HIGHWAY TO THE FUTURE:

NAVIGATING THE ROAD FREIGHT OPPORTUNITIES IN SOUTHEAST ASIA

CONTENTS

FOREWORD

In 2021, we launched our first road freight whitepaper, “Southeast Asia freight: The road to growth”, when businesses needed an alternative to getting their goods around the region. We were in the thick of the pandemic then, with air freight rates soaring and a lack of capacity on the ocean freight front. The road freight solution struck the perfect balance.

While the supply chain situation is normalizing post-pandemic, the market has a lot of uncertainty and volatility. From geopolitical tensions to port congestions, the air and ocean freight system stretched to its limit. What does this mean for the future of road freight? The future is still bright.

While governments work on providing more, and safer, roads and highways, we have focused on ensuring our customers can exploit the region’s network to its utmost.

We highlighted the positive impact of key regional regulatory initiatives, such as the ASEAN Customs Transit System (ACTS) and the Regional Comprehensive Economic Partnership (RCEP).[1] At the time, we flagged how road freight played a more significant role in international long-haul solutions across Asia. It was cost-effective and reliable, especially when paired with other freight modes.

We modeled our Asian trucking freight business on our successful European offering. Still, the two regions are vastly different, and we’ve adapted accordingly, making the most of what exists and adding our innovations where we can. With our core product, DHL Asiaconnect[2], we run our road freight LTL (Less than Truck Load) service with a predefined timetable.

Our full-truck-load solution, DHL Asialine, offers a more tailored service, adding elements such as armed escort and additional insurance. Both offerings provide 24/7 equipment tracing and monitoring via a dedicated command center and specific contingency planning.

This is what customers appreciate: a regular, reliable and cost-efficient service.

This report will show that while the momentum is in the right direction for Asian road freight, challenges remain, and opportunities remain for rethinking how the region’s freight is moved.

Thomas Tieber
CEO, Southeast Asia & South Pacific
DHL Global Forwarding

[1] Launched in Cambodia, Laos, Malaysia, Singapore, Thailand and Vietnam in 2020, ACTS is a computerized customs transit management system designed to enable licensed operators to move goods across borders using a single document and without having to pay duties and taxes otherwise due when goods enter or leave a country. RCEP is a free trade agreement (FTA) between the ten member states of the Association of Southeast Asian Nations and its five FTA partners (Australia, China, Japan, New Zealand and Republic of Korea). It went into force in 2022.
[2] DHL Global Forwarding https://www.dhl.com/global-en/home/our-divisions/global-forwarding/road-freight.html

THE BIG SHIFT

COVID accelerated consumer trends already in play, particularly the demand for e-commerce. Road logistics bore much of the brunt of this, not just for last-mile delivery, but also as lockdowns and capacity constraints saw ocean and air freight prices rise, just as reliability became an increasing challenge. Road freight was the least affected by COVID, with sky-high prices and capacity constraints for other modes of shipment making it an obvious choice.

But that doesn't mean there weren't challenges.

Roads can't cross ocean. In many cases, road freight cannot provide all the solutions for some customers but it could complement other modes. For example, a customer needed to ship their goods from Bangkok to Tokyo during the pandemic restrictions, when capacities in the air freight market were limited. To resolve the issue, DHL trucked the cargo from Bangkok to Hong Kong, where it could transfer the cargo to a plane for its final leg to Japan.

The issue is not about which transport mode should be used, but about getting the product there as quickly and cost-effectively as possible, even if that means cooking up a bespoke, multimodal solution. The challenges of the pandemic were a reminder that businesses and their partners of need to be as flexible and imaginative as possible.

CHANGES AND CHALLENGES

COVID left an indelible mark on the sector just as it accelerated existing trends. Other developments pre-dating the pandemic have also been expedited, leaving a deeper imprint on the region. Among those are efforts to boost supply chain resilience by diversifying production, particularly outside China. At the same time, governments in the region have sought to lure such investment with attractive packages and upgrading transport infrastructure. Both are key to understanding how logistics companies such as DHL have adapted to best service clients.

BUILDING SUPPLY CHAIN RESILIENCY

COVID lockdowns, and the acceleration of e-commerce posed significant challenges for logistics. It also drove home the vulnerability of relying too much on a single location and a geographically limited supply chain. China retained some COVID restrictions until as late as December 2022, which was one of the reasons that forced the hand of those companies that would have preferred to wait and see, given the costs and time required to shift supply chains.[3] War and geopolitical tensions have reinforced the need to diversify, a process that is still ongoing. According to a survey done by Eastspring Investments, 75% of business leaders believe inaction will cost more than rebalancing. Failure to build additional supply chain resiliency could put 19-24% of profits at risk over the next 10 years.[4]

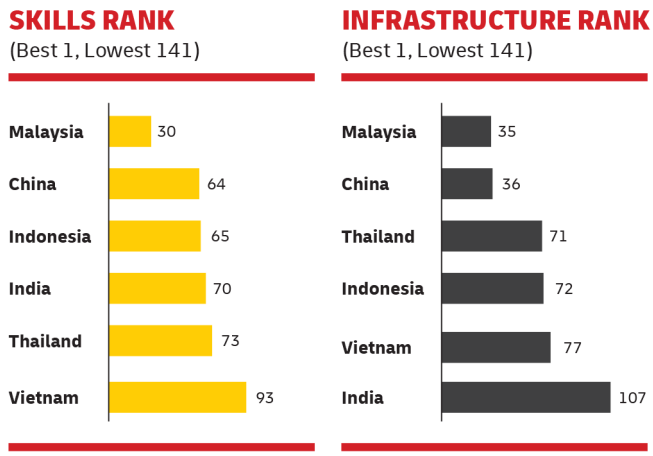
The best-known of these shifts is 'China Plus One', where companies often maintain a presence in China but build capacity in another country or region. Countries in South or Southeast Asia have been preferred, but companies are increasingly looking at Mexico and Europe due to trade sanctions.

The results are visible: The Chinese share in U.S. imports has dropped from 21% in 2018 to 17% in 2022, with machinery goods accounting for the most significant trade diversion to Southeast Asia and Taiwan. Indeed, Southeast Asia finds itself playing a pivotal role in this shift, importing capital goods from China, South Korea, and Taiwan. In addition, the region has progressively become a crucial trade intermediary between China and developed economies. Its strategic location benefits the facilitation with other parts of Asia, Australia, and the Pacific.

Southeast Asia also holds a demographic advantage, with 155 million individuals aged 25 to 54 having a tertiary education, surpassing China's 145 million[5]. This educated population provides a valuable resource for businesses looking to extend their reach. Based on the skills rank data by World Bank Labor stats (February 2022) as shown in the PWC report Global Supply Chains: The Race to Rebalance[6], Malaysia was placed 30th in terms of skills ranking. Meanwhile, there is minimal difference between China and Indonesia, with China ranked at 64 and Indonesia closely behind at 65. The small gap in their rankings suggests that the skill levels in both countries are comparable, suggesting Southeast Asia has become a more prominent alternative for businesses.

