



Emerging from Covid-19: Digitalisation and Sustainability in Foodservice

April 2023



Right By You



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Executive Summary

In the near-term, foodservice players need to navigate challenges from higher costs of borrowing, labour and raw materials. As post-Covid-19 dining adjusts to new economic realities, foodservice players should keep abreast of changing consumer preferences. This may include easy cooking at home in lieu of out-of-home dining to economise. For others, food delivery has become more entrenched – even as Covid-19 restrictions disappear.

Demand for increased convenience is structural; and so is the need for different pricing points. Packaged food and beverage sales of easy preparation and wellness categories – which performed better than on-the-go categories during Covid-19 – continued to see growth despite lifting of restrictions. Likewise, Quick Service Restaurants (QSR) have gained market share at the same time as foot traffic to foodservice outlets have lagged foot traffic to groceries.

These changes require foodservice players to continue investing in multiple touchpoints to broaden their reach and to invest in supply chain reliability, flexibility and diversification. Changing consumer trends can be deciphered by leveraging on real-time data and trends – through partnerships, data sharing – which underscore the dynamic and competitive landscape of foodservice.

As part of the foodservice industry's sustainable transition and to extract value from food waste, we also take a closer look into used cooking oil (UCO) collection and upcycling. It not only delivers value in terms of traceability and nominal cash to foodservice players, but also in cutting Greenhouse Gases (GHG). Given its part in the circular economy, UCO collection and upcycling thus benefits from digitalised supply chain management that provides traceability. Foodservice companies' waste management activities would also be eligible for green financing under UOB's sustainable finance frameworks for Smart City and Circular Economy; while trading of UCO may qualify under UOB's Green and Sustainable Trade Finance Framework.

Over the long-term, foodservice is expected to expand faster than food retail, underpinned by demographic shift and urbanisation. This offers opportunities to grow its footprint and to provide value-added services. Whichever strategy foodservice participants undertake, we expect the momentum in digitalisation and sustainability to continue.

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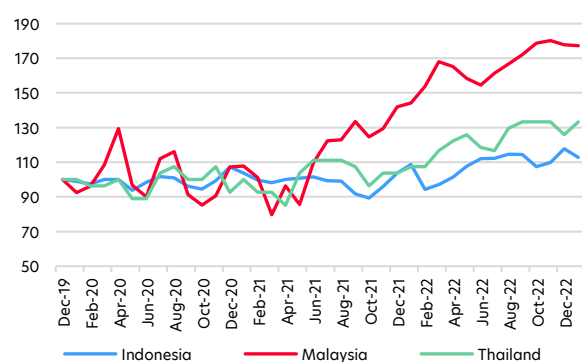
Foodservice vs. Food retail

Consumers are adapting to higher prices

In ASEAN-4¹, foodservice and food retail prices have increased faster than their volumes in 2022; with input costs, such as chicken and egg having reached their highest levels since 2019 (see Figures 1 and 2). As higher input costs are passed on to consumers, consumption behaviour is adapting in different ways. In some consumer segments, these adjustments may include fewer trips to foodservice outlets and/or a smaller ticket size per visit. In food retail, some demand may have shifted towards private labels, smaller packaging, and/or substitution of discretionary goods.

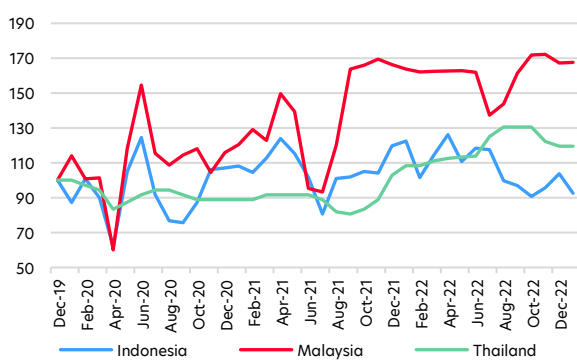
Data we collected indeed shows a faster pace of price increases in food retail (see Figure 3). In foodservice however - with exception of Indonesia - we saw a slower increase or reduced average transaction value (see Figure 4). This is not surprising, as foodservice pricing is typically higher than that of food retail (i.e. at least three times input cost). This divergence suggests that raw material cost increases in foodservice have been partly absorbed, substituted, reduced or paid for by cost savings elsewhere.

