

Final Report for Commissioned Projects FY2022
MOEJ City-to-City Collaboration for
Zero-Carbon Society project

**(Developing an Institutional Framework Towards KL Zero
Carbon City and Neighborhood in Collaboration with Tokyo
Metropolitan Government and Saitama City)**

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1 Summary

Following the outcome of the "project developing a policy and implementation framework for building energy efficiency through city to city collaboration between KL Government and Tokyo Metropolitan Government " (which was conducted FY 2019 to FY 2021) ("Phase 1"), KL City (hereafter referred to as KL City) declared its target to become a carbon neutral city by 2050 and has also designated a specific neighborhood "Wangsa Maju Carbon Neutral Growth Center" as a model for carbon neutral initiatives.

Therefore, in this project (Phase 2), while continuing to support the creation and operation of a mechanism for the diffusion of energy efficiency (renewable energy) in public buildings, which was promoted in Phase 1 in consideration of the needs of KL City, further input for those in private buildings and housings were offered to support carbon neutrality in the entire KL City by 2050. The project this year supported KL City in updating its plan and implementing decarbonisation projects by sharing energy and resource recycling initiatives towards 'Zero Emission Tokyo' in 2050 and 'Carbon Half by 2030', which the Tokyo Metropolitan Government is implementing ahead of other cities in order to achieve carbon neutrality by 2050. Furthermore, support for the development of the newly added carbon-neutral neighborhood was provided by sharing the know-how and knowledge of Saitama City and a private company (Loop), which have experience in developing zero-carbon districts in the Misono area, a leading example in Japan. Wangsa Maju Carbon Neutral Growth Center implemented a number of projects, including the installation of solar panels on commercial buildings, area lighting with solar technology and solar panels on the roofs of bus and taxi stops. The use of the knowledge shared by the Tokyo Metropolitan Government and Saitama City to KL City Hall this year will continue to be discussed by the parties concerned.

2 Purpose of the project

The 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC), held in November 2021, confirmed that limiting the temperature increase from pre-industrial levels to 1.5°C is the new global target. In order to achieve this target, it is essential for countries to accelerate their efforts at various levels, such as state, city and district levels. In Japan, too, it has been declared that the country will reduce its overall greenhouse gas emissions to zero by 2050, aiming to create a decarbonised society, and the number of municipalities declaring virtually zero CO₂ emissions has rapidly increased to over 600 (as of 30 April 2022). Under the regional decarbonisation roadmap formulated in June 2021, initiatives are underway to create advanced measures in each region and to expand them nationwide.

The role of cities and municipalities in considering and implementing concrete regional climate change measures and projects as described above is becoming increasingly important. The drive to build a sustainable decarbonised society across the world needs to be accelerated, particularly in Asia, where economic growth is rapid, and international support for urban initiatives to decarbonise cities, the places of activity that underpin socio-economic development, is being strengthened.

In addition, in the situation of the spread of the new coronavirus, cities were being forced to recalibrate and consider new measures to achieve sustainable development, as well as to address transmission spread-related challenges, and it is crucial to build new approaches and new cities through city to city collaboration.

In this project, Japanese research institutions, private companies and universities, together with Japanese cities that have experience and know-how in the formation of decarbonised societies, conducted a research project to support overseas municipalities in their efforts to form decarbonised societies and the introduction of facilities that contribute to the formation of decarbonised societies.

3 Description of the work

The following activities were carried out in this study with the aim of reducing greenhouse gas emissions (here in after referred as "GHG emissions") in KL towards the formation of a carbon neutral city by 2050 through the realisation of city-wide carbon neutral initiatives and a carbon neutral smart community/neighborhood.

3.1 Support for the establishment of a city-wide carbon neutral system

Initiatives such as the Tokyo Metropolitan Government's actions to revise its ordinance on building decarbonisation were shared in online meetings with KL City Hall and at international workshops. In the international workshop, case studies of potential carbon neutral cities/carbon neutral districts of KL City were shared with other Asian cities and third country cities. In addition, a project proponent visited the Johor Bahru region of Malaysia and Singapore to investigate the possibility of developing similar approaches in other cities in Malaysia and neighbouring ASEAN countries, as well as the possibility of third country cooperation.

3.2 Support for the establishment of a carbon neutral neighborhood

With regard to know-how on decarbonised urban areas, the city of Saitama and private companies (such as Loop, which is responsible for the development of the area in question) provided the pioneering initiative in Japan to maximise the use of advanced

technologies such as digital technology in the development of the Misono area in Saitama City. In addition, as the restrictions on entry to Japan have been eased, a visit by KL government officials and others to the Misono area was organised and carried out.

4 Carbon neutral neighborhoods – regional microgrid

4.1 Global trends

Energy demand in the building sector is estimated to be around 40% of global energy use and 30% of GHG emissions. (Yukse, 2017; UNEP, 2017) Many countries consider it essential to focus on buildings in order to reduce energy consumption and GHG emissions to meet climate change targets.

In Malaysia, the target country of this project, green buildings are expected to be one of the driving forces for green growth and sustainable development. As such, several green building rating systems have been introduced to assess the environmental quality of buildings. Due to the tropical climate, the majority of energy consumed in buildings is used for air conditioning and ventilation, and there is room for this to continue to increase with economic development. It is hoped that the general trend to reduce the heat load of buildings by insulating roofs and external walls and shading with eaves will effectively increase the cooling capacity of ventilation and air conditioning.

In parallel with national initiatives, city governments in metropolitan areas such as KL City and Johor Bahru City have also developed climate change action plans to reduce energy use in their cities. KL City, for example, aims to achieve city-wide carbon neutrality by 2050. As a role model for private building owners, the city hall has installed energy-efficient equipment and photovoltaic (PV) systems (KL, 2021). However, due to the difficulty of achieving virtually zero emissions in buildings alone, the KL City Hall has announced the development of carbon neutral neighborhoods as the next step.

Europe, the US and Japan are facing the same challenges, and there are moves to achieve virtually zero emissions per city blocks or group of buildings. For example, Europe plans to create 100 Positive Energy Districts (PEDs) by 2025, using locally produced renewable energy in an urban setting. PED is an area or a series of buildings with multiple means of energy supply, using energy-efficient building materials and equipment. They have virtually zero annual CO₂ emissions and often generate electricity from renewable energy on site or in the surrounding area. They usually have the following characteristics (Ahiers et al., 2020)

- i. The building design is energy-efficient
- ii. Is an energy carrier and GHG emission reductions are measured to the city boundary
- iii. Equipped with power generation facilities that use renewable energy as a resource

and supply energy to the buildings at which facilities are located and to neighboring buildings

- iv. Equipped with functions to enable peak shifting
- v. Equipped with e-mobility functions (sharing of electric vehicles, using electric vehicles as storage batteries).

In the case of PEDs in residential areas, it is expected that residents will become prosumers (organisations that generate their own electricity and sell and supply electricity to the utility or other facilities), which will raise awareness of and accelerate the energy transition. Resident participation is seen as an important pillar of the energy transition process, as the interaction between residents and the energy system requires social innovation. (Lupiet al., 2021) PEDs are more expensive than conventional projects and require multiple sources of funding and sophisticated business models, which is why there are still not many implemented examples. (Bossi et al, 2020)

Meanwhile, community-level energy systems are also being built. In many cases, a new local utility owns and/or oversees the operation of the community level energy system, aiming for virtually zero emissions in the community. A small-scale district energy system where the energy mix consists of multiple resources, would generate electricity in a group of adjacent buildings while also connecting to higher-level grid power.

For example, the West Town at the University of California, Davis, effectively uses 5.4 MW of concentrated solar power and a 300 kW biogas fuel cell plant that utilises agricultural waste on campus to generate power with a 6% surplus. (Wheeler, 2013) Feldheim in Brandenburg, Germany, was the first self-sufficient community, with a 123 MW wind park, a 2.25 MW solar park, a woodchip-based heating system, and a 526 kW biogas plant that uses slurry from cattle and pigs, and corn silage. Feldheim is known for its efficient combination of different resources to generate electricity. (Mundaca, 2018) The Danish island of Samsø has a district heating plant that generates significant amounts of electricity from wind power and uses solar heat, wood chips and straw. The district heating plant, which is the first of its kind, uses a 2500 m² solar thermal array, and heat generated from a 900 kWh wood chip-fired boiler. (Spear, 2021) The city of Newcastle, Australia, aims to build a microgrid using 'smart poles', streetlights equipped with devices to measure air quality. On Tokelau Island, New Zealand, approximately 1 MW of solar panels have been installed to meet 150% of the current electricity demand, allowing Tokelau islanders to expand their electricity use in the future.

In Japan, the term "regional microgrid" refers to a system of local production and local consumption of energy in which electricity is generated from renewable energy sources such as solar power and biomass power in a limited community, and the amount of electricity is

controlled by storage batteries and other means to provide the community with its own electricity supply. This is called a "regional microgrid". (Agency for Natural Resources and Energy, 2023) The system is expected to revitalise the local economy and, in the event of a disaster, enable an autonomous power supply even if it is disconnected from the grid. Many plans are being drawn up using this concept, to build back-up power supplies in industrial complex, areas surrounding the city hall, rural farming areas and islands in the event of a disaster.