[3] China's loss is Southeast Asia's gain as supply chains shift away to cheaper climes, Jan 7 2023, South China Morning Post, https://www.scmp.com/week-asia/economics/article/3205858/chain-reaction-chinas-loss-southeast-asias-gain-supply-chains-shift-away-cheaper-climes
[4] Eastspring: https://www.eastspring.com/docs/librariesprovider6/whitepaper-reports/global-whitepaper-2024-new-anchors-reshaping-supply-chains-final-0205.pdf
[5] Roland Berger: The Rise of Southeast Asia, https://www.rolandberger.com/en/Insights/Publications/The-rise-of-Southeast-Asia.html
[6] PWC: Global supply chains: The race to rebalance, https://www.pwc.com/gx/en/about/pwc-asia-pacific/global-supply-chains-the-race-to-rebalance.html

ASIA PACIFIC SKILLS, INFRASTRUCTURE AND LABOR COMPARISON



Both graphics are made on the total of 141 countries included in the ranking

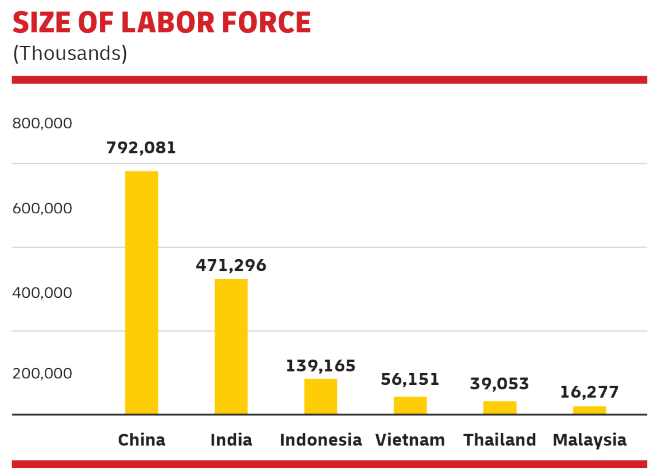


Figure 1.1: Source: World Bank Labor stats (February 2022) as shown in the PWC report Global Supply Chains: The Race to Rebalance (2023)

Many countries are picking up this trend. France, for example, has been encouraging its companies to diversify their operating hubs to reduce dependence on China. In December 2022, the E.U. pledged $10 billion of investment in Southeast Asia, partly to reduce reliance on China but also in the wake of the war in Ukraine, which had exposed the union's supply lines.[7]

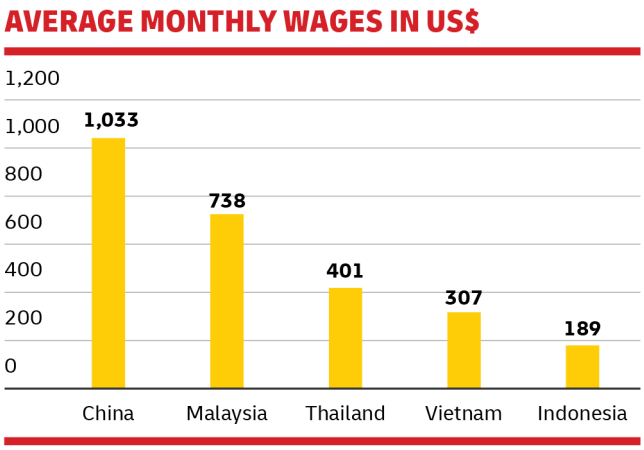
Such strategy or policy has helped propel Southeast Asia to be among the fastest-expanding regions in the world. In September 2024, the Asian Development Bank (ADB) indicated its forecast of the year to 4.5%, with an expected rise to 4.7% in 2025. At the same time, weak global demand tempers optimism that those countries benefitting from this diversification will have an easy ride. Vietnam's total import-export value reached US$113.43 billion in the first two months of 2024, marking an 18.1% increase compared to the same in 2023, according to preliminary statistics released by the General Department of Customs on March 21, in 2024.

The volume of world merchandise trade should increase by 2.6% in 2024 and 3.3% in 2025 after falling 1.2% in 2023. However, regional conflicts, geopolitical tensions, and economic policy uncertainty pose a substantial risk to the forecast. It requires these countries not to depend too much on China for manufacturing equipment, raw materials, or other inputs, in light of Western importation regulations on Chinese products. The past few years have made supply chain resilience necessary, as it has become much more complicated.

SOUTHEAST ASIA AS A SUPPLY CHAIN HUB

Indeed, mainland Southeast Asian countries present highly different resources, opportunities and challenges. On the one end, there are countries like Cambodia and Myanmar, with a GDP per capita of around US$6,000, while on the other side sit Malaysia (US$37,000) and Singapore (US$134,000). Together, ASEAN offers global players a combination of "lower labor costs, increased visibility and access to new markets, and diversified investments that provide flexibility".[8]

A PWC report with data compiled by CEIC and The National Bureau of Statistics of China outlines the average monthly wages across key countries: China at US$1,033.28, Malaysia at US$737.50, Thailand at US$400.62, Vietnam at US$306.76, and Indonesia at US$181.67.[9] This spectrum of labor costs underscores Southeast Asia's appeal, with manufacturing expenses potentially being half of those in China, making it an attractive hub for businesses seeking a cost-effective yet dynamic operational environment.



Source: CEIC, The National Bureau Statistics of China, from Global Supply Chain: The Race to Rebalance (2023)

This accelerating diversification has highlighted the growing specialization of some countries.

[7] EU pledges $10bn investment in Southeast Asia during ASEAN summit, Al Jazeera, https://www.aljazeera.com/news/2022/12/14/eu-pledges-10bn-investment-in-southeast-asia-during-asean-summit
[8] Supply Chain Diversification: Trends in Southeast Asia for 2023, https://ycpsolidiance.com/article/supply-chain-diversification-sea-2023
[9] Exchange rate used at time of publication: 1RMB to US$0.14

Vietnam, for example, continues to be a key manufacturing hub for apparel and footwear, but has steadily built a reputation in the past 15 years or so as a viable manufacturing and assembling hub for electronics, an expertise that is naturally upgrading to more complex technologies, as outlined in its "National Strategy for the Fourth Industrial Revolution", launched in late 2020.

In 2008, Samsung decided to relocate its manufacturing from China to Southeast Asia, beginning with a mobile phone factory in Vietnam's Bac Ninh province, just outside Hanoi.[10] By 2019, the South Korean giant had completely shut down its phone factories in China. While the move was primarily over labor costs and competition from local smartphone manufacturers, it has enabled Samsung to insulate itself more effectively from geopolitical tensions, U.S.-imposed tariffs on Chinese goods and COVID disruptions.