Figure 1. Egg prices (local currencies)-indexed



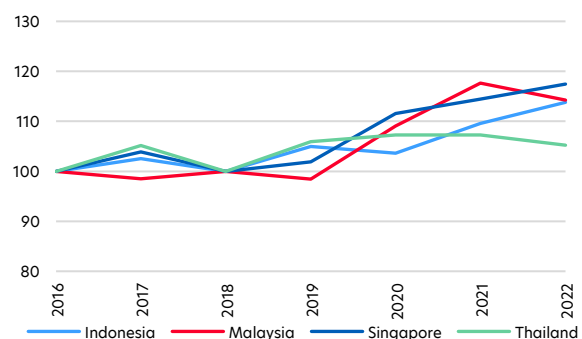
Source: Industry sources

Figure 2. Broiler prices (local currencies)-indexed



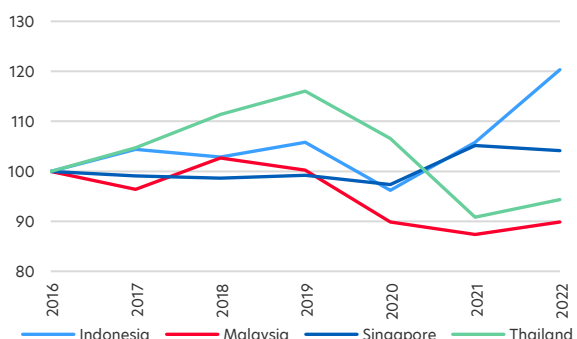
Source: Industry sources

Figure 3. Packaged staple food price-indexed



Source: Euromonitor International

Figure 4. Foodservice transaction value-indexed

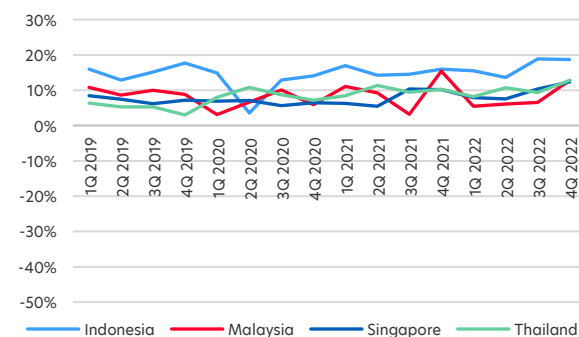


Source: Euromonitor International

¹ ASEAN-4: Indonesia, Malaysia, Singapore, Thailand

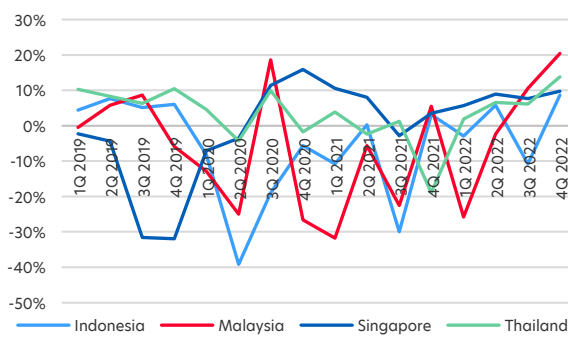
The quarterly results of some listed food retail and foodservice counters across Indonesia, Malaysia, Thailand, and Singapore also revealed deviating operating margins since 1Q 2019 (see Figure 5 and 6). But despite volatility in foodservice stocks' operating margins however, trends have generally moved into positive territory by 4Q 2022.

Figure 5. Quarterly operating margins of listed food retail stocks²



Source: Bloomberg

Figure 6. Quarterly operating margins of listed foodservice stocks³

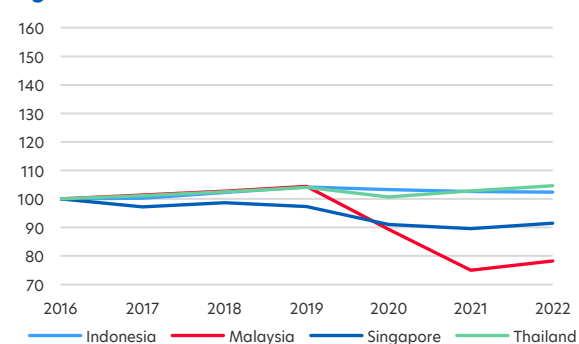


Source: Bloomberg

QSR has the highest foodservice segment growth in ASEAN-4

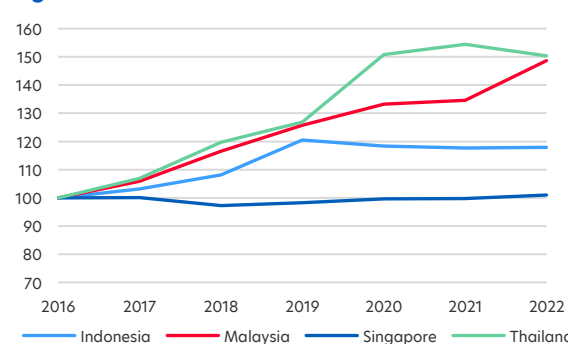
During the Covid-19 pandemic, within foodservice segments, limited-service restaurants or quick service restaurants (QSR) emerged as winners. As the foodservice supply chain was forced to temporarily shift from on-premise to off-premise points of sales, participation in online delivery and curbside pickup was crucial. Independent foodservice outlets lacking digital presence to offset drops from dine-in revenues consequently incurred losses; and some outlets (primarily full-service restaurants) were forced to close permanently (see Figure 7). Conversely, chained QSR outlets were better prepared to adjust; and expanded their footprint over the same period. Yet, expansion of outlets were not uniform across ASEAN-4 over 2020-2021 (see Figure 8). Today, despite most Covid-19 restrictions lifted since 2022, foodservice outlets still have to deal with rising costs of borrowing, raw materials, and labour. Hence, we expect continued shifts in outlet premises to reduce costs towards locations with easy access, lower rents and extended operating hours.

Figure 7. Full-service restaurant outlets-indexed



Source: Euromonitor International

Figure 8. Limited service or QSR outlets-indexed



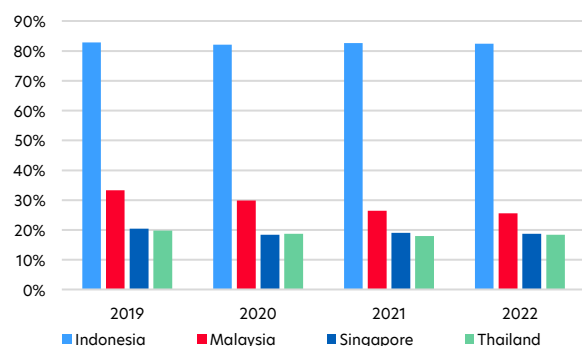
Source: Euromonitor International

² Simple average of reported operating margins of 16 counters in Indonesia, 22 counters in Malaysia, 9 counters in Singapore and 33 counters in Thailand

³ Simple average of reported operating margins of 6 counters in Indonesia, 3 counters in Malaysia, 13 counters in Singapore and 8 counters in Thailand

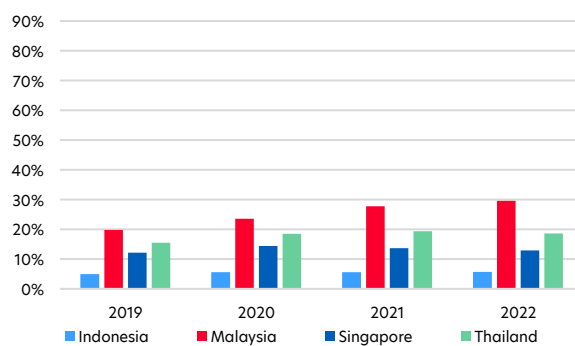
Based on Euromonitor data, the aggregate foodservice value of chained QSR in ASEAN-4 had indicatively expanded 2.7 per cent CAGR between 2019 and 2022; and was estimated to have grown 3.3 per cent YoY in 2020 alone – despite Covid-19 movement restrictions. This translated to a growth of 2.8 percentage points in chained QSR’s aggregate market share within the overall foodservice sector to 13.8 per cent in 2022 from 11.0 per cent in 2019 (see Figures 9 and 10).