For example, the Sendai Microgrid, which continued to generate power even during the 2011 Great East Japan Earthquake, has installed gas engine power generation units, fuel cells and solar power generation equipment, and has succeeded in achieving high supply reliability through the grid connection of distributed power sources. Waste heat generated from the gas engine is used as thermal energy to supply heat for water heating and air conditioning to the adjacent hospital and medical facilities. It is also known for continuing to supply electricity and heat to the medical and nursing care facilities after the gas engine power generation system was shut down during the earthquake, by utilising the storage batteries and photovoltaic power generation.

In Hamamatsu, eight microgrids have been formed to create energy, save energy and strengthen BCP (business continuity planning in preparation of disasters) at eight city facilities. Energy management systems have been installed to provide electricity interconnections between adjacent facilities, and Hamamatsu's new power company operates the VPP (virtual power plant) network, which is a community of producers, owners of electricity storage technology and consumers, who can directly or indirectly exchange self-generated renewable energy from energy storage facilities with each other. A robust self-learning software platform connects the actors and ensures an optimal energy balance is achieved.

The above-mentioned carbon neutral city blocks and communities have a variety of models that are being realised and are expected to be a way to achieve not only an energy transition, but also a sustainable social transition while aiming to solve environmental and social problems such as climate change and energy poverty. On 28 April 2022, the European Commission (EC) announced their 100 EU Cities Initiative, which aims to create 100 climate-neutral and smart cities by 2030. In June 2021, the Japanese Government also developed a Regional Decarbonization Roadmap in cooperation with local authorities, setting out priority measures and actions to achieve net zero emissions, including the creation of 100 'decarbonization leading areas'.

It is hoped that more cities will follow the lead of the pioneering cities and pursue climate neutrality by 2050.

4.2 Japan's leading case study: Saitama City

A leading example of a regional microgrid in an urban residential area in Japan is the city of Saitama. Saitama City's 'Smart Home Community' model aims to increase its energy self-sufficiency rate by combining on-site solar power generation with storage batteries and other balancing technology, and to procure electricity with non-fossil certificates to achieve a 'virtual' 100% renewable energy sourced community.

The Misono area where the Smart Home Community is located used to be a sparsely populated area with fields and forests, but in 2001 Urawa Misono Station on the Saitama Rapid Transit Railway opened and new urban development started around Saitama Stadium 2002, which was built for the Japan-Korea World Cup. The area was developed as a land readjustment project by the City of Saitama and the Urban Renaissance Agency. A large-scale shopping mall also opened in 2006.

Although the reserved land for land readjustment projects is normally sold at public auction to fund part of the project, the Smart Home Communities project did not stick to the traditional method, but adopted a proposal-based bidding method to launch the two concepts of 'decarbonisation' and 'a close-knit neighborhood', with regard to how best to use the reserved land. Ideas were invited and the reserved land was sold to the developer with the best idea. To increase the property value of the Misono area and attract developers, the City of Saitama worked with private businesses and universities to create attractive public spaces. For example, the establishment of a marché selling local vegetables and fruit and the cleaning of the Ayase River by residents have contributed to the creation of a lively neighborhood, and in recent years Saitama City has promoted the demonstration operation of on-demand taxis as a means of transport within the area. Thanks in part to these efforts, the area successfully attracted a large-scale shopping mall, increasing the number of residents from 3,400 to 17,348 (January 2023).

A developer that won the bid proposed the 'formation of a local community', 'undergrounding of power lines' and 'the visualization of energy supply and demand', which became the features of the Smart Home Community, and concluded the agreement with Saitama City. As a result, the 'Smart Home Community District' within the beautifully transformed Misono area has the following features.

- A) It is highly insulated and airtight. The hot and humid summers in Japan have traditionally prevented the construction of highly insulated and airtight buildings, but Saitama City has pioneered the adoption of performance standards comparable to those in California, the UK and Northern Europe, ahead of other municipalities.
- B) Electric lines have been undergrounded. With the memories of the Great East Japan

Earthquake still strong, and the need to secure energy in the event of a disaster, utility poles and wires were installed under common spaces within the housing blocks, which is efficient in terms of cost and labour as it does not require deep digging, and has created a green and comfortable area for social activities.

(Features of the latest third phase of the 'Smart Home Communities' project are as follows)

- C) Electricity sales contracts. To create a carbon neutral microgrid within the smart home community, an electricity sales contract model was implemented, whereby Loop installed solar panels on all 51 detached houses to supply the community with the electricity generated, while surplus electricity within the community was stored in Loop-owned storage batteries (125 kW) and two electric vehicles (40 kW/vehicle) in the charging area. The homeowners can purchase green energy from Loop during normal times, and in the event of a grid failure, they can use the electricity generated and stored in the community independently of the grid.
- D) Remote control. The water heaters adopted in the Misono area are hybrid water heaters that can provide hot water using both gas and electricity. Based on solar power generation forecasts, demand forecasts and electricity usage forecasts for water heating, the system predicts the amount of surplus solar power generated and remotely controls the system to boil water at the timing when the surplus occurs, thereby maximising the use of solar power. If there is still a surplus of solar-generated electricity, the surplus can be stored in storage batteries or EVs. In addition, in the event of a grid blackout, the system makes maximum use of limited electricity to increase resilience, for example by instructing the water heaters to use gas to enable the use of electricity generated and recharged in the community for things other than hot water heating.
- E) Dynamic pricing. Finally, the Misono district introduced dynamic pricing to change the energy consumption habits of its residents. Dynamic pricing is an initiative to encourage changes in electricity usage during peak hours, for example by displaying electricity prices according to the time of day the day before and asking residents to refrain from using electricity during high electricity prices and use it during low electricity prices. In the Misono area, a system has been introduced whereby the unit price of electricity fluctuates according to the amount of surplus solar power generated.

Solar power alone can supply 30% of the community's demand, and with the addition of storage batteries and water heaters, the self-sufficiency rate is planned to rise to 60%. If the weather is favourable and consumption is low, the independent microgrid alone can supply enough electricity to meet demand even when disconnected from the grid. Furthermore, the

system has been constructed so that, in the event of a disaster, the electric current can be limited from 60 A to 10 A, further extending the life of the system by limiting its use to the minimum necessary appliances, such as refrigerators and lighting. The Misono area is a leading example of a resilient system that was achieved through a joint public-private partnership between the Ministry of the Environment, Saitama City, housing manufacturers and electric utilities. Particularly novel is the fact that the utility manages both energy supply and demand, a mechanism that encourages behavioural change among consumers. As Japan's conventional centralised power system faces a variety of challenges, such as the ageing of facilities and soaring electricity prices due to the war in Europe, there are high expectations for this new decentralised power system that utilises renewable energy.

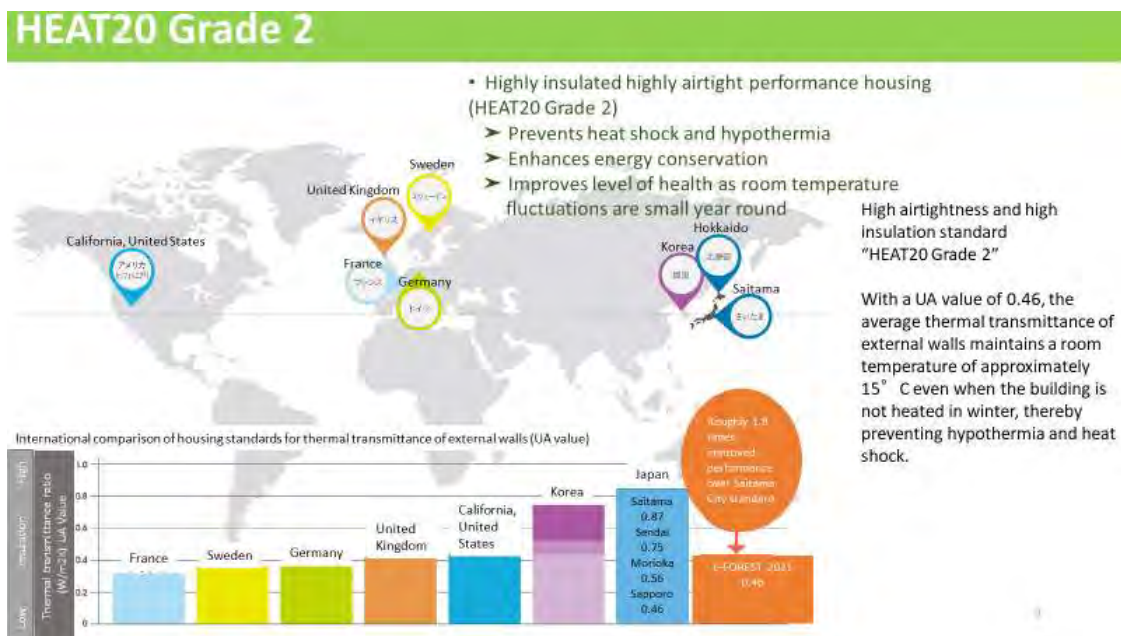


Figure 1: Saitama City's housing performance standards

PPA (Power Purchase Agreement)

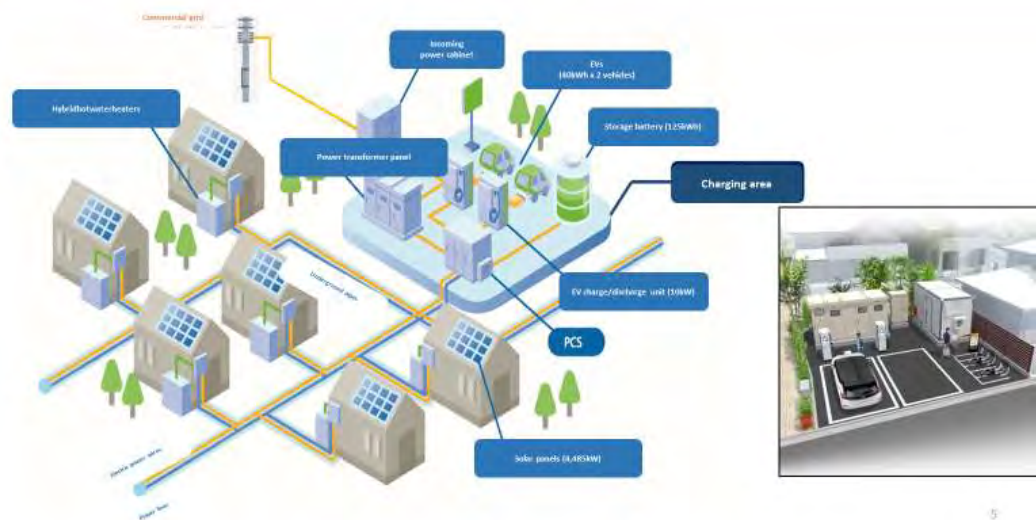


Figure 2: The simplified concept of the 'Smart home community' in Misono area (source: Loop Inc.)

