



Supply chain

A period of **Reshaping**

24 Feb 2025

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Associate Professor Dr. Vatcharapol Sukhotu is the Dean, Faculty of Logistics and Digital Supply Chain, Naresuan University. He has experiences in both academia and industry with the specialization in supply chain and logistics management, and operations management.

Dr. Vatcharapol Sukhotu received a Ph.D. in Industrial Engineering from Texas A&M University in the area of Operations Research. During his study, he was awarded a scholarship from MHIA, a leading association of US. material handling and logistics providers for his research.

Topics



- 1. Sustainability**
- 2. Supply chain management and strategy**
- 3. Incorporating sustainability to supply chain**
- 4. Trends in supply chain management**



Definition of sustainability (World Commission on Environment and Development, 1987)

“Using resources to meet the needs of the present without compromising the ability of future generations to meet their own needs”



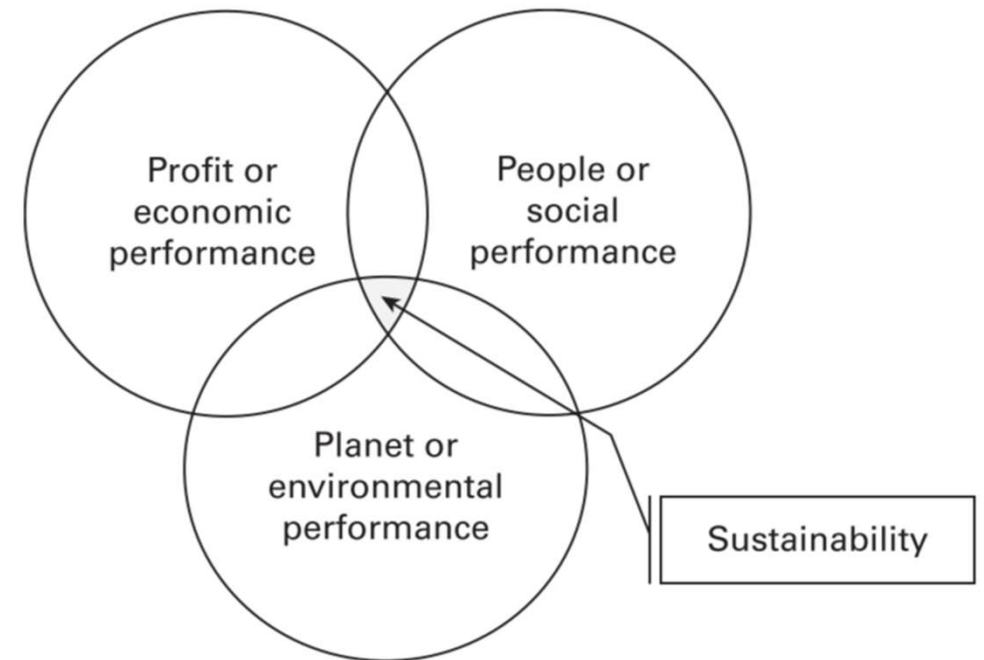
Sustainability

- (1) capable of being sustained, ie of economic development, energy sources, etc, and
- (2) capable of being maintained at a steady level without exhausting natural resources or causing severe ecological damage, ie sustainable development.

Source: Grant, et al. from Collins English Dictionary (1998)



John Elkington's (1994) '**triple bottom line**' or TBL concept encompassing profits, the planet and people. The TBL posits that firms should focus on maximizing shareholder wealth or **economic** value they create while ensuring that they also add **environmental** and **social** value to achieve long-term natural environment security and proper working and living standards for all human beings.





Sustainability needs....

Sincerity and **Caring**



[\(12\) An Inconvenient Truth \(2006\) Official Trailer #1 - Al Gore Movie HD - YouTube](#)

Al Gore's 'Inconvenient Truth'? -- A \$30,000 Utility Bill

By JAKE TAPPER

[↗ Share](#)



Feb. 26, 2007 — -- Back home in Tennessee, safely ensconced in his suburban Nashville home, Vice President Al Gore is no doubt basking in the Oscar awarded to "An Inconvenient Truth," the documentary he inspired and in which he starred. But a local free-market think tank is trying to make that very home emblematic of what it deems Gore's environmental hypocrisy.

Armed with Gore's utility bills for the last two years, the Tennessee Center for Policy Research charged Monday that the gas and electric bills for the former vice president's 20-room home and pool house devoured nearly 221,000 kilowatt-hours in 2006, more than 20 times the national average of 10,656 kilowatt-hours.



"If this were any other person with \$30,000-a-year in utility bills, I wouldn't care," says the Center's 27-year-old president, Drew Johnson. "But he tells other people how to live and he's not following his own rules."

Scoffed a former Gore adviser in response: "I think what you're seeing here is the last gasp of the global warming skeptics. They've completely lost the debate on the issue so now they're just attacking their most effective opponent."

Kalee Kreider, a spokesperson for the Gores, did not dispute the Center's figures, taken as they were from public records. But she pointed out that both Al and Tipper Gore work out of their home and she argued that "the bottom line is that every family has a different carbon footprint. And what Vice President Gore has asked is for families to calculate that footprint and take steps to reduce and offset it."





 How a small Chinese company tricked the Ger...   
Info Watch later Share

Dirk Messner
President
German Environment Agency

that are genuinely new. 



How a small Chinese company tricked the German state | DW Investigation

How **Beijing Karbon**, a relatively unknown Chinese company, managed to defraud the German state by creating fake carbon credit projects. These projects were certified by German authorities under the Upstream Emission Reduction (UER) scheme, which allows companies to offset their carbon emissions by investing in projects that reduce emissions elsewhere.