Figure 9. Share of full-service restaurant revenue is declining



Source: Euromonitor International

Figure 10. Share of chained QSR revenue has expanded since Covid-19



Source: Euromonitor International

Chained QSR outlets in ASEAN-4 are dominated by global brands – whose share of revenue had risen by 0.6 – 6.7 percentage points between 2019 and 2021 (except in Thailand, which contracted 1.7 per cent on lower overall average transaction value). Global QSR brands had fared relatively better than independent outlets given several drivers:



Convenience

Global franchises are generally better suited for structural shifts towards off-premise ordering post-Covid-19; while younger consumers are better adapted to QSR



Digitalisation

QSR business model allows for quicker transition to online deliveries. Digital ordering (on or off-premise) and food delivery would alleviate labour tightness while providing better granularity in demand trends



Product hygiene.

Being widely recognised brands, consumers are aware of the product standards, consistency and packaging for safer meals



Consolidation

Closure of independent outlets provides opportunity to expand market share. This expansion may not necessarily reopen in the same locations; but rather focus on locations that are easily accessible and with lower rents to maximise flexibility of all-day offerings



Value for money

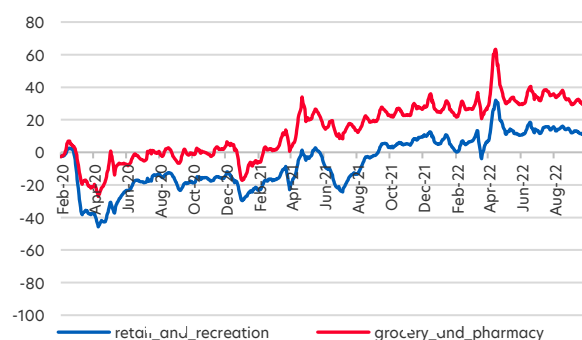
A global franchise brand with a streamlined supply chain and better economies of scale would offer better value for budget-conscious consumers

Are consumers cooking more at home?

While foodservice footfalls post-Covid-19 continue to recover since early 2022, its pace has varied across ASEAN-4. Based on Google Mobility data (between February 2020 and October 2022), restaurant footfalls in some countries (taken from visits to retail and recreation outlets as a proxy) have reverted to pre-pandemic levels. In Indonesia, footfalls have notably exceeded their pre-pandemic levels.

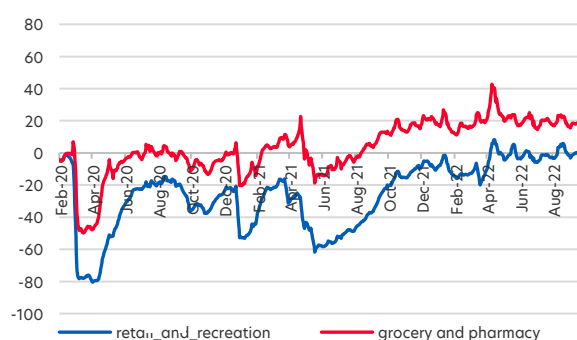
On the other hand, footfalls in food retail outlets (taken from visits to grocery stores and pharmacies as a proxy) by end 2022 have mostly exceeded pre-pandemic level and outperformed those in retail and recreation. This suggests consumers may be spending more on groceries than out-of-home meals - except in Singapore, where footfalls in retail and recreation have overtaken those to grocery stores and pharmacies.

Figure 11. Percent change in Indonesia foot traffic from baseline* (seven-day moving average)



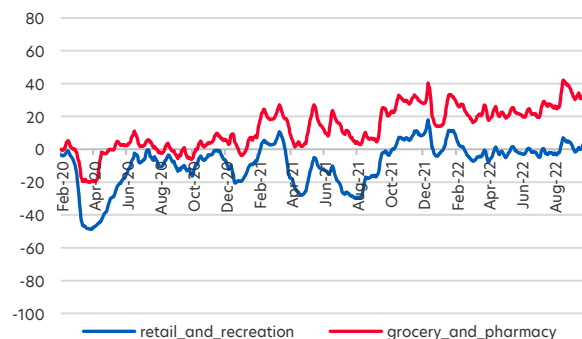
Google Covid-19 Community Mobility reports

Figure 12. Percent change in Malaysia foot traffic from baseline* (seven-day moving average)



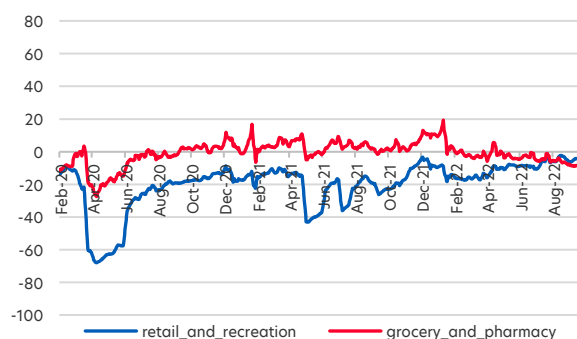
Google Covid-19 Community Mobility reports

Figure 13. Percent change in Thailand foot traffic from baseline* (seven-day moving average)



Google Covid-19 Community Mobility reports

Figure 14. Percent change in Singapore foot traffic from baseline* (seven-day moving average)

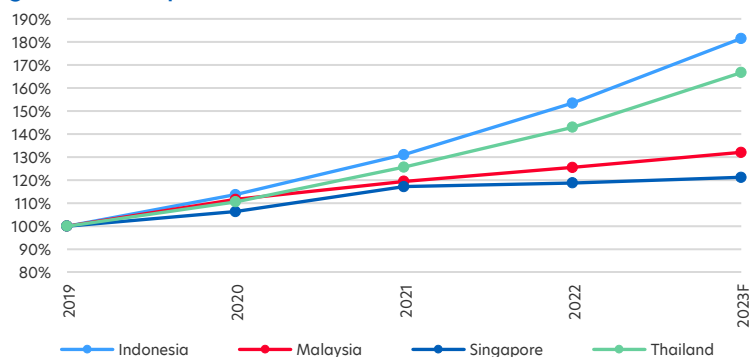


Google Covid-19 Community Mobility reports

* Baseline day = the median foot traffic value from the five-week period between 3 January 2020 and 6 February 2020, which represents a *normal* value for that day of the week

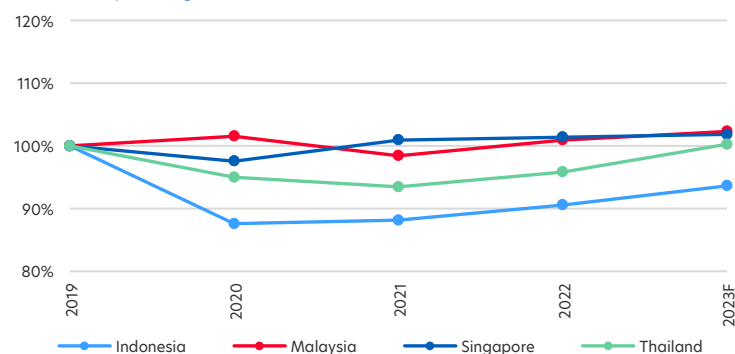
The packaged food retail data we collected (as a representation of how well the fast-moving consumer goods or FMCG industry performs), also suggests that certain categories – such as easy preparation meals and wellness – have gained grounds. Compared to others, these categories have seen their volumes grow faster post-pandemic (see Figure 15) and are expected to be maintained at faster pace relative to other categories. This trend may not only be borne out of demand for more convenience due to return to work; but also partly due to ongoing demographic shift, and as part of bringing the foodservice experience home to economise. On the other hand, on-the-go categories that had suffered during the pandemic have started to recover (see Figure 16). However, growth rate thereafter is expected to remain soft.

