BUSINESS ENVIRONMENT COUNCIL
商界環保協會

Biodiesel and Renewable Diesel in Hong Kong

Assessing Demand-Side Readiness for Decarbonisation

Business Environment Council Limited

May 2025

About BEC

Business Environment Council Limited ("BEC") is an independent, charitable membership organisation, established by the business sector in Hong Kong. Since its establishment in 1992, BEC has been at the forefront of promoting environmental excellence by advocating the uptake of clean technologies and practices which reduce waste, conserve resources, prevent pollution and improve corporate environmental and social responsibility. BEC offers sustainable solutions and professional services covering advisory, research, assessment, training and award programs for government, business and the community, thus enabling environmental protection and contributing to the transition to a low-carbon economy.

CONTENTS

CONTENTS

CHAPTER 6 SUMMARY AND OUTLOOK

CONCLUSION

DEFINITIONS

"2BS VS"	2BS Biomass, Biofuel, Bioliquids, Sustainability Voluntary Scheme
"B5"	5% Biodiesel and 95% Diesel
"B100"	100% Biodiesel
"BD"	Biodiesel
"BEC"	Business Environment Council
"Biofuel"	A fuel produced from biomass (organic materials) that can be used as a renewable energy source, e.g. ethanol, biodiesel, renewable diesel, sustainable aviation fuel. This research mainly focuses on biodiesel and renewable diesel.
"EMSD"	Electrical and Mechanical Services Department, HKSAR
"EVs"	Electric vehicles
"EPD"	Environmental Protection Department, HKSAR
"ESG"	Environment, Social and Governance
"FAME"	Fatty Acid Methyl Ester
"FSD"	Fire Services Department, HKSAR
"HDRD" or "HVO"	Hydrogenation Derived Renewable Diesel) or Hydrotreated Vegetable Oil
"GHG"	Greenhouse gas
"ISCC"	International Sustainability and Carbon Certification
"RD"	Renewable Diesel
"RED"	EU Renewable Energy Directive
"RSB"	Roundtable on Sustainable Biomaterials
"RSPO"	Roundtable Sustainable Palm Oil
"SAF"	Sustainable Aviation Fuel
"UCO"	Used Cooking Oil
"WCO"	Waste Cooking Oil

Executive Summary: Biodiesel and Renewable Diesel in Hong Kong's Decarbonisation Journey

Hong Kong's transition to sustainable energy solutions has placed **biodiesel** and **renewable diesel** at the forefront of its decarbonisation strategy. These fuels offer a pragmatic bridge to reduce emissions in hard-to-abate sectors such as logistics, construction, and public transportation. However, their adoption faces multifaceted challenges, from market accessibility to regulatory gaps. This report synthesises key findings from stakeholder surveys, focus groups, and policy analyses to outline actionable pathways for accelerating the adoption of biodiesel and renewable diesel, with more focus on renewable diesel as a newer generation of drop-in biofuel.

Challenges in the Current Market

Despite growing corporate decarbonisation targets, Hong Kong's energy transition remains constrained by a persistent reliance on conventional diesel. Over 70% of high-energy-demand sectors, including construction and transportation, continue to prioritise diesel due to its operational reliability and cost efficiency. Adoption of renewable diesel is hindered by **four systemic barriers:**

- **Policy Ambiguity:** Renewable diesel is not yet legally recognised as a fuel for on-road use according to current Air Pollution Control (Motor Vehicle Fuel) Regulation (Cap 311L).
- **Accessibility Gaps:** Limited number of outlets and opaque supply chains restrict renewable diesel availability.
- **Information Deficits:** Corporate decision-makers lack clarity on renewable diesel's lifecycle emissions, feedstock origins, and compatibility with existing engines.
- **Cost Sensitivity:** Despite renewable diesel's emissions reduction potential (up to 90% in its pure form), its price premium over diesel outweighs environmental benefits for most organisations.

A critical disconnect persists between sustainability ambitions and practical implementation.

Strategic Insights and Recommendations to Fuel Suppliers

1.Cost Efficiency is Crucial in Adoption

Organisations prioritise fuel affordability over decarbonisation metrics, with 62% ranking pricing as their top consideration. To overcome this:

- **Address Cost Barriers:** Introduce free/low-cost renewable diesel trials for high-impact sectors like public transportation. Partner with fuel distributors to offer volume-based discounts for early adopters.
- **Enhance Accessibility:** Deploy mobile refuelling units for construction sites and expand renewable diesel stations/pumps near port logistics hubs.

2. Education Bridges the Knowledge Gap

Misconceptions about renewable diesel's engine compatibility and environmental benefits stifle demand. Targeted interventions include:

- **Transparent Product Data:** Publish renewable diesel's emission savings (e.g., 90% CO_2 reduction vs. diesel) and feedstock traceability.
- **Sector-Specific Campaigns:** Launch workshops for fleet managers and procurement teams, highlighting renewable diesel's "drop-in" usability and compliance with international standards like the International Sustainability and Carbon Certification ("ISCC").

3. Leverage Early Adopters

Current renewable diesel users and biodiesel consumers represent a ready market for scaling adoption:

- **Target High-Potential Sectors:** Focus on industrial transportation and construction sectors through tailored incentives.
- **Prioritise Outreach:** Engage renewable diesel users first to amplify peer advocacy, followed by biodiesel users as transitional adopters, and finally diesel-dependent sectors through pilot programmes.

4. Transparency Builds Trust

Concerns about greenwashing and feedstock sustainability (e.g., palm oil linkages) necessitate:

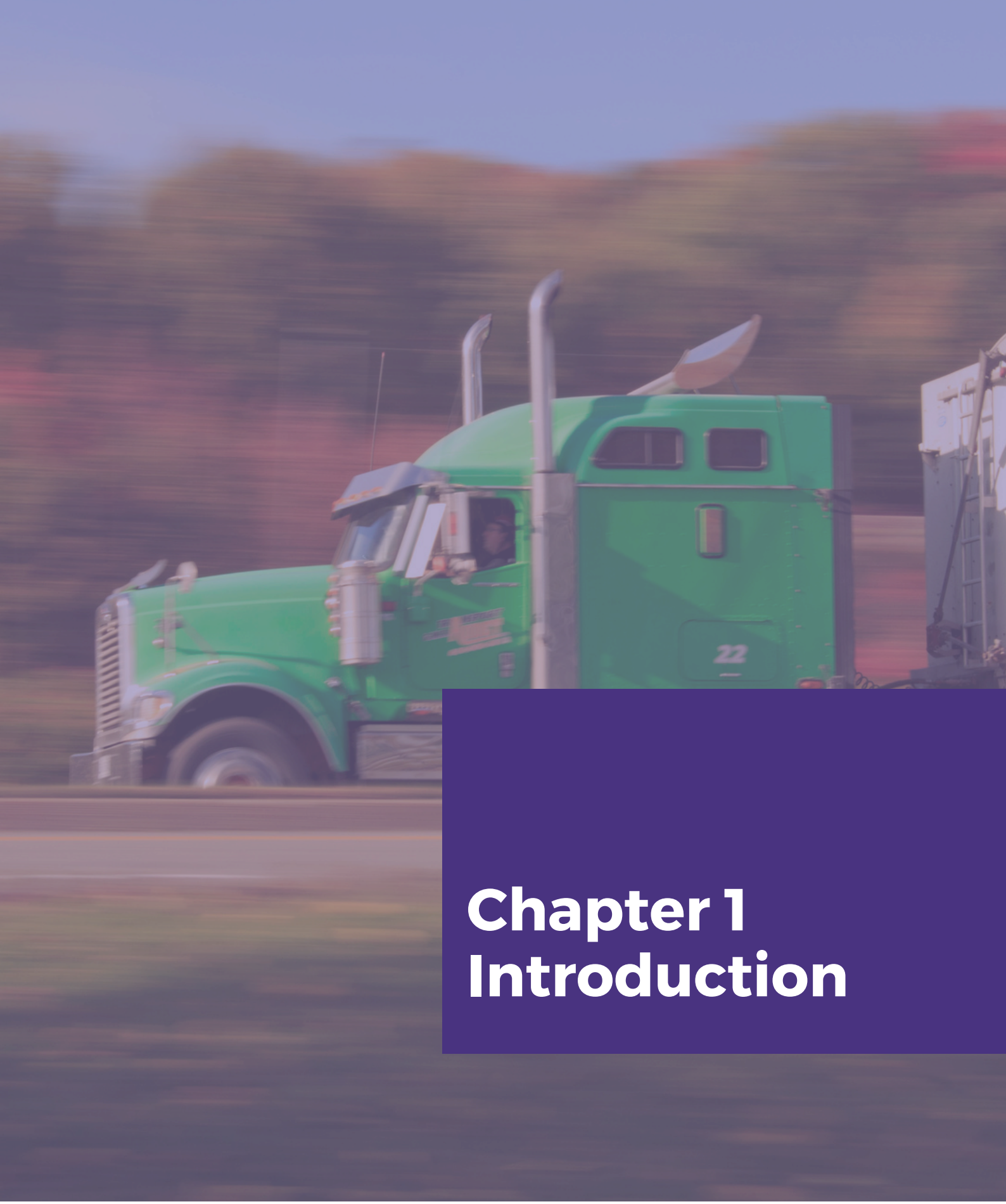
- **Certification Alignment:** Provide credible certifications such as ISCC EU for renewable diesel sold in Hong Kong, ensuring compliance with international sustainability benchmarks.

Regulatory Imperatives

Hong Kong's fuel regulations (Cap 311L) do not include paraffinic diesel fuels like renewable diesel, limiting their on-road use. To unlock renewable diesel's potential:

1. **Legal Recognition:** Amend Cap 311L to classify renewable diesel as an approved road fuel.
2. **Cross-Agency Collaboration:** Establish a task force (including but not limited to: Environment and Ecology Bureau, Environmental Protection Department, Transport and Logistics Bureau, and Fire Services Department) to streamline safety standards and refuelling guidelines.
3. **Supporting Infrastructure:** Plan for new biodiesel and renewable diesel fuelling stations and improve accessibility
4. **Blend Mandates:** Implement a phased rollout of increasing blended renewable diesel mandates for public fleets.
5. **Disclosure Frameworks:** Require third-party lifecycle assessments and feedstock traceability for all biofuel suppliers.

Biodiesel and renewable diesel are not merely alternatives but necessities as transitional fuels for Hong Kong to meet its 2050 carbon neutrality targets. By addressing cost barriers, enhancing transparency, and aligning regulations with global standards, the city can position renewable diesel as the backbone of its transitional decarbonisation strategy for some of the hard-to-abate sectors. Immediate collaboration between policymakers, fuel suppliers, and corporate stakeholders will be critical to transforming ambition into action.



Chapter 1 Introduction

Background and Objectives of the Study

The launch of the Climate Action Plan 2050 by the Hong Kong Government in October 2021 is a major call for action for fuel users to transition to greener options.Biodiesel has existed in the market as a transitional fuel for some time, while renewable diesel is a newer second-generation biofuel that has seen increasing use in several countries and regions due to its suitability for direct drop-in usage with existing engines and generator technologies.

To understand the perception and market of the two alternative fuels in Hong Kong, Business Environment Council ("BEC") conducted a market study on biodiesel and renewable diesel.

Through examining the biofuel market landscape globally, analysing the readiness of corporate customers in Hong Kong, and understanding the opportunities and challenges facing biofuel suppliers, this research seeks to identify strategies to drive market adoption, enhance supply chain efficiency, and inform policy decisions. The ultimate goal is to promote biofuels as viable transition fuels that support Hong Kong's decarbonisation efforts and sustainability objectives.

Biodiesel: Existing Alternative Fuel

Biodiesel is an alternative fuel developed from feedstocks such as Used Cooking Oil ("UCO") and contains multiple blending ratios. Biodiesel is produced by a process known as transesterification, which converts organic fats and oils into fatty acid alkyl esters ("FAME") by reacting them with alcohols and catalysts[1].

In Hong Kong, the most common biodiesel blend concentration is B5 (5% biodiesel and 95% diesel). Engine modifications are needed to use higher blending ratios. Compared to diesel, biodiesel has the following features including:

- CO_2 emissions reduction compared to regular diesel
- Black smoke reduction
- However, engine modifications are required to use higher blend ratios or B100 (100% FAME/bio-content) in engine/machinery

Renewable Diesel: The Next Generation of Low-Carbon Fuel

Renewable diesel ("RD"), or Hydrotreated Vegetable Oil ("HVO") is a second generation biofuel made through the hydrogenation process.

The hydrotreating process parallels the process used to "crack" crude oil into gasoline, diesel, and other petroleum products in a crude oil refinery. Consequently, renewable diesel production facilities are increasingly converted parts of crude oil refineries or complete conversions of refineries. Renewable diesel can be used as a drop-in fuel in regular diesel engines and provides further benefits:

[1] Gerveni, M., T. Hubbs and S. Irwin. "Biodiesel and Renewable Diesel: What's the Difference?" farmdoc daily (13):22, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, February 8, 2023.

- Up to 90% CO_2 emissions reduction compared to regular diesel
- Emissions reduction of regulated pollutants such as nitrogen oxides (NO_x), particulate matter ("PM"), carbon monoxide ("CO"), and unburnt hydrocarbons ("HC")
- Lower engine noise
- Direct drop-in, no engine modification required to use 100% renewable diesel in engine/machinery

Both fuels especially in higher blend offer significant reductions in greenhouse gas ("GHG") emissions compared to traditional diesel and help address the transition towards low-carbon fuels. Globally, many regions have implemented policies and initiatives to promote their uses. Further research and exploration are needed for both types of fuel to be considered for use in Hong Kong.

Market Price Difference Among Three Types of Fuels

The price differences among diesel, biodiesel, and renewable diesel can vary due to different factors including feedstock, manufacturing, logistics, subsidies, etc. In general, diesel is typically the cheapest option because it is mass-produced from petroleum and benefits from established infrastructure. Biodiesel is often slightly more expensive than regular diesel due to higher production costs associated with feedstocks. Renewable diesel is usually the most expensive among the three options because it is produced through advanced processes and scarce in supply. On average, it costs about three to four times more than regular diesel.

Chapter 2 Global Market Landscape and Implications to Hong Kong

European Union: Driving the Global Biofuels Market

Stricter renewable energy mandates, such as RED III and Fuel EU Maritime, are driving long-term demand for low-carbon fuels. Import reliance has decreased sharply amid trade barriers, particularly targeting Asian suppliers, while domestic production increasingly prioritises renewable diesel capacity expansion.

The EU's Role in the Global Biofuels Market

EU continues to be a global leader in shaping the biofuels market through its ambitious renewable energy policies and regulations. The Renewable Energy Directive ("RED"), first introduced in 2009, set the foundation for incorporating biofuels and renewable energy into the EU's energy mix. Over the years, the directive has evolved, with RED III (adopted in 2018) setting an ambitious framework for renewable energy use by 2030. Under RED III, the EU targeted 29% of total energy consumption in transport to come from renewable sources by 2030.[2]

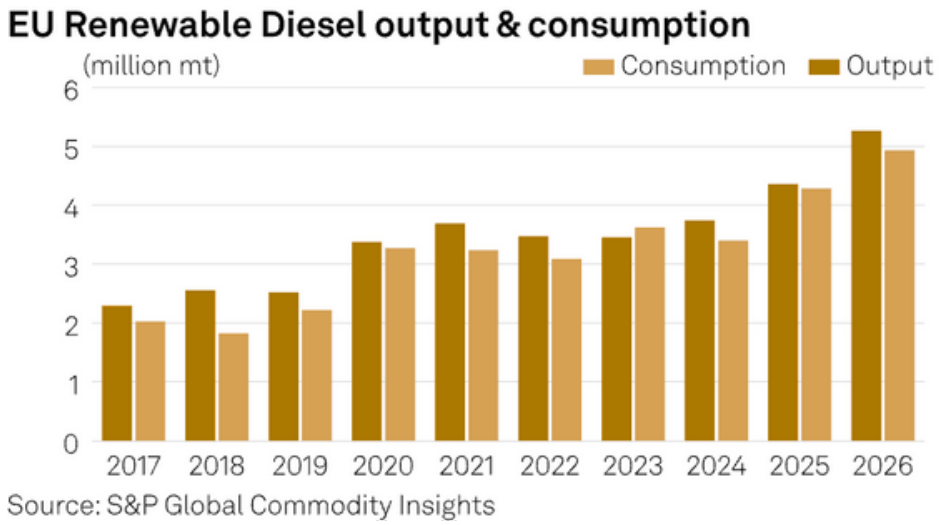


Figure 1 EU Renewable Diesel Supply and Demand (2017 - 2026) [3]

EU Trade Policies and Anti-Dumping Measures in the Biofuels Market

In addition to regulatory measures, the EU has also used anti-dumping and countervailing duties as strategic tools to protect its domestic biofuels industry. These duties have been frequently imposed over the last two decades to safeguard the competitiveness of EU-based suppliers and to discourage low-priced imports.

Anti-dumping duties were imposed on Chinese biodiesel imports starting August 2024.[4] In February 2025, the definitive duty has been imposed on both biodiesel and HVO originating in China. These duties aim to protect the European biofuels industry from the risks associated with underpriced imports. The EU has also implemented similar anti-dumping and countervailing duties on biodiesel imports from countries such as the US, Argentina, and Indonesia.