Samsung's move did not entirely decouple itself from China, at least not immediately. According to *The Wall Street Journal*, Samsung experienced difficulties securing some Chinese parts, leading to another shift: Chinese component manufacturers moving to where their customers are. In Samsung's case, one of its suppliers of smartphone displays, BOE Technology, has said it plans to invest in new factories in Vietnam.[11]

Samsung's experience also laid the groundwork for others to follow, including Apple. Samsung now manufactures half of its smartphones in Vietnam, while Apple has transferred part of its AppleWatch, iPad, MacBook and Airpods production there. Both companies have also shifted some key operations to India. Samsung built the largest smartphone factory in the world in India, and Apple has said it intends to produce its latest iPhone models in India for the first time.[12]

Thailand, meanwhile, has specialized in automotive assembly since the 1960s, and by the 1970s, it had become a major auto hub, exploiting its domestic design potential and natural position as an exporter to the Southeast Asian region.[13] It is now Asia's 5th largest manufacturer of internal combustion engine vehicles and plans to be ASEAN's key electric vehicle (EV) hub by 2025. Some of its investments are already paying off. Its Eastern Economic Corridor, set up in 2017 to promote economic integration among three provinces on its eastern seaboard, has become an ecosystem for components makers and other companies providing services and products to the industry.[14]

The government is pushing to expand its electronics and computer manufacturing from components and integrated circuits to devices, Internet-of-Things microelectronics and embedded systems.[15] Sony, which relocated some of its smartphone manufacturing from China to Thailand in 2019, has also decided to move 92% of its camera production. Only lenses will continue to be produced in China.[16]

Thailand continues to invest in its infrastructure. It will complete a high-speed train project to connect Bangkok to key regions within the country and its southern neighbor, Malaysia, in 2026. The government has committed to expanding 5G networks to cover 98% of the population by 2027.[17] Japanese company Murata, which makes smartphone components such as capacitors, announced the completion of a ceramic capacitor factory outside Chiang Mai in northern Thailand. The project started in 2021.[18]

[10] From trailblazer to leader of the biggest phone assembly factory in Vietnam, EMagazine, https://www.vietnamplus.vn/samsung/from-trailblazer-to-leader-of-the-biggest-phone-assembly-factory-in-vietnam.html
[11] China + 1 = ASEAN: A winning formula, Fidelity International, https://www.fidelityinternational.com/editorial/article/china-1-asean-a-winning-formula-7e1ba8-en5/. See also Apple supplier BOE plans new factories in Vietnam | Reuters, Jan 11 2023, https://www.reuters.com/technology/apple-supplier-boe-plans-new-factories-vietnam-sources-2023-01-11/
[12] Inside Apple's and Samsung's Supply Chain Shift Away From China, WSJ (YouTube channel), https://www.youtube.com/watch?v=NIH6kvYJwK4
[13] Thailand's Automotive Industry: The History Behind the "Detroit of Asia" - Seasia.co, https://seasia.co/2023/03/23/thailand-s-automotive-industry-the-history-behind-the-detroit-of-asia
[14] SCMP, opcit, and Eastern Economic Corridor (EEC) Office, at https://www.eeco.or.th/en
[15] Thailand's strategic position in global supply chain - KPMG Thailand, https://kpmg.com/th/en/home/media/press-releases/2023/06/press-rethinking-supply-chains-en.html
[16] ソニーのカメラ生産、日米欧向けを中国から分離 - 日本経済新, https://www.nikkei.com/article/DGXZQOUC261A90W2A221C2000000, reported in English at Digital Photography Review, https://www.dpreview.com/news/4892777263/report-sony-has-moved-over-90-of-its-camera-production-out-of-china
[17] KPMG
[18] Completion of New Production Building in Thailand | Murata Manufacturing Co., Ltd., https://corporate.murata.com/en-global/newsroom/news/company/general/2023/0327

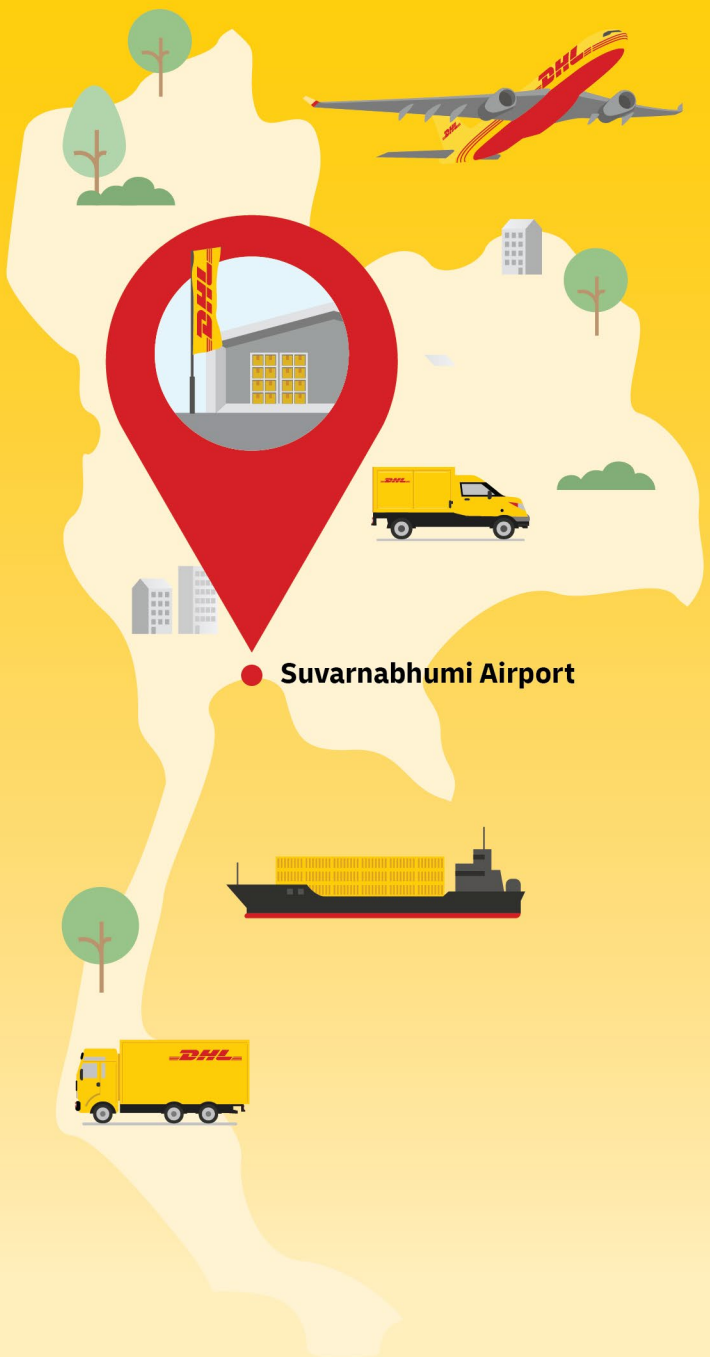
DHL INTERNATIONAL MULTIMODAL HUB

SUVARNABHUMI AIRPORT FREE ZONE 3, BANGKOK, THAILAND

Airports of Thailand Ground Aviation Services Company Limited (AOTGA), in collaboration with Airports of Thailand Public Company Limited (AOT) and Thai Customs has established the Multimodal Transportation Center located in Free Zone 3 Suvarnabhumi Airport, following the development of the Customs Rule Protocol by the Thai Customs Department. The Multimodal Transportation Center was launched in 2024 and will streamline handling of cargo from, to and transiting Thailand across different transportation modes.