Figure 15. Easy preparation and wellness categories⁴ saw new growth since pandemic - indexed



Source: Euromonitor International

Figure 16. On-the-go categories⁵ have seen volumes recovering since reopening - indexed



Source: Euromonitor International

⁴ Category includes: reduced-sugar carbonates, flavoured yoghurt, instant noodles, RTE cereals, cheese, savoury snacks, frozen processed seafood, vitamins & derivatives, fresh coffee, plant-based milk (ex. soy)

⁵ Category includes: concentrates, confectionery, RTD tea, juice, energy drinks, sports drinks

Data as a vital driver for growth

As food demand expands, consumer spending on foodservice remains largely discretionary amidst intense competitive environment (i.e. low entry-barrier). To drive strategic growth, value and convenience should be in line with consumer preferences in the target markets. In most cases, the food and beverage industry (both food retail and foodservice) use consumer insights that would best serve their business goals. According to Tastewise (an artificial intelligence data platform for the food and beverage industry), surveys have traditionally been employed to assess trends. However, data collected through one-time surveys has drawbacks; these being a snapshot in time and having limited sample size. Moreover, consumer intents and views compiled in surveys may not necessarily reflect actual behaviour for various reasons.

Today the foodservice industry needs to keep abreast of fast-changing consumer preferences through digitalisation. This involves increased adoption of food delivery; which has opened doors for real-time data (e.g. spending and consumption preferences at different timings of the day across different areas) – particularly since the pandemic – as well as various cloud-based management software and hardware. Data is also shared within a chain and franchise model, where franchisors typically provide consumption trends with its franchisees and outlets across different regions for potential test cases. For independent restaurants, providing booking widgets through online platforms or social media can likewise work to expand reach, to build guest database and to organise staffing.

Digitalisation hence enables the foodservice industry to gain insights in actual consumer preferences; the historical trend of which can also be evaluated. It also enables automation, which is important to improve not just customer experience, but also operational efficiency between team members to minimise employee turnover. For this purpose, digital insights and data providers would be able to provide foodservice brands with specific trends – in addition to order flows from delivery aggregators. For foodservice players, there is a strong incentive to understand consumer insights not only from own outlets, but also across geographies.

[Check out the interview on the next page](#)

Interview with
PT Sarimelati Kencana Tbk

Mr. Andromeda Tristanto

Head of Investor Relations
and Corporate Finance

Would you provide us with a brief description of PT Sarimelati Kencana Tbk and its key businesses?

PT Sarimelati Kencana Tbk (SMK) (*IDX ticker: PZZA*) was established in 1987 and holds a franchise agreement of Pizza Hut Indonesia from Yum! Brands. As of 2022, SMK operated 615 Pizza Hut Outlets throughout Indonesia. SMK also operates a pasta factory in Jakarta, a protein factory in West Java as well as dough ball facilities in West, Central and East Java, Bali, South Sulawesi, North and South Sumatra and Riau provinces.

How has foodservice business- especially QSR - changed as a result of Covid-19?

During Covid-19 restrictions back in 2020 to 2021, delivery and take away services became the backbone of the business, since dine-in was not allowed. Outlets near residential area delivered the highest performance for the business because of work-from-home and study-from-home activities. To cater for this, we made some changes to the menu to make it simpler and to ensure that products can be transported in boxes.

How does the QSR industry ensure its supply chain is resilient against disruptions?

Disruptions are inevitable. Covid-19 caused disruptions not only in production; but in logistics and distribution as well. To overcome these issues, QSR must engage with various suppliers and must be willing to pay in advance for most of their needs. In effect, these disruptions created higher financing needs; and consequently, increased borrowing costs. However, we benefit from strong support from our suppliers - built through good relationship for many years. Good faith in business pays off.

How important is data on consumer trends in generating revenues?

Data on consumer trends is very important. Competition has become tougher nowadays; where products differentiation has become more and more insignificant. Businesses who can exploit data to gain result from it would be able to increase its acumen in targeting and, therefore, win the customers.

[Continued to next page](#)

In terms of age profile, who are your focus consumers and why?

The focus is on mature customers and family oriented. Most of our products are considered as premium product in term of price. Therefore, mature, well-established customers are a good fit to the purpose. However, we have also launched initiatives that make us stay relevant to teenagers/young adults as well; as we want to grow with them in terms of their spending power and needs.

How does SMK approach staff turnover as key component in foodservice business?

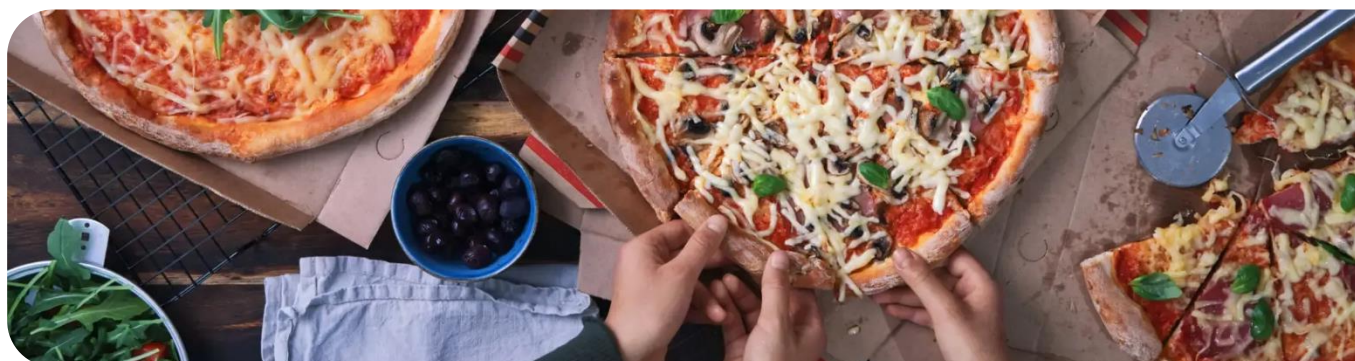
By giving competitive package within the industry and by ensuring that staff rights are fulfilled.