5 Wangsa Maju Carbon Neutral Growth Center

The carbon-neutral neighborhood in KL City is expected to be a measure for the transition to a sustainable society, aiming not only at energy transition, but also at solving environmental and social problems such as climate change and energy poverty.

5.1 Outline of Wangsa Maju Carbon Neutral Growth Center

KL City Hall has decided to install renewable energy as well as high-efficiency equipment in its city-owned facilities in order to achieve more comprehensive and sustainable energy management through the implementation of a pilot project. And, as mentioned above, the vision of going carbon neutral by 2050 was announced by KL City Hall, after the Tokyo Metropolitan Government announced its 2050 Zero Emissions Strategy, and ahead of many cities in developing countries. KL Mayor Mahadi chose the Wangsa Maju area as a demonstration site for climate change action and the "Wangsa Maju Carbon Neutral Growth Center". UTM-LCARC (Universiti Teknologi Malaysia-LCARC), at the request of KL Mayor Mahadi, has prepared an action plan for the district "Wangsa Maju Carbon Neutral Growth Center 2050 Action Plan". The plan is to gradually transform the district from the suburban, dormitory-centered town it is today into a carbon-neutral, vibrant, and livable growth center. KL Mayor Mahadi will consider switching 50% of the street lights to LED, installing solar power in public facilities and installing solar farms within the area in order to turn the Wangsa Maju Carbon Neutral Growth Centre into a smart city. If realised, this will be the first social

implementation of energy efficiency and disaster prevention measures in Malaysia.

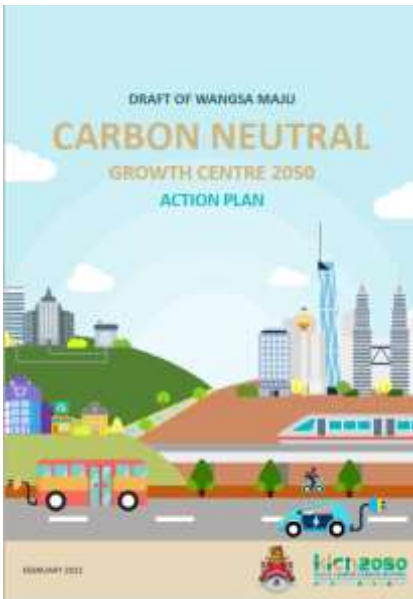


Figure 3: Wangsa Maju Carbon Neutral Growth Center 2050 Action Plan

The Wangsa Maju Carbon Neutral Growth Center 2050 Action Plan, utilizing the Asia-Pacific Integrated Model (AIM), outlines a clear and feasible path to carbon neutrality by 2050. The plan describes a realistic and gradual transition to a low-carbon society by 2030, a carbon-neutral society by 2040, and a carbon-neutral society by 2050.

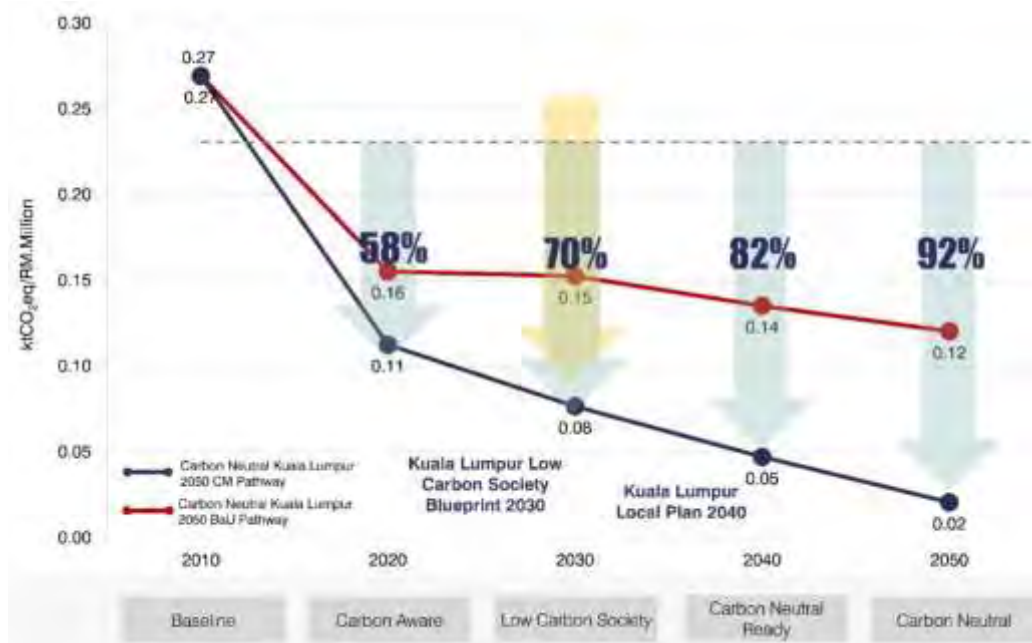


Figure 4: Wangsa Maju Carbon Neutral Growth Center's GHG intensity



Figure 5: Wangsa Maju Carbon Neutral Growth Center’s GHG emissions

The Wangsa Maju Carbon Neutral Growth Center is located in the northern part of the Wangsa Maju Maluri Strategic Zone, with commercial and residential areas centered on the AEON shopping centers, covering an area of 10.72 km², with a population of 215,695 (2020 census) and a population density of over 200 people per hectare. The population density per hectare is more than 200 people. The main land uses are residential (31.5%), transport infrastructure (30.24%) and vacant land (16.3%), making it a medium-sized suburban area with many dormitories, but well connected to the rest of KL city center by a network of highways and public transport, with great potential for new and redevelopment projects. It also has a good range of public (6.4%) and commercial (6.1%) facilities, sufficient to meet the basic qualities of urban life.



Figure 6: The location of the Wangsa Maju Carbon Neutral Growth Center

KL City Hall was among the first to address urban policies related to climate change with the adoption of the KL Low Carbon Society Blueprint 2030 in 2018. The KL Structure Plan (PSKL2020) and KL City Plan (KLCP2020) were then adopted as statutory development plans to guide and manage the growth of KL City, and the KL Structure Plan 2040 (PSKL2040) and KL Local Plan 2040 (PTKL2040) followed. The KL Structure Plan 2040 sets "Climate Smart and Low Carbon City KL" as one of the goals, while the KL Local Plan 2040 sets "Green Technology, Low Carbon and Renewable Energy" as a new area. Low-carbon policies have been mainstreamed into KL City Hall's plan.

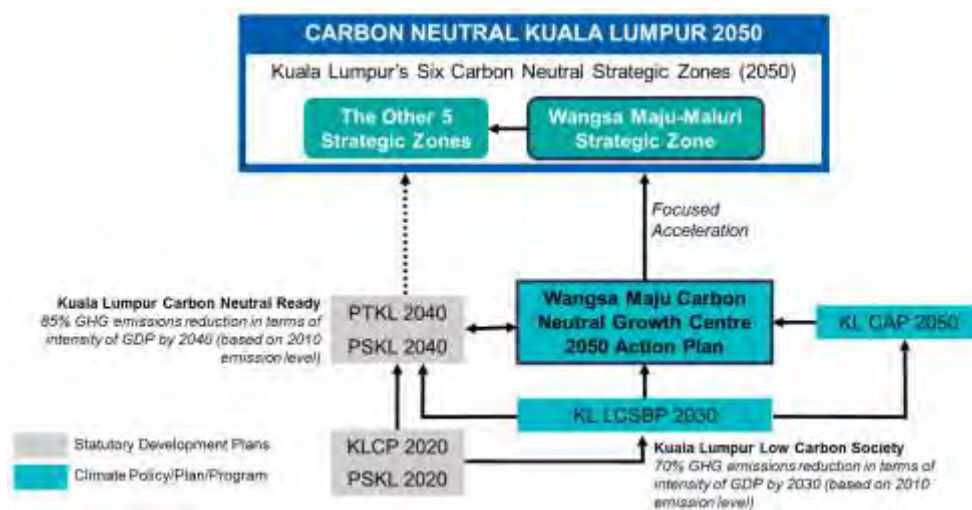


Figure 7: Relation between KL City Hall's plans and the Wangsa Maju Carbon Neutral Growth Center

5.2 Estimated 2050 GHG emissions for the Wangsa Maju-Maluri Strategic Zone

UTM-LCARC estimates that GHG emissions in the Wangsa Maju-Maluri Strategic Zone will increase from 4,334 ktCO₂eq in 2010 to 13,357 ktCO₂eq in 2050 under the Business as Usual (BaU) scenario. However, depending on future measures, GHG emissions could be reduced to 2,960 ktCO₂eq by 2050.