DHL Global Forwarding Thailand, is the only international freight forwarder with a dedicated warehouse space within the Multimodal Transportation Center. Operating in this facility allows DHL to offer customers a comprehensive range of multimodal services, providing the flexibility to seamlessly transition between road, air, and sea freight. It facilitates efficient deconsolidation and consolidation of shipments for import, export, and transit, all while simplifying customs procedures at a single location.

The DHL International Multimodal Hub enhances DHL's existing LTL network, DHL ASIACONNECT and ASIACONNECT+, DHL's LTL network, which already offer reliable connections between Southeast Asia, Indo-China and China.



BEFORE FREE ZONE 3

- Customs procedures and check completed at each border checkpoint
- Unable to change or combine transportation modes
- All cargo must be for a single designated route
- Can be time consuming

AFTER FREE ZONE 3

- Customs check and clearance done in Free Zone 3
- Simplified processes and improved clearance time
- Switch transporation modes with ease
- Consolidate/ deconsolidate shipments for import/ export
- Handling of shipments for import, export and transit

Malaysia, like Thailand, has long focused on key sectors. For Malaysia, electronics manufacturing started in the 1970s with simple components and the assembly of semiconductor parts. It now accounts for 5-7% of the world's semiconductor production, and 13% of its semiconductor testing and assembly. This has left it well-positioned to benefit from a U.S. sanction on importing and exporting semiconductors from China. But it still depends heavily on China for raw materials and sub-components, as evidenced by a sizeable trade deficit with its northern neighbor.[19]

As shown in Figure 1.1 (Page 6), Malaysia holds the highest skills rank in Southeast Asia. Their infrastructure also supported the country to receive diversification business from China. Furthermore, there has been a notable surge in Foreign Direct Investment (FDI) inflows into Malaysia, experiencing a 71% increase from $2.1 billion to $3.6 billion at the end of the fourth quarter of 2023[20]. The manufacturing sector is crucial in Malaysia's economy, constituting 23% of the GDP. Malaysia is a major producer of a diverse range of goods, focusing on exporting electrical and electronics products.[21]

While these more advanced economies have been best placed to reap the benefits of supply chain diversification, we have seen two subsequent waves that will further transform Southeast Asia and beyond. The first wave saw manufacturing move from China to Vietnam, Thailand and Malaysia. A second wave has seen lighter manufacturing, assembly and finishing of products in Cambodia, and, more recently, we're seeing a similar wave hit Laos.

Cambodia has announced ambitious plans to transform its infrastructure, including high-speed rail links between the capital, Phnom Penh and the Thai border to the west, Vietnam to the east, and its southern port, Sihanoukville. Thai and Cambodian railway authorities reinstated rail links in July 2023 for the first time in half a century. Track capacity on both sides of the border is currently adequate for up to 26 return pairs of trains per day between Central Thailand and Phnom Penh, and is already linked to commercial users through private sidings.[22]

A new airport opened in the western city of Siem Reap in October 2023, and another one in the capital city is scheduled to be operational by the first half of 2025.[23] Five vehicle investment projects were approved in early 2023. When finished, they will bring the number of car assembly plants in the kingdom to nine.[24] This is seen as part of a "Country + One" strategy by the companies involved, where labor-intensive parts are made in Cambodia and transported to Thailand or Vietnam for final assembly. Automotive component exports from Cambodia tripled between 2015 and 2019 to US$200 million, the latest figures available, while electronic exports doubled to US$900 million. However, this is one step on the road for the Cambodian government, which hopes to make the country a hub for producing more complex components in both industries.

[19] Malaysia (MYS) Exports, Imports, and Trade Partners | OEC, https://oec.world/en/profile/country/mys?yearlyTradeFlowSelector=flow1
[20] McKinsey – Southeast Asia: Economic Overview Q4 2023, https://www.mckinsey.com/featured-insights/future-of-asia/southeast-asia-quarterly-economic-review
[21] Promising Sectors for Investments in Malaysia's Economic Corridors, https://www.aseanbriefing.com/news/promising-sectors-for-investments-in-malaysias-economic-corridors/
[22] Cambodia, Thailand on track with new railway connectivity, https://www.khmertimeskh.com/501336830/cambodia-thailand-on-track-with-new-railway-connectivity/
[23] Cambodia inaugurates new Chinese-funded airport, https://apnews.com/article/siem-reap-airport-cambodia-angkor-wat-tourism-china-21e0620a5835b7a032d7be7e8ddf7637
[24] Vehicle assembly investments roll into Kingdom - Khmer Times, https://www.khmertimeskh.com/501248460/vehicle-assembly-investments-roll-into-kingdom/

Something similar is happening in **Laos**, though it may take a few years to be evident. For now, much of the economic activity is driven either by hydroelectric generation, and commercial activity around its rail link with China. However, the apparel and shoes sector is growing by about 5.7% per year, with most of the factories foreign-owned.[25] The country's special economic zones offer significant advantages for logistics, including, for example, allowing shippers to leave goods there for extended periods. The taxation will be lower if the goods are produced or reworked in Laos.[26]

SOUTHEAST ASIA LOGISTICS FUTURE

Companies expanding outside China should carefully assess logistics options to address challenges, especially during global disruptions. In intra-Asia logistics, both trucks and railways serve as reliable alternatives to complement air and ocean shipping, offering resilient and diversified transportation modes across borders. For instance, in the case of Vietnam, its proximity to China has proven advantageous for diversifying companies. Still, air and ocean freight capacity disparities necessitate road freight or multimodal transportation to address these differences.

Notably, the just launched DHL Global Forwarding International Multimodal Hub at Free Zone 3 at Suvarnabhumi International Airport in Bangkok will further facilitate multimodal movements between Thailand, Southeast Asia and the rest of the world.

Besides capacity, road freight also offers a more reliable schedule and cost-efficient way of transporting goods. The price advantage is most noticeable for small amounts of freight, especially for companies with low transport volumes. Road freight is often the best choice – LTL in particular.

[25] Lao garment association lobbies for tax breaks on imported raw materials — Radio Free Asia, https://www.rfa.org/english/news/laos/taxes-03162023165152.html
[26] Special Economic Zone (SEZ) | Investment Promotion Department, https://investlaos.gov.la/where-to-invest/special-economic-zone-sez/

WHAT MAKES ROAD FREIGHT WORK

A lot has changed since DHL introduced its international road freight solution in Southeast Asia. The four factors that will continue to push road freight ahead are: Service offerings, infrastructure, government policies and sustainability.

SERVICE OFFERINGS

Two categories cover the offerings in road freight: full-truckloads (FTL) and less-than-truckloads (LTL).

LTL signifies booking a specific truck capacity, with freight costs shared among companies employing a similar approach. This arrangement ensures that customers only pay for the space they utilize. On the other hand, FTL involves reserving an entire truck, dedicated exclusively to one customer transporting goods from the origin to the destination.

The primary advantages of road freight stem from the unparalleled infrastructure accessible to trucks, unmatched by other modes of transport. Regarding inland transportation, the road network stands out as the most extensive transport infrastructure. Unlike alternatives such as ports, airports, or train stations, road freight isn't reliant on specific logistics hubs, making virtually any destination accessible by road.