Through a combination of ambitious renewable energy targets, strict sustainability regulations, and strategic trade measures, the EU has positioned itself as a central player in the global biofuels market. Many European countries show weaker demand and lower prices for diesel and traditional biodiesel, with an increased demand and price of renewable diesel.

[2] European Committee. Biofuels
[3] S&P Global Commodity Insights. COMMODITIES 2025: European renewable diesel market bullish on regulatory support and rising demand
[4] Reuters. EU to set tariffs on Chinese biodiesel in anti-dumping probe

Spillover Impact on the Hong Kong Market

The EU's biofuel policies have global implications that can indirectly or directly affect Hong Kong. While Hong Kong itself is not a major producer of biofuels, its role as a regional trading hub and its reliance on imports for energy and goods means that changes in EU biofuel regulations and trade policies can have several impacts:

☑ ***1. Shifting Trade and Supply Chains to Other Markets***

The anti-dumping duties will shift biodiesel producers from affected countries (China, Indonesia, etc) to redirect biofuel and feedstock exports to other regions, including Hong Kong. Hong Kong could not only facilitate this diversification as a logistics hub but gain access to more biofuel products in competitive pricing.

☑ ***2. Providing Renewable Diesel Policy Examples to Hong Kong***

The EU's leadership in biofuel regulations and renewable energy targets can indirectly influence Hong Kong's own sustainability goals. The EU's ambitious renewable energy targets and focus on reducing GHG emissions could serve as a model for Hong Kong. Hong Kong can further explore ways to reduce carbon emissions, including the adoption of renewable diesel in sectors that rely heavily on diesel-powered heavy-duty vehicles and machinery.

The United States: Changing Market

The US market is undergoing a strategic pivot. Although renewable diesel was displacing biodiesel during the Biden administration, the US is likely to repivot back to promote fossil fuels in the new Trump administration. Export activity remains minimal as output focuses on meeting local needs. However, both market supply and demand for biofuel might drop due to policy uncertainty in the next four years.

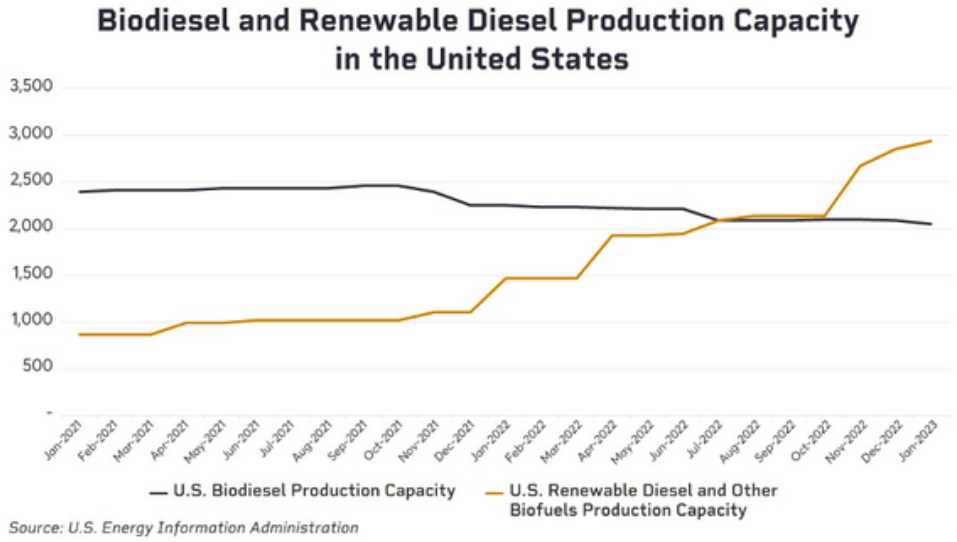


Figure 2 Biodiesel and Renewable Diesel Production Capacity in the US (2021 - 2023) [5]

[5] CME Group. Biofuels Pivot to Asia

Boom in Renewable Diesel Production

Renewable diesel production in the United States has experienced exponential growth in recent years, driven by refiners' shift away from petroleum-based products. Production capacity for renewable diesel nearly quadrupled after the COVID-19 pandemic, rising from 791 million gallons (3.4 billion tonnes) in 2021 to 3 billion gallons (12.9 billion tonnes) by 2023. When combined with biodiesel, total US biomass-based diesel production capacity exceeded 5 billion gallons by the same year.

This growth has been underpinned by the US Environmental Protection Agency's Renewable Fuel Standard ("RFS") programme, which mandates blending targets for biomass-based diesel. The RFS set a demand target of up to 4.5 billion gallons (21.4 billion tonnes) annually through 2025. Production capacity for biodiesel and renewable diesel is projected to surpass 7 billion gallons (30 billion tonnes) by 2025. [6]

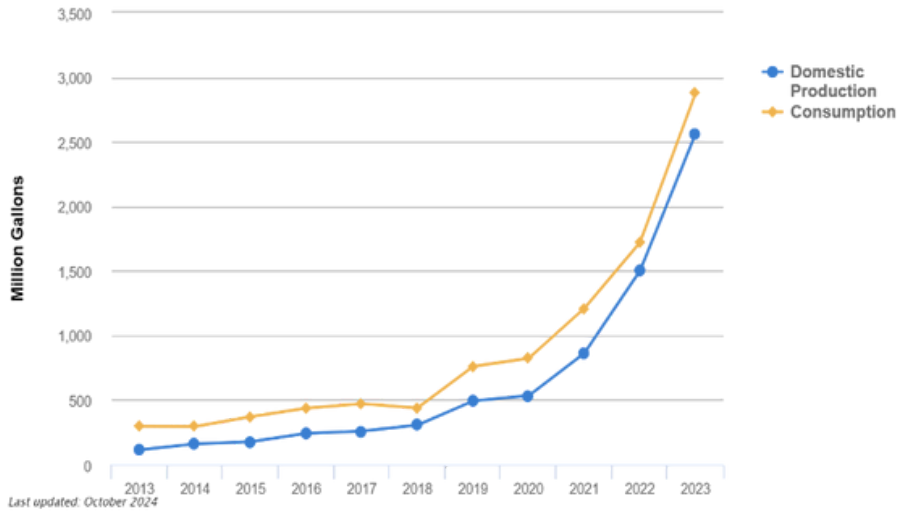


Figure 3 US Renewable Diesel Production and Consumption (2013 – 2023) [7]

Changing Domestic Political Environment

The U.S. Federal Government has implemented robust policies and incentives to promote biofuels, with the RFS Programme (2005) serving as the backbone of the industry. The RFS establishes annual production volume targets, regularly updated to ensure alignment with renewable energy goals.

However, Donald Trump, who just started his second US presidency in 2025, issued an Executive Order titled "Unleashing American Energy" on January 20, 2025. The White House is working to prevent conflicts among the oil and biofuel (including agriculture) industries.[8]

Implications for the Hong Kong Market

The Hong Kong Government can learn from the various incentives and policy support set by the previous administration on sector-specific transition target setting, public education and stakeholder engagement, and providing financial incentives for both biofuel production and adoption. Hong Kong may need to rely more heavily on renewable diesel imports from other regions like China or Southeast Asia, where locations are closer and production is more robust.

[6] Reuters. Renewable diesel glut hits US refiner profits, threatens nascent industry
[7] The Alternative Fuels Data Center, US Department of Energy. Renewable Diesel
[8] Reuters. US oil, biofuel group recommends 5.25 billion gallons in biomass diesel mandates, sources say

Biofuels in Southeast Asia: Policies and Market Dynamics

Southeast Asia plays a critical role in the global biofuels market, with countries like Singapore, Indonesia and Malaysia adopting diverse policies and strategies to promote biofuel production and usage. As of 2023, Hong Kong imports most of its petrochemical products from China, followed by Singapore and Thailand. Singapore, despite lacking natural hydrocarbon resources, serves as a key refinery hub, sourcing raw materials from its neighbours, Malaysia and Indonesia. Here is a closer look at the policies and market trends across the three major countries on biofuels and feedstock production.

Supply Surplus and Implications to the Hong Kong Market

Southeast Asia's biofuel policies and production trends reflect a region at varying stages of adoption. Countries like Singapore, Indonesia and Malaysia are leading ambitious mandates, growing production capacities, and formulating robust export strategies. For Hong Kong, these trends create opportunities.

According to global commodity market research data, both Indonesia and Malaysia are expected to have excess supply. Hong Kong could benefit from increased access to biodiesel products from these two markets. However, a significant portion of the feedstock and biofuel products are generated from food crops such as palm oil. Biofuel customers need to pay closer attention to the feedstock sources and related sustainability certificates on life cycle assessment.

Renewable diesel produced in Singapore may increase the product supply and lower market prices in Hong Kong. As the Finnish biofuel producer Neste decided to invest $2 billion to expand its renewable products refinery in Rotterdam, Netherlands, more EU market demand can be satisfied locally. Previously mainly supplying the EU market, Singaporean renewable diesel producers need to look for new markets, such as Hong Kong. [9] Driven by new climate transition opportunities enabled by technology development and growing investments in HVO plants globally, renewable diesel capacity is expected to grow faster than biodiesel.

Figure 4 AFSC Leads Full Transition of GSE Fleet to Renewable Diesel

[9] Reuters. Finland's Neste to invest $2 bln in renewable products refinery in Rotterdam

Markets and Policies in Major Southeast Asian Countries

Key Features	Market Insights	Policy Highlights
Singapore		
• A regional hub for biofuels and energy trading. • Strong infrastructure for manufacturing, storing, and trading biofuels.	• Projected biodiesel production of 1.4 billion litres (1.6 billion tonnes) by 2032.[10] • Major importer of Chinese UCO.	• Licences for biofuel operations supported by tax incentives. • Attracting multinational energy firms like Shell and ExxonMobil. • No specific renewable diesel mandate, but robust infrastructure supports biodiesel and blended fuels.
Indonesia		
• Global leader in biodiesel production due to its abundant supply of palm oil as feedstock. • Strong focus on palm oil-based feedstocks.	• B40 mandate (40% biodiesel blend) drives production. • Renewable diesel production growing, with exports forecasted at 76 million litres (80 million tonnes). • Exports to the US and the EU are constrained by various trade and regulatory barriers.	• Indonesia Long-term Strategy for Low Carbon and Resilience puts biofuels as main energy source in the transportation sector by 2050.[11] • Export barriers push focus to markets like China, the Netherlands, Peru, and the Philippines.
Malaysia		
• Second-largest producer of palm oil globally. Gradually increasing biodiesel blend mandates.	• Biodiesel production is projected to reach 1.8 million tonnes in 2024, with exports of 300,000 tonnes in 2023.[12] • Operates 18 biodiesel plants with a capacity of 2.5 billion litres (2.8 billion tonnes). • Plans to increase mandates from B10 to B30 by 2025 and potentially B40 in the future.	• National Biofuel Policy (NBP) introduced in 2006. • Current B10 mandate with plans for B30 by 2025. • Potential for production growth if mandates expand regionally. • Exports biodiesel to the EU, China, and the US

Table 1 Key Market Features in Major Southeast Asian Countries

[10] OECD-FAO. Agricultural Outlook 2023-2032
[11] Indonesia Long-term Strategy for Low Carbon and Climate Resilience 2050
[12] Reuters. Malaysian 2024 biofuel output seen rising if B20 biodiesel usage expanded

China's Push for Biodiesel: Policies, Implications, and Market Shifts

China is advancing its decarbonisation agenda with a focus on achieving carbon neutrality by 2060 and peaking emissions by 2030. However, the biodiesel industry has been mainly export-oriented until the EU anti-dumping tariff against Chinese biodiesel in 2024.

China's renewable diesel industry has followed a distinct trajectory compared to biodiesel sector. Emerging in 2017 as an export-focused market, the industry has largely relied on policy incentives and strong demand from Europe. Historically, the country lacked a national programme to promote biodiesel due to the absence of federal mandates or financial support. Domestic biodiesel consumption has remained limited. However, recent developments signal a shift. The introduction of policy support for biofuels has opened the door for modest market growth.

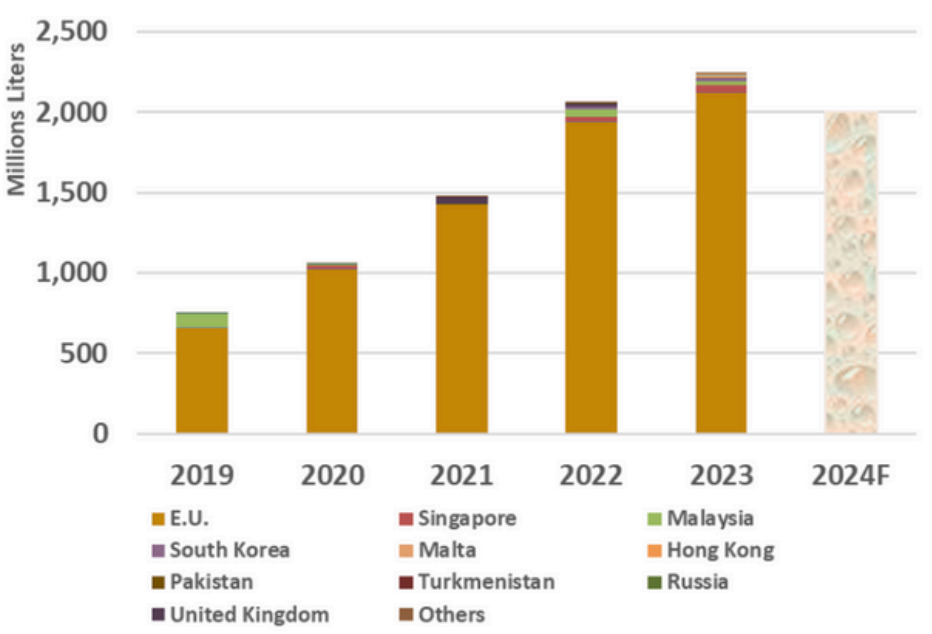


Figure 5 Export Destinations of China's Biodiesel and Renewable Diesel (2019 - 2023) [13]

National-level Policy Support

To further accelerate biodiesel adoption, the National Energy Administration ("NEA") launched pilot programmes in November 2023 and April 2024 to promote biodiesel use in road transport and maritime sectors.[14] These initiatives aim to create a closed-loop system connecting production, supply, and adoption while establishing replicable frameworks for scaling biodiesel production. This domestic push comes at a time when the EU has imposed anti-dumping duties on Chinese biodiesel imports, prompting a shift in focus toward the local market and alternative export destinations.

China is positioning itself to lead in renewable fuel production while navigating the complexities of global trade and environmental policies.

[13] USDA, China: Biofuels Annual
[14] 国家能源局关于组织开展生物柴油推广应用试点示范的通知 国家能源局综合司关于公示生物柴油推广应用试点的通知

Push for Domestic Production

Starting in December 2024, China cancelled export tax rebates on UCO.[15] This policy shift seeks to transition the biofuel industry from its export-centric model to one more focused on domestic development. At the same time, it could open new export opportunities for China's sustainable aviation fuel ("SAF"), particularly as the EU provisionally excluded SAF from its proposed anti-dumping duties on July 19, 2024. It is possible that China's biofuel suppliers turn to SAF production for export, instead of producing biodiesel or renewable diesel.

Challenges and Global Market Shifts

In response, Chinese producers are exploring export opportunities in regions like the US, Asia Pacific, and the Middle East. However, challenges persist, such as stricter auditing of UCO supply chains by the US Environmental Protection Agency and potential policy shifts in the US following the 2024 Presidential election.

Implications on the Hong Kong Market

The evolving biodiesel policies and market dynamics in China have significant implications for Hong Kong, given its role as a trading hub and its efforts to reduce carbon emissions. The Hong Kong market is likely to be impacted:

1.Biofuel Initiatives on Greener Transportation:
Hong Kong has been gradually adopting green transportation alternatives in public transportation and maritime sectors to reduce emissions. China's increased supply of biofuel products to the region could support these trends with a stable supply, particularly if Hong Kong adopts similar policies mandating blended or pure biofuels, especially on renewable diesel. This would create steady demand for renewable diesel locally.

2.Potential Lower Cost for End Users:
If China's domestic prioritisation and export policy changes lead to higher local biodiesel and renewable diesel production, Hong Kong businesses, particularly in transportation and logistics, may be able to enjoy lower fuel costs. This could speed up the renewable diesel adoption.

3.Alignment with Regional Standards:
As China's biofuel policies progress, Hong Kong may need to align its standards and certifications (e.g., for feedstock or biofuel) with regional or international frameworks. This could facilitate cross-border trade and ensure compliance with global sustainability standards, but it may require regulatory updates and industry adaptation.

China's push for localising biofuel production may accelerate the renewable diesel product availability in Hong Kong. More product options will accelerate the adoption of renewable diesel in diesel-reliant sectors including transportation and maritime. More product supply will make the Hong Kong market to be more competitive with lower price levels. Proactive policy measures and infrastructure development will be essential for Hong Kong to fully capitalise on these opportunities.

[15] S&P Global Commodity Insights. China to end export tax rebates on aluminum, copper, biofuel feedstock Dec. 1

Hong Kong's Biofuel Landscape: Challenges and Opportunities

Overview

Biodiesel and renewable diesel are gaining attention as effective tools in Hong Kong's transition to a low-carbon economy. However, their market adoption remains restricted due to limited availability, high costs, limited local production/supply, regulatory gaps, and insufficient infrastructure. While biodiesel has a more established presence, renewable diesel presents a significant opportunity for decarbonising heavy-duty transport and industrial applications given its drop-in nature —despite its nascent stage in the region.

