

Caring for the Environment



We are driving into a new era with our eco-friendly bus fleets and many other sustainable innovations and technologies. We strive to become a carbon neutral bus operator by 2040 to set a new industry standard.





Good Health and Well-Being



Clean Water and Sanitation



Affordable and Clean Energy



Industry, Innovation and Infrastructure



Sustainable Cities and Communities



Responsible Consumption and Production



Climate Action

Environmental Policy

We recognise the inherent environmental impacts of our bus services and we are committed to mitigating and minimising these impacts in the following ways:

- ✔ Preventing pollution and continually improving our environmental performance by establishing and achieving objectives and targets;
- ✔ Conserving resources by reducing waste at source, and recycling and reusing resources;
- ✔ Minimising and controlling emissions from buses by adopting control measures and providing professional bus repair and maintenance services;
- ✔ Reducing our environmental footprint and combating climate change;
- ✔ Enhancing staff environmental awareness by providing training in line with our environmental policy and environmental objectives and targets, as well as in relation to the potential environmental impacts arising from our operations;
- ✔ Communicating our environmental policy and requirements to our suppliers and making the policy available to the public;
- ✔ Responding to environmental enquiries promptly and ensuring effective internal communication on environmental issues; and
- ✔ Ensuring compliance with all applicable local environmental legislation and other relevant requirements.

Environmental Management

KMB has been ISO14001 certified for its Environmental Management Systems for its two largest depots. KMB's four major depots and LWB's depot are subject to quarterly surveillance audits to ensure compliance with a set of stringent environmental management standards. Environmental working groups have been set up to handle environmental issues and ensure the implementation of the ISO systems. Under the guidance of the Senior Management, the Engineering Team is introducing new and innovative technologies applicable to both bus fleets and bus operations.



▲ With its dedication to promoting green transportation, KMB continues to identify suitable financing solutions



Adopting TCFD Reporting

The Task Force on Climate-related Financial Disclosures ("TCFD"), developed by the Financial Stability Board, aims to define how reporting could take account of climate-related issues and offers recommendations on the type of information companies should disclose to better inform investors and others.

TIH adopted the framework recommended by TCFD, discussing in detail the risks of climate change, the potential impact on our business, and the actions we are taking to cope with these risks. TIH is committed to communicating our approach and strategies through the TCFD's four thematic areas: governance, strategy, risk management, and metrics and targets.

Governance

The overall strategic planning and accountability for the Group's sustainable development rests with TIH's Board-level Committee, which determines the sustainability strategy and oversees its progress. The Board-level Committee, Audit and Risk Management Committee, is appointed to oversee strategic ESG-related issues related to TIH, including climate-related strategies, policies, actions and disclosures. It informs the Board of the strategic risks and opportunities presented by climate change, which forms part of the Board's discussion of TIH's short- to long-term plans.

Our ESG Task Force, under the oversight of the Committee, implements the Board's ESG strategy and policies to drive sustainable initiatives throughout our operations, including safety, environmental protection, staff welfare, community engagement and volunteering. The ESG Task Force is also responsible for optimising environmental performance, raising staff awareness on corporate social responsibilities, sharing knowledge and industry best practices and working with the Enterprise Risk Management Task Force of the Company to assess new emerging ESG-related risks.



▲ KMB strives to explore renewable energy technologies and is determined to reduce emissions and save energy, so as to build a better environment

Our Visions and Targets

To align with the National 14th Five-Year Plan and the emission reduction target of the Hong Kong SAR Government, the Group has outlined a vision of upgrading the whole fleet with new energy buses by 2040. Hence, we have set short-term Environmental Targets for the financial year ("FY") 2023. Using FY2019 as the baseline, we plan to reduce the carbon intensity and energy intensity, comprising carbon footprint of bus, oil consumption, electricity consumption and water consumption. Meanwhile, the Group is undergoing an in-depth ESG checking and planning to establish long-term targets to reach our 2040 vision.