Are you aware of any sustainability trends in the foodservice supply-chain amongst players?

Yes. We have launched initiatives related to sustainability, such as installing solar panels to power some of our outlets. We are also continuously improving the way we cook our products to reduce food waste.

What do you think is the long-term trend for QSR model?

Cloud kitchen is always being discussed in many occasions. However, for a company like us - who has strict standard from the franchisor - it needs to be proven in terms of hygiene standard as well as recipe confidentiality. We believe automation is a must in any industry because it will increase efficiency in operation. At this point consolidation remains to be seen.



Extending the foodservice's reach

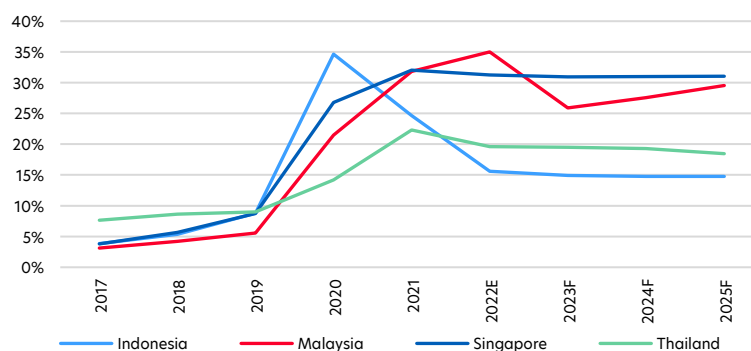
“The digital touchpoint can be accessed not only for food delivery, but also as means for product launches, specific promotions or loyalty programmes, as well as for understanding consumer trends relevant for product development and pricing points”

Food delivery remains vital, despite deceleration post-Covid-19

As consumers demand greater accessibility; presence in various touchpoints is vital not only for packaged food and beverage brands, but also in foodservice - not least QSR brands. The digital channel, for example - through own and/or third-party platforms - can be accessed not only for food delivery, but also as means for product launches, specific promotions or loyalty programmes, as well as for understanding consumer trends relevant for product development and pricing points.

According to e-Conomy SEA 2022 report published by Google, Temasek and Bain & Company, the Gross Merchandise Value (GMV) of food delivery in Southeast Asia (covering Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam) was estimated to have grown from USD5 billion in 2019 to USD17 billion in 2022 - representing 50 per cent CAGR over the three-year period. A slower expansion of 13 per cent CAGR is expected by 2025 to USD24 billion. While slightly less aggressive, Euromonitor likewise estimates that food delivery GMV in ASEAN-4 would continue expanding 6 per cent CAGR over the next three years to reach USD18 billion by 2025F. This accounts for roughly 20 per cent of overall foodservice value; although each country would have different penetration rates (see Figure 17). Overall, food delivery share remains sizeable, given the inherent fragmentation in the industry.

Figure 17. Share of food delivery to overall foodservice value



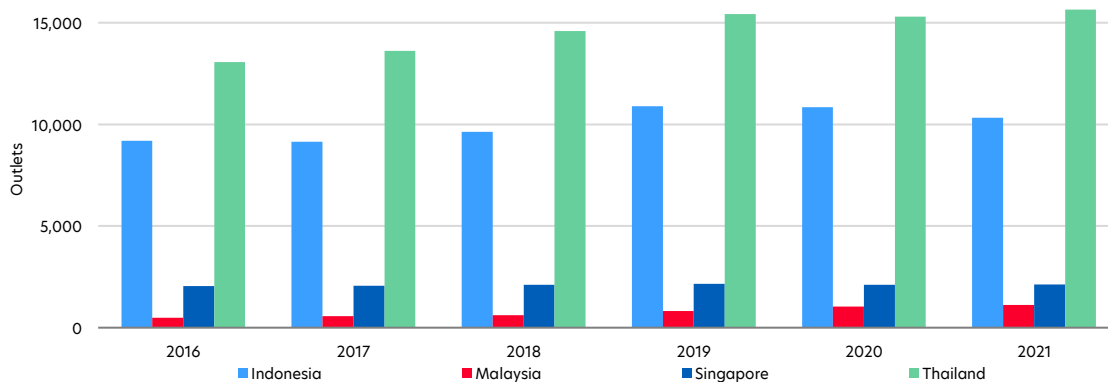
Source: Euromonitor International

The chained kiosk model requires continuous innovation

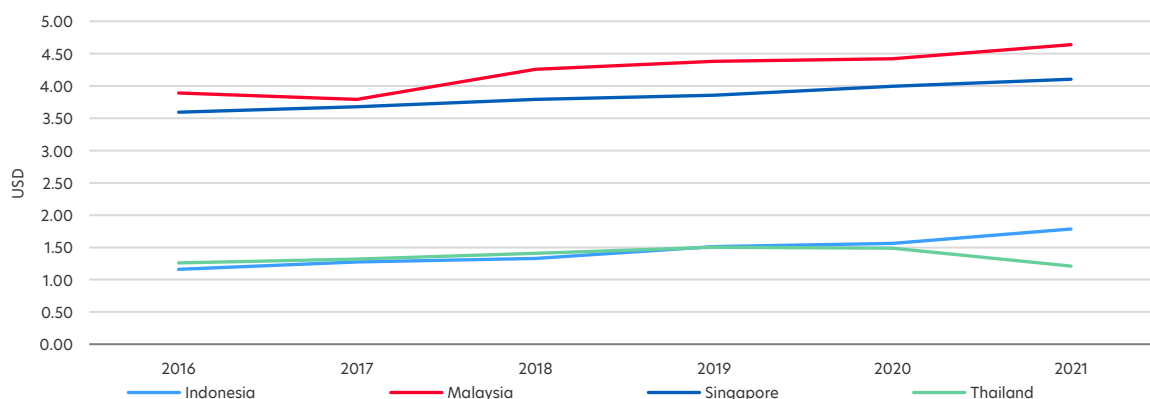
Another channel through which the foodservice industry has been able to grow rapidly is the chained kiosk model. Proliferation of this model reflects consumer demand for affordable and convenient offerings; and one that can be nimble, requiring low initial investment for each outlet or franchisee. Driven by a low-cost format, the chained kiosk can rapidly replicate proven concept and is hence a volume-driven model (as opposed to royalty-focused or innovation-focused). For this reason, payback period per outlet would typically be less than one year, much quicker than the average of three to five years for a global chained QSR outlet. Chained kiosk outlets were estimated to have expanded 2-19 per cent CAGR between 2016 and 2019 in Indonesia, Malaysia and Thailand. However, between 2019 and 2021 growth had slowed to 17 per cent in Malaysia and 1 per cent in Thailand; and even shrunk by 3 per cent in Indonesia (see Figure 18) due to Covid-19 mandated cuts in operating hours and movement restrictions.