Well-developed road systems also enable flexible planning of routes or intermediate stops. The well-established road systems in road freight allow for adaptable route planning and the inclusion of intermediate stops. This flexibility allows for the swift modification and expansion of routes on short notice. Spontaneous transport requests can frequently be accommodated, as the road infrastructure permits usage at any time without needing prior registration or booking.

This independence is advantageous for other modes like ocean, air, or rail since they often require additional road transport to move goods between the airport, seaport or train station and the facility or warehouse, and vice versa. Road freight's extensive reach and adaptability provide nearly limitless possibilities for efficiently transporting goods between locations.

BENEFITS OF LTL

Costs

Pay only for the weight of the shipment and the space it takes up in the truck. Since costs are determined based on a chargeable weight, LTL freight are a fraction of full truckload (FTL) rates. LTL freight shipping is seen as the most cost-effective service in the logistics industry

Price Stability

Compared to other transport modes (Air-Ocean) which shows a volatile pricing development during the year, LTL can provide you with stable pricing validity up to a full year

Efficiency

Because multiple shipments are loaded on the same truck and are on the same lane together, LTL freight steamline the shipping process and optimizes fleet capacity to move more cargo faster

Eco-friendly

Optimized LTL shipping helps reduce carbon emissions. The more capacity LTL freight we can fulfil in our offering, the less trucks will need to be out on the road. And with more ways than ever to find shorter transit routes and by packaging using sustainable materials, LTL freight is one of the tools helping the forwarding industry go green

The past few years have reinforced the need to maintain a deep and constantly updated understanding of three key areas: infrastructure, government initiatives, and sustainability.

INFRASTRUCTURE

Roads may be the key communication arteries for mainland Southeast Asia, boasting the most extensive truck network without relying on logistical hubs such as airports or seaports. However, their quality varies widely, not only from country to country, but within them. ESCAP's 2019 report on transport connectivity in Asia and the Pacific found road infrastructure along the Asian Highway network in Southeast Asia varied widely among member states. Malaysia, the Philippines, Thailand and Singapore were reported to have good road infrastructure overall. In less developed countries in the region, such as Cambodia, Laos and Myanmar, lower quality (categorized as Class-III and below Class-III) roads accounted for 60% to more than 80% of the entire Asian Highway network within their national borders.[27]

Even countries like Vietnam, which plans to complete its 2,000-km North-South Expressway system linking its northern border with the south in 2025, recognize that more needs to be done. Vietnam's Prime Minister has said that this decade, Vietnam needs to build nearly four times the number of highways it has built over the past two decades.[28]

Moreover, a road's suitability can vary year to year because of changing weather, geopolitics or the need to repair, reroute or expand. The only way to be sure a route is fit for purpose is to ensure your logistics partners conduct regular road surveys of current conditions – including safety, road surfaces, speed limits, and rest and stop points.

Conducting regular surveys has an added benefit. It might throw up surprises and opportunities that could have been missed. The road between the Cambodian capital of Phnom Penh and Vietnam's Ho Chi Minh City, for example, has improved enough for some companies to load their ocean freight containers at their factory in Cambodia and, rather

than ship them from the country's main port at Sihanoukville, send them by road to Ho Chi Minh City, where sailings are more frequent. The added cost of shipping by road is more than offset by the prices softened by the more frequent sailings from the southern Vietnamese port. By delivering their cargo more quickly to the final customer, companies can reduce the working capital cycle, free up cash sooner, and grow their business with less reliance on costly external funding.

COVID has highlighted the importance of knowing where a shipment is, and whether there are security, safety or stability issues. And while not all the roads of Southeast Asia may meet those of more advanced economies, the region's cellular networks are advanced enough to support the world's most demanding mobile internet users.[29] This allows road freight to be monitored in real-time by attaching sensors and GPS units to cargo, providing customers with accurate location predictions and likely arrival times.

Visibility into shipments, and deep and updated intelligence about road conditions are critical to a successful road freight solution. Another essential strategy is to be flexible enough to adopt a suitable multimodal solution. Logistics providers must know the available options and spot opportunities as circumstances change.

[27] Review of sustainable transport connectivity in Asia and the Pacific 2019 : addressing the challenges for freight transport, https://repository.unescap.org/handle/20.500.12870/3032 (A 2021 report did not provide so much detail at a country and regional level.)
[28] Unlocking Vistas of Progress: Accelerating Growth with Vietnam's North-South Expressway System, https://www.viettonkinconsulting.com/global-business/unlocking-vistas-of-progress-accelerating-growth-with-vietnams-north-south-expressway-system/
[29] Building an Internet for the Future of Southeast Asia, Kearney, June 2023, Building an Internet for the future of Southeast Asia - Kearney. Southeast Asia "leads the world in mobile Internet use. For example, people in Indonesia, Malaysia, the Philippines and Thailand spend more than four hours a day using mobile Internet – exceeding the global average of three hours.

Take, for example, Laos. The country lies between China in the north and key markets of peninsular Southeast Asia, to the south, east and west. While it remains a minnow in terms of economic output, Laos has a key asset: a newly opened railway that connects China's Kunming with the capital of Vientiane. The railway was formally opened in late 2021, opening a key trade route between ASEAN and its largest trading partner, China.

Two-way rail freight services between key Southeast Asian hubs and China's industrial heartland quickly followed. It is now cheaper and significantly faster than shipping by air, for example, to move goods between China and Southeast Asia. In one case, shipments from 10 suppliers scattered around China were consolidated via Buyers' Consolidation in Kunming before being shipped by train to Vientiane, and, from there, trucked across the Mekong to the manufacturer's sites in Thailand. This multimodal solution resulted in a faster Door-to-Door (DTD) lead time compared to ocean freight, and costs 70% lower than air freight.

It also provides another option for those usually shipping from China to Southeast Asia via Vietnam. The Thai-Cambodian railway mentioned earlier will add similar options for moving goods from northern Asia to Southeast Asia.

But these are outliers. Rail freight options in Southeast Asia remain uneven, and while there are numerous projects afoot, most of the countries that make up mainland Southeast Asia rely on roads. The challenge is for governments to make the most of the existing trade infrastructure through policies and investment in expanding it.

GOVERNMENT AND POLICIES

Indeed, government initiatives have created opportunities for those aware of them: Laos, as mentioned above, has more than a dozen special economic zones (SEZs), allowing companies to benefit from special concessions on storing and shipping, and offering a one-stop service for paperwork. Encouraged by the progress of its Eastern Economic Corridor development, also mentioned above, Thailand is adding new corridors, and seeking to revitalize 10 existing SEZs along its four borders by upgrading transport infrastructure and customs checkpoints.[30]

These measures provide excellent opportunities for streamlining shipments across borders. Initiatives like ASEAN's Custom Transit System (ACTS) (mentioned above) promise to reduce paperwork further. ASEAN has since launched numerous outreach efforts to help the private sector make the most of the program while addressing shippers' concerns.[31] Countries within the region are also attempting to resolve border issues, collaborate on improving infrastructure and streamline

[30] Thailand's development model splutters, Bangkok Post, 16 Mar 2023, https://www.bangkokpost.com/opinion/opinion/2529019/thailands-development-model-splutters also Government pushes economic zone promotion, Bangkok Post, Dec 13 2022, https://www.bangkokpost.com/business/general/2458935/government-pushes-economic-zone-promotion, Special Economic Zones (SEZs) Development Progress, Feb 2023, https://www.nesdc.go.th/ewt_dl_link.php?nid=5195