Risk Management

We have integrated climate-related risks into the Group's Enterprise Risk Management. The Group's Enterprise Risk Management System adopts a systematic approach and uses a set of consistent risk assessment criteria to identify and manage risks. Accurate risk information is provided to the Management to assist them in decision-making and risk control without compromising cost-effectiveness and efficiency.

A Key Risk Indicator Report ("KRI Report"), summarising the Group's major risks as identified by the Management, is submitted to the Audit and Risk Management Committee three times a year. The KRI Report provides a comprehensive profile of the major risks and the mechanism established for monitoring these risks.

Our Environmental Targets

Target by FY 2023

(Baseline: FY 2019)



-10%

Carbon Footprint of Bus

tCO₂e per million km

Progress by FY2022: **-7.31%** (On Track)



-10%

Diesel Oil

GJ per million km

Progress by FY2022: **-7.51%** (On Track)



-20%*

Electricity

kWh per m²

Progress by FY2022: **-41.67%** (On Track)



-25%*

Water

m³ per bus

Progress by FY2022: **-35.21%** (On Track)

* Due to the impacts of the COVID-19 epidemic in Hong Kong since 2020, the investments in environmental initiatives for electricity and water reduction, and the rescheduling of electric buses' deployment, the targets of electricity consumption and water consumption have been changed from -10% to -20%, and -5% to -25% respectively.



▲ The waste water treatment systems and water recycling systems effectively reduce water consumption



▲ KMB has introduced different eco-friendly measures, such as electric buses and wind curtains, to help reduce carbon emissions

SUSTAINABILITY REPORT

Green Finance

KMB closed two HK\$800 million sustainability-linked loan facilities with MUFG Bank Limited and Chong Hing Bank Limited in order to drive Hong Kong towards zero emissions through green finance. KMB has set out key sustainability performance targets in relation to the reduction of greenhouse gas emissions of buses, and an increment in green procurement and the average training hours for employees. KMB will continue identifying suitable financing solutions and lead Hong Kong's transportation industry into a new green era.

Greenhouse Gas Emissions Reduction

KMB and LWB seek to minimise greenhouse gas emissions by judicious application of the latest technologies and interventions.

Environmental Bus Fleet

We invest in eco-friendly buses that meet the strict exhaust emission standards of the European Council of Environmental Ministers to create a better environment and minimise climate-related impacts.

At the end of 2022, there were 776 Euro VI buses (including three Euro VI diesel-electric hybrid buses), 2,936 Euro V buses, 26 battery-electric buses, including a batch of 16 new-generation electric buses newly deployed in the KMB fleet, and 132 Euro VI buses, 116 Euro V buses and four battery-electric buses in the LWB fleet. The new electric buses are zero-emission buses. They meet the latest standards of KMB,

with free 5G Wi-Fi internet connection services provided and ventilation windows installed. The majority of these buses have been deployed on routes passing through busy corridors to improve the roadside air quality in high-traffic areas. We have been replacing older bus models with the latest and more energy-efficient bus models to enhance our bus fleet's longevity and environmental performance to achieve zero-emission. The average age of the KMB bus fleet is 6.91 years, while that of LWB is 3.97 years.

Exploring Renewable Energy and Zero-emission Bus Technologies

KMB and LWB strive to explore renewable energy and zero-emission technologies, demonstrating KMB and LWB's determination to introduce green public transport in Hong Kong. Attaching great importance to pursuing the Government policy of achieving carbon neutrality by 2050, KMB and LWB has rolled out an electrification roadmap and are planning to install around 30,000 solar panels to put into practice its development blueprint for new energy and electric buses.

