition to a low carbon lifestyle would require changes in communities' social patterns and the norms that form the society. To conclude, a low carbon lifestyle is the best solution to a low carbon practice by living and working sustainably, meeting society's needs, and improving the quality of life while minimising natural resources, emissions, waste, and pollution.

2.2 Sustainable development goals

Malaysia and 192 other countries signed 17 Sustainable Development Goals (SDGs) under the auspices of the United Nations (UN) in 2015 to eradicate poverty, reduce inequality, and address climate change by 2030. Based on the Department of Statistics Malaysia (2019) report, the SDG goals cover three main pillars, namely social (56 %), economic (20 %), and environmental (24 %). This study focuses only on four SDGs: SDG 2: Zero Hunger, SDG 11: Sustainable Cities and Communities, SDG 13: Action on Climate Change, and SDG 17: Working Together for Goals. Based on SDG 2, Kuala Lumpur needs to work with various parties to ensure there is no hunger among the population and promote healthy and nutritious eating habits. This is also supported by SDG 17, stating that cooperation with various parties can help the development of green neighbourhoods with the participation of local communities. The Community Garden Policy supports the development of urban community gardens guided by agricultural practices and healthy lifestyles toward a low carbon society and climate change, which can also be linked to SDG 13, focusing on the effects of climate change and worsening natural disasters. Meanwhile, SDG 11 attempted to make Kuala Lumpur the main agenda of a 'City For All' with the provision of housing, transport infrastructure, and recreational areas. SDG 17 is a key pillar that strengthens partnerships and collaborations with partners that have become LA21KL's practice in driving program sustainability to achieve the SDGs in Kuala Lumpur. Collaboration between stakeholders is expected to help Kuala Lumpur's efforts to achieve this long-term goal. It requires the coordination of programs and accurate data to drive the growth of cities and communities in tandem.

2.3 Community and communications

Community and stakeholder engagement in a low carbon lifestyle (Holgersen, 2015) is crucial. Lim (2014) reported that the role of LA21KL is to encourage sustainable communities that acknowledge economic, environmental, and social issues. LA21KL faces several issues and challenges, such as a lack of awareness and information among local people about low carbon initiatives and difficulties in getting community

participation (Ngah and Zulkifli, 2014). Some local committees or representatives are not active and are not well known. Howell and Allen (2017) suggested the need for information campaign effectiveness in promoting a low carbon lifestyle to reduce any social gaps. More activities are essential to raise public awareness and cognise low carbon activities (Abdul Aziz et al., 2015). Establishing a low carbon lifestyle is significant in transforming Kuala Lumpur into a world-recognised low carbon city (KLCH, 2020). In response to this challenge, empowering the community to undertake low carbon initiatives and practices a low carbon lifestyle via effective action plans is crucial to motivating and supporting the establishment of LCS in Kuala Lumpur. Communication is a social process affecting human behaviour, including in-person and virtual interaction, made possible by technological advances. In line with Kuala Lumpur's target of 2030, it must embark on a practicable low carbon lifestyle to significantly reduce its carbon emissions. An approach to raising awareness through campaigns on social networks is an important mechanism for exchanging required information (Vrain and Wilson, 2021). Reilly (2020) stated that communication among communities begins with their daily activities, linking practices by sharing relevant information to create trust and encourage interaction among the community. Communication strategies play a role in building trust and connection with the recipients, especially in promoting low carbon lifestyle programs.

3. Research methodology

The phenomenological research methodology was used (Moustakas, 1994) to investigate living experiences and practices among the community and stakeholders towards achieving a low carbon lifestyle. Semi-structured interviews will be used in collecting data in a qualitative research method (Merriam, 1998) with three informants and two stakeholders who are actively engaged in the program. The interview sessions were conducted through online tools (Zoom and Google Meet applications) due to the COVID-19 pandemic and face-to-face interviews using a purposive sampling method from April to October 2021. During the interview sessions, informants were asked to share their experiences, reasons for adopting a low carbon lifestyle, and factors that led to low carbon lifestyle practices. They also shared their challenges in exploring new ways to bring the community together. Moustakas (1994) proposed an "interview protocol with extensive questions that facilitate crucial, rich, and substantive descriptions" to gather rich data. These comprehensive questions are applicable to keep the protocol open to immediate revisions that may assist participants in verbalising their happenings.