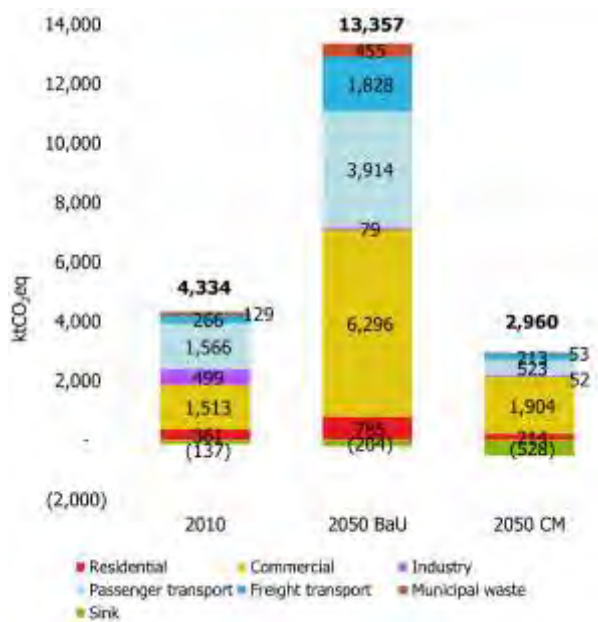


Figure 8: GHG emission estimates in Wangsa Maju-Maluri Strategic Zone

UTM-LCARC estimates that GHG emissions from the business sector will quadruple from 2010 levels under the 2050 BaU scenario, accounting for about 47% of total GHG emissions. GHG emissions from the passenger transportation sector are also found to be about three times the 2010 level under the 2050 BaU, and its share of total GHG emissions is 29%. This shows that there is great potential to reduce GHG emissions in the Wangsa Maju area by strategically focusing efforts on the operations and transportation sectors.

5.3 Potential for achieving decarbonization in "Wangsa Maju Carbon Neutral Growth Center"

With resource, financial, technological, and time constraints, strategic prioritization of emission reduction measures through a "focused acceleration" approach is critical, especially for cities in developing countries. The "focused acceleration" approach effectively focuses on the implementation of a small number of high-value, high-impact projects that have the potential to achieve up to 90% of emission reduction targets within a city's available capacity.

In the "Wangsa Maju Carbon Neutral Growth Center," the focus will be on projects in five strategic areas: Power and Energy, Mobility, Waste, Greening, and Community. The diagram below is used by KL City Hall as a guideline for identifying feasible and implementable projects suitable for the "Wangsa Maju Carbon Neutral Growth Center".



Figure 9: Five strategic areas

The KL City Hall has held focus group discussions and identified 20 proposed actions under the five strategic areas that will lead the "Wangsa Maju Carbon Neutral Growth Center" to carbon neutrality by 2050, considering emission reduction potential, climate change resilience, equitable stakeholder benefits, community integration, and the capacity of KL City Hall officials.

The proposed initiatives and projects are diverse; require different implementation duration and prioritisation; and offer variable decarbonisation potentials and socioeconomic impacts. They range from community-based, low-cost and low-barrier quick wins, to longer-term, higher cost and sectoral technologically oriented initiatives, and capital intensive, holistic and cross-sector development projects. Collectively, the initiatives and projects will contribute to the materialisation of the "15-minute City", where most local needs, facilities, public transportation, and employment for a good portion of the Wangsa Maju Carbon Neutral Growth Center community will be easily accessible within a 15-minute walking or cycling from home, in a safe, convenient, comfortable and high quality pedestrian-scale urban environment.



Figure 10: Five (5) sectors and 20 proposed initiatives in Wangsa Maju CNGC 2050
 (Source: Wangsa Maju CNGC 2050 Action Plan, 2022, p.28)

5.4 Proposed project implementation schedule

Specific initiatives for the short term (2021-2025), medium term (2026-2030), and long term (2030 and beyond) in the "Wangsa Maju Carbon Neutral Growth Center 2050 Action Plan" set forth by the KL City Hall are shown in the figure below.

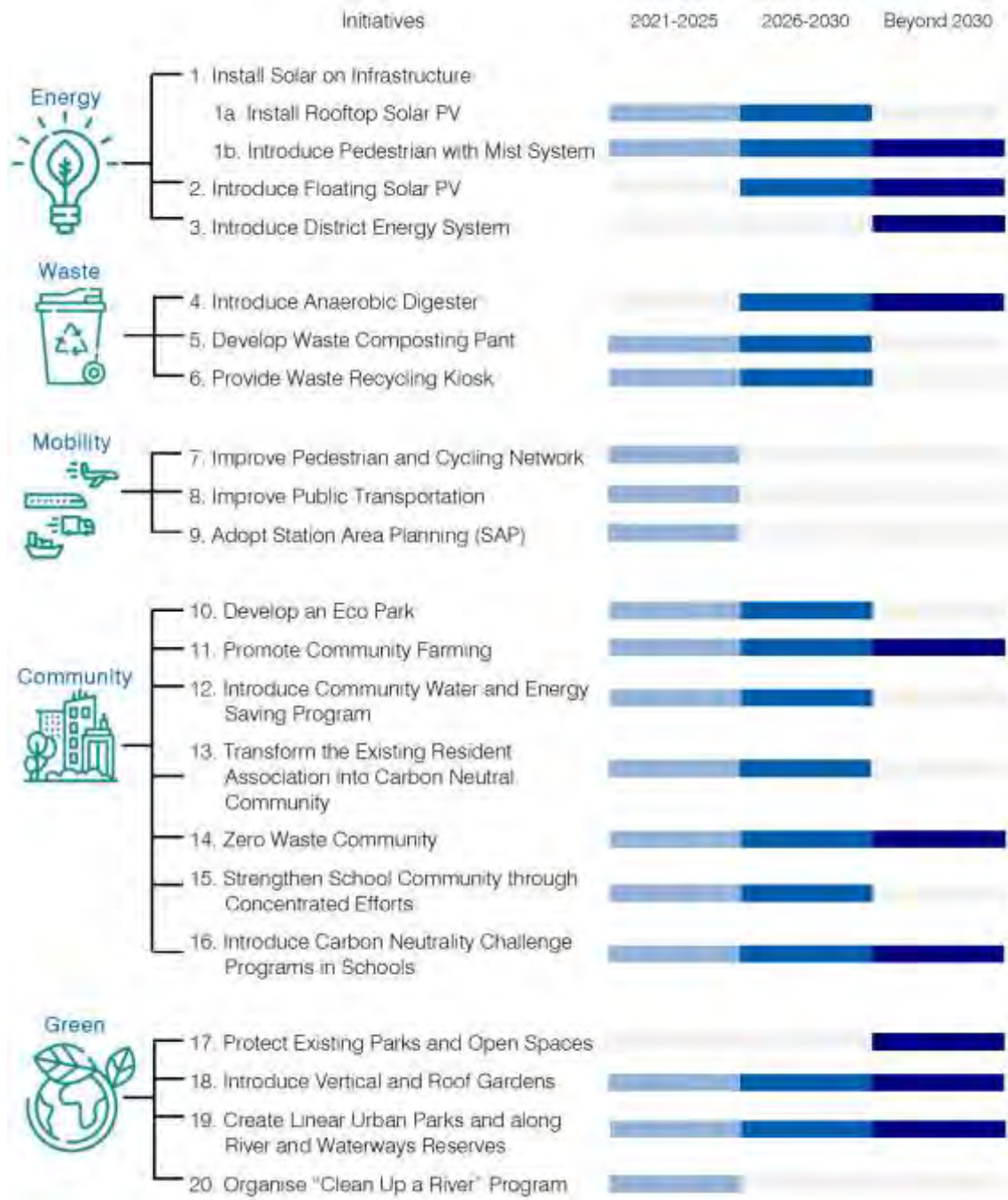


Figure 11: Project implementation schedule (draft)

5.5 Progress of Implementation of carbon neutrality initiatives

5.5.1 Area Lighting with Solar Technology along the Bunus River

A total of 55 units of solar-powered area light sticks have been installed along the Bunus River in the first phase of the project. Total electricity generation is estimated at 1,188 kW, leading to a monthly savings in electricity bill of MYR 831.60 or an annual savings of MYR 9,979.20. Apart from savings in energy consumption and reduction in carbon emissions, the project yields other benefits of promoting active mobility among the local community with a co-benefit of improvement in public health; increasing community appreciation of the value of urban waterways and green network; and increasing public awareness of, and direct involvement in, climate change mitigation efforts in Wangsa Maju and KL City.



Figure 12: Solar-powered light sticks installed along Bunus River in Wangsa Maju

5.5.2 Solar Panels on the Roof of Bus/Taxi Stops

As an effort towards improving the visibility and public awareness of GHG emission reduction efforts in KL City, a total of 20 bus and taxi stops have been installed with solar panels on the bus shelters. These 20 solar panel installations presently provide electricity for 63 lamps in the bus and taxi stops, with an estimated 793.8kW generated, yielding a savings in electricity

bills of RM555.66 a month or RM6,667.92 a year.