Policy and Regulatory Gaps

Lagging Framework for Biofuels

While biodiesel and renewable diesel are recognised as viable solutions for reducing emissions in transport and industry, Hong Kong's policy and regulatory framework for their production, distribution, and use is underdeveloped. Biodiesel benefits from limited regulatory oversight, but renewable diesel lacks official recognition or infrastructure support, creating barriers to adoption.

Current Biofuel Regulations in Hong Kong

In Hong Kong, the Air Pollution Control Ordinance (Cap. 311) is the overarching legislation that regulates fuel usage to reduce air pollution.
Hong Kong's on-road application diesel fuel regulations are primarily based on the EN 590 standard, which governs conventional diesel fuels. EN 590 sets specific requirements for key parameters such as sulphur content (≤10 ppm), cetane number (≥51), and density (820–845 kg/m^3), all of which Hong Kong has adopted. However, EN 15940, the European standard for paraffinic diesel fuels—including renewable diesel—is not currently reflected in Hong Kong's regulatory framework.

EN 15940 differs from EN 590 in several ways, particularly in its recognition of the unique properties of paraffinic fuels, which do not fall within the same density range as conventional diesel.

While Hong Kong's diesel regulations align closely with EN 590, the absence of explicit standards for paraffinic fuels like renewable diesel creates a regulatory gap. This lack of specific guidelines for paraffinic fuels could hinder the adoption of cleaner, renewable diesel alternatives in the region.This creates a grey area where the fuel is neither explicitly approved nor prohibited for use due to its omission from Cap 311L.

Despite being duty-free to encourage its use in Hong Kong, biodiesel receives no direct financial support for production or usage. Its higher cost compared to traditional diesel reduces its competitiveness in the market.

Supply Challenges

Production and Feedstock Underutilisation

Hong Kong has two main biodiesel producers—Champway and ASB Biodiesel—with a combined annual production capacity of approximately 100,000 metric tonnes[16] of B100. Both manufacture B100 primarily using UCO (or waste cooking oil, "WCO") as feedstock.

Hong Kong Environmental Protection Department ("EPD") requires licensed operators to collect and process WCO to prevent illegal reuse or disposal.[17] However, there is no regulation prioritising local biodiesel production in WCO collection. As a result, a significant portion of the WCO collected in Hong Kong is exported to other markets for biofuel production, limiting feedstock availability for domestic biodiesel production.

Currently, Hong Kong lacks the capability to produce renewable diesel locally. Most renewable diesel products would need to be imported.

Distribution and Adoption

According to the Dangerous Goods Ordinance (Cap. 295), biodiesel is classified as a dangerous good (Class 3A) due to its properties, requiring licensing for storage above certain quantities (e.g., 2,500 litres for industrial sites).

It is illegal to sell or transfer fuels without proper licenses, which restricts biodiesel and renewable diesel distribution unless provided by authorised suppliers and limits biodiesel and renewable diesel availability in public markets. As of May 2025, there is only one retail gas station providing B5 in Hong Kong, located in Tsing Yi. Otherwise, biodiesel and 100% renewable diesel need to be delivered directly to the users by licensed fuel distributors.

Despite the regulatory ambiguity, renewable diesel adoption in Hong Kong is gaining momentum, with key initiatives led by major suppliers and organisations. Shell Hong Kong has provided renewable diesel via bulk delivery for use in ground services equipment at Modern Terminals and Hong Kong International Airport ("HKIA") since October 2023. Modern Terminals has begun its trial programme using renewable diesel at Terminal 9 (South) as part of its decarbonisation efforts.[18] Airport Authority Hong Kong ("AAHK") has launched a renewable diesel pilot project at HKIA, making it the first airport in Asia to use renewable diesel supplied by Shell [19]. Several companies at HKIA have transitioned to using renewable diesel instead of traditional diesel.

Due to current regulatory constraints, 100% renewable diesel is not yet legally recognised for on-road use in Hong Kong. As a compromise, a 20% blend of renewable diesel ("R20") has been introduced for public road use starting in August 2024. Esso Renewable Diesel R20, with 20% renewable content, is available at the Esso Tsing Yi South service station and through bulk delivery to commercial customers. As of May 2025, R20 is available at four service stations in Hong Kong.[20]

[16] According to U.S. Department of Energy's biodiesel's energy conversion factors, biodiesel lower heating value is 119,550 Btu/gal and density is 0.88, the energy of 92,000 metric tonnes of biodiesel is equivalent to 3,481.5 TJ

[17] Environmental Protection Department, HKSAR Government. "Waste Cooking Oils" Collectors Registration

[18] Modern Terminals Limited. Modern Terminals Pioneers Deployment of Green Fuel Becoming the First in Hong Kong to Trial Hydrotreated Vegetable Oil

[19] Airport Authority Hong Kong. HKIA First in Asia to Use Renewable Diesel on Ground Services Equipment

[20] Esso Renewable Diesel R20

Figure 6 MTL Has Launched a Pilot Programme for Hydrotreated Vegetable Oil (HVO)

Demand and Market Adoption

Demand and Market Adoption

According to the Hong Kong Energy End-use Data 2024 ("HKEEUD 2024") published by Electrical and Mechanical Services Department ("EMSD"), 25% of Hong Kong's energy consumption in 2022 is from oil and coal products (including gasoline, diesel, biodiesel, etc).

Renewable oil-based energy sources, including biodiesel used in vehicles, represent approximately 0.4% of total "Oil & Coal Products" consumption.

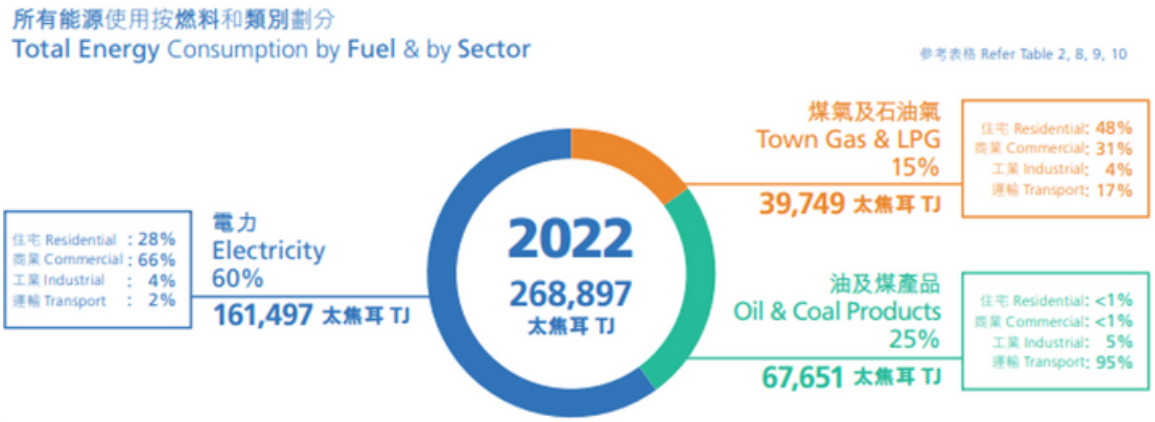


Figure 7 Total Energy Consumption by Fuel & by Sector [21]

[21] Electrical and Mechanical Services Department, HKSAR Government. Hong Kong Energy End-use Data 2024

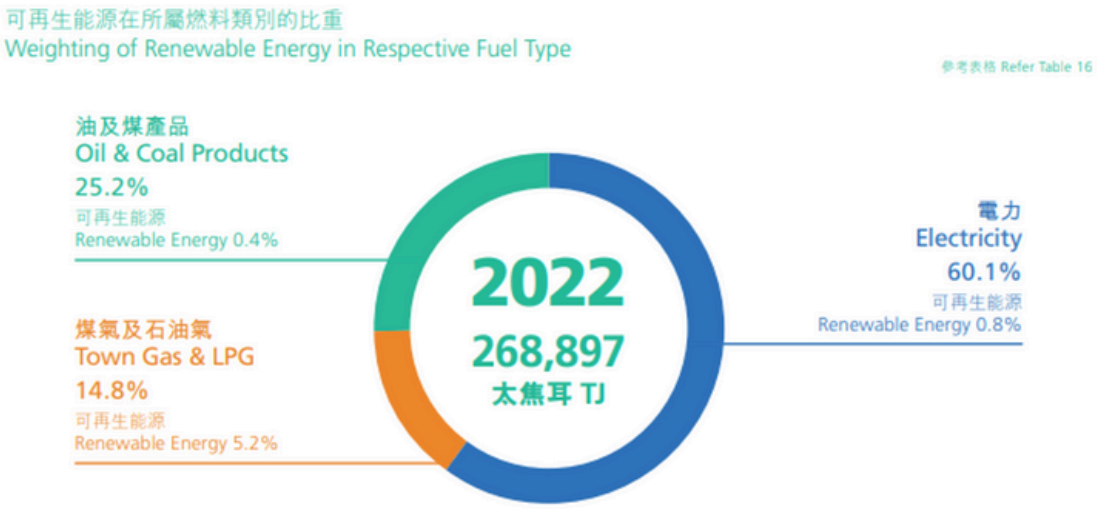


Figure 8 Weighting of Renewable Energy in Respective Fuel Type [22]

Biodiesel's market penetration and contribution to Hong Kong's energy mix remain minimal relative to the city's overall energy demand.

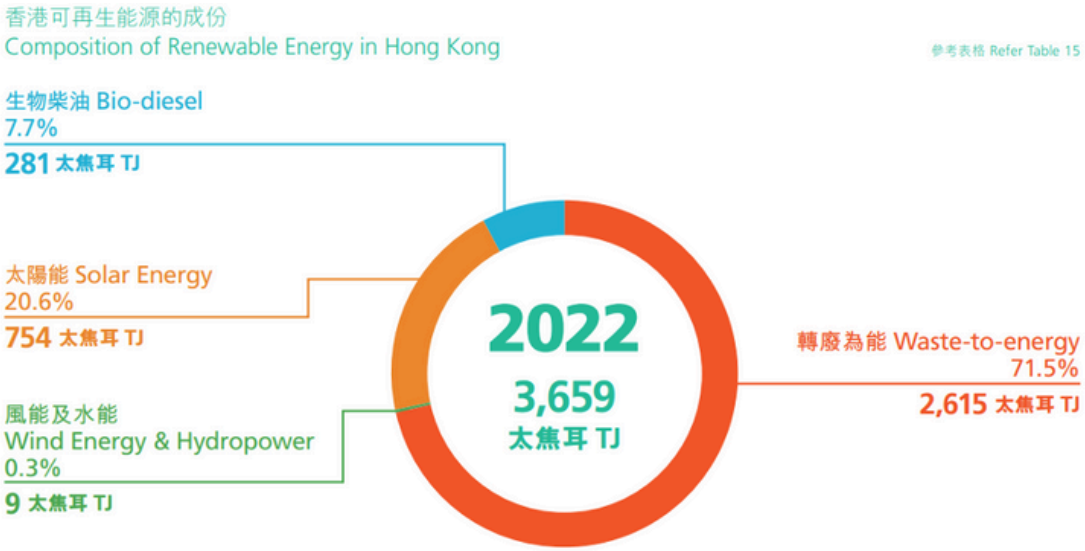


Figure 9 Hong Kong Energy End-use Data 2024 [23]

However, the biodiesel's consumption of 281 TJ, is only about 7.5% of Hong Kong's own biodiesel production capacity (estimated 100,000 metric tons/year, or 3,787 TJ/year).[24] The gap between biodiesel production and consumption in Hong Kong highlights a significant underutilisation of its biodiesel production capacity.

There have been renewable diesel pilot programmes in Hong Kong including the Hong Kong International Airport and Modern Terminals on non-road equipment and machinery.

[22] Electrical and Mechanical Services Department, HKSAR Government. Hong Kong Energy End-use Data 2024[22] Electrical and Mechanical Services Department, HKSAR Government. Hong Kong Energy End-use Data 2024
[23] Electrical and Mechanical Services Department, HKSAR Government. Hong Kong Energy End-use Data 2024[22] Electrical and Mechanical Services Department, HKSAR Government. Hong Kong Energy End-use Data 2024
[24] According to U.S. Department of Energy's biodiesel's energy conversion factors, biodiesel lower heating value is 119,550 Btu/gal and density is 0.88, the energy of 100,000 metric tonnes of biodiesel is equivalent to 3,787 TJ

Figure 10 Hactl Partners with AAHK on Renewable Diesel Pilot

Lack of Policy Support and Limited Public Awareness

Despite Hong Kong's commitment to achieving carbon neutrality by 2050, there are no specific decarbonisation targets or strategies for promoting transition fuels like biodiesel or renewable diesel. Unlike electric vehicles ("EVs"), which benefit from government subsidies and tax exemptions, there are no financial incentives for businesses or individuals to adopt biodiesel or renewable diesel. This lack of support restricts demand, even for companies seeking to align with ESG goals and sustainability initiatives. This lack of advocacy and public awareness further limits their adoption in both corporate and individual markets, leaving their potential untapped.

Chapter 3 Understanding the Demand in Hong Kong

Survey Development Process

A survey for the demand side was first developed. The objective was to find out whether corporate customers would consider biodiesel and/or renewable diesel for decarbonisation efforts.

The survey was fine-tuned and shared with participants from a wide range of industries, including those that are highly relevant to the study. Over the response period between November and December 2024, more than 100 respondents have shared views representing their organisations through the survey. Overall, 64% of respondents are existing users of diesel, biodiesel or renewable diesel, whereas 36% use electricity or other alternative fuels. Responses are classified based on the Hang Seng Industry Classification System, with an additional non-commercial sector including Public Services and Education.

The survey was split into several sections in accordance with the fuel types that clients used, namely diesel, biodiesel, renewable diesel and other alternative energy sources (e.g. electricity, hydrogen, Liquefied natural gas ("LNG"), etc). The questions developed for the survey delved into fuel product use case, product satisfaction and then readiness to upgrade to alternate fuel.

Audience Demographic

Industry Representation in Biodiesel and Renewable Diesel Survey

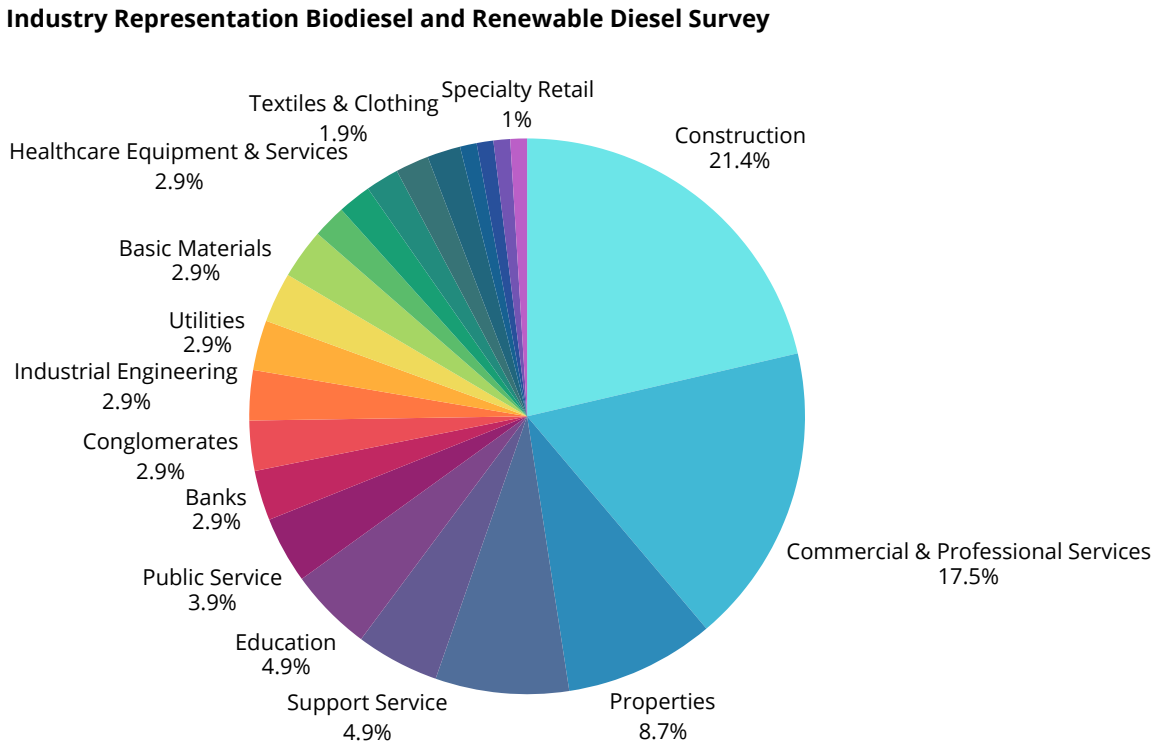


Figure 11 Industry Representation of Survey Participants

The survey respondents represent a diverse range of industries, with the Construction sector contributing the most participants (22 respondents). Other significant contributors include Properties (nine respondents) and Industrial Transportation (eight respondents). The not-for-profit sectors (Education and Public Service combined) account for nine respondents, showcasing notable interest from public and educational institutions.

The Commercial & Professional Services (18 respondents) group includes companies offering diverse practices and business scales such as engineering consultancies and commercial laundry, and can serve for reference only. This broad participation highlights interest in biodiesel and renewable diesel across both industrial and service-oriented sectors, with representation from both profit-driven and non-profit organisations.