A chained kiosk model's target market is primarily focused on young families and students with no access to own kitchen. For this reason, they are primarily located close to residential areas (as opposed to shopping malls). Compared to global QSR brands, kiosks also have lower average transaction value (see Figure 19). While chained kiosks product offerings are limited, fierce competition still necessitates a refresh in outlet appearance every few years; as well as seasonal products outside of its core menu. Kiosk model also typically undertakes its own logistics from its distribution centres to outlets, hence requiring its own cold-chain fleet.

Figure 18. Recovery of chained kiosk outlets following Covid-19 closures uneven across ASEAN-4



Source: Euromonitor International

Figure 19. Kiosk average transaction value higher in Malaysia, Singapore vs. Indonesia, Thailand

Source: Euromonitor International

The growing - and challenging - ecosystem of cloud kitchens

Occupying a sizeable share in foodservice sales today, online food deliveries have also supported an alternative model: kitchen without restaurant front. These kitchens cater solely for food delivery or collection (B2C) - for which the order is received online (through own and/or third-party aggregator platforms) (see Figure 20). This model is also called ghost kitchens, virtual kitchens, or dark kitchens. It is differentiated from central kitchens, which supply cooked/semi-cooked food for chained-restaurant outlets (B2B) to streamline supply chain and to address labour cost. Through delivery aggregator platforms or own ordering platforms, cloud kitchens in ASEAN-4 receive orders from customers directly. However, the drawback of being dependent on aggregators is that the platforms capture all the data and demand trends from a wider target audience that foodservice players can otherwise analyse to fine-tune their offerings. Hence as a direct-to-consumer brand, having its own platform would help to enhance competitiveness in this data-driven economy.

As Covid-19 restrictions forced a pivot into delivery model, restaurant brands saw the benefits of operating a cloud kitchen using digital platforms. These may include reduced serving-staff costs and rental expenses, relevant product offerings, and more. Cloud kitchens can also supply to virtual brands (brands that exist only in aggregator platforms) within limited radius to ensure freshness and lower delivery cost. Yet while cloud kitchens should remain relevant as a share of the industry to fill demand for convenience, there are challenges:



With on-premise dining returning to pre-Covid-19 levels, unrecognised brands would find it tougher to achieve economies of scale



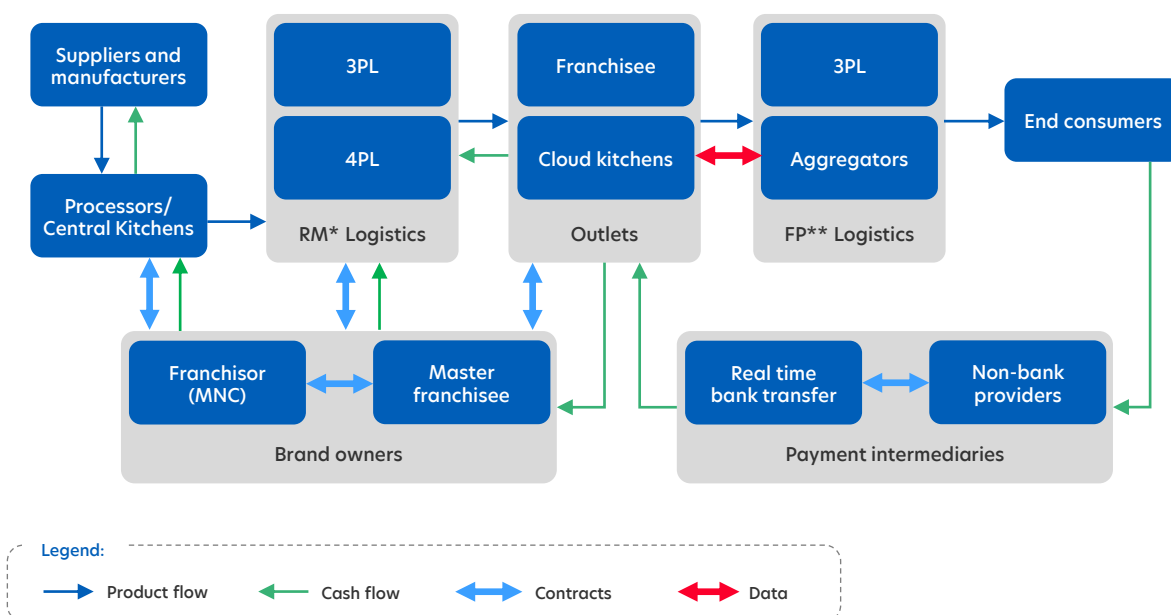
Structurally, any dependence on third-party aggregators/logistics would entail significant platform charges which - without scale - would erode its advantages over physical outlets

Ensuring supply chain resilience through diversified suppliers and logistics partners

Post-Covid-19, the need for resilient supply chain is a key focus area; and one which would involve diversification of qualified suppliers to minimise disruptions seen during the pandemic. Yet, the on-boarding process for branded QSR typically requires extensive due diligence. A simplified onboarding process therefore would be necessary.

As perishable food ingredients require appropriate storage and handling at the right temperatures, logistics is a segment which QSR brands needs control over to avoid mix up in deliveries, food safety issues, and/or supply disruptions. Investments such as live tracking and cloud-based ordering system thus would need to be integrated to ensure flow and quality to each outlet are not compromised. Within the chained QSR supply chain (see Figure 20), there are pain points which would be better addressed through either 3PL (third-party logistics) or 4PL (fourth-party logistics). These include IT solutions as well as order fulfillment, inventory and logistics. Ultimately, the suitability of either 3PL or 4PL logistics would depend on foodservice's requirements.