To further enhance the positive impacts and community appreciation of renewable energy use, KL CITY HALL plans to also include smart phone and mobile device charging points at the bus and taxi stops.

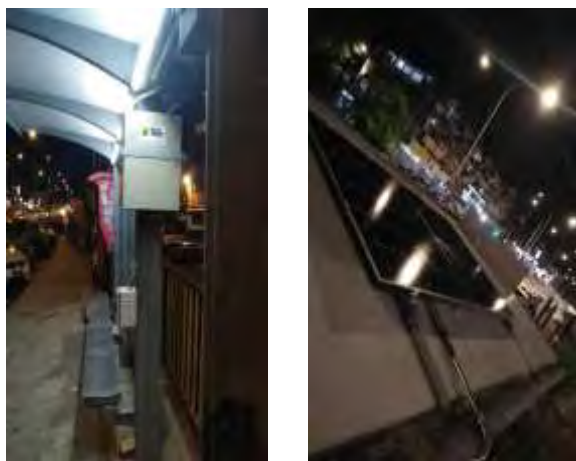


Figure13: Solar energy powered lighting at one of 20 selected bus and taxi stops in KL City

5.5.3 Solar Panel Installation for Commercial Buildings

KL CITY HALL has been promoting, recognising and celebrating private sector renewable energy initiatives in KL City. The completion of the installation of solar panels on the roof and parking areas of the AEON Alpha Angle Shopping Mall in Wangsa Maju is one publicly visible example. Total electricity generation from the installed solar panels is estimated at 1.5MWp, giving rise to an estimated 1,372 metric tons of annual CO₂ avoidance, which is equivalent to planting about 35,000 trees (estimated from the 1.5MWp share of AEON Alpha Angle from a total 3.6MWp generated that included the AEON Taman Maluri Shopping Centre). Other benefits gained from the ESG effort include lower electricity expenses for AEON, provision of covered parking bays for AEON shoppers, and reduction in the heat from the flat roof which

resulted in lower chiller electricity consumption.

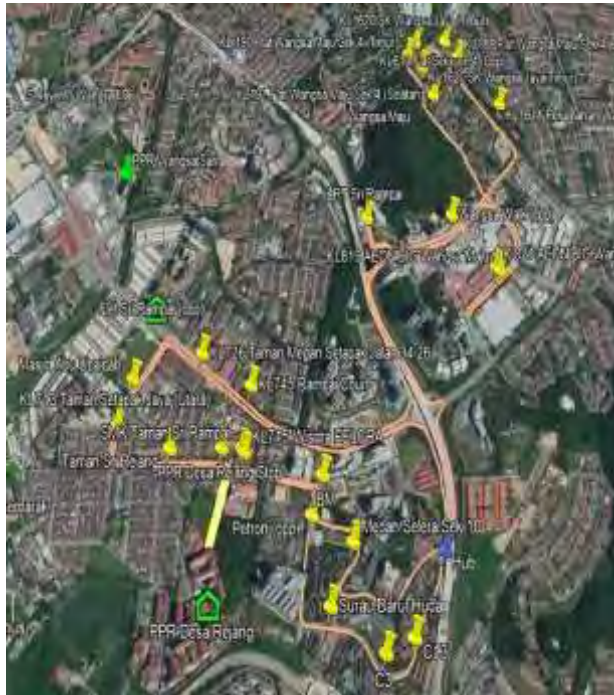
In supporting KL CITY HALL's aspiration to develop the Wangsa Maju Carbon Neutral Growth Centre, apart from the installation of solar panels, AEON Alpha Angle also provides recycling centres in the mall as well as a dedicated section for the public to learn more about sustainability.



Figure14: Installation of solar panels in the roof and parking area of AEON Alpha Angle Shopping Mall in Wangsa Maju (right figure shows a photo of the mall after solar PV is installed)

5.5.4 Use of EV Buses for the GoKL Free Shuttle Bus Service

KL CITY HALL successfully put 60 Malaysian-made SKS EV buses on the road in KL City since 2022. These EV buses are used for the GoKL free-ride bus service in KL City, with four units being used in the Wangsa Maju Growth Centre to provide a 13-km shuttle bus service route covering key residential areas, shopping centres and the Sri Rampai Light Rail Transit (LRT) Station. The GoKL EV bus service comes together with a smart application (<https://gokl.app.geoxspot.com/>) which provides passengers with real-time tracking of bus location as well as estimated bus arrival time to enable passengers to better plan their journey.



Map of route



Route



EV buses used for GoKL



Refuelling

Figure15: Four GoKL EV buses provide free-ride shuttle bus service

5.5.5 Dedicated Bicycle/Pedestrian Lane

Towards promoting active mobility as a lifestyle and mode of transportation (beyond recreational and leisure cycling and walking) in KL, KL City Hall has put in place a city-wide dedicated bicycle and pedestrian network that also connects to the larger network involving neighbouring local authorities. The bicycle and pedestrian lanes mainly utilise strategic green and blue corridors and link up major destinations in the city. A major achievement so far has been the completion of the Sungai Bunus (Wangsa Maju) to Saloma Link section, which will be extended to KL City Center (KLCC) and Tun Razak Exchange (TRX) Park. The bicycle and pedestrian network offers a direct, safe, conducive environment for walking and especially cycling between Wangsa Maju Carbon neutral Growth Center and the city center and beyond.



Figure16: A map of the dedicated bicycle and pedestrian network currently in construction

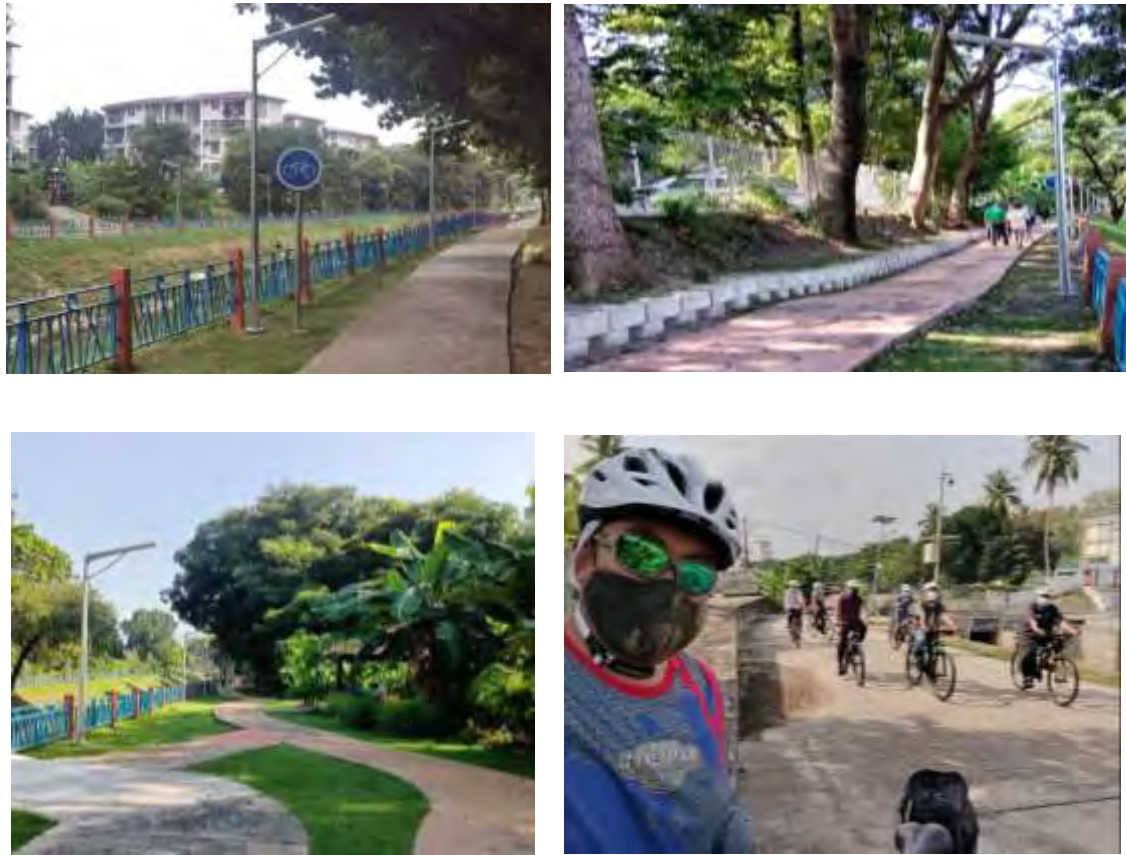


Figure17: The completed section of the dedicated bicycle and pedestrian network in Wangsa Maju

5.5.6 One Community One Recycling (1C1R) Program

Community based programs that empower the community to directly get involve in and contribute to reducing GHG emissions are key to KL City's transition into a low carbon society by 2030 and carbon neutral society by 2050. Wangsa Maju Carbon Neutral Growth Center has been a successful case of implementing the One Community One Recycling (1C1R) Program which sees the setting up of 1C1R kiosks within the KL City Hall's People's Housing Projects (PPR) and Public Housing (PA), where residents are able to conveniently "trade" their recyclable wastes for daily necessities or offset their monthly home rental.



Figure18: Example of 1C1R Kiosk set up in a People's Housing Project in Wangsa Maju

5.5.7 Urban/Community Farming

Another successful community-based climate mitigation program has been urban/community farming projects in Wangsa Maju. KL City Hall provides facilitation, technical and some financial support to encourage residents in public housing projects to productively use empty lands within the projects as well as along the Sungai Bonus corridor to farm food crops. Apart from fostering good neighbourliness spirit and enhance community bonding, the farming activities also green and clean neighbourhood surroundings. The activities also generate income to the community and heighten the community's awareness of climate change mitigation, local food security and sustainable consumption of food.