Breakdown of Fuel and Energy Usage in the Past 12 Months

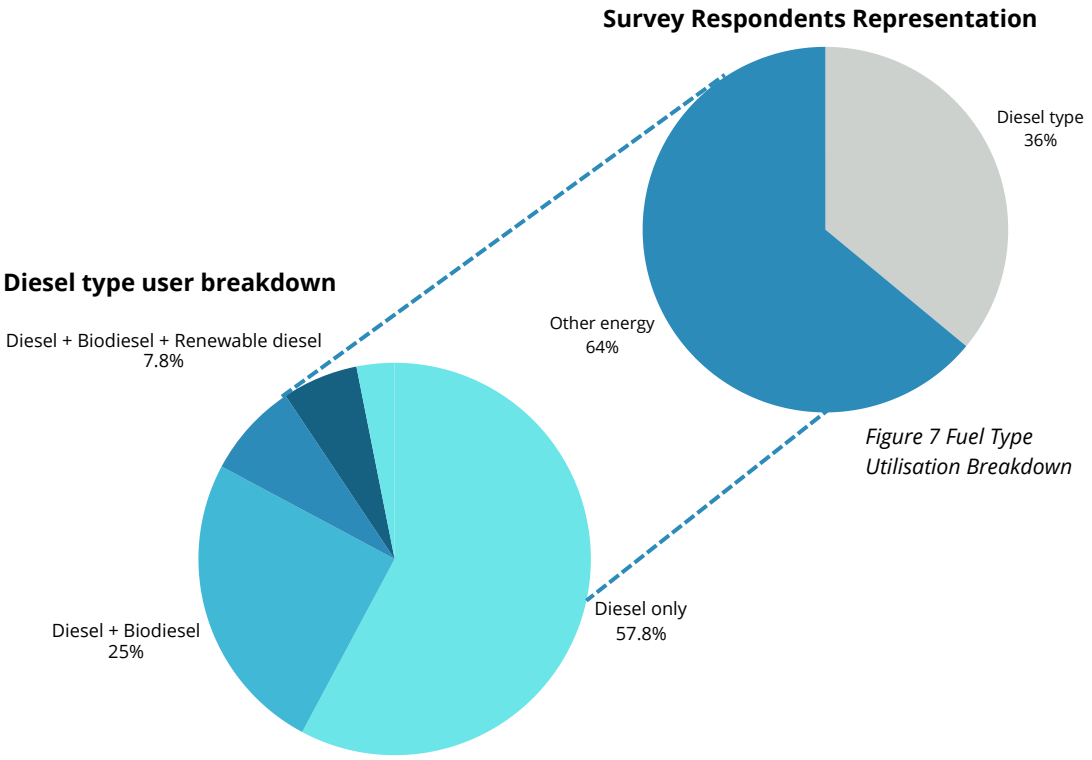


Figure 12 Industry breakdown of other fuel users

Figure 7 Fuel Type Utilisation Breakdown

The fuel or energy usage data from the survey responses provides demographic insights into the types of energy sources used by respondents over the past 12 months:

- Diesel remains the most commonly used energy source, with 37 respondents using it exclusively.
- A notable portion of respondents uses multiple diesel fuel blends, such as:
    - Diesel + Biodiesel (16 respondents)
    - Diesel + Biodiesel + Renewable Diesel (Five respondents)
    - Diesel + Renewable Diesel (Four respondents)

- Alternative fuels, such as electricity and LNG, have 36 respondents using them. The top two of this group's respondents are from Commercial and Professional Services sector (36%) and Construction sector (14%)

This demographic data highlights a heavy reliance on diesel with some emerging interest biodiesel and renewable diesel among the surveyed respondents.

Survey Insights

Insight 1: The Gap in Transition to Cleaner Fuels

The survey analyses the fuel choices reported to understand energy usage across different sectors. The survey data reflects a significant reliance on diesel across high-energy-demand applications, moderate adoption of biodiesel, and minimal uptake of renewable diesel and electricity.

Question: How does your current organisation apply the fuel product(s) on?

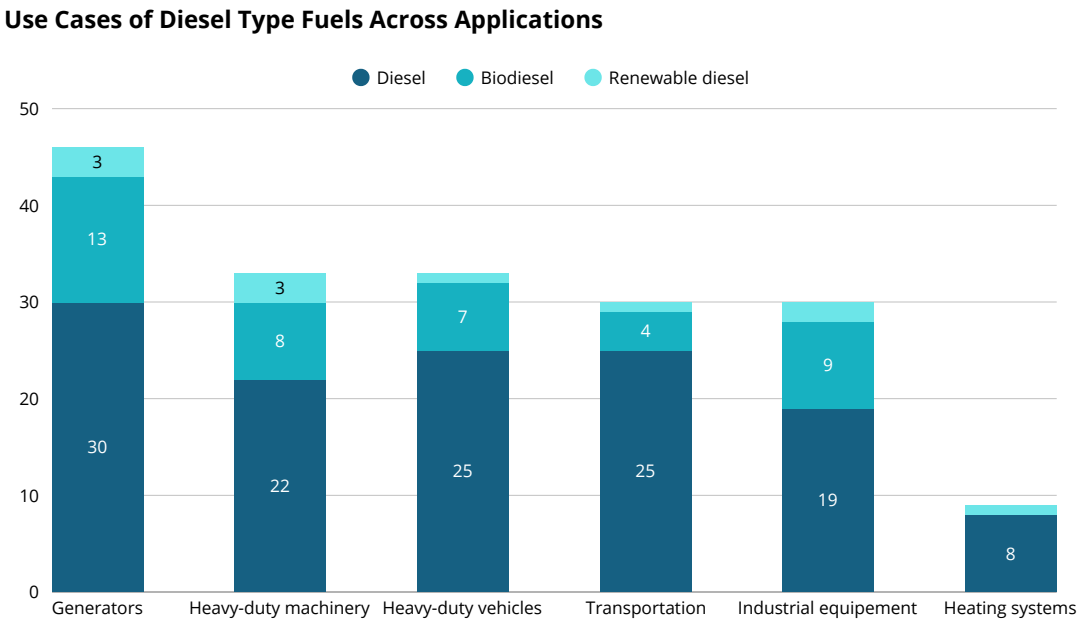


Figure 13 Use Cases of Fuels Across Applications

Diesel dominates across generators (valued for reliability and energy density), heavy-duty machinery, and transportation, with modest biodiesel adoption and minimal renewable diesel uptake. Heavy-duty vehicles highlight a critical decarbonisation gap, while transportation's reliance on diesel underscores the urgent need for cleaner alternatives like renewable diesel.

The data highlights a clear gap between the current widespread reliance on diesel and the potential role of renewable diesel as a cleaner, scalable alternative. Transportation and heavy-duty vehicles, being among the largest consumers of diesel, represent crucial areas where renewable diesel could make a significant impact. The data underscores the need to bridge the gap between the widespread use of diesel and the potential of renewable diesel as a cleaner alternative, emphasising the importance of promoting broader adoption of transitional fuels like renewable diesel to meet sustainability goals.

Insight 2: Practicality outweighs Sustainability: Compatibility, Cost, and Supply are Key Influencing Factors.

The survey asked organisations to rank the importance of influencing factors in the fuel use decision-making process and calculated a weighted average score for each factor.

The scoring metrics (where a higher score indicates greater importance) highlight organisations' priorities and reveal critical barriers and opportunities for adopting alternative fuels, such as renewable diesel, in Hong Kong. Engine compatibility, pricing, and availability are the top three factors when considering the choice of fuel.

Question: How would your organisation rank the importance of the following influencing factors in deciding which fuel type to use?

Ranking	Factor	Overall Scoring [25]
1	Engine compatibility	4.16
2	Pricing	3.36
3	Availability	3.08
4	Decarbonisation effect	2.88
5	Fuel economy	2.79
6	Easiness of usage and refuelling	2.69
7	Air emission level (tailpipe emission)	2.23
8	Quality	1.85

Table 2 Ranking of Influencing Factors by Total Score

Analysis of the Weighted Average Scoring on the Influencing Factor

The survey data highlights that organisations prioritise operational factors, such as engine compatibility, pricing, and availability, over environmental benefits when deciding on fuel types.

Engine Compatibility (4.16) – The Top Priority

Engine compatibility is marked as the highest ranking. Among all diesel, biodiesel, and renewable diesel users, 42% ranked it as the top priority. This reflects a preference for solutions that minimise operational disruptions and additional costs associated with modifying existing engines and equipment.

[25] The score of each factor is calculated by the weighted average of every survey respondent's ranking on each factor .

Organisations are more likely to consider a new fuel if they are certain of its ability to replace conventional diesel without operational disruptions. Corporate customers also would love to reduce the perceived risks of switching, such as downtime, increased maintenance, or performance inefficiencies.

However, a lack of assurance about renewable diesel's compatibility could hinder its adoption. Therefore, transparent technical specifications information sharing, piloting and demonstrations are essential to build confidence among potential adopters.

Pricing (3.36) – A Key Barrier

Pricing is the second most important consideration for organisations. High fuel costs directly impact operational budgets and profitability, especially in industries like transportation, construction, and logistics, where fuel is a major expense.

The higher costs of renewable diesel compared to conventional diesel create a significant barrier to adoption. For organisations, the cost premium associated with renewable diesel may outweigh its environmental and operational benefits. Financial subsidies could help reduce the cost gap and make renewable diesel a financially viable alternative. Additionally, organisations with corporate sustainability goals may be incentivised to pay a premium for renewable diesel if its decarbonisation benefits are aligned.

Availability (3.08) – Demand for a Stable Supply

The availability of fuel, including a steady and reliable supply, is the third most important factor. Organisations require fuels that can meet their operational needs without interruptions or logistical challenges.

A consistent and stable supply chain must be established to reassure organisations of its availability. This could involve partnerships with international suppliers, investments in local production or storage infrastructure, and transparent supply chain management. Renewable diesel producers must also ensure that distribution networks are robust enough to meet demand, particularly for industries that rely on high volumes of fuel.

For renewable diesel to achieve greater adoption in Hong Kong, efforts must focus on educating users about its compatibility and environmental advantages, addressing cost barriers, and ensuring a reliable supply.

Influencing Factor Ranking by Different Fuel Use Types

There are also differences in what influences fuel decisions for users of diesel, biodiesel, and renewable diesel.

	Fuel user type		
Ranking	Diesel only users	Biodiesel users	Renewable diesel users
1	**Engine compatibility** (6.73)	**Pricing** (6.44)	**Engine compatibility** (7.00)
2	Fuel economy (4.84)	Engine compatibility (5.63)	Pricing (5.27)
3	Pricing (4.73)	Availability (5.38)	Decarbonisation effect (5.18)

Table 3 Ranking of Key Influencing Factors for Diesel, Biodiesel, and Renewable Diesel Users

For diesel users, engine compatibility is ranked as the most important factor. This is because diesel users rely on established systems and expect that the fuel works seamlessly as diesel. Fuel economy comes second, as operational efficiency and cost savings are critical. Pricing is third, indicating that while cost matters, it is less important than ensuring performance and efficiency.

For biodiesel users, pricing is the top priority. This reflects concerns about the higher costs often associated with biodiesel compared to regular diesel. Engine compatibility is ranked second, as users still want to ensure the fuel works well with their equipment. Availability (e.g., a steady supply) is third, highlighting the need for consistent and reliable access to biodiesel for operations.

Renewable diesel users focus on engine compatibility first, like diesel users. Pricing is second, and the decarbonisation effect is third. Organisations using renewable diesel may already consider environmental benefits a baseline feature of the fuel. As a result, practical factors like engine compatibility and pricing take priority in decision-making. These factors directly impact operational efficiency and costs, which are critical for organisations when selecting a fuel type, even if it is a clean alternative.

Insight 3: Satisfaction Levels Reflect Trade-offs: Diesel Leads on Availability and Cost, While Renewable Diesel Excels in Sustainability

The survey assesses organisational satisfaction with diesel, biodiesel, and renewable diesel across six key criteria: competitive pricing, suitability to engine, easiness of usage and refuelling, air pollution reduction, decarbonisation potential, and availability. Respondents rated their satisfaction on a scale from 1 (strongly dissatisfied) to 5 (strongly satisfied). The data has been normalised to ensure comparability across factors, as different groups received varying numbers of responses.

Question: How satisfied is your organisation on diesel/biodiesel/renewable diesel?

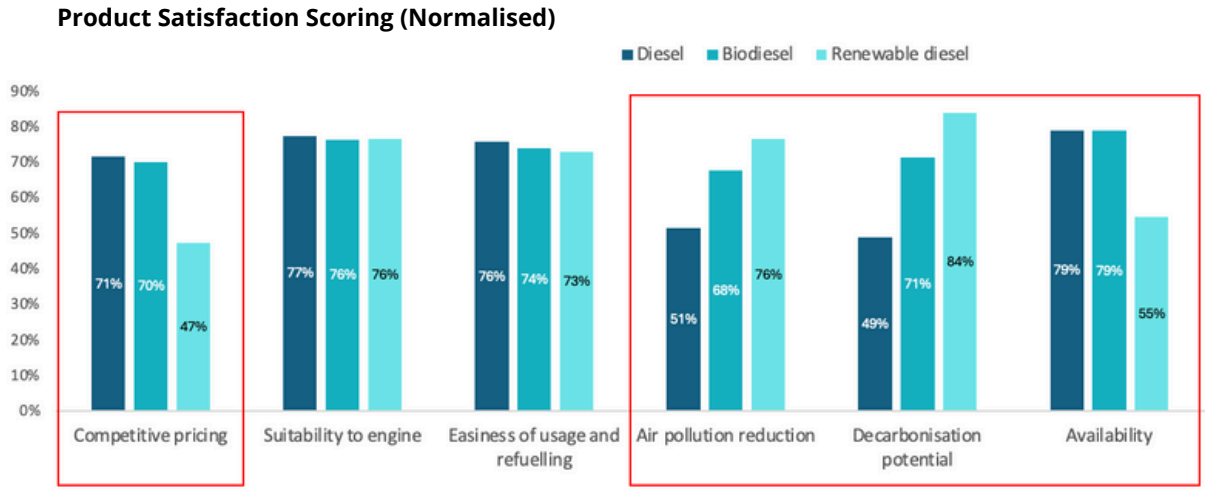


Figure 14 Product Satisfaction Scoring across 3 Fuel Users (Normalised)

This question's results highlight several key insights about renewable diesel compared to biodiesel as a fuel option:

- **Decarbonisation Potential:** Renewable diesel scores significantly higher (84%) than biodiesel (71%) in decarbonisation potential, indicating stronger satisfaction among organisations for its ability to reduce GHG emissions more effectively.
- **Air Pollution Reduction:** Renewable diesel also outperforms biodiesel in air pollution reduction (76% vs. 68%), reflecting its superior performance in reducing particulate matter and other harmful emissions.
- **Competitive Pricing:** Renewable diesel (47%) lags behind biodiesel (70%) in competitive pricing, showing that organisations' concern on price premium, which remains a barrier to broader adoption.
- **Availability:** Both diesel and biodiesel (79%) are rated higher than renewable diesel (55%) in availability, suggesting that organisations may find it easier to source biodiesel, likely due to more established supply chains and blending mandates.

Overall, the survey highlights that while renewable diesel is perceived as superior in environmental benefits (decarbonisation and air pollution reduction), it currently underperforms in competitive pricing and availability compared to biodiesel. This suggests that addressing cost and supply challenges will be critical to increasing the satisfaction and adoption of renewable diesel.

Insight 4: Diesel Users are Likely to Consider Renewable Diesel. Once Started, Renewable Diesel Users are Very Committed to Expanding Their Usage

The survey data highlights a cautious but growing interest in biodiesel adoption among diesel users, with 54% indicating they are "Likely/ Definitely Yes" to upgrade and only 11% leaning against it. However, a significant portion (35%) remains undecided, signalling uncertainty or a need for clearer incentives.

Biodiesel and Renewable Diesel Upgrade Considerations

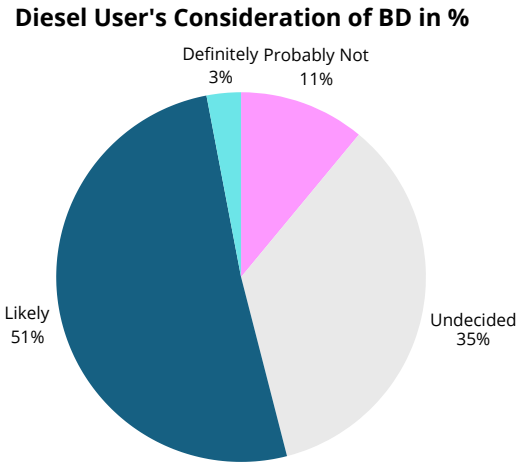


Figure 15 Diesel User's Consideration of BD in %

When take a closer look at each user group's considerations, their responses reveal varying levels of interest, with current renewable diesel users being the most enthusiastic, followed by biodiesel users and diesel users.