Figure 20. Chained QSR supply chain



Source: UOB Analysis

*RM: Raw materials; **FP: Finished products

One man's trash is another man's treasure

“Between 2021 and 2026, we estimate UCO potential collection volume in ASEAN-4 to collectively expand by 4 per cent CAGR to slightly 0.6 million MT”

A framework to upcycle foodservice waste

With entrenched positioning during the pandemic, we expect momentum in digitalisation and sustainability in foodservice to continue, particularly for chained QSR.

In ensuring QSR brands address sustainable practices such as food waste and pollution, management of waste is another increasingly important consideration. We believe collection and upcycling of used cooking oil (UCO) is a low hanging fruit – more so given a monetary incentive – for foodservice players to enhance their sustainable practices.

UCO from households, foodservice and food manufacturers is a common waste in Southeast Asia. Today only a fraction of UCO potential volume is collected, given several pain points for collectors:



Lack of scale
(mainly in households)



Fragmentation and aggregation
of logistics, particularly in rural areas



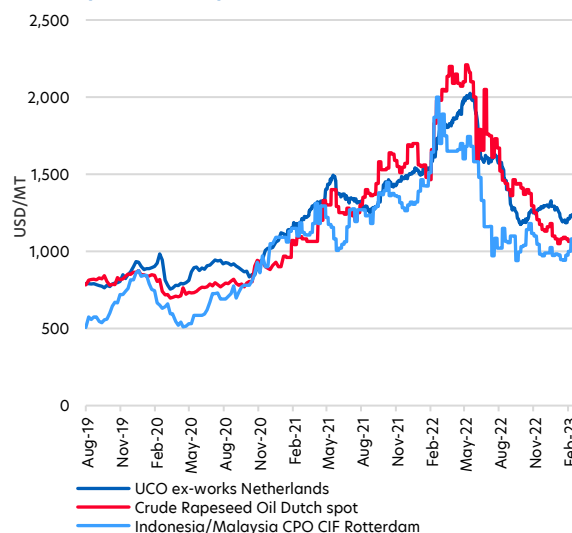
Low margin and intense
working capital

According to the International Council on Clean Transportation (ICCT), the potential UCO collection volume in Indonesia and Malaysia (based on assumptions of 100 per cent from urban restaurants, 50 per cent from urban households and 100 per cent from food processing) is estimated to reach 715 and 158 thousand metric tons (MT), respectively. While there are no official data on UCO collection potential in Southeast Asia, our channel checks suggest that, as a rule of thumb, current collection in Singapore and Thailand may reach 19 thousand MT and 140 thousand MT, respectively. Based on this data, between 2021 and 2026, we estimate UCO current collection volume in ASEAN-4 (Indonesia, Malaysia, Singapore, Thailand) to collectively expand by 4 per cent CAGR to 0.6 million MT.

Aiming for sustainable solutions

Since the expansion of the US Renewable Fuel Standard (RFS) programme in 2007, UCO has been employed as feedstock to produce first-generation biodiesel (also called UCO Methyl Ester or UCOME). Given its pricing (see Figure 21), UCO collection for export has in the last few years taken on extra appeal beyond the traditional demand for domestic soap making, reprocessed cooking oil for animal feed (including gutter oil), as well as UCO-based biodiesel. More recently, demand for UCO as feedstock for Renewable Diesel (RD⁶) has been boosted by EU's Renewable Energy Directive in 2018 (RED II), in which biofuel derived from UCO can be considered *twice* its energy content for blending into conventional fossil fuel.

Figure 21. At times UCO trades above palm oil and rapeseed oil prices



Sources: Bloomberg, Argus

The RED II policy indeed created a deeper market for UCO not only in Europe but also in Asia. Collection points initially established in China subsequently expanded to Southeast Asia for bulk exports to the EU⁷. UCO collected in Asia has flowed to Europe mainly as feedstock to produce RD. UCO is also increasingly being used as feedstock for Sustainable Aviation Fuel (SAF) to be blended with Jet Fuel (subject to certification of sustainability based on criteria set by regulatory bodies in EU/North America to verify quality).

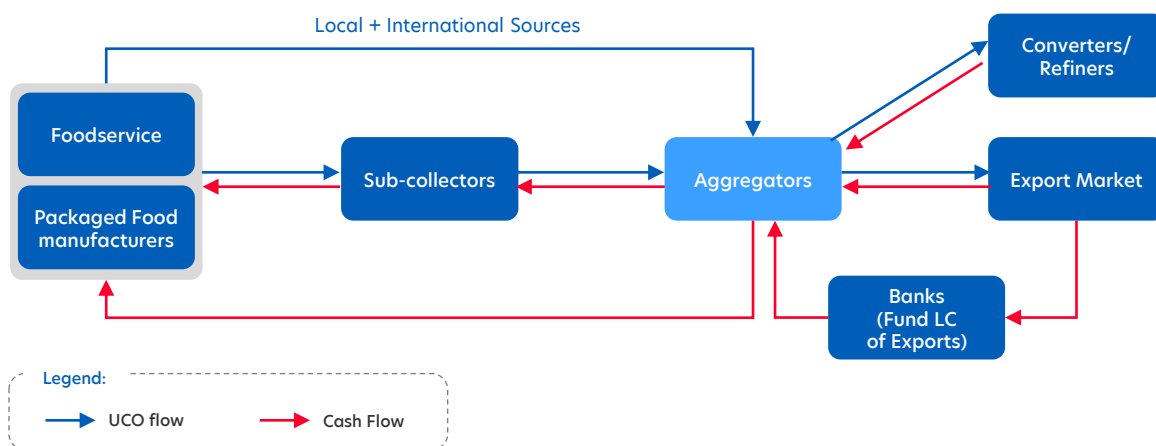
While burning RD still emits CO₂, it is significantly lower compared to that emitted by burning fossil-based diesel. RD has a GHG intensity of 15.6 gram CO₂e/MJ – excluding ILUC (indirect land use change) – compared to fossil diesel's or gas oil's GHG intensity of 95.1 gram CO₂e/MJ (i.e. 83 per cent reduction)⁸.