[31] Asean customs transit system a boon, https://www.bangkokpost.com/opinion/opinion/2385903/asean-customs-transit-system-a-boon. See also ASEAN Customs Transit System - Information Portal, https://acts.asean.org/

procedures. Cambodia and Vietnam, for example, met at the end of 2023, to add lanes to one congested checkpoint and to speed up cross-border commercial transport.[32]

For the time being, the picture is mixed. Each country has different requirements about whether trucks can ferry goods across their border, meaning road freight that passes several borders requires flexibility, planning and ingenuity. For example, getting a shipment from Singapore to Vietnam requires switching trucks at two borders (Malaysia-Thailand and Thailand-Laos.) Other countries have restrictions on goods that are intended for transit. Exploring options such as LoLo (Lift on – Lift off), more commonly used for seaborne cargo, which can switch containers between trucks at a border, is advisable to avoid delays and potential damage.

In September 2023, the Customs Administrations of all 10 ASEAN Member States collectively endorsed the ASEAN Authorized Economic Operator Mutual Recognition Arrangement (AAMRA). This agreement establishes a consistent and transparent trading environment within the member states. AAMRA aligns certification standards with the World Customs Organization (WCO) SAFE Framework, ensuring expedited cargo clearance and priority treatment for certified AEOs within ASEAN.

AAMRA is vital in strengthening supply chain connectivity, allowing businesses to benefit from cost savings by reducing administrative burdens. Six ASEAN Member States, including Brunei Darussalam, Indonesia, Malaysia, the Philippines, Thailand, and Singapore, plan to pilot AAMRA by the end of 2023, with full implementation targeted by the third quarter of 2024. The remaining four states are expected to join during the second pilot phase.

Government priorities, policies and regulations can change, and sometimes the changes can have profound long-term implications that are not always immediately obvious. Indonesia, for example, is pushing to move beyond the extraction of raw materials that go into producing batteries for EVs and become a key producer of the batteries, and the cars, themselves.

Indonesia, the world's largest producer of nickel, essential for the lithium-ion batteries used in EVs, has banned the export of nickel as a raw material,

and has been courting various foreign investors to help build an EV ecosystem within Indonesia, with the goal of producing 2.4 million EVs, including cars and motorbikes, by 2035.[33]

This will have a significant impact, not only on the evolution of EV (see separate section below) but on logistics. For one thing, Indonesia, while being the biggest single source of nickel, does not have any domestic source of lithium ore, meaning it will have to import some of the raw materials necessary to produce batteries. And when Indonesia does start producing batteries in quantity, it will encounter restrictions on what can be shipped by air.

The most likely options will be to ship by sea or a combination of sea and road. An EV battery for a car, for example, is well suited to road freight in terms of size and restrictions on shipment of such kinds of batteries. Although Indonesia's EV battery industry is still in its infancy, a logistics plan to support it is already being drawn up.

The country is actively working to position itself as a pivotal hub in the EV supply chain. With Indonesia being the largest automotive market in Southeast Asia and the second-largest production center in

[32] KH, VN Agree on Multiple Deals Boosting Cross-Border Infrastructure & Transport Systems, Nov 11 2022, https://construction-property.com/cambodia-vietnam-cooperate-on-five-key-issues-related-to-infrastructure-and-transportation/
[33] Indonesia Courts Chinese Investors for EV Production Ecosystem, https://www.voanews.com/a/indonesia-courts-chinese-investors-for-ev-production-ecosystem-/7212395.html

the region, trailing only Thailand, it is strategically positioning itself to play a crucial role in the broader landscape of EV manufacturing and distribution.

Contributing to the country's development in the EV supply chain, DHL Global Forwarding launched its new EV Center of Excellence in Batam, Indonesia in March 2024. Batam's close proximity to Asia Pacific's manufacturing and trade activities makes it an ideal location for the new EV Center of Excellence, which bridges the gap in the region's evolving EV ecosystem. The facility offers DHL's EV expertise, a comprehensive and modular range of services, including inbound and outbound logistics across various transportation modes, warehousing with value-added services such as battery check and charge, and full aftermarket EV battery handling.

SUSTAINABILITY

In ASEAN, the shift of sustainability has been established by some countries. However, it is yet to be coordinated across the region. Indonesia has biofuel targets, while countries like Malaysia, Thailand, and Vietnam have national plans that include green transport targets for their respective countries.

Transitioning to zero-emission trucks could lead to 2.8–3.8 gigatons of cumulative CO2 savings through 2050. The World Economic Forum, which announced the move, acknowledged several challenges: shippers must select the right cases for early deployment, vehicle manufacturers must ensure they have the right trucks available, and the government needs a clear roadmap for zero-emission road freight vehicles and infrastructure.[34]

Indeed, the infrastructure will be a key logistical challenge, especially as EVs become more popular – or are mandated by law. Indonesia's EV industry plan will help push down prices and increase domestic demand for the end product. But like many developing countries, Indonesia's favored transportation is mainly by motorcycle, of which there are some 120 million on the country's roads. Indonesia is targeting 2 million e-motorbikes by 2025.[35] The charging and battery-swapping infrastructure for such vehicles differs from that needed for cars, buses or trucks. The Asian Development Bank (ADB) calculates that some 5.5 million chargers would be required in Indonesia by the end of the decade to meet the projected e-motorcycle numbers. Swap sites, handling 10-30 batteries, would need to be every 4-6 km.[36] Indonesia's network of formal and semi-formal convenience stores and corner stalls will likely provide a natural focus for housing charging stations and resupplying batteries.

Certainly, rolling out that infrastructure may be less of a challenge than the one for electric trucks. For now, they cannot make a trip, such as the 1,830 km run from Singapore to Bangkok. A battery for an electric truck currently would last between 300 and 400 km, and would then require charging for three or four hours, doubling the lead time for a regular truck. But the most significant challenge, as already pointed out, is the infrastructure, one that other regions, including Europe, are facing: a shortage of charging stations.

The European Union, in July 2023, passed a law requiring fast-charging stations to be installed every 60 km on highways by 2025.[37] In January, BP announced what it said was Europe's first 'public charging corridor' along 600 km of road connecting North Sea ports in Belgium and the Netherlands with the Mediterranean port of Genoa. A 45-minute charge would extend a truck's range by 200 km.[38]

Electric vehicles, especially electric trucks, are experiencing a surge in popularity. Yet, a range of alternative fuels could transform the energy landscape, from simple, conventional biofuel blends to solutions requiring sophisticated technologies and infrastructure, such as synthetic e-fuels. These options offer at least four primary considerations for the future of sustainable fuels: Biofuels, EVs, Green Hydrogen, and E-Diesel. Each presents distinct benefits and challenges.