- 🌱 KMB plans to introduce 500 electric buses in the coming three to five years, accounting for one-eighth of the whole bus fleet. In the long run, KMB hopes that new-energy buses will be deployed in the entire fleet by 2040 to help make Hong Kong a green city. Currently, KMB and LWB have 30 single-deck electric buses. Together with the 52 double-deck electric buses to be delivered by 2023, the two companies are expected to have over 80 electric buses by 2023;



▲ KMB collaborates with business partners in launching the Decarbonisation Partnership Programme to promote green transportation and move towards carbon neutrality

- ☑ KMB has introduced the third-generation solar panels on double-deckers. The system reduces the air temperature in the compartment by around 8-10°C compared to a bus without such a system. It supplies power to the fans of the air-conditioning system, thereby reducing fuel consumption. The third-generation solar panel bus can save 5-8% of fuel consumption on each bus daily, which is equivalent to reducing about six tonnes of carbon emissions per bus annually. The system has now become a standard feature in new purchase buses;
- ☑ About 30,000 solar panels will be installed on buses, at depots and bus stops. Up to 13 million kilowatt-hours (kWh) of electricity will be generated annually, equivalent to the annual electricity consumption of 4,176 households in Hong Kong, reducing about 12,587 tonnes of carbon dioxide emissions. As two franchised bus companies with the largest solar panel systems in Hong Kong, KMB and LWB aim to lead the public transport industry toward the new green era and promote carbon neutrality;
- ☑ KMB has successfully designed wind curtains that help reduce energy wasted due to the loss of cooled air of buses and obtained patents that were granted by the Intellectual Property Department. The facility, installed at the rear exit of a bus, will be activated when the exit door is opened, creating an airflow to separate the hot air outside from the cooled air inside. According to tests conducted at the ambient temperature of 32°C, the temperature measured in the area near the exit door inside a bus compartment with wind curtains is 4°C lower than that in a bus without. KMB plans to install the facility on 600 buses. We are also further exploring if the system could be powered by the looming thermoelectric system that generates electricity from the waste heat of the engine, improving energy saving; and
- ☑ The scheme to retrofit the fleet with lower-powered LED strips has also started, which will create a softer and more comfortable travel environment to passengers compared to the existing LED lighting. This initiative helps reduce the carbon emissions of our buses by 5,600 tonnes of carbon emissions per year. The existing LED light strips will be reused in bus depots and bus stops for lighting.

Decarbonisation Partnership Programme

KMB collaborated with business partners by launching the Decarbonisation Partnership Programme to retrofit solar panels on KMB's current bus fleet. The first phase of the Decarbonisation Partnership Programme received strong support from 48 corporate partners spanning industries, such as transportation, banking, catering, bus manufacturing, parts supply, legal support and others, which helped retrofit solar panels on 89 bus roofs. KMB is dedicated to working with our corporate partners to contribute towards carbon neutrality in Hong Kong.

CO₂ Concentration Checks

Each year, 80 KMB buses and 15 LWB buses from passenger-intensive bus routes are selected for a data logger measurement of indoor CO₂ concentration. Our buses generally demonstrate compliance with the requirement.

Emissions Reduction

KMB and LWB adopt the latest technologies to reduce roadside emissions and maintain good air quality in bus compartments. We have in place a number of measures to meet the high standards of exhaust emissions laid down by the European Council of Environmental Ministers, which include using near zero sulphur diesel, renewing bus models and upgrading older buses by retrofitting exhaust treatment devices such as diesel oxidation catalysts, diesel particulate filters, and selective catalytic reduction units.

As part of our environmental protection commitment, KMB and LWB invest regularly to upgrade the environmental performance of their bus fleets and patrol cars. KMB and LWB have introduced electric patrol cars as back-up support and set up electricity-recharging facilities at the main depots.

Energy Saving

KMB and LWB take all practicable measures to reduce resource consumption and streamline waste disposal procedures. We handle and dispose of all materials in compliance with applicable laws and regulations, and in a responsible way without posing risks to human health or to the environment.

Fuel

To reduce fuel consumption, a number of measures have been adopted throughout the KMB and LWB bus fleets and across all operations:

- ☑ The aircraft-style "Posilock" fuel filling system is used to refuel buses;
- ☑ Ambient sensors are installed on air-conditioned buses to reduce unnecessary cooling;
- ☑ The use of synthetic gearbox oil extends oil drain intervals to reduce waste oil by 80%; and
- ☑ The mileage-based oil change scheme reduces engine oil consumption and waste oil by 40%.