⁶ RD (also called HVO or hydrotreated vegetable oil) is produced by adding hydrogen and hydrocracking; and is differentiated from biodiesel/UCOME, which is an ester by adding methanol. While both can be blended into conventional diesel, biodiesel may gel in colder climate, causing damage to the engine. RD/HVO on the other hand, has identical chemical composition as fossil diesel

⁷ Certificates of full traceability are required for all export markets and are subject to audits to ensure quality (affecting refinery conversion rate) and are not adulterated or mixed with virgin oils

⁸ Based on report by European Environmental Agency (Mellios and Gouliaro, November 2020)

Figure 22. UCO collection supply chain



Sources: Interviews with players in the industry

Through a bottom-up supply chain (see Figure 22), UCO in Southeast Asia primarily ends up in refineries and/or port-side tanks for exports. Currently the largest UCO refinery in Southeast Asia is Neste Oil in Singapore, with capacities to produce both RD and Sustainable Aviation Fuel (SAF) for exports. Meanwhile, UCO exports from port-side tanks in Malaysia are mostly destined for the European markets, where it is subsequently converted into RD and/or SAF as drop-in fuel.

The growing demand for UCO

Under EU's RED II Annex IX Part B, UCO may be used as feedstock of biofuels, but limited to 1.7 per cent share of energy content in transport fuels. Where justified, EU member states may modify this limit on account of feedstock availability. The maximum share of biofuels in the EU is 7 per cent of final consumption of energy in road and rail transport sectors.

According to draft amendments in RED III however, current reference for double counting of energy content is removed. While the recent drop in UCO prices (see Figure 21) indicates reduced attractiveness of employing UCO-based biofuels, the EU ban of Russian diesel supply from February 2023 could still incentivise maximising RD's allowable energy content for blending. Yet, any potential dent in European UCO demand may not necessarily reduce long-term interest in UCO collection in Southeast Asia, given planned expansion in capacity to produce RD/SAF in the region (in addition to existing Neste Oil refinery in Singapore, UCO-based SAF capacities in Asia are expanding). According to Argus, rising demand for UCOME (UCO Methyl Ester) would also come from blending with marine fuel.

Supplies of UCO hence are tied to the size and growth of foodservice and food manufacturing industries in ASEAN-4. As more UCO can be collected with traceability, some countries in Asia Pacific may increasingly restrict UCO exports to secure domestic feedstock.

Traceability is a major component in procuring UCO

Given UCO's cash value, there is currently no shortage of UCO collectors in Southeast Asia. Foodservice outlets are positioned to generate cash flow from undertaking circular economy initiatives, given better access to sell its UCO. While some collectors may have exclusive contracts (i.e. periodic fixed pricing) with foodservice establishments, most collectors work on daily spot basis. For chain restaurants and independent outlets, there is typically no contract to centrally organise collection; with each outlet having its own arrangement. Likewise, outlets located in shopping malls would typically have centralised disposal and collection; although not all malls have strict enforcement.

For branded QSR - while not covered under general franchise agreements - UCO recycling would be an opportunity to promote their sustainability agenda with end-to-end traceability (see interview below) to prevent mishandling, which would impact the QSR's brand image.

Interview with FatHopes Energy

Mr. Vinesh Sinha
Founder/
Chief Executive Officer

How do you describe FatHopes Energy and its key businesses?

FatHopes Energy (*ref: www.fathopesenergy.com*) is a multi-faceted business established in 2010 with the primary focus of developing sustainable fats, oils, and grease solutions for advanced biofuel production. Over the years FatHopes Energy has managed to cement its position as a robust and reliable supplier of ready-to-use biofuel feedstock to global markets. The organisation has grown to be able to meet global standards as they regularly supply products to oil and gas companies globally. Constantly at the forefront of the sustainable biofuels industry has enabled FatHopes Energy to gain trust from the global markets. FatHopes Energy believes it can bring the same value to its customers.

What differentiates your business model vs. other collectors?

FatHopes Energy is currently the sole company in Southeast Asia certified under ISCC CORSIA (Collecting Point) and the first

[Continued to next page](#)

company in Malaysia authorised under ISCC CORSIA (Trader with Storage). The corporation will be the only regional used cooking oil (UCO) collector eligible to supply Sustainable Aviation Fuels (SAF) established by International Civil Aviation Organization (ICAO) specifically to be used for aviation fuels.

Apart from cash value for UCO, how has FatHopes supported the foodservice industry in terms of traceability?

Fathopes Energy has introduced its own proprietary hardware in the iTanks which are deployed at selected points of origin of the used cooking oil throughout the region. These iTanks are able to transmit a live signal on the volumes of used cooking oil at all of these locations at any given time. On top of this, our software solutions also offer end-users the chain of custody that is adequately captured from the point of origin to the point of export where every transaction is recorded. This gives all restaurants the piece of mind that all waste oil collected by FatHopes Energy is channeled toward biofuels production. Furthermore, FatHopes Energy is the first company in Malaysia to develop a "digital solution" for UCO collection. The FatHopes Energy Enterprise System (FHEES) is a cloud software for digitising and optimising waste management operations for our corporate customers and consumers. FHEES connects software modules, third party systems, vehicle technologies and mobile apps in a central ecosystem under one platform. The traceability of flow in UCO collection can be captured at each collection point, making it easier for live tracking operations, verifying services and reviewing detailed historical performance.

How has FatHopes managed collection from many outlets?

Fathopes Energy is the innovative leader in this space and solutions such as those mentioned above have attracted the largest household names to dispose of waste oil with us. Through our technological solutions these vendors are always assured that their waste oils are ethically repurposed towards renewable solutions; and through our reporting mechanisms, these same vendors can use our reports as a testament to their ESG commitments.

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Is UCO price tied to petroleum or cooking oil? Are there instances of under/oversupply; how does FatHopes mitigate it?

The price of UCO is correlated to the price of new cooking oil as it is a derivative of the product. FatHopes Energy offers a variety of pricing to our vendors including a floating rate mechanism that is adjusted according to market prices. This way the vendor as well as FatHopes Energy is hedged, in the event market prices move up or down.

Who are FatHopes' UCO buyers; how does EU policy affect UCO demand?

UCO is specifically mentioned in RED II annex IX part B as a feedstock that qualifies towards double counting for the bio mandates set in Europe. This was designed to encourage the use of waste products as opposed to virgin oils as there are significantly higher lifecycle GHG savings from these sources. As such the current regulation is designed in such a way to support the demand for used cooking oil as a feedstock and we see this as supportive towards the demand for used cooking oil in the future. Our clients today are major oil and gas companies that primarily use our feedstocks as the raw material for sustainable aviation fuel production.



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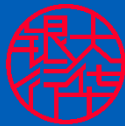
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