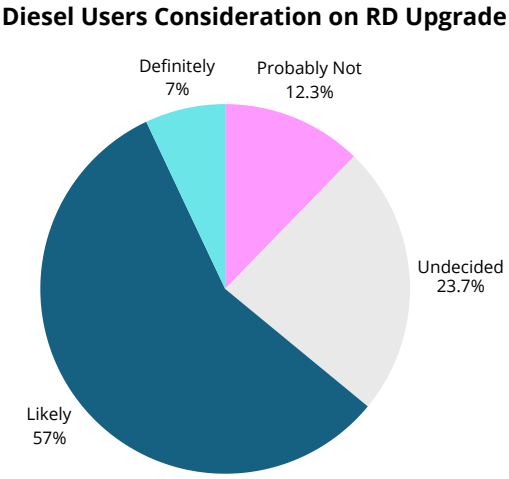


Figure 16 Diesel Users' Consideration of Adopting RD in %

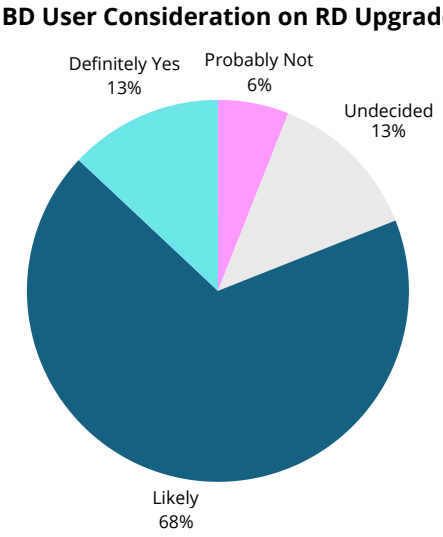


Figure 17 BD User Consideration on RD Upgrade in %

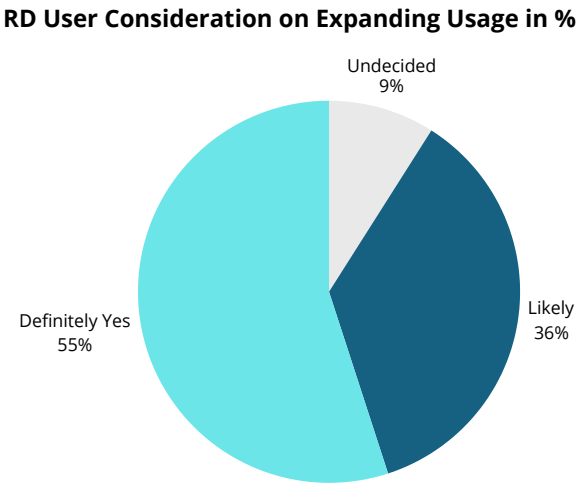


Figure 18 RD User Consideration on Expanding Usage in %

While a majority of diesel users are open to upgrading to renewable diesel, 27% remain undecided, and cost or operational concerns may explain the hesitation. Education about renewable diesel's compatibility and benefits could help address these uncertainties.

Biodiesel users show a significantly higher willingness to upgrade to renewable diesel compared to diesel users, with 82% interested and only 6% unwilling. This suggests that biodiesel users are already familiar with alternative fuels and see renewable diesel as a natural progression due to its better environmental and operational benefits.
Current renewable diesel users are the most enthusiastic, with 91% expressing interest in expanding use and no users unwilling to do so. This indicates high satisfaction with renewable diesel's performance and benefits, suggesting a positive user experience.

Upgrade Consideration Factors

Question: Which would be the most significant factor that drives your organisation to upgrade or use more renewable diesel?(Single choice)

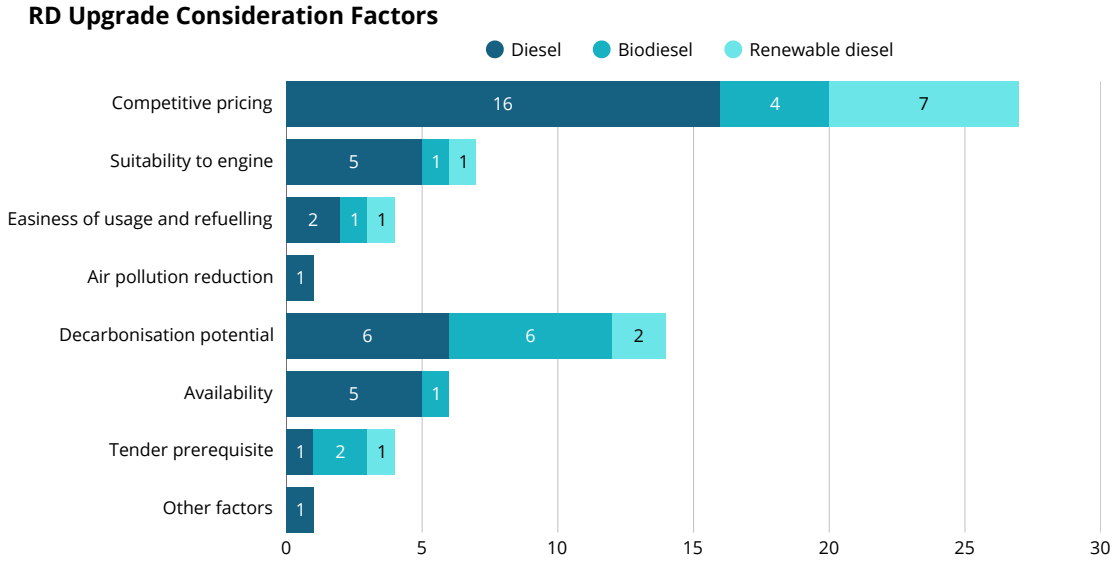


Figure 19 Key Driver Behind Renewable Diesel Adoption among 3 Fuel Users

The data reveals nuanced priorities among four user groups—diesel users, biodiesel users, current renewable diesel users, and other energy type users—when considering renewable diesel adoption. While "Competitive pricing" serves as the primary affordability factor in product purchasing decisions , "Decarbonisation potential" ranks as the second most important consideration in renewable diesel adoption.

Diesel Users

Diesel Users RD Consideration Factor Distribution

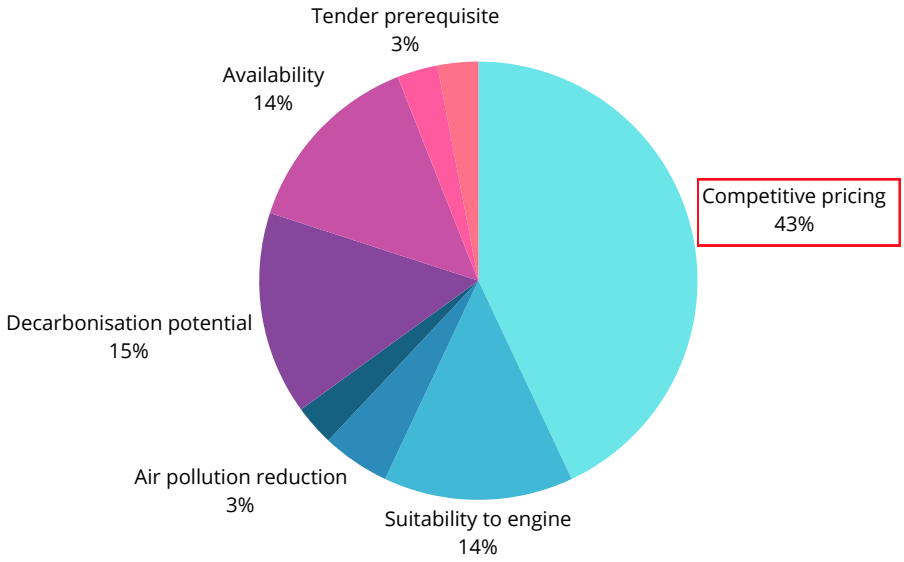


Figure 20 Diesel Users: Key Decision Drivers for Renewable Diesel Adoption

- **Top Factor: Competitive pricing (43%):** Diesel users are highly cost-sensitive, prioritising competitive pricing in their decision to adopt renewable diesel. This reflects their need for renewable diesel to be economically viable compared to conventional diesel.
- **Secondary Factors:**
  - **Decarbonisation potential (16%):** Environmental benefits are a moderate consideration, indicating growing awareness of sustainability.
  - **Suitability to engine and Availability (14% each):** Operational reliability and supply are key concerns, suggesting a need for reassurance about renewable diesel's compatibility and availability.

Biodiesel Users

BD Users RD Consideration Factor Distribution

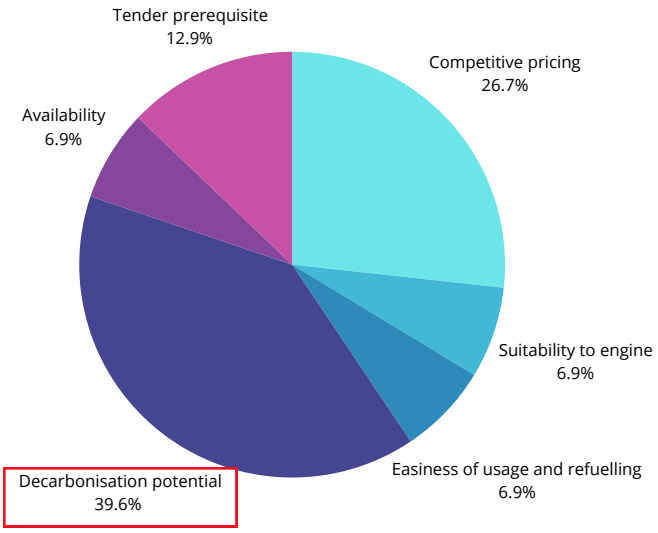


Figure 21 Diesel Users: Key Decision Drivers for Renewable Diesel Adoption

Top Factor: Decarbonisation potential (40%)

- Biodiesel users prioritise renewable diesel's ability to reduce carbon emissions, demonstrating a strong focus on sustainability and environmental benefits.

Secondary Factors:

- **Competitive pricing (27%):** While cost is less critical than for diesel users, it is still a significant consideration.
- **Tender prerequisite (13%):** Regulatory or contractual requirements for renewable diesel adoption are more important for biodiesel users than for other groups.

Current Renewable Diesel Users

RD Users' RD Consideration Factor Distribution

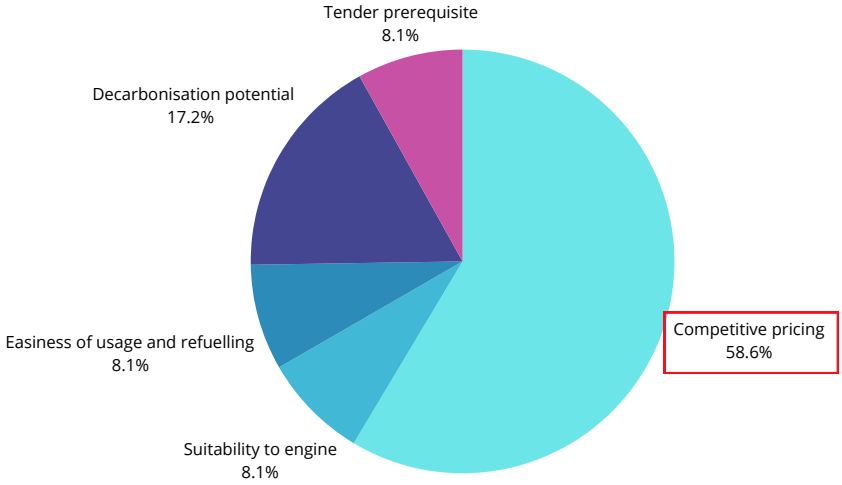


Figure 22 Renewable Diesel Users: Key Decision Drivers for Expanding Renewable Diesel Usage

- **Top Factor: Competitive pricing (58%):** Current renewable diesel users are the most price-sensitive group, likely because they are focused on expanding renewable diesel usage and require cost-efficiency to scale up adoption.
- **Secondary Factors:**
  - **Decarbonisation potential (17%):** While still relevant, environmental benefits are less critical for current renewable diesel users, as they may already perceive renewable diesel as a sustainable solution.
  - **Suitability to engine, Easiness of usage, and Tender prerequisite (8% each):** Operational and regulatory factors are minor considerations for this group.

Other Energy Type Users (Electricity, Hydrogen, LNG, etc.)

Pricing is still the top factor. Decarbonisation potential (22%) is the second major driver for these users, who likely see renewable diesel as a potential complement to their current clean energy solutions.

User Group	Top Factor	Second Factor
Diesel Users	Competitive pricing (43%)	Decarbonisation (16%)
Biodiesel Users	Decarbonisation (40%)	Competitive pricing (27%)
Renewable diesel Users	Competitive pricing (58%)	Decarbonisation (17%)

Table 4 Summary of Each Fuel User Group's Consideration Factor

- **Competitive pricing remains the top factor** for renewable diesel adoption, particularly for diesel (43%) and current renewable diesel users (58%). Addressing cost concerns is critical to scaling adoption.
- **Biodiesel and other energy users prioritise environmental benefits,** with decarbonisation potential (40% and 22%, respectively) and air pollution reduction (11% for other energy users) being key considerations.
- **Operational and regulatory factors are secondary drivers,** but biodiesel users (13%) and other energy users (11%) show higher sensitivity to tender prerequisites compared to other groups.

Insight 5: Sector-Specific Opportunities to Drive Renewable Diesel Adoption

This analysis delves into the preferences and considerations of the top five sectors regarding the transition to renewable diesel. These sectors—Construction, Commercial & Professional Services, Properties, Industrial Transportation, and Public Services & Education—received the highest number of survey responses, making them representative of key use cases and decision-making factors in Hong Kong. By examining their motivations, willingness to pay, product preferences, and current adoption levels, we gain valuable insights into the challenges and opportunities for advancing renewable diesel adoption across these pivotal industries.

1. Construction

RD Upgrade Likeliness in Construction Sector

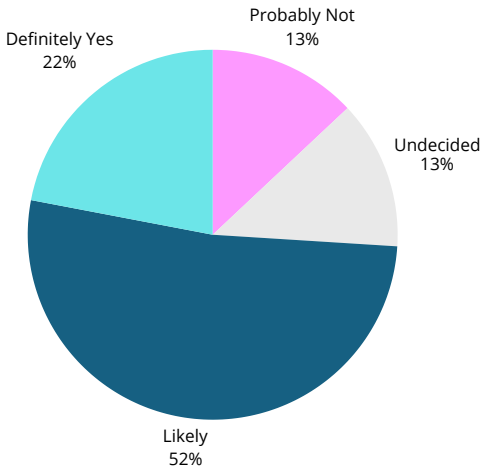


Figure 23 Likelihood of RD Adoption in the Construction Sector

RD Upgrade in Consideration in Construction Sector

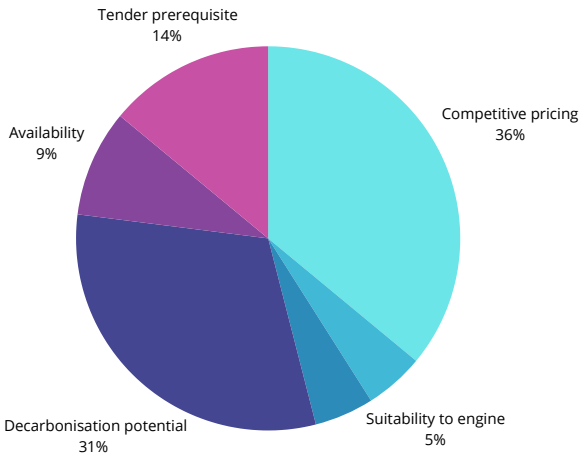


Figure 24 RD Upgrade Consideration in the Construction Sector

- **Sector introduction:** Companies in the Construction sector focus on building materials manufacturing, construction of residential and commercial buildings, and large-scale civil engineering projects.
- **Likely Transition:** The sector displays a strong interest in transitioning to renewable diesel, with 77% indicating willingness to upgrade.
- **Key Drivers:** Competitive pricing and decarbonisation potential are the main motivators, while air pollution reduction and engine suitability are less relevant.
- **Key Insight:** Construction prioritises affordability and moderate environmental benefits, making it a cost-sensitive but receptive sector for renewable diesel transition.

2. Properties

RD Upgrade Likeliness in Properties Sector

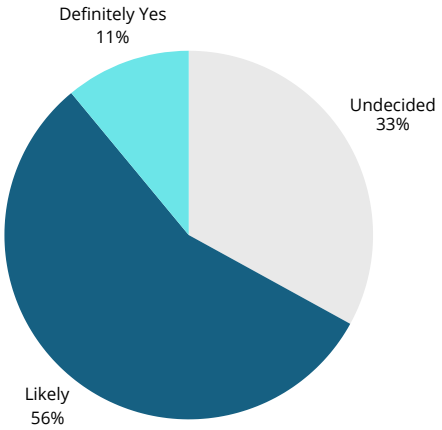


Figure 25 Likelihood of RD Adoption in the Properties Sector

RD Upgrade Consideration in Properties Sector

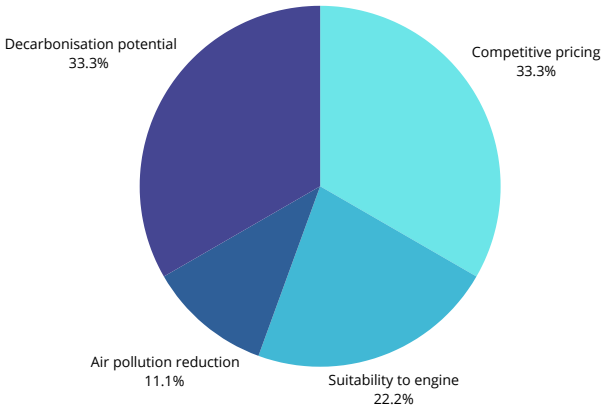


Figure 26 RD Upgrade Consideration in the Properties Sector

- **Sector introduction:** Companies in this sector are involved in real estate services, property development, property investment, real estate investment trusts, and property management services.
- **Likely Transition:** The sector shows moderate interest, with 67% indicating willingness to upgrade. The remaining 33% are undecided, with no outright opposition.
- **Key Drivers:** Competitive pricing and decarbonisation potential are equally important, while engine suitability and air pollution reduction are less relevant.
- **Key Insight:** The properties sector shows moderate interest in renewable diesel, with a strong preference for affordable, low-bio-content options and limited current adoption.