SUSTAINABILITY REPORT

Electricity

We continue to explore environment-friendly initiatives and invest in the latest technologies to minimise energy use and reduce greenhouse gas emissions.

Besides our one-off LED light replacement and continuous housekeeping measures, we have dynamically adjusted our electricity consumption pattern in accordance with the latest operation scales, including the adjustment of illumination time of parking depots and the optimisation of equipment used to support our facilities' operation duration.

We cooperate with a power company to install Solar Photovoltaic Systems consisting of more than 8,500 solar power panels at depots, bus termini and bus shelters to extend the application of renewable energy and reduce greenhouse gas emissions.

Green Measures in the Office

The Green Office concept drives both the design and the renovation of our premises. We run our air-conditioning systems at 25.5°C to align with the Government's Action Blue Sky Campaign and save energy. Operating hours have also been rearranged to reduce energy waste during non-office hours. High-efficiency air conditioning units are installed in all newly renovated offices. We have also set up recycling arrangements for used toners, plastic materials and used papers and have regularly promoted good housekeeping practices for energy saving to all staff members.

Waste Reduction

KMB and LWB are committed to good waste management through responsible storage and disposal of waste, recycling and reusing resources whenever feasible. Significant types of waste generated in our operations are reported as follows:

Waste Water

As responsible corporate citizens, KMB and LWB are committed to reducing water consumption and properly treating effluents before discharge. Our depots are equipped with ten automatic waste water treatment systems handling 400 cubic metres per day. The water used for bus washing was collected and recycled, reducing total water consumption at depots by around 4%. Newly set up rainwater collection and water recycling systems have been introduced in some of our satellite depots. We would continue to install more rainwater collection and water recycling systems in some other bus depots in the coming years so as to increase water consumption saving.

Tyres and Metals

Used KMB and LWB tyres were retreaded by KMB's appointed contractors, and waste metals were sent to recycling companies.

Oil and Chemicals

Solid chemical waste is processed and stored by type in designated areas at bus depots before disposal by a registered chemical waste collector at the Government's Chemical Waste Treatment Centre, while waste oil is recycled or disposed of in accordance with the statutory standards. In the reporting period, KMB and LWB have improved the engine oil replacement cycle by changing new engine oil with extended oil drain intervals to reduce solid chemical waste.

Batteries are disposed of by a licensed contractor complying with the instructions of the Environmental Protection Department ("EPD"), with some of them exported to overseas facilities approved by the EPD under the Basel Convention.

Our Environmental Targets

Target by FY 2023

(Baseline: FY 2019)



-8%

Solid Chemical Waste

kg per million km

Progress by FY2022: **-7.39% (On Track)**



-4%

Metal

kg per million km

Progress by FY2022: **-2.36% (On Track)**



Embracing Green Transportation Transformation with eBus

In support of reducing carbon emissions, KMB has been devoting resources to testing out new energy buses. Through unrelenting efforts, KMB has taken a major step forward in the transition to green transportation by deploying 16 new-generation electric buses in April 2022, followed by receiving the first 12-metre electric double-decker in December 2022.

The new-generation single-deck e-Bus is equipped with the Battery Management System ("BMS") and the Water Cooling System, which help monitor the efficiency and condition of the battery and control its temperature, effectively extending the battery life cycle and improving its performance. The new model is 4% lighter than its predecessor while its passenger capacity is increased by 16% to 81 people. Furthermore, it only takes one hour and forty minutes to get fully charged, which is two hours faster than the older model, and has a driving range of 200 kilometres.



"KMB targets to upgrade the entire bus fleet to zero-emission buses by 2040, and therefore we have formulated a blueprint on bus electrification. With the introduction of double-deck electric buses in 2023, a total number of 500 electric buses will be deployed in our fleet in the coming three to five years, and two multi-storey bus depots are to be built in Tuen Mun and Tai Po for new energy buses."

Jones Wong, KMB Deputy Operations Director
(Bus Servicing & Engineering)