[34] World Economic Forum and Partners to Develop First Zero-Emissions Road Freight Cluster in India, https://www.weforum.org/press/2023/07/world-economic-forum-and-partners-to-develop-first-zero-emissions-road-freight-cluster-in-india/
[35] Indonesia aims for two million electric motorcycles on the road by 2025, https://www.nst.com.my/world/region/2022/10/837323/indonesia-aims-two-million-electric-motorcycles-road-2025
[36] Electric Motorcycle Charging Infrastructure Road Map for Indonesia, Oct 2022, Asian Development Bank,
[37] New EU law requires fast-charging stations at every 60 kilometers by the end of 2025, World Economic Forum, Jul 27, 2023, https://www.weforum.org/agenda/2023/07/eus-law-mandates-fast-charging-stations-every-60-kilometers-along-highways-2025
[38] BP Pulse builds Europe's first public charging corridor for electric trucks along major logistics route , https://www.bp.com/en/global/corporate/news-and-insights/press-releases/bp-pulse-build-europes-first-public-charging-corridor-for-electric-trucks-along-major-logistics-route.html

ALTERNATIVES TO TRADITIONAL FOSSIL FUELS

	Biofuels	Green Electricity	Green Hydrogen	E-Diesel
What	▪ Promising alternative to fossil fuels ▪ Main advantage: - Widespread availability, produced from fast-growing energy crops such as corn and sugar beet, as well as agricultural and industrial waste	▪ Sustainable alternative to traditional fossil fuels for powering electric trucks ▪ It is generated from renewable sources such as solar, wind and hydro power ▪ Compared to diesel, green electricity is cheaper, costing only half as much	▪ Promising fuel source for powering fuel-cell electric vehicles and specialized internal combustion engines ▪ Produced through the electrolysis of water using renewable electricity, green hydrogen is a sustainable alternative to traditional fossil fuels ▪ It can also be used in conjunction with other sustainable energy sources such as solar and wind power to reduce greenhouse gas emissions	▪ E-Diesel is a type of synthetic fuel that can be used in existing diesel engines without requiring any modifications to the engine fueling infrastructure ▪ It is produced by combining green hydrogen with captured carbon dioxide to create a liquid hydrocarbon that can be used as a drop-in replacement for traditional diesel fuel
Benefits	▪ Blending biofuels with traditional fuels can help reduce local air pollution, limit CO2 emissions, and promote cleaner combustion ▪ Biofuels are also more environmentally friendly, as they are biodegradable and less toxic than fossil fuels	▪ Can be used to power two types of electric trucks - Battery electric and - Direct electric cable systems ▪ Battery EVs are suitable for pantographs, on the other hand, can handle higher range, but are limited on a given infrastructure and are available only on fixed routes, making their operation more complex	▪ Many benefits available, such as - Its ability to power fuel-cell EVs and specialized internal combustion engines - It has an equivalent cost to diesel, making it a cost-effective alternative to traditional fuels - Furthermore, green hydrogen can be produced in locations with abundant renewable electricity, reducing the dependence on fossil fuels and promoting energy security	▪ Important benefit of E-Diesel to many carriers is, that it can be used in existing diesel engines, making it a viable alternative to traditional diesel fuel without requiring any changes to existing infrastructure or engines ▪ This means that businesses can reduce their carbon footprint without making signifcant changes to their operations
Challenges	▪ However, there are sustainability concerns associated with the production of biofuels ▪ If energy crops are not cultivated using sustainable practices, deforestation can occur, releasing greenhouse gases and harming biodiversity ▪ Monocultures can also lead to food and water shortages ▪ Poor irrigation and farming practices can also impact agricultural yields and reduce soil fertility ▪ Additionally, significant amounts of energy are required for crop harvesting and processing	▪ The adoption of green electricity in the logistics industry is not without challenges ▪ It requires new truck designs, equipment, and infrastructure, which can be costly for businesses to implement ▪ The range of battery electric vehicles is also limited, which can be a challenge for long-distance hauls ▪ Moreover, the supply of green electricity is not sufficient as yet to meet the demand for electric trucks, which requires significant investment in renewable energy infrastructure	▪ There are some trade-offs associated with the use of green hydrogen, like other sustainable fuels, it requires new truck designs, equipment, and infrastrucure ▪ The operational complexity of green hydrogen-powered vehicles is also high, requiring careful management of the fuel and maintenance of the fuel cell system	▪ E-Diesel is currently more expensive than traditional diesel fuel, costing twice as much ▪ Its widespread adoption will depend on further development of green hydrogen and carbon-capture technologies ▪ Producing e-diesel requires significant investment in these technologies, which are still in the early stages of development

Source: Saloodoo Blog, Apr 24, 2023 "Fueling the Future of Logistics: Exploring Promising Alternatives to Traditional Fossil Fuels"

Biofuels, derived from organic materials like plants and animals, such as ethanol and biodiesel offer advantages in blending with traditional fuels. This will help ease the transition to a more sustainable option and contribute to reduced local air pollution, limited CO2 emissions, and cleaner combustion practices. Despite these benefits, drawbacks include the extensive land and water requirements for biofuel production.

A more attractive fuel for large trucks is likely to be hydrogen. Hydrogen-fuel-cell vehicles generate power from hydrogen gas, emitting only water vapor, while EVs use stored electricity from batteries. Both offer eco-friendly alternatives but differ in refueling infrastructure and energy sources. Hydrogen cells take only a few minutes to refuel, are lighter and can achieve longer ranges.

While considerable challenges remain and no single energy solution appears to be the key to clean and green logistics, steps are being taken to move the sustainability agenda in the right direction. In Thailand, DHL Global Forwarding launched EVs in 2023, comprising a mix of 6-wheeler and 4-wheeler. In Europe, the company introduced 18 new trucks running on biofuel for all European Formula One races in 2023.

GETTING ON THE RIGHT TRACK TO SUSTAINABILITY

Freight trains have a huge advantage over other forms of wheeled transport – they move more weight using less energy. Run them on electricity from renewable sources and shipments become much more sustainable.

In Europe, DHL has introduced, on top of the already existing European intermodal offering, a new sustainable intermodal rail freight solution from Germany to Denmark. The rail transport takes about 12 hours and is available to customers with full-truckload shipments. The new connection will considerably relieve road traffic as up to 240 truckloads per week can be fulfilled via rail. Dedicated freight trains depart from the Ziel Terminal in Duisburg, and the combined transport terminal in Padborg, Denmark.

For each truck shifted to rail, 1.05 tons of CO_2 are saved - that's around 250 tons per week and as much as 11,500 tons per year. In combination with DHL Freight's GoGreen Plus service for pick-up and delivery, customers get the opportunity to reduce the emissions for their land transport significantly.

While this is not yet possible in Southeast Asia, it gives an idea of the future of intermodal freight movements when the right infrastructure and trade policies are in place.

"What we have started in Europe more than 50 years ago and continuously developed, can inspire this region. Such a solution would require a lot of organizational input, not only from the private sector but the governments as well. We need the right infrastructure, equipment and cross-border trade policies, but the success of what we have done between Germany and Denmark gives a good roadmap to achieving sustainable intermodal transportation," said Bruno Selmoni, VP, Head of Road Freight and Multimodal, Southeast Asia, DHL Global Forwarding.