The researcher assigned an ID number to each informant. The interview was written word for word (verbatim), including pauses, laughter, and other remarks using NVivo 12 software. Researchers allocated a long time to rewriting, about one hour of interview is equivalent to three hours of rewriting the interview (Ismail, 2005). Data was examined using a constant comparative technique as mentioned by Merriam (1998). Creswell and Poth (2018) stated that the obtained data gives meaning to researchers after being analysed by the following steps: organise data by reading repeatedly to obtain important information related to study objectives and provide a specific code according to the statement by informants. Code setting for transcripts is very important in facilitating the process of retrieving the original data or in cross-referencing information, identifying related categories and themes, and writing the research report. A triangulation process was used to verify participants' experiences by interviewing stakeholders who were part of the LA21KL committee and were involved in the KL LCSBP 2030 preparation. The data analysis was conducted continuously until there was no further information or new data that was redundant with the obtained information, known as a saturation point (Glaser and Strauss, 1967). Table 1 provides an overview of the informants' and stakeholders' demography.

Table 1: Demography of informants and stakeholders

Informant	Age	Involvement in Community/ NGOs/ Government Agency/ Private Company	Position	Notes
Informant 1	51	5 - 10 y	Secretary	Community
Informant 2	52	More than 10 y	Former Chairman	Community
Informant 3	55	5-10 y	Former Chairman	Community
Informant 4	32	Less than 5 y	Town Planning Officer (Stakeholder)	LA21KL Coordinator
Informant 5	47	11- 20 y	Founder and President of Lestari Alam Malaysia (Stakeholder)	NGO

4. Analysis and finding

Phenomenological data analysis is the process of reading, reflecting and writing, and rewriting to enable the researcher to transform 'lived experience' into a textural expression of that 'essence' (Van Manen, 1990). The

results of this study discuss the findings through interview data that have been analysed by researchers using the NVivo 12 software. In particular, this study focuses on the following research question and objective:
Research Question: What are the practices of a low carbon lifestyle among the communities?
Research Objective: To understand the practices of the low carbon lifestyle among the communities.

4.1 Theme 1: Community engagement and empowerment

A low carbon lifestyle has created opportunities for the community to design their lives sustainably. Low carbon programs and LA21KL have organised numerous engagements with the community. In line with SDG 11: Sustainable Cities and Communities, communities are part of cities. Cities and communities have a strong interdependence. Local authorities and other government agencies need to support the city, as mentioned by Ho et al. (2016) that LCS promotion in different segments is essential to change people's behaviour and consumption. Engagement is crucial among the community and stakeholders (Holgersen, 2015). LA21KL also contributes to the success of the programs by introducing the Subject Matter Expert (SME) as SDG 17: Working Together for Goals, which emphasises partnership and collaboration with relevant agencies, universities, and corporate companies.

> "We want to highlight the main element, which is the people. If we want to achieve a sustainable city and community, we need to empower the people. The city will not become a sustainable place if the community itself is not 'sustainable'."
>
> Informant 5

Informant 2 mentioned that the community showed their interest and passion in composting and urban farming activities. Even though their first step was a failure due to a lack of knowledge, they have now succeeded and become entrepreneurs in composting. They also have a proper compost centre at Sunway SPK Damansara. The composting and urban farming sites are located side by side. They also established recycling with separation at the source, and almost 100 % of households followed the campaign. The leader plays a role in contacting relevant agencies to get more support and funding. This statement is supported by Informant 4, who pointed out that the community is knowledgeable about composting. They gained knowledge from LA21KL programs and have now become experts and trainers. The community also does urban farming, fish farming, insect repellent, and rainwater harvesting. To encourage participation among the community in urban farming, they built raised beds (8-10 feet long and 3-4 feet wide) for gardening using recycled bricks and loose cement. This is to prevent them from getting back pain when hoeing and they do not have to bend or squat when farming. As per Whitmarsh et al. (2011), a low carbon lifestyle is a simple and healthy behaviour model guided by ecological values, in which humans can actively restrain their behaviour in daily life. Informant 2 notified that the community built a cabin container known as a Knowledge Centre in 2019. It shows that the activity has increased interest and responds to sustainable problems by attempting to influence community lifestyle. This community has received a first-place award from the Ministry of Housing and Local Government (KPKT) through the Green Neighbourhood Award (AKH 2021), organised by PLANMalaysia under the Komuniti Perumahan Bertanah category in 2021.