3. Industrial Transportation

RD Upgrade Likeliness in Industrial Transportation Sector

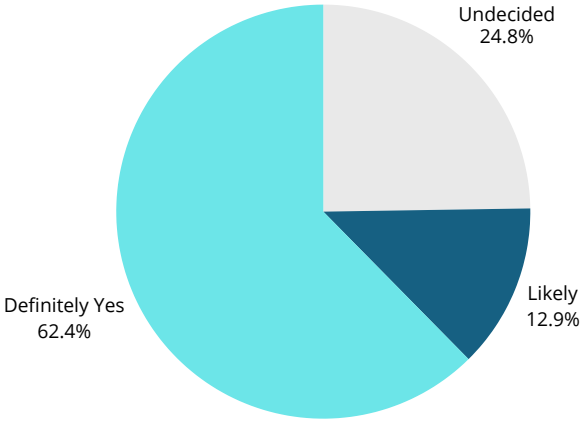


Figure 27 Likelihood of RD Adoption in the Industrial Transportation Sector

RD Upgrade Consideration in Industrial Transportation Sector

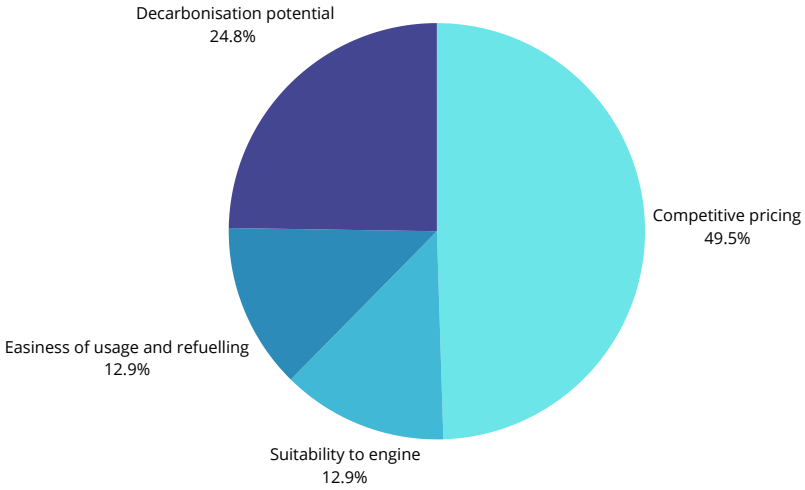


Figure 28 RD Upgrade Consideration in the Industrial Transportation Sector

- **Sector introduction:** Covers shipping and port operations, railway and toll road management, air freight and logistics, and road goods transportation
- **Likely Transition:** This sector demonstrates strong interest, with 75% committed to transitioning. Only 25% remain undecided, and there is no outright opposition.
- **Key Drivers:** Competitive pricing is the dominant factor, followed by decarbonisation potential and ease of usage. Air pollution reduction and engine suitability are not priorities.
- **Key Insight:** Industrial transportation is highly committed to renewable diesel adoption, prioritising sustainability over cost, with significant current usage of high-bio-content fuels.

4. Public Services & Education

RD Upgrade Likeliness in Public Service and Education Sector

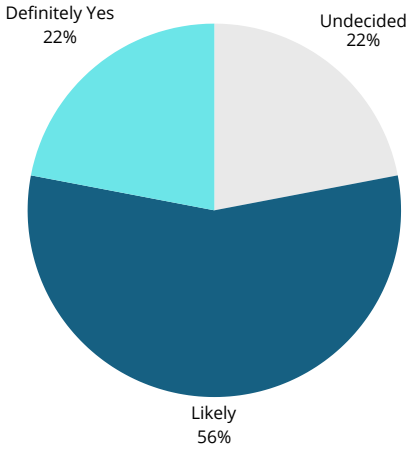


Figure 29 Likelihood of RD Adoption in the Public Services and Education Sectors

RD Upgrade Consideration in Public Service and Education Sector

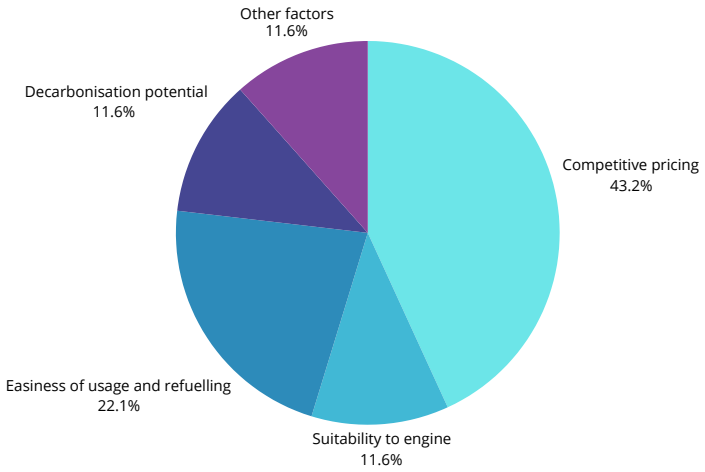


Figure 30 RD Upgrade Consideration in the Public Services and Education Sectors

- **Sector introduction:** This sector includes services provided by public or non-profit organisations. It covers essential services like business associations and social welfare organisations. It also includes schools that provide school bus services, where fuel usage plays a significant role in their sustainability and operations.
- **Likely Transition:** The sector shows strong interest, with 89% indicating a willingness to transition.
- **Key Drivers:** Competitive pricing and ease of usage are the primary motivators, while decarbonisation potential is less significant.
- **Renewable Diesel Blend Usage:** No current renewable diesel blend usage is reported, reflecting minimal adoption.
- **Key Insight:** Public services and education are open to renewable diesel adoption, prioritising affordability and ease of use, but current adoption levels remain low.

5. Commercial & Professional Services

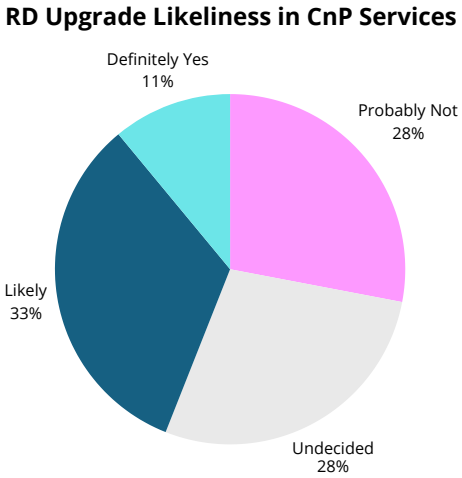


Figure 31 Likelihood of RD Adoption in the CnP Services Sector

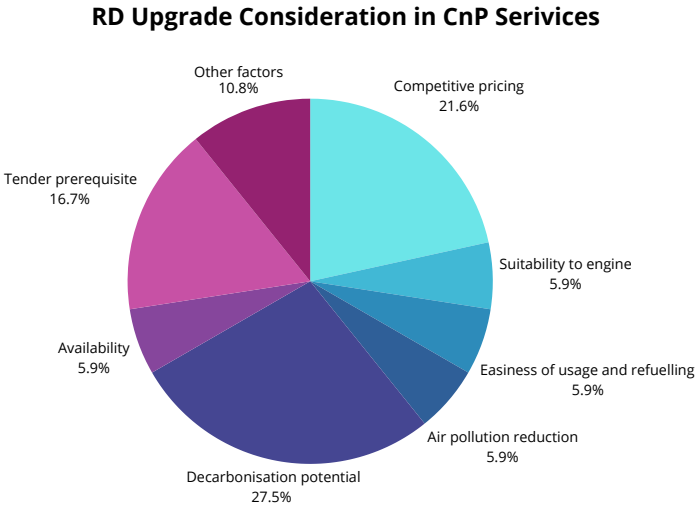


Figure 32 RD Upgrade Consideration in the CnP Services Sector

- **Sector introduction:** Companies in this sector provide professional services for industrial and commercial sectors. Some of the respondents to this survey include environmental consulting and energy engineering companies. Only 28% of the respondents use diesel or biodiesel in areas including Transportation, heavy-duty vehicles, and generators.
- **Likely Transition:** This sector shows moderate interest in renewable diesel, with 44% leaning towards adoption. However, 28% are hesitant, and 28% remain undecided.
- **Key Drivers:** Decarbonisation potential and competitive pricing are the top motivators, but other factors like air pollution reduction and ease of usage are less significant.

Analysis of Survey Responses and Sector Insights

This analysis delves into the preferences and considerations of the top five sectors regarding the transition to renewable diesel. These sectors—Construction, Commercial & Professional Services, Properties, Industrial Transportation, and Public Services & Education—received the highest number of survey responses, making them representative of key use cases and decision-making factors in Hong Kong.

The findings show that most sectors are cost-sensitive, with affordability and availability being the primary drivers for adoption. Construction and Industrial Transportation emerged as the most promising sectors for renewable diesel uptake, with the latter already demonstrating a strong commitment to renewable diesel compared to lower bio-content fuels. Conversely, sectors like Commercial and Professional Services exhibit more cautious attitudes. Across all sectors, competitive pricing, ease of use, and decarbonisation potential were consistently prioritised, though current adoption levels remain generally low.

Insight 6: Alignment with Specific Biofuel Standards for Biodiesel and Renewable Diesel Customers

Question: What are the biofuel-related certification schemes that your organisation adheres to?

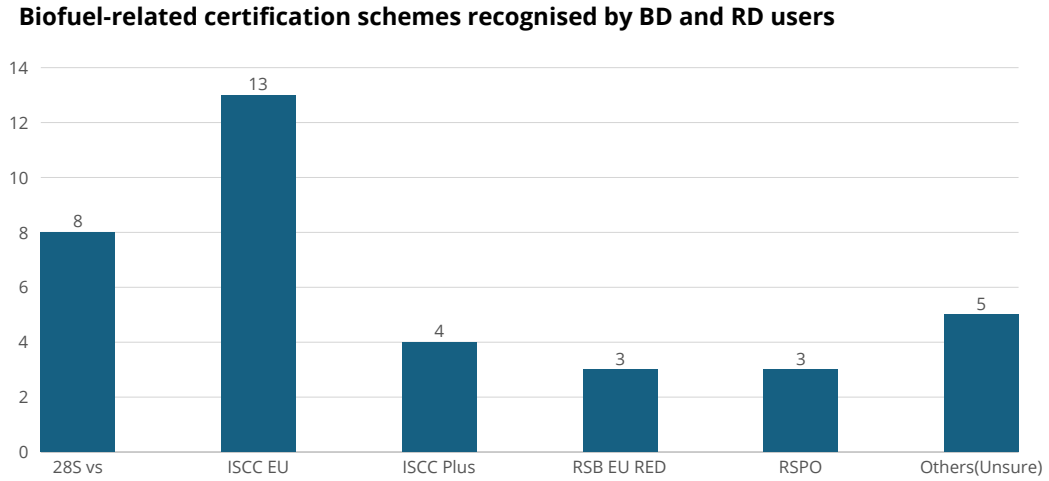


Figure 33 Biofuel Certification Schemes Recognised by Biodiesel and Renewable Diesel Users

The data highlights the preferences and awareness of biodiesel and renewable diesel users regarding alignment with specific biofuel sustainability standards.

1.Dominance of ISCC EU:

- The **ISCC EU** standard is the most widely recognised and adopted among biodiesel and renewable diesel users, with **13 customers** aligning with this certification.
- This suggests that ISCC EU is perceived as a reliable and widely accepted standard, especially in markets where compliance with the EU Renewable Energy Directive ("RED") is required. Its prominence reflects the influence of European sustainability requirements on global biofuel trade.

2.Moderate Adoption of 2BS Voluntary Scheme:

- The **2BS Biomass, Biofuel, Bioliquids sustainability Voluntary Scheme ("2BS vs")**, with eight users, is the second most recognised standard.
- Its adoption indicates a preference for voluntary sustainability certifications that comply with the EU RED framework, but it may not yet have the same level of universal acceptance as ISCC EU.

3.Limited Usage of Other Standards:

- Certifications like **ISCC Plus, RSB EU RED**, and **RSPO** have relatively lower adoption rates.
- This may be due to their more specific focus or niche applicability:
  - ISCC Plus is often used for non-EU markets or for additional sustainability criteria beyond regulatory requirements.
  - Roundtable on Sustainable Biomaterials ("RSB EU RED ") is highly rigorous but less commonly adopted due to its complexity.
  - Roundtable on Sustainable Palm Oil ("RSPO") pertains specifically to palm oil and may not be relevant.

4.Uncertainty among Users:

- A notable five users are unsure of their alignment with specific standards, indicating a lack of awareness or understanding of certification schemes.
- This highlights the need for better education and outreach on the importance and benefits of biofuel sustainability certifications.

Focus Group Discussions

Focus Groups Design

Two focus groups were conducted with the topic being the usage of biodiesel and renewable diesel in Hong Kong. The first focus group consists of businesses with prior use of biodiesel and/or renewable diesel. The second focus group had eight participants who were diesel or biodiesel users. Both groups' participants are from the airport, marine terminals, construction, industrial equipment, food & beverage, and grocery retail sectors. The guiding questions in the focus group follow a similar logic as the clients' survey for participants to provide qualitative insights.

Observation 1: ESG Alignment as a Catalyst for Biofuel Adoption

A dominant theme emerging from discussions was the pivotal role of Environmental, Social, and Governance ("ESG") objectives in driving corporate interest in biodiesel and renewable diesel. Participants emphasised that these fuels offer a tangible pathway to meet carbon reduction targets, particularly for Scope 1 emissions, without necessitating extensive infrastructural overhauls. Businesses highlighted satisfaction with the immediate decarbonisation benefits, especially when using renewable diesel derived from used cooking oil ("UCO"), which aligns with global sustainability benchmarks such as the UN Sustainable Development Goal 7 Affordable and Clean Energy, Goal 11 Sustainable Cities and Communities, and Goal 13 Climate Action.

Researchers and industry practitioners in the EU and the US have been studying and applying biofuels for decades. Researchers at The University of Hong Kong conducted a feasibility study of using renewable diesel ("HVO") as motor fuel in Hong Kong.[26]

[26] Leung Yiu Cheong Dennis, Department of Mechanical Engineering, The University of Hong Kong, "Feasibility study of using 2nd generation biodiesel (HVO) as motor fuel in Hong Kong"

Observation 2: Operational Efficiency and Continuity with Renewable Diesel

Renewable diesel offers significant advantages over electricity as a transition fuel, particularly in industrial applications where efficiency, productivity, and operational continuity are critical.

In a conversation with a construction company, the representative commented that additional productivity can turn into longer workable hours and higher profit. Unlike EVs or e-trucks, which require substantial downtime for recharging, renewable diesel can be used to refuel equipment and vehicles almost instantly, typically in a matter of minutes.

By comparison, charging an electric truck can take at least one hour using fast chargers and even longer with standard charging infrastructure with currently available technologies. In industries where time is money — such as logistics, construction, and heavy manufacturing — this waiting period can result in significant productivity losses, operational delays, and increased costs. Before newer electrification and faster charging technologies emerge, renewable diesel eliminates this bottleneck, allowing businesses to maintain continuous operations and meet tight schedules.

Furthermore, the infrastructure required to transition to renewable diesel is far less disruptive compared to the charging infrastructure needed for electric equipment. While electric solutions often require the installation of extensive charging networks, Renewable diesel can be stored, transported, and distributed using existing fuel supply chains. This makes it more accessible and scalable, particularly in industries that rely on remote operations or heavy-duty equipment, where charging infrastructure may be impractical or unavailable.
In addition, renewable diesel provides performance comparable to traditional diesel, offering consistent reliability. This makes it particularly suitable for industrial applications that demand high power output and long operational hours. By adopting renewable diesel, industries can achieve immediate reductions in carbon emissions while maintaining productivity, operational efficiency, and cost-effectiveness.

Figure 34 WFS Adopts Renewable Diesel for the Fueling Dispensers and Fueling Bowser

Observation 3: Regulatory and Policy Support as Enablers of Scale

The use of biodiesel and renewable diesel in Hong Kong is significantly restricted due to a lack of regulatory clarity and support.

Renewable diesel faces even greater regulatory challenges. As pointed out by focus group participants, currently Hong Kong's on-road vehicle regulation Cap 311L, is based on fossil diesel. As a result, pure or higher blended renewable diesel could not be used on-road since it doesn't meet the density property listed in the regulation. This regulatory gap significantly limits its potential adoption for decarbonising road transport.

Users are restricted to deploying these fuels in limited use cases, which undermines their potential to contribute to Hong Kong's broader decarbonisation goals. Addressing the regulatory challenge is key to unlocking the full potential of these fuels.

Participants also observed that there has been a weak policy signal from the Government to scale up biodiesel and renewable diesel usage in government decarbonisation plans, providing incentives, or conducting public awareness campaigns. Without government support, the scalability of these fuels will remain limited, and their potential contribution to Hong Kong's climate goals will go unrealised.