Figure19: Ongoing urban/community farming projects along Sungai Bonus within the Wangsa Maju Carbon Neutral Growth Centre

5.5.8 Planned and/or Committed Projects

Building on the success of existing low carbon and carbon neutrality initiatives in KL City and Wangsa Maju Carbon Neutral Growth Centre, as well as lessons learnt through capacity building and technical visit to Tokyo and Saitama City by selected KL City Hall officers, KL City Hall has plans to continue and further enhance selected existing initiatives as well as introduce new projects in 2023 and beyond.

Planned projects for which official proposal papers have been prepared include:

1. Installation of solar panels on the rooftop of hawker centres and other KL City Hall owned assets;
2. Solar panel installation on commercial buildings and non KL City Hall owned public infrastructure;
3. Installation of floating solar on Danau Kota Lake, Sri Rampai Lake and Semarak Lake; and
4. Tree planting.

For rooftop solar installation on hawker centres and KL City Hall owned assets, 17 such assets have been identified for project implementation within the Wangsa Maju Parliament Area, as follows:

Table 1: Sites to which solar PVs will be installed in Wangsa Maju Parliament Area

No.1	Pasar (Wet Market) Jalan Genting Klang
No.2	Pasar Dan Pusat Penjaja (Wet Market and Hawker Centre) Seksyen 1
No.3	Pasar Dan Pusat Penjaja Seksyen 1
No.4	Pasar Dan Pusat Penjaja Seksyen 2
No.5	Pasar Dan Pusat Penjaja Seksyen 4
No.6	Dewan Serbaguna (Multipurpose Hall), Taman Setiawangsa
No.7	Dewan Serbaguna, Seksyen 1
No.8	Dewan Serbaguna, Seksyen 2
No.9	Dewan Serbaguna, Seksyen 4
No.10	Dewan Serbaguna, Seksyen 10
No.11	PA Seri Kedah
No.12	PA Gombak 2
No.13	PA Wangsa Maju R10
No.14	PA Seri Tioman I
No.15	PPR Gombak Setia

No.16 PPR Wangsa Sari

No.17 PA Desa Rejang

For solar panel installation on commercial buildings and public infrastructure, KL City Hall will be reaching out to the relevant parties and partners within Wangsa Maju and beyond to promote and facilitate ESG initiatives such as that of the successful solar panel installation on AEON Alpha Angle. It is expected that continuous engagement and coordination with the relevant regulatory and approving authorities such as the Energy Commission (EC), Sustainable Energy Development Authority (SEDA) as well as the National Energy Company (Tenaga Nasional Berhad, TNB) will be essential, in which KL City Hall will play a crucial role. It is hoped that continuous and further learning from successful implementation of such projects as well as more advanced technological application by the private sector from Tokyo and Saitama City will further enhance the effective implementation of the projects in Wangsa Maju Carbon Neutral Growth Center.

KL City Hall is committed to implementing the installation of floating solar on Danau Kota Lake, Sri Rampai Lake and Semarak / Kolam Setapak Jaya Lake in Wangsa Maju as proposed in the Wangsa Maju Carbon Neutral Growth Centre 2050 Action Plan. Nonetheless, a few regulatory and technical barriers exist and need to be overcome, including:

- A) Limits set on the total electricity generation in order to ensure stability of the grid;
- B) Absence of KL City Hall owned assets in the vicinity of the lakes to directly consume the electricity generated;
- C) Lack of economically feasible storage / battery technology for storage of excess electricity generated; and
- D) Potential environmental and visual impacts of floating solar panel arrays on the surrounding urban functions and activities.

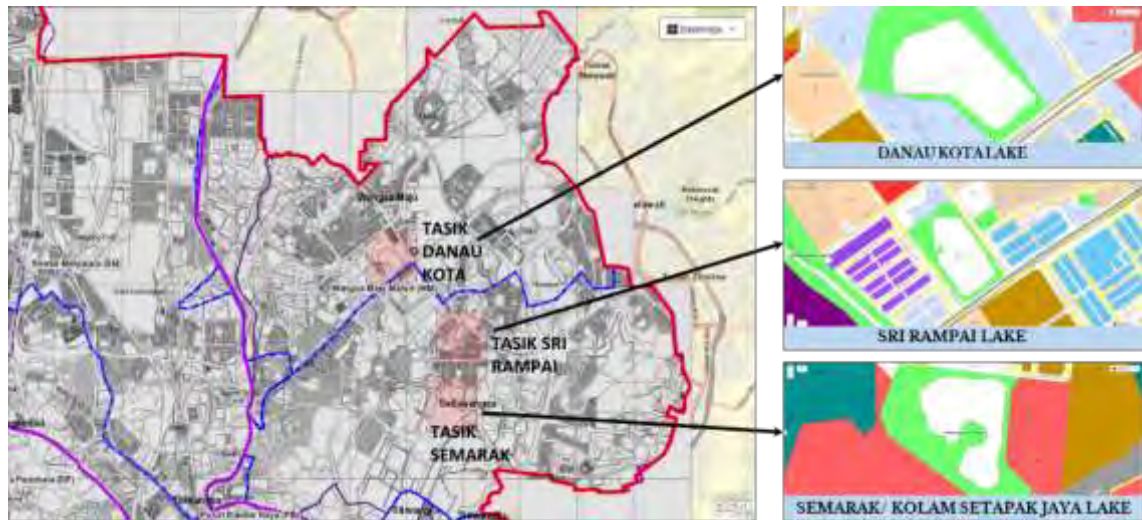


Figure 20: Proposed locations for floating solar installation in the Wangsa Maju Carbon Neutral Growth Centre

5.5.9 New and Future Projects – Way Forward

Knowledge sharing and dissemination of the learning from the technical visit to Tokyo Metropolitan Government and Saitama City Hall have led to the following projects being proposed for future implementation in Wangsa Maju Carbon Neutral Growth Centre:

1. Vertical installation of solar film on buildings and use of solar film on covered pedestrian walkways;
2. Pilot project for microgrid with smart home and EV application (as in Saitama's smart home community model) towards fully exploiting the potential of distributed renewable energy generation and energy efficiency improvement measures. There is however foreseeable setback to the idea in that the heavily subsidised energy price in Malaysia significantly reduces the attractiveness of the concept due to relatively high technology costs;
3. Carbon reduction solution in construction via carbon absorbing construction materials,
4. Widespread use of EV cars and transportation and the need to look for solution for providing sufficient charging stations in terms of numbers and location, focusing on the Wangsa Maju Carbon Neutral Growth Center and subsequently extending primary demand areas;
5. Widespread use of solar street lamps to cover the whole Wangsa Maju area; and
6. Proposed Energy Park in the existing park at the upstream of Sungai Bunus in Wangsa Maju as an edu-recreation-leisure for public education and showcase/celebration of KL City Hall -Tokyo Metropolitan Government-Saitama City collaboration.

6 Contributions from Japan

6.1 Support for the establishment of a city-wide carbon neutral system

6.1.1 Sharing of Tokyo Metropolitan Government's knowledge

The following presentations were made by TMG officials at the 'High Level Talks' Seminar on August 8 2022

6.1.1.1 Carbon Half initiative

Ms Toshiko Chiba, Climate Change Policy Specialist and Director, Climate Change and Energy Division, Bureau of Environment, Tokyo Metropolitan Government presented the Tokyo Metropolitan Government's Carbon Half initiative to achieve zero emissions by 2050. Tokyo will first reduce its greenhouse gas emissions by 50% by 2030 compared to the base year (2000). Through this initiative, Tokyo hopes to attract investment and business and create a healthier and more comfortable environment. The aim is to amend the ordinance to promote the use of highly insulated building materials in detached houses and the installation of photovoltaic power generation on rooftops. As most of the energy consumed in Tokyo is produced outside Tokyo, the Tokyo Metropolitan Government must strengthen decarbonisation and energy security in an integrated manner, taking into account the situation in Russia and Ukraine.

KL City is looking forward to the provision of building energy efficiency and conservation (renewable energy) know-how from the Tokyo Metropolitan Government in the coming year.

6.1.1.2 Plastic strategy

Mr. Yasuo Furusawa, Chief Specialist for Circular Economy Policies, Sustainable Materials Management Division, Bureau of Environment, Tokyo Metropolitan Government, provided detailed policy information on Tokyo's plastics strategy and stressed the need for a plastics policy. Plastics emit GHG at every stage from material extraction, processing and distribution to disposal, which need to be reduced by establishing a carbon closed cycle. New business models such as product sales, service provision and sharing reusable containers were introduced, as well as horizontal recycling methods where used containers are collected and used again as raw material for the same type of plastic container. The Tokyo Metropolitan Government financially supports such private sector innovations and provides advice on legislation and publicity opportunities.

The KL City Hall is looking forward to receiving more know-how on plastics strategies from the Tokyo Metropolitan Government in the coming year.

6.1.2 C40 Cities Bloomberg Philanthropies Awards

The collaboration between Tokyo Metropolitan Government and KL City was awarded the 2022 C40 Award in the Climate Movement category at the C40 World Summit of Heads of State and Government held in Buenos Aires, Argentina, in October, 2022. This is the second time that Tokyo has won the award, having previously won the award in 2013 under the cap-and-trade scheme.