4.2 Theme 2: Sustainable leadership

According to Informant 3, they focus on youth and invite them to join the environmental programs after the engagement. The leader collaborated with the Malaysian Environmental Sustainability Association and launched the Persatuan Sosio-Ekonomi dan Alam Sekitar (PERSEAS) Squad to manage recycling activities in PPR Kepong. They were trained for two years to be part of the Junior Environmental Sustainability Squad before becoming part of the PERSEAS Squad. They coordinated, organised the system, and recorded the recycled items at the recycling hub. As mentioned by Nishioka (2016), the basic practice of reducing, reusing, and recycling changes patterns and levels of consumption toward meeting basic needs. They also received awards and certification from the Mayor and SWCorp Director for their knowledge in science and environment fields.

> "Pekan Kepong community is the only PPR public housing resident in Malaysia with complete and comprehensive data… every household involved, about 300 participants from 939 units, 301 have been involved in this project from the start. We started on 28th December 2019. Although MCO was implemented, the project is still ongoing. This is what we mean by sustainability."
>
> Informant 5

Informant 3 stated that the Malaysian community has started to realise the importance of recycling items into papers and newspapers, which has persuaded them to participate in a low carbon lifestyle. In urban farming, paddy was planted in PPR Kepong, and this activity is quite rare in this city. The purpose of planting mustard and chillies is to teach the community, especially teenagers, how to grow, fertilise, and water the crops to monitor and create a positive life experience for the community. This is also related to food security like SDG 2: Zero Hunger. For food security purposes, they do not use chemical pesticides. Informant 1 expressed that in the early

stages, the effort to attract the community's interest in doing urban farming with limited space was quite challenging. Eventually, the goals and objectives of the initiative were conveyed to the urban farming participants, which aligns with Kuala Lumpur's intention to reduce carbon emissions by 70 % by 2030. PA Seri Perlis became a pioneer in urban farming after winning several awards from KPKT through the Green Neighbourhood Award in 2021. Each urban farming participant will take turns becoming the spokesperson during the programs. This activity gives them motivation and confidence in sharing their activities. LA21KL also makes PA Seri Perlis a mentor or reference in sharing knowledge with other urban farming communities.

4.3 Theme 3: Communication strategies

According to Informant 1, the use of various techniques such as smartphones has changed how leaders and communities communicate in doing activities. For example, the WhatsApp application has become the community and stakeholders' preferred channel for sharing and disseminating information (Reilly, 2020).

> "Communication technology helps in agriculture, especially sales, knowledge sharing, and relationship bonds. If participants are on leave, they can inform us via WhatsApp to ask for help in watering the trees. … I think it is about time to water trees using apps on mobile phones with a timer (on and off). These technological requirements need to be developed to facilitate this activity."
>
> Informant 1

Informant 4 stated that other applications such as Facebook and LinkedIn are also used to communicate with the community to encourage participation, although not all communities are willing to share their activities on Facebook for security purposes. On the other hand, the community has created a YouTube channel to share low carbon activities and knowledge. LA21KL also has its own official Facebook page as a medium of communication, dissemination, and promotion to encourage community involvement regarding low carbon programs. Informant 3 mentioned that awareness among the community is currently very high.

> "Last month, I conducted a webinar with the youth group, many of them asked me about recycling and wanted to participate in the activity…although not many people joined at first, around 800 people joined in the middle of the webinar. We can see the community awareness."
>
> Informant 3

In terms of information technology, Informant 1 has created a QR Code for every tree. When they scan the code, they get complete information about the trees (scientific names, nutritional content, and benefits of the plants). This is a new technology to learn more about trees, while other gardens use a tagging system to label trees.

5. Conclusions

The community is a fundamental aspect in attaining sustainability and creating a low carbon society, where people adopt low carbon elements in their daily lives and transform the community participation towards a low carbon lifestyle. This study suggests that more Green Mentoring programs organised by LA21KL be implemented as a way to spread environmental awareness among the community. The community empowerment program can be done by duplicating the champions from PPR Kepong in terms of recycling, PA Seri Perlis in urban farming, and Sunway SPK Damansara in composting activities. These programs provide several benefits, such as many good and knowledgeable leaders, continuous monitoring by LA21KL, and strong partnerships from various parties. Volunteers or community interests have fostered an understanding of community empowerment and their efforts. Together with SDGs, good leaders may lead by example and solve each challenge by responding to sustainability issues and mentoring other communities in following emerging movements and influencing lifestyles, recognising the connections between practices, people, institutions, and places. Goal setting and monitoring by local authorities will create good outcomes, such as effective communication and improvements, as well as positive life experiences in the community.

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