Observation 4: Strengthening Supply Chain Transparency and Certification

Throughout the focus group discussions, participants recognise renewable diesel as a cleaner and more sustainable alternative to traditional fossil diesel. However, concerns about the transparency and sustainability of its supply chain raise a question mark to adoption. These challenges are particularly pressing for businesses that need to ensure their use of renewable diesel aligns with sustainability goals, regulatory requirements, and carbon credit systems. Without transparent certification standards and a sustainable feedstock supply chain, businesses may face reputational risks, operational inefficiencies, and difficulties participating in carbon markets.

Feedstock Transparency

One of the primary concerns about renewable diesel is the lack of transparency in its feedstock supply chain. Renewable diesel can be produced from a variety of feedstocks. While utilising local UCO as "waste-to-energy" are considered sustainable, other sources such as palm oil raise environmental concerns due to its association with deforestation, loss of biodiversity, and human rights abuses.

Businesses worry that non-renewable or unsustainable materials may be mixed into the renewable diesel feedstock. This practice undermines the sustainability claims of the final product and creates a risk of greenwashing. The lack of clarity about feedstock origins makes it difficult for businesses to determine whether the renewable diesel they purchase genuinely contributes to reducing their carbon footprint. This uncertainty can also lead to reputational damage if stakeholders notice discrepancies between the sustainability claims and the actual environmental impact of the product.

Observation 4: Strengthening Supply Chain Transparency and Certification

Enterprise-led Initiatives and limitations

Some organisations have taken proactive measures to address these challenges by directly collecting feedstock for their suppliers. This approach allows businesses to ensure a more transparent and reliable supply chain by verifying the origin and sustainability of the feedstock. For example, companies in the food and beverage industry may collect their own UCO and provide it for biofuel producers as feedstock.

However, while these initiatives demonstrate a commitment to sustainability, they are not scalable across industries. Collecting feedstock requires significant resources, infrastructure, and logistics. Furthermore, this approach places the burden of ensuring supply chain transparency on individual businesses rather than addressing the systemic issues that affect the entire renewable diesel market.

Observation 5: Strengthening Supply Chain Transparency and Certification

The cost of biodiesel and renewable diesel remains a critical barrier to their widespread adoption. This cost premium makes it less attractive to corporate customers, especially those operating on tight budgets or without strong incentives to decarbonise. B100-grade biodiesel, while used by some corporate customers, also faces resistance due to its higher price, compatibility to engine, and logistical challenges.

Renewable diesel, while offering significant benefits such as being a drop-in fuel that requires no engine modifications, is prohibitively expensive for many users. The cost of pure renewable diesel is reported to be three to four times higher than that of regular diesel (especially for large corporations that can better deal with bulk diesel purchases), making it economically unviable for high-volume customers (who can make the most significant environmental impact) without substantial subsidies or incentives. This disparity is exacerbated in markets like Hong Kong, where Euro V diesel has been tax-free since July 2008 [27]. On the other hand, while some suppliers offer discounts for bulk orders, smaller enterprises that cannot meet the volume requirements for such discounts are left paying significantly higher prices. This creates an uneven playing field where only larger enterprises can afford to adopt these fuels at scale.

The current high cost of renewable diesel outweighs its decarbonisation potential per corporate users. Enterprises may struggle to justify the price premium, especially when other sustainable alternatives, such as electrification, are being explored. Without meaningful financial incentives, such as subsidies, the adoption of biodiesel and renewable diesel will remain limited to enterprises with specific ESG mandates or those participating in public works projects. Reducing costs through government support or increased production efficiency is essential to making these fuels more accessible.

[27] Environmental Protection Department, HKSAR Government. Starting from 14 July 2008, the duty rate for Euro V diesel has been waived.

Chapter 4 Research Insights from Suppliers

Development Process of Expert Interview

The process of developing and conducting interviews with biodiesel suppliers in Hong Kong and Mainland China was to assess the viability of Hong Kong as a market for biodiesel and renewable diesel. Hong Kong has a very limited number of local suppliers specialised in biodiesel production with no renewable diesel production capability. Instead, biodiesel and renewable diesel are primarily imported into Hong Kong. Therefore, interviews were conducted to capture nuanced perspectives from three individual suppliers, with two located in Hong Kong and one in Mainland China.

Findings

Finding 1: Feedstock Competition and Certifications

Suppliers comply with global certification standards, but the Hong Kong market is constrained by feedstock competition and export incentives.

The availability of common feedstock, UCO, is limited in Hong Kong since it is usually collected for export. The EU tariff on Chinese biodiesel further increased the feedstock competition in the EU and attracted more Hong Kong UCO collectors. This not only has led to production capacity falling significantly below the design limits of local suppliers, but also driven up local production cost and prices.

The two local suppliers in Hong Kong rely on grease trap oil and UCO as feedstocks. Both suppliers adhere to international certification standards, such as ASTM D6751, EN 14214, and ISCC, ensuring the quality and sustainability of their products. However, due to the highly competitive UCO market, many competitors — both local and international — prioritise exporting UCO to more lucrative markets like the EU and the US. UCO collectors enjoy higher profit margins compared to local producers, as their leaner business models focus solely on collection and export rather than production.

In terms of clientele, the two local suppliers cater mainly to oil companies, maritime bunkering, public transport, and corporate customers.

Finding 2: Global Trade Policy and Market Dynamics

Global trade policies, particularly anti-dumping tariffs imposed by the EU, significantly impact biodiesel production in Mainland China, leading to shifts in business models and production strategies.

To navigate these restrictions, producers have adopted alternative strategies. According to the interview with the biofuel supplier in Mainland China, some continue production and export to regions that have not imposed tariffs, such as the Middle East, Singapore, and the US. Many producers are pivoting to alternative fuels like SAF, which is not yet subject to tariffs. Since the EU tariff covers product origin, biodiesel produced via Mainland China feedstock is still subject to the tariff. Additionally, Hong Kong has no renewable diesel production capability, making it unfeasible to shift the renewable diesel production to Hong Kong.

Finding 3: Local Demand and Market Constraints

Low local demand and high production costs limit the growth of biodiesel and renewable diesel markets in Hong Kong.

Although the Hong Kong Government mandates the use of B5 biodiesel blends for all public projects, overall local demand remains low. Private sector demand is growing gradually, driven by ESG reporting requirements. However, the higher cost and operational challenges associated with biodiesel and renewable diesel hinder the adoption of higher blends or pure biofuels.

Finding 4: Future Outlook and Strategic Considerations

Suppliers are exploring future opportunities in renewable diesel and SAF production, driven by higher demand and market potential.

Both local suppliers are committed to improving production efficiency and exploring new opportunities in renewable diesel and SAF. However, renewable diesel faces profitability challenges due to limited market acceptance and demand in Hong Kong. SAF production is seen as a more promising alternative, as it shares the same feedstock as renewable diesel but has higher global demand. Suppliers may consider upgrading their production facilities to accommodate SAF production, recognising its potential for long-term growth.

Gap Analysis

The interviews with biodiesel and renewable diesel suppliers in Hong Kong and Mainland China highlight the complex interplay of feedstock competition, regulatory barriers, global trade dynamics, and local market constraints. While Hong Kong has potential as a market for alternative fuels, several critical gaps must be addressed to unlock this potential.

Feedstock availability remains a key challenge, with local suppliers struggling to compete with exporters who benefit from higher incentives in foreign markets. To address this, the Hong Kong Government should implement policies to prioritise local UCO collection and provide incentives for local biodiesel production. Strengthening public-private collaboration could also help secure consistent feedstock supplies and reduce dependence on imports.

Global trade policies, such as the EU's anti-dumping tariffs, have forced Chinese producers to adapt their business models including exporting to nearby regions. Hong Kong is a global trading and logistics hub. Strategic trade agreements and regional collaborations could support Hong Kong to take advantage in accessing and adopting biofuels locally.
Despite the challenges, there are promising opportunities in renewable diesel and SAF production. Suppliers recognise the potential of SAF, which shares the same feedstock as renewable diesel but has higher global demand.

While the biodiesel and renewable diesel markets in Hong Kong face significant hurdles, they also hold considerable potential. By addressing gaps in policy, regulation, and market development, Hong Kong can create a more supportive environment for alternative fuels. This would not only enhance local production capabilities but also position Hong Kong as a key player in the global transition to sustainable energy. However, achieving this vision requires a coordinated effort between government, industry, and other stakeholders to overcome existing challenges and drive long-term growth.

Chapter 5
Policy Recommendations

1. Recognise the Usage of Renewable Diesel

1.1 Recognise Biodiesel and Renewable Diesel for On-road Use

According to a report on decarbonising the transportation sector in Hong Kong by Civic Exchange, medium goods vehicles are estimated to become the second-largest roadside emission source by 2050.[28] It's urgent for industry stakeholders to adopt feasible alternative fuels to achieve climate transition.

However, renewable diesel is not yet legally recognised as a fuel for on-road use, according to Hong Kong Air Pollution Control (Motor Vehicle Fuel) Regulation (**Cap 311L**). This regulatory gap is a significant barrier to its adoption by industries and users looking for low-carbon fuel alternatives.

To address this, the government must update Cap 311L to officially recognise renewable diesel and expand its current provisions for biodiesel. For example, while biodiesel blends up to B5 are permitted for on-road use, higher blends such as B20 or B100 should be allowed, given advancements in engine technology that can accommodate these blends without performance issues. Similarly, pure and blended renewable diesel, which requires no blending due to its compatibility with existing diesel engines, should be granted the same legal status as fossil diesel, enabling its widespread adoption.

By modernising the regulation, Hong Kong can encourage the use of both biodiesel and renewable diesel, further reducing GHG emissions in the transport sector and aligning with the city's decarbonisation targets.

1.2 Establish Cross-Agency Collaboration

The adoption and regulation of biofuels like biodiesel and renewable diesel involve multiple government bureaus and departments, making cross-agency collaboration essential for a cohesive policy framework. Currently, responsibilities related to biofuel production, usage, and regulation are fragmented across various entities, including:

[28] Civic Exchange. A Roadmap to Achieve Net Zero Emissions for Transportation Sector in Hong Kong

- **Environment and Ecology Bureau ("EEB"):** Oversees environmental sustainability and policies to reduce carbon emissions including fuel policies.
- **Environmental Protection Department ("EPD"):** Regulates waste management, including the collection of UCO, a key feedstock for biofuels.
- **Fire Services Department ("FSD"):** Regulates the safe storage and handling of fuels, including biodiesel and renewable diesel.
- **Development Bureau ("DEVB"):** Responsible for urban planning and renewal, land administration and public infrastructure development.
- **Electrical and Mechanical Services Department ("EMSD"):** Provide electrical and mechanical services for enhancing energy efficiency, safety and quality of operations.
- **Lands Department ("LandsD"):** Responsible for land registration and allocation for related fuel infrastructure.
- **Transport and Logistics Bureau ("TLB"):** Responsible for policies related to transportation system, including public transport, vehicle regulation, and logistics infrastructure.
- **Marine Department ("MD"):** Enforces marine regulations, and oversees port operations and facilities, including the regulation of fuels used by vessels within Hong Kong waters.

To streamline efforts, the government could establish a **multi-stakeholder task force**, coordinated by a central authority, such as the EEB. This task force should bring together representatives from all relevant bureaus and departments, as well as private stakeholders, such as biofuel producers, industry users, and subject matter experts.

The primary objectives of this task force may include:

1. Developing a unified regulatory framework for biofuel adoption.
2. Addressing cross-sector challenges, such as feedstock collection, fuel quality standards, and infrastructure development.
3. Promoting public and private sector collaboration to scale up the use of BD and renewable diesel.

By promoting cross-agency collaboration, Hong Kong can create a more integrated and effective approach to promoting biofuels, avoiding redundancies, and ensuring consistency in policymaking.

2. Boost Local Demand by Incorporating Biofuels into Hong Kong's Climate Transition Plans

Hong Kong is at a pivotal stage in its journey toward carbon neutrality, with a pressing need to reduce emissions in sectors heavily reliant on diesel-powered operations, such as construction, transportation, and industrial machinery. While the long-term vision involves transitioning to zero-emission technologies, such as hydrogen and electric commercial vehicles listed in the Green Transformation Roadmap of Public Buses and Taxis released by The Hong Kong Government in December 2024, the adoption of these solutions remains limited in the short term due to high costs, infrastructure challenges, and technological barriers. In this context, biodiesel and renewable diesel emerge as practical, low-carbon transitional fuels that can deliver immediate emissions reductions without requiring significant upfront investments or modifications to existing diesel engines. For example, Malaysia currently imposes a 10% biodiesel mandate.

Figure 35 Cathay Cargo Terminal and HAS Trial HVO for Ground Equipment

2.1 Encourage Higher Blends in Public Projects and Transport

Public projects and transportation systems are among the largest consumers of diesel in Hong Kong. Currently, public works and public housing projects are promoted to use B5-grade biodiesel for machinery,[29] but this policy has not been updated to reflect advancements in fuel technology. Modern engines can efficiently run on higher blends of biodiesel, such as B20 (20% biodiesel) and any blend ratio of renewable diesel, which offer greater emissions reductions.

Similarly, public transportation represents a major opportunity for biofuel adoption. Mandating the use of higher blends of biodiesel or renewable diesel in government fleets, public buses, taxis, and ferries could significantly reduce the sector's carbon footprint.

To implement this, the government should:

- Update Procurement Policies: Require government fleet, all public works projects, and public transportation systems to use higher biodiesel and renewable diesel blends, starting with B20 and R20, and transitioning to B100 and R100 where feasible.
- Provide Financial Support: Offer subsidies or tax breaks to public agencies and contractors to offset the higher cost of biofuels.
- Engage with Manufacturers: Work with vehicle and equipment manufacturers to ensure compatibility with higher biodiesel blends.

By leveraging the public sector's purchasing power, Hong Kong can create a strong market for biofuels, encouraging private sector adoption and accelerating the city's transition to cleaner energy.

2.2 Raise Awareness Through Piloting, Knowledge Sharing and Free/Low-cost Trials

The Government can collaborate with major biofuel providers to launch pilot programmes in select sectors (e.g., construction and transportation) to test fuel performance, identify operational challenges, and gather data on emissions reductions.

Public awareness and industry engagement are critical to overcoming resistance to change and accelerating the transition to biodiesel and renewable diesel. This could include:

[29] Hong Kong Legislative Council. LCQ12: Promoting use of biodiesel

1.Knowledge Sharing and Education:

- Fuel providers can educate the public and corporate customers about renewable diesel by highlighting its benefits and uses. Through transparent technical data sharing and demonstrations, they can explain that renewable diesel is fully compatible with existing diesel engines, requiring no modifications, helping businesses achieve their sustainability goals.
- Organisations like BEC can organise workshops, seminars, and training sessions for industry stakeholders to share best practices and address technical concerns. These engagements can educate businesses, fleet operators, and the general public about the benefits of biodiesel and renewable diesel, including their compatibility with existing engines, reduced emissions, and cost-effectiveness.

2.Free/Low-cost Trial Programmes:

- Free or subsidised trials of biodiesel and renewable diesel should be carried out to encourage adoption by industries and public sector operators. For example, biofuel providers can provide free or subsidised renewable diesel fuel for a limited period to logistics companies to demonstrate its performance and cost savings.

3.Public Campaigns:

- The Government can partner with non-profit organisations and biofuel providers to launch awareness campaigns highlighting the role of biodiesel and renewable diesel in Hong Kong's carbon neutrality transition, emphasising their immediate benefits and long-term sustainability.

Through education and engagement, the Government can build public confidence in biofuels, paving the way for broader adoption.

3. Ensure Accessibility and Stable Supply of Renewable Diesel

Based on the survey feedback, many interested customers don't know where and how they can access renewable diesel products. A stable supply and accessibility of renewable diesel are essential to ensure its successful adoption as a clean fuel alternative in Hong Kong. Without a reliable supply, businesses and industries cannot confidently transition to renewable diesel, as interruptions or shortages could disrupt operations. Accessibility ensures that renewable diesel is available and practical for widespread use.

3.1 Secure a Steady Supply of Renewable Diesel to Hong Kong

Fuel providers should work to maintain a stable fuel product inventory by diversifying product supply sources, increasing the minimum stock level, and providing both stationary and mobile fuelling solutions.

Providers can also establish long-term contracts with multiple international producers, such as those in Mainland China, Singapore, or the EU, to diversify supply sources and reduce dependency on a single region. This helps mitigate risks from global disruptions.

To further enhance supply reliability, providers can develop a robust logistics network, including securing reliable shipping routes and partnering with local distributors to streamline product delivery. Mobile fuelling solutions, such as bulk delivery trucks, can also help meet the needs of industries with large fleets.

In addition to these efforts, providers can work closely with the Hong Kong Government to monitor demand trends, streamline import procedures, and secure incentives for infrastructure development. By combining these efforts, fuel providers can maintain a stable and reliable renewable diesel supply to support Hong Kong's energy and sustainability goals.

3.2 Promote Product Information Sharing

Right now, Hong Kong has very few places to fill up with biofuels for on-road usage—just one B5 biodiesel stations and four R20 renewable diesel station. This makes it hard for customers to access and switch to cleaner fuels.