The C40 Cities Bloomberg Philanthropies Award, which celebrates the most ambitious city-led climate action projects with the greatest global impact, have been held every few years since 2013; in 2022, the awards were held under the theme 'United in Action', two outstanding initiatives were selected in each of five categories.



Figure21 : C40 Cities Bloomberg Philanthropies Awards Ceremony

In addition, a short film introducing the initiatives of the Tokyo Metropolitan Government and the KL City Hall were actively introduced on the social media and official websites of both municipalities.

Tokyo Metropolitan Government's official website

(Japanese)

https://www.kankyo.metro.tokyo.lg.jp/policy_others/international/collaboration_with_kl.html

(English)

https://www.kankyo.metro.tokyo.lg.jp/en/int/collaboration_with_kl.html

Tokyo Metropolitan Government's website "Time to Act"

(Japanese)

<https://www.time-to-act.metro.tokyo.lg.jp/>

(English)

<https://www.time-to-act.metro.tokyo.lg.jp/en/initiatives/230220>

Tokyo Metropolitan Government's Facebook

(Japanese)

https://www.facebook.com/watch/?extid=NS-UNK-UNK-UNK-IOS_GK0T-GK1C&mibextid=2Rb1fB&v=884594426090755

(English)

https://www.facebook.com/watch/?extid=NS-UNK-UNK-UNK-UNK-IOS_GK0T-GK1C&mibextid=2Rb1fB&v=1240768133314811

Tokyo Metropolitan Government's twitter

(Japanese)

<https://twitter.com/tochokankyo/status/1628273540494417922?cxt=HHwWhlCzPY-K5ZgtAAAA>

(English)

https://twitter.com/Environment_TMGS/status/1628256873022640130?cxt=HHwWhMDS-fi_3ZgtAAAA

KL City Hall's Facebook

<https://www.facebook.com/100050360955386/posts/pfbid0bABbnxz3V6ev1jL2T6gg5Rtzvxxrf5dufY2ikN2N7YU2GwP2aPqgyyLLStApMt3GI/?d=w&mibextid=qC1gEa>

6.1.3 Feasibility study of the Johor Bahru region and Singapore

IGES staff visited the Johor Bahru region of Malaysia and Singapore to conduct a feasibility study on the expansion of the project to areas outside KL City in Malaysia and neighboring ASEAN countries, as well as third country cooperation. For details, see section '9. Mission to the Johor Bahru region and Singapore' of this report.

6.2 Support for the establishment of a carbon neutral neighborhood

6.2.1 Providing know-how on the 'Smart home community model' in Saitama

The background to the smart home community model, the transition to implementation and the technical characteristics of this regional microgrid were provided mainly by Saitama City to KL City on 29 July, 8 August and 22-24 November 2022. In addition, two KL City officials who visited Saitama City actually visited the Misono area and inspected the site.

6.2.2 Invitation to the E-KIZUNA Global Summit hosted by Saitama City

From 22-24 November, two KL city officials attended the E-KIZUNA Global Summit hosted by Saitama City, providing a valuable opportunity for networking with local and international authorities and gathering the latest global information on decarbonisation and resilience.

6.2.3 Provide opportunities for business matching with companies in Saitama

A side event (exhibition of sustainable technologies) at the E-KIZUNA Global Summit led to the business matching of KL City with several companies in Saitama City. As a result, after the summit, detailed online discussions on technical specifications were actually held with several companies to explore whether this could lead to future business opportunities.

7 Presentation at International Conferences

7.1 High Level Talks on Zero Carbon City KL

Date and time	August 8 th , 2022
Method	Hybrid (Room Anjung Singgahsana at KL City Hall)
Co-Organisers	KL City Hall University of Technology Malaysia (UTM) Institute for Global Environmental Strategies (IGES),
In Partnership with	Ministry of the Environment, Government of Japan (MOEJ) Bureau of Environment, Tokyo Metropolitan Government Saitama City Sustainable Energy Development Agency (SEDA) The Japanese Chamber of Trade & Industry, Malaysia (JACTIM)
Supported by	Embassy of Japan in Malaysia JETRO Kuala Lumpur

The seminar shared a number of attempts to decarbonise KL City as a whole, as well as the latest examples of ordinance revisions for decarbonising buildings and resource recycling initiatives stated in the 2050 'Zero Emission Tokyo' and 2030 Carbon Half, which the Tokyo Metropolitan Government is implementing ahead of the rest of the world. In addition, the City of Saitama presented Misono's 'Smart Home Community' development, a leading example of carbon neutral neighborhoods in Japan.

The event gathered approximately 200 participants (143 web viewers, 16 panelists+ secretariat+ interpreters, and 50 audience members)

Speakers and panelists (in order of appearance):

Datuk Seri Mahadi Che Ngah, Mayor of KL City

Mr. Hiroshi Ono, Vice Minister for Global Environmental Affairs of MOEJ (online)

Mr. Katsuhiko Takahashi, Ambassador of Japan to Malaysia, Embassy of Japan in Malaysia (online)

Mr. Shoichi Kurioka, Director General, Bureau of Environment, Tokyo Metropolitan Government (video statement)

Mr. Hayato Shimizu, Mayor of Saitama City Hall (video statement)

Professor Dr Mohd Hamdan Ahmad, Deputy Vice Chancellor (Development), University Technology Malaysia (UTM) (video statement)

Prof Kazuhiko Takeuchi, President of IGES (online)

Prof Ho Chin Siong, Director of Low Carbon Asia Research Centre, UTM

TPr. Chau Loon Wai, Senior Lecturer, Co-Director, UTM-Low Carbon Asia Research Centre

Dr. Junichi Fujino, Programme Director, Integrated Sustainability Centre, IGES

Dr. Ryoko Nakano, Research Manager, City Taskforce, IGES

Mr. Nik Mohammed Faizal Bin Nik Ali, Chief Assistant Director (Architect) Project Implementation & Building Maintenance Department, KL City

Ms. Toshiko Chiba, Climate Change Policy Specialist and Director, Climate Change and Energy Division, Bureau of Environment, Tokyo Metropolitan Government (online)

Mr. Yasuo Furusawa, Chief Specialist for Circular Economy Policies, Sustainable Materials Management Division, Tokyo Metropolitan Government (online)

Mr. Osamu Kanda, Supervisor, Department of Futuristic City Promotion, Urban Strategy Division, Saitama City

Mr. Kazuya Kitae, Chief Coordination Officer, the Japanese Chamber of Trade & Industry, Malaysia

Mr. Takumi Niino, Senior Staff Member for International Relations Team, Bureau of Environment, Tokyo Metropolitan Government

The seminar was featured on the social media of the Embassy of Japan in Malaysia, on its official website and in JETRO's business briefs.



Figure 22: Group photo of the High Level Talks Seminar

Embassy of Japan in Malaysia Facebook

<https://www.facebook.com/JapaninMalaysia/posts/pfbid02smJGQGxMTw9arZumajjPxH-Hr6ahPSJKcKD1mwqTgfEUoTPgqbYw7FxBCtkQ8C5TUl>

Embassy of Japan in Malaysia website (Japanese)

https://www.my.emb-japan.go.jp/itpr_ja/newinfo_10082022A.html

Embassy of Japan in Malaysia website (English)

https://www.my.emb-japan.go.jp/itpr_en/newinfo_10082022A.html

JETRO Biznews

<https://www.jetro.go.jp/biznews/2022/08/39587c4671afbadd.html>

7.2 E-KIZUNA Global Summit

Date and time	November 22-24, 2022
Venue	Palace Hotel Omiya
Hosted by	Saitama City Hall
Co-hosted by	ICLEI Japan
In partnership with	Ministry of Foreign Affairs, Ministry of Economy, Trade and Industry, Ministry of Land Transport and Tourism, Ministry of Environment
Supported by	23 companies
Participation	329 persons (9 countries, 15 overseas cities, 22 Japanese cities, 50 companies,

and institutions etc.)

Breakout session 1: Realization of energy efficiency and adoption of microgrids together with on-site renewable energy

Saitama City, KL City (Malaysia), Hawaii, Maui (USA), Newcastle City (Australia), Hamamatsu City (Japan) and Loop Inc. presented their best practices at the breakout session 'Realization of energy efficiency and adoption of microgrids together with on-site renewable energy'. The presentations were followed by a discussion on how to spread microgrids and the potential of resilient decentralised energy systems.

Mayor Mahadi of KL mentioned that learning from each other's good practices was one method to keep the earth safe. He also added that he would like to localise Saitama's smart home community model under a public-private partnership in KL City.

Speakers and panelists (in order of appearance)

KL City, Malaysia

Maui County, Hawaii, United States

Newcastle City, Australia

Hamamatsu City, Japan

Loop Inc.

City of Saitama, Japan



Figure23: E-KIZUNA Global Summit, Breakout session 1

7.3 UNFCCC-COP27

Date and time	November 10 th , 17:00-18:30 (local time)
Venue	COP27 Japan Pavilion
Hosted by	Institute for Global Environmental Strategies (IGES), University of Technology Malaysia (UTM)
Title	Japan-Malaysia City to City Carbon Neutral Collaborations – Celebrating the 40th Anniversary of the Look East Policy (LEP)

The year 2022 marks 40 years since then Prime Minister Mahathir's Look East Policy in 1982. During that time, there has also been cooperation on various climate change measures, particularly between Japan and Malaysia. In particular, the results of efforts towards carbon neutrality through inter-city cooperation were presented and future developments were discussed.