ROAD FREIGHT IS HERE TO STAY

Goods will always travel by road at some point– even if it's just a short hop from the airport or seaport, from shipper to consignee. Even as air and ocean freight normalizes, the demand for road freight will remain. The road remains the most viable door-to-door solution for selected markets in a land-connected region like Southeast Asia.

"If you take a shipment from Singapore to Thailand, going on the road can be faster and more cost-efficient. You can get goods delivered door-to-door instead of multiple transitions with air or ocean freight," said Selmoni.

The discussion on road freight is now shifting away from its relevance and cost to other infrastructure and policies challenges that will smoothen the road ahead. Countries within the region are still investing in their road infrastructure, while policies such as ACTS and RCEP will only aid the development of road freight in the future.

Global supply chain trends such as China Plus One will also see this region come into focus, especially with multi-entry points into China via road, rail, air, or ocean.

"The appeal of our region, where we can jump into a multimodal solution, will keep the market moving forward. The road is part of the solution, and a very important one at that," said Tieber.

APPENDIX

Road transport has been a core element of the DHL success story. DANZAS, which was acquired by Deutsche Post in 1999, offered the first-ever international consolidation service (equivalent to modern day LTL service) in 1854 to/from St Louis in France from Zurich/Basel in Switzerland. DHL first rolled out its range of leading road freight products in Europe – DHL EUROCONNECT, DHL EURAPID, DHL EUROLINE AND DHL EURONET – since the 90's, the coverage now extends to over 2000 international lines.

In Asia, DHL's commitment to best-in-class trucking services began in 2011 with the launch of a regular LTL Singapore-Malaysia-Thailand service under the DHL ASIACONNECT banner. Vietnam and China were added in 2015, and 2011 saw the launch of DHL ASIALINE FTL services in Singapore, Malaysia, Thailand, Vietnam, China, In 2019, DHL further expanded its product portfolio in Asia with the launch of LTL services DHL ASIACONNECT+, which added Indonesia to the Southeast Asia road network via a multimodal connection.

In December 2021, DHL ASIALINE was expanded as multimodal offering. As the market pioneer DHL offered the rail-truck solution between China & Southeast Asia by connecting the railway mode between China and Laos to the already well-established DHL Global Forwarding Southeast Asia trucking network.

DHL Global Forwarding's suite of road freight services are not exclusively for land movements but are also designed to be integrated across modalities to the exact specification of clients.

DHL ASIACONNECT

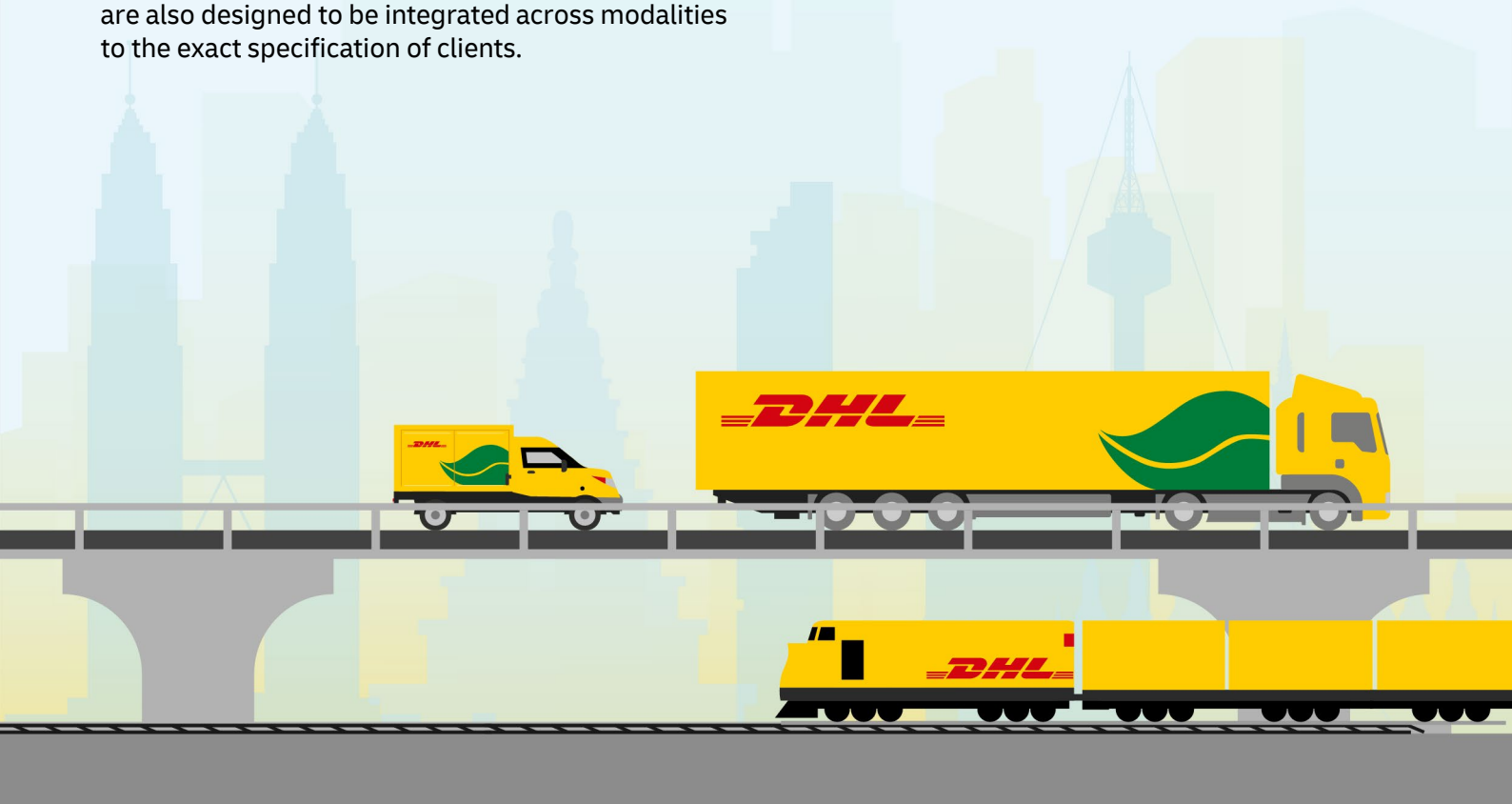
This is a LTL network of international services with regular scheduled departures from China, Malaysia, Singapore, Thailand and Vietnam. Clients benefit from customs clearance, flexibility and lead time reduction even with small volumes, with door-to-door service levels assured from Singapore to China. GPS-equipped trucks ensure stable and safe truck monitoring and complete shipment track and trace visibility.

DHL ASIACONNECT+

DHL ASIACONNECT+ marries the best of DHL's Asian Less-Than-Truck-Load international road freight services with regular scheduled flights as well as barge connections. This service is available in China, Indonesia, Malaysia, Thailand and Vietnam with more countries due to be added in the near future. Standard tariff and lead time allow customers to manage and control their costs and inventories. A single point of contact for customers' end-to-end shipments across modes guarantees a standard level of services from Jakarta to Bangkok.

DHL ASIALINE

This FTL road service is available in Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Singapore, Thailand and Vietnam. Exception management and contingency plans and emergency response services are included, while options include armed escorts, crane-lift and additional insurance.



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