Hong Kong needs to increase biofuel accessibility across the city. By utilising and upgrading current fuelling infrastructure—especially along bus routes and in busy areas like industrial zones, logistics hubs, and construction sites—it will be easier for businesses to access these fuels. Working with urban planners and industry experts can help identify the best locations for these stations. Encouraging private fuel companies to invest in biofuel infrastructure through incentives can also speed up this process.

Fuel providers should provide up-to-date information on fuelling station addresses and offer technical support. Such information should be easily accessible through product websites and online map applications. They should collaborate with engine manufacturers to confirm and assure its compatibility with existing diesel engines. Additionally, forming partnerships with vehicle and equipment suppliers can help address concerns and ensure a smooth transition for businesses using renewable diesel.

4. Strengthen Certification Frameworks Through International Alignment and Rigorous Oversight

4.1 Align with International Carbon Standards

Hong Kong's renewable diesel certification system should formally recognise and align with international carbon standards to enable seamless participation in global carbon markets. Aligning standards such as the EN 15940 (for fuel quality) and ISCC EU standards will strengthen Hong Kong's position as a leader in sustainable energy while building trust in its renewable diesel certification framework. By adopting these standards, Hong Kong can streamline cross-border trade, enhance market access for local stakeholders, and avoid fragmentation caused by developing standalone criteria.

4.2 Establish Sustainability Criteria with Transparency

Building on internationally recognised frameworks, Hong Kong can implement sustainability requirements for renewable diesel production. Key criteria can include:

- Feedstock traceability: to prevent deforestation or land-use change linked to biofuel production.
- Greenhouse gas ("GHG") emissions thresholds: across the lifecycle of renewable diesel, aligned with ISCC benchmarks.
- Environmental and social safeguards: to protect biodiversity, water resources, and local communities.

These criteria will ensure that renewable diesel sold or produced in Hong Kong meets rigorous environmental and ethical standards, mirroring global best practices while addressing regional priorities. To uphold credibility, Hong Kong can encourage independent third-party verification of compliance with sustainability criteria. Additionally, producers and suppliers are encouraged to disclose detailed feedstock data, including:

- Geographic origin and source of feedstocks.
- Production methods (e.g., waste/residue vs. crop-based feedstocks).
- Life-cycle GHG emissions calculations for each batch.

Publicly accessible registries or platforms could be developed to centralise this information, promoting accountability and consumer trust.

5. Secure Local Feedstock and Promote Local Manufacturing Capabilities

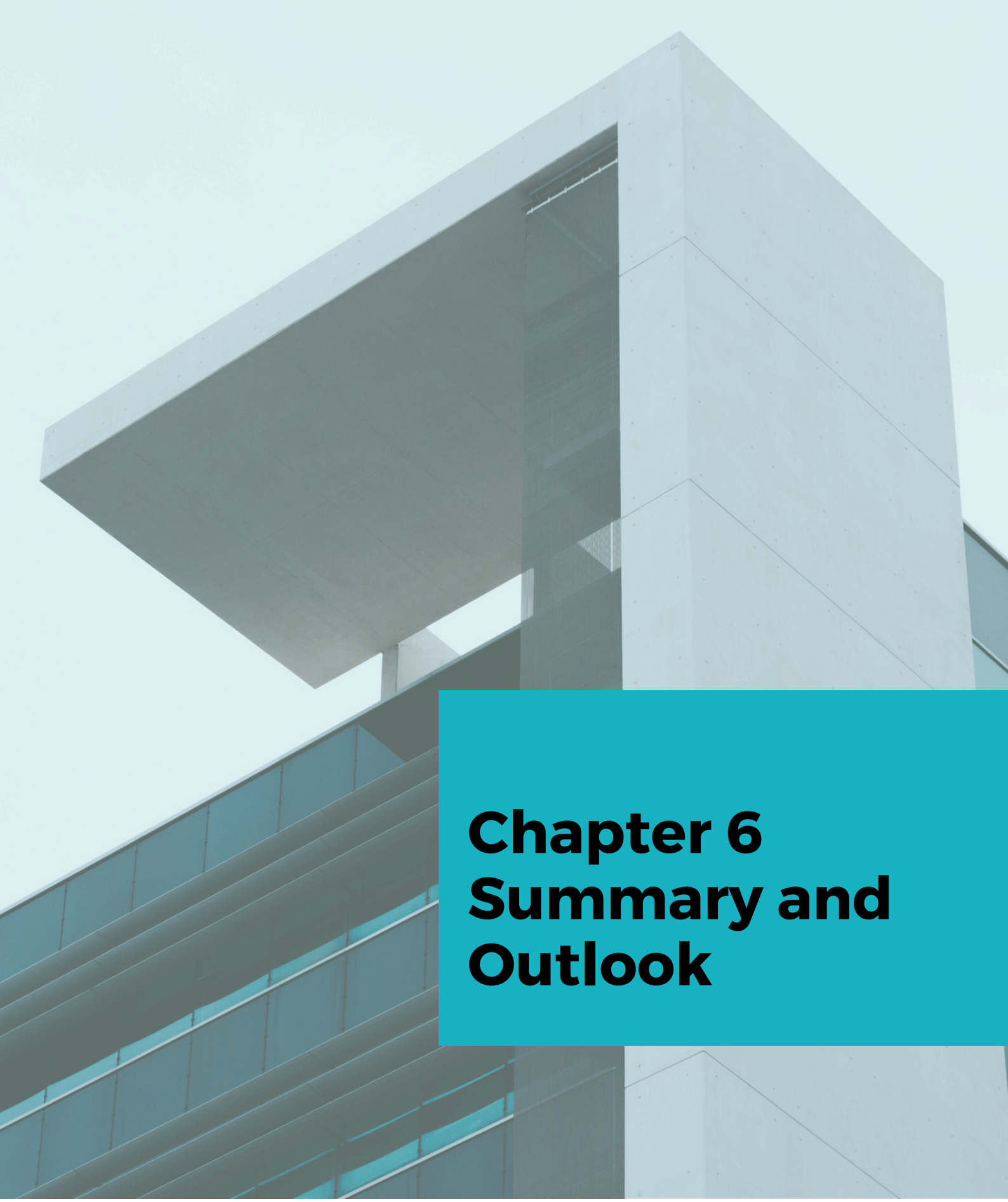
5.1 Encourage Production and Usage of Local Biofuels

To support the growth of the local biofuel industry and resource circulation in the Waste Blueprint for Hong Kong 2035, The Government should promote the development of local biofuel production and consumption.

To drive local consumption, the Government should prioritise the use of locally produced biofuels. While the city currently relies entirely on imports for its renewable diesel supply, developing local production capabilities can transform organic waste into valuable biofuels. This would not only reduce Hong Kong's reliance on imported fuels but also address waste management challenges and contribute to a circular economy.

5.2 Diversify Feedstock Sources and Origins

A stable feedstock supply for local biofuel manufacturers is critical. However, a significant portion of Hong Kong's UCO is exported to meet high demand in the EU and the US. UCO collection policies should keep local UCO feedstock in Hong Kong for local biofuel production. The Government can partner with industries that generate waste feedstocks, such as restaurants and food manufacturers, to create a reliable supply chain for sustainable materials.Supporting local production reduces reliance on imported fuels, strengthens energy security, and creates jobs within the green economy. However, challenges such as high production costs and a lack of talent have hindered the growth of the domestic biofuel industry.



Chapter 6 Summary and Outlook

Renewable diesel, a second-generation biofuel, distinguishes itself through technical and environmental benefits. Renewable diesel is a direct "drop-in" replacement for conventional diesel, requiring no engine modifications or operational compromises. Its adoption can reduce GHG emissions by up to 90% while significantly reducing harmful pollutants like nitrogen oxides ("NO_x") and particulate matter ("PM"). Furthermore, it maintains the energy density and reliability of traditional diesel, ensuring seamless integration into sectors reliant on high-performance fuels, from logistics to heavy machinery.

Positive industry feedback highlights its appeal in streamlining corporate energy transitions, in addition to avoiding costly infrastructure overhauls or productivity losses. For instance, focus groups highlight its role in avoiding downtime during fleet transitions — a critical factor for industries like aviation and shipping. This practicality, paired with decarbonisation benefits, positions renewable diesel as a transitional lifeline for hard-to-abate sectors where electrification remains technologically or economically unfeasible.

In regions like Hong Kong, renewable diesel offers a strategic pathway to meet Hong Kong's 2050 carbon neutrality targets. Despite fragmented policy support and dependence on imported feedstocks — its application in port operations, construction machinery, and freight transport aligns with the city's need for scalable, low-disruption solutions. By decarbonising cranes, generators, and heavy-duty vehicles without fleet replacements, renewable diesel bridges the gap between regulatory pressure and industrial reality.

Renewable diesel represents a pragmatic yet powerful tool in the global decarbonisation arsenal. By balancing environmental rigour with operational continuity, it addresses the urgent need for solutions that are both ecologically sound and economically viable. As industries and governments navigate the energy transition, renewable diesel stands out as a catalyst for progress — proving that sustainability and practicality need not be mutually exclusive.

Key Drivers of Renewable Diesel Adoption in Hong Kong

Looking ahead, the fuel's trajectory will hinge on harmonising international sustainability certifications, scaling feedstock supply chains, and targeting sector-specific adoption campaigns. Several factors will influence the adoption and market growth of renewable diesel in the next decade:

A. Sectoral Demand

- **Heavy-Duty Transport and Industrial Sectors:** These sectors are less suited for electrification due to technological and cost barriers, making renewable diesel a practical low-carbon alternative. According to our research and engagement, the Industrial Transportation sector, already demonstrating a willingness to adopt high-bio-content fuels, is likely to drive renewable diesel demand.

- **Construction and Schools:** These sectors also show moderate interest in renewable diesel, particularly if cost barriers are reduced and supply becomes more reliable.

Electrification is rapidly advancing in Hong Kong, however, public transport, heavy-duty vehicles and off-road equipment (e.g., in construction) face a longer electrification transition period, leaving a significant market opportunity for renewable diesel in these applications.

B. Policy and Regulation

- Hong Kong's Climate Action Plan 2050 outlines ambitious decarbonisation goals, with a focus on carbon neutrality by 2050. While the current policy framework heavily favours EVs, the introduction of biofuel-specific policies, such as on-road usage recognition, higher blending requirements or incentives for renewable diesel, could dramatically accelerate adoption.

- Examples from other regions (e.g., the EU and California in the US) show that regulatory support, such as blending mandates and subsidies, can be pivotal in scaling renewable diesel markets.

C. Global Supply Chain and Import Dependency

- As local production remains limited, Hong Kong will likely rely on imports of renewable diesel to meet future demand. Global competition and sustainability concerns over feedstock sourcing could pose challenges. Prioritising waste-based feedstocks, such as UCO, could mitigate these risks and align with sustainability goals.

Market Forecast

This market forecast on renewable diesel and biodiesel in Hong Kong is developed based on a combination of qualitative and quantitative research methods. The analysis incorporates insights from demand-side surveys, focus group discussions, and interviews with suppliers and industry experts. Additionally, it reflects the analysis of Hong Kong's current environmental policies conducted by the BEC Policy and Research Team.

While every effort has been made to ensure the accuracy and reliability of the information presented, this forecast is subject to certain limitations. The findings rely on self-reported data from survey respondents and focus group participants, which may introduce potential biases or variations in interpretation. Furthermore, the perspectives of suppliers and experts reflect the current conditions and may change as the market evolves.

The forecast is also influenced by Hong Kong's regulatory framework, which is subject to updates or changes. As a result, the projections provided should be interpreted as indicative rather than definitive. Readers are encouraged to consider this report as a guide, acknowledging that actual market developments may differ due to unforeseen economic, technological, or policy changes.

Short-Term (2025–2027)

- **Adoption Levels:** As a new product to Hong Kong, renewable diesel will remain limited adoption. The majority of renewable diesel usage will likely come from experienced users and sustainability-focused organisations with strong ESG mandates. To address awareness gaps, trial and pilot programmes of renewable diesel blends (e.g. 20% or 33%) can play a key role in educating customers about the benefits of renewable diesel, showcasing its compatibility with existing diesel engines, and demonstrating its potential to reduce emissions.
- **Policy Developments:** Advocacy efforts by BEC and other organisations may drive initial policy discussions around biofuels for sectoral usage. However, significant legislative changes are unlikely in the short term, with relatively limited discussions at the public policy level. Pilot programmes highlighting renewable diesel's role in decarbonising hard-to-electrify sectors, such as heavy-duty transport and construction, could help shift the policy narrative.
- **Market Size:** renewable diesel will occupy a niche market, catering primarily to sectors like Industrial Transportation and Construction. Enhanced customer education through targeted programmes, case studies, and collaboration with industry leaders could help expand adoption beyond these early sectors.

Mid-Term (2028–2030)

- **Policy Momentum:** By the late 2020s, growing pressure to decarbonise hard-to-electrify sectors and align with international biofuel standards may prompt Hong Kong to introduce more progressive biofuel policies. Potential measures include renewable diesel subsidies or mandatory blending ratios.
- **Technology and Supply Chain:** Advances in feedstock processing and global renewable diesel production capacity may reduce costs, improving the competitiveness of renewable diesel in Hong Kong. Local biodiesel production may also scale up if UCO collection is prioritised.
- **Adoption Growth:** Adoption is expected to accelerate, particularly in heavy-duty transport, public service fleets (e.g., buses), and industrial equipment. Construction and logistics companies may also adopt renewable diesel as part of their decarbonisation strategies.
- **Market Size:** renewable diesel could capture a growing market share, particularly in fleets and sectors where electrification remains impractical.

Long-Term (2031–2035)

- **Widespread Integration:** By the early 2030s, renewable diesel adoption is expected to reach mainstream levels in hard-to-electrify sectors, driven by regulatory mandates, improved affordability, and greater awareness of its benefits.
- **Decarbonisation Impact:** renewable diesel will play a critical role in helping Hong Kong achieve interim carbon reduction targets, particularly in the transport and industrial sectors.
- **Complement Electrification:** While electrification will dominate light-duty applications, renewable diesel will remain essential for heavy-duty vehicles, maritime transport, and construction equipment. Hydrogen fuel may emerge as a competitor in some areas as scale growths with lower carbon hydrogen, renewable diesel's compatibility with existing infrastructure will ensure its relevance.

Opportunities for Growth

Opportunities for Hong Kong

Renewable Diesel as a Decarbonisation Opportunity
Despite its regulatory challenges, renewable diesel offers significant potential for decarbonising heavy-duty vehicles and industrial machinery. Its properties, comparable to traditional diesel, make it an attractive low-carbon alternative that could scale rapidly with the right policy framework.
Strengthening Local Supply Chains
By prioritising local UCO for biofuel production, Hong Kong could enhance its circular economy by taking advantage of the feedstock for "waste-to-energy" production.
Policy Intervention
Introducing specific decarbonisation targets for biofuels and providing financial incentives—similar to those for EVs—could catalyse adoption. Examples include subsidies for biofuel users and mandates for biodiesel blends (e.g.R33).
Raising Awareness
A concerted effort to educate the public and businesses on the environmental benefits of biodiesel and renewable diesel could drive market demand. Government campaigns and partnerships with industries could highlight biofuels as transitional solutions in achieving Hong Kong's carbon neutrality goals.

Challenges

- Price fluctuation of feedstock and/or biofuel products.
- Hong Kong's biofuel market is still underdeveloped compared to Mainland China, the EU and the US, requiring substantial investment and policy support to scale up its supply and demand.
- Competition for UCO exports and biodiesel imports with other markets, such as Southeast Asia and the Middle East, could limit Hong Kong's supply options.

While biodiesel and renewable diesel can play key roles in Hong Kong's energy transition, their adoption is hindered by high costs, limited local production, regulatory gaps, and a lack of incentives. Biodiesel's established market presence provides a foundation for growth, but renewable diesel represents a significant untapped opportunity for decarbonising heavy-duty transport and industrial sectors. With policy intervention, infrastructure investment, and greater public awareness, Hong Kong can unlock the potential of these biofuels as part of its low-carbon future.

Conclusion

Through our research and in-depth engagement with corporate users, renewable diesel has demonstrated a satisfying user experience and decarbonisation result. However, wider adoption is essentially constrained by policy gaps, resulting in inefficient market interests. The Government needs to act now to expedite the low carbon transition and take a leadership role in supporting this effort. This includes setting clear rules to ensure that on-road use of renewable diesel is permitted, safe and high-quality. Funding pilot projects to test the idea of introducing renewable diesel at more retail service stations/pumps can help identify challenges and refine the strategy. Integrating renewable diesel accessibility expansion into Hong Kong's broader plan to cut emissions, especially for commercial vehicles, will ensure this effort aligns with the city's long-term goals. By taking these steps, Hong Kong can make more accessible and accelerate its transition to cleaner energy.

BEC is committed to advocating the use of credible biodiesel and renewable diesel that can demonstrate transparent decarbonisation potential and traceability as transitional fuels in Hong Kong's journey towards decarbonisation. BEC will actively engage with stakeholders and the Government to promote the implementation of policies and actions that drive the adoption of these biofuels.

Looking ahead, BEC plans to bridge the awareness gap by organising dissemination events regarding research findings and public education activities. These initiatives aim to raise awareness among businesses and the general public about the environmental benefits of biodiesel and renewable diesel and their role in achieving carbon neutrality.

In conclusion, BEC will play a pivotal role in shaping strategies and strengthening collaboration to ensure Hong Kong capitalises on the opportunities presented by biodiesel and renewable diesel in building a sustainable and low-carbon future.

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