In particular, collaboration between KL City, Tokyo Metropolitan Government and Saitama City, under the Ministry of Environment Japan's 'City-to-City Collaboration for Zero-Carbon Society project', to promote KL's carbon neutrality initiatives of the whole city, as well as the Wangsa Maju neighborhood in the north-east was discussed. The collaboration between Kyoto City and the Johor Bahru's Iskandar Regional Development Agency for climate education and low carbon scenario development, were also discussed. In the panel discussion, the panelists discussed the key enabling factors for a horizontal development of these good practices from a youth perspective.



Figure24: Panel discussions by youths at the COP27 Japan Pavilion

Speakers and Panelists (in order of appearance)

Mr. Yasuo Takahashi, Executive Director, IGES

Prof Hishamuddin Mohd Ali, Deputy Vice Chancellor, University Technology Malaysia (video letter)

Mr. Hiroshi Ono, Vice-Minister for Global Environmental Affairs, Ministry of the Environment, Japan (MOEJ)

Mayor Datuk Seri Mahadi Che Ngha of KL City (online)

Ms. Toshiko Chiba, Climate Change Policy Specialist and Director, Climate Change and Energy Division, Bureau of Environment, Tokyo Metropolitan Government (online)

Prof Ho Chin Siong, University Technology Malaysia

Dr. Junichi Fujino, Principal Researcher, IGES

Mayor Daisaku Kadokawa of Kyoto City (video letter)

Mr. Dato' Dr Badrul Hisham Bin Kassi, Chief Executive, Iskandar Regional Development Authority (IRDA)

Mr. Choo Hui Hong, Assistant Vice President, Resilient Environment, IRDA

Mr. Hiroyoshi Uchida, Principal Policy Advocacy Advisor, Climate Youth Japan (CYJ)

Ms. Haruki Yamamoto Chief of Events for Youth, CYJ

7.4 Zero Carbon Cities International Forum

Date and time March 1st,2023

Method Hybrid

Hosted by Ministry of Environment Japan,
Office of Special Presidential Envoy for Climate, United States of America

Organized by Institute for Global Environmental Strategies (IGES)

The Zero Carbon City International Forum, hosted by the Ministry of the Environment, was held on 1 March. The Forum shared advanced case studies on multi-benefits (smart/compact cities, digital, circular economy, nature positive economy, etc.) in preparation for the G7 Sapporo Climate, Energy and Environment Ministerial Meeting to be held in Sapporo in April 2023. A presentation on circular economy was given by Mr. Takanobu Iwasaki, Deputy Director, Planning Division, Sustainable Materials Management Division, Bureau of Environment, Tokyo Metropolitan Government who spoke at the second part of the seminar (ASEAN-Japan High-Level Seminar on Sustainable Cities).

8 Mission to KL City

Purpose of the mission:

To participate in meetings and site visits related to the Ministry of Environment-commissioned project ' Developing an Institutional Framework Towards Kuala Lumpur Zero Carbon City and Neighborhood in Collaboration with Tokyo Metropolitan Government and Saitama City', and to organize the 'High Level Talks' seminar to introduce advanced case studies.

Duration of the mission: August 7-10, 2022 (4 days)

Delegation members:

Name	Affiliation and title
Dr. Junichi Fujino	Programme Director, Integrated Sustainability Centre, IGES
Mr. Takumi Niino,	Senior Staff Member for International Relations Team, Bureau of Environment, Tokyo Metropolitan Government
Mr. Osamu Kanda,	Supervisor, Department of Futuristic City Promotion, Urban Strategy Division, Saitama City
Dr. Ryoko Nakano,	Research Manager, City Taskforce, IGES

Activities:

- Courtesy visit to KL Mayor Mahadi
- Organise 'High Level Talks' seminar (about 200 participants) (Aug8)
- Site visit of Wangsa Maju Carbon Neutral Growth Center (Aug9)
- Courtesy visit to Mr Takahashi, Ambassador of Japan (Aug8)
- Courtesy visit to Japanese Chamber of Commerce and Industry Malaysia (Aug9)
- Courtesy visit to JETRO Kuala Lumpur Office (Aug9)

Main achievements:

The KL City, Tokyo Metropolitan Government and Saitama City's past achievements and future attempts towards decarbonisation were presented in a seminar format to a high-level audience including the KL City Mayor and other relevant officials, including the Mr. Ono Vice-Minister for Global Environmental Affairs, MOEJ and Mr. Takahashi Ambassador of Japan to Malaysia. The 'High Level Talks' seminar attracted approximately 200 participants, both at the venue and online.

The delegation visited the Wangsa Maju Carbon Neutral Growth Center and were able to see

how 10 of the 20 action items in the plan drawn up by KL City have already been implemented. They visited Aeon's Alpha Angle (the oldest mall-type shopping center in Malaysia for Aeon, and located in Wangsa Maju), which had been introduced to KL City by Tokyo Metropolitan Government, and confirmed that the solar PV systems on the roof and carport roofs generate 75% of the mall's total electricity consumption.

Through visits and exchanges of views with the Embassy of Japan in Malaysia, the Japanese Chamber of Commerce and Industry Malaysia (JACTIM) and JETRO Kuala Lumpur, the potential for overseas development of 'smart grids', 'highly airtight and insulated housing' and 'bonsai' involving related companies in Saitama City was confirmed.

Schedule

Date	Time	Schedule
Aug 7 (Sun)	10:20	Depart Narita Airport (NRT) (MH 071 Malaysia Airways)
	16:45	Arrive at KL International Airport (KLIA)
	19:00	Meet with KL Mayor Mahadi, walk through KL with Prof Ho
	21:00	Arrive at hotel
Aug 8 (Mon)	8:00	PCR test
	10:30	High Level Talks Seminar (KL City Hall, Room Anjung Singgahsana)
	15:00	Courtesy visit to Mr Takahashi, Ambassador of Japan to Malaysia
	19:00	Meet with KL Mayor Mahadi and his team
Aug 9 (Tue)	21:30	Arrive at hotel
	9:30	Site visit of Wangsa Maju Carbon Neutral Growth Center Site
	15:00	Courtesy visit to Japanese Chamber of Commerce, Trade and Industry Malaysia (JACTIM)
	16:30	Courtesy visit to JETRO Kuala Lumpur Office
Aug10 (Wed)	21:00	Arrive at hotel
	7:15	Depart KL International Airport (KLIA) (NH 816, ANA)
	15:30	Arrive Narita Airport (NRT)
	16:00	Delegation meeting to discuss next steps



Embassy of Japan to Malaysia (Aug 8)



Site visit of Wangsa Maju Carbon Neutral Growth Center (Aug 9)



1C1R kiosks (Aug 9)



Solar PV at Aeon's Alpha Angle (Aug 9)



SDGs center (Aug 9)



Japanese Chamber of Commerce, Trade and Industry Malaysia (Aug 9) JETRO KL Office (Aug 9)

Figure25: Sites visited during mission in KL City

9 Mission to the Johor Bahru region and Singapore

Purpose of the mission:

To explain the city to city collaboration project between KL City and Tokyo Metropolitan Government/Saitama City towards a carbon neutral city and to explore the possibility of a similar project in Johor Bahru City.

Duration of the mission: August 10-12, 2022 (3 days)

Delegation members:

Name	Affiliation and title
Dr. Junichi Fujino	Programme Director, Integrated Sustainability Centre, IGES

Activities:

- Courtesy visit to Mayor of Johor Bahru (Aug 10)
- Courtesy visit to UTM Deputy Vice-Chancellor's Deputy (Aug 11)
- Courtesy visit to Iskandar Regional Development Authority (Aug 11)
- Courtesy visit to J. CLAIR Singapore (Aug 12)



Courtesy visit to Mayor of Johor Bahru (Aug 10)



Iskandar Regional Development Authority (Aug 11)



Courtesy visit to UTM Deputy Vice-Chancellor's Deputy (Aug 11)



J. CLAIR Singapore courtesy visit (Aug 12)

Figure26: Mission to the Johor Bahru region and Singapore

10 List of activities for FY2022

Jun 14, 2022	Preliminary Kick off meeting for Ministry of Environment
Jul 8, 2022	Preparatory meeting of Japanese members (online)
Jul 14, 2022	KL City Hall and Tokyo Metropolitan Government Environment Bureau extend Letter of Intent for collaboration
Jul 29, 2022	KL City, Tokyo Metropolitan Government and Saitama City officials, Loop Inc. meeting (online)
Aug7-10, 2022	Tokyo Metropolitan Government and Saitama City officials visit KL City Introduction of KL City, TMG and Saitama City initiatives at High Level Talks Seminar (hybrid)
Aug 10-12,2022	IGES officials visit Johor Bahru region and Singapore
Sept 9, 2022	KL City and Saitama City sign Letter of Intent
Oct 9, 2022	Preparatory meeting for International Summit (online)
Nov 10, 2022	KL City and Tokyo Metropolitan Government present at COP27 Japan Pavilion (hybrid)

Nov 22-24, 2022 KL City Mayor speaks at E-KIZUNA Global Summit (online)
Two KL City officials attend the Summit and visit the site

Dec 19, 2022 Interim briefing for Ministry of Environment

Feb 3, 2023 KL City, Tokyo Metropolitan Government and Saitama City officials
meeting (online)

Feb 7, 2023 Final briefing for Ministry of Environment

Feb 8, 2023 Business matching between KL City and Saitama City related
companies

Mar 1, 2023 Tokyo Metropolitan Government speaks at the Zero Carbon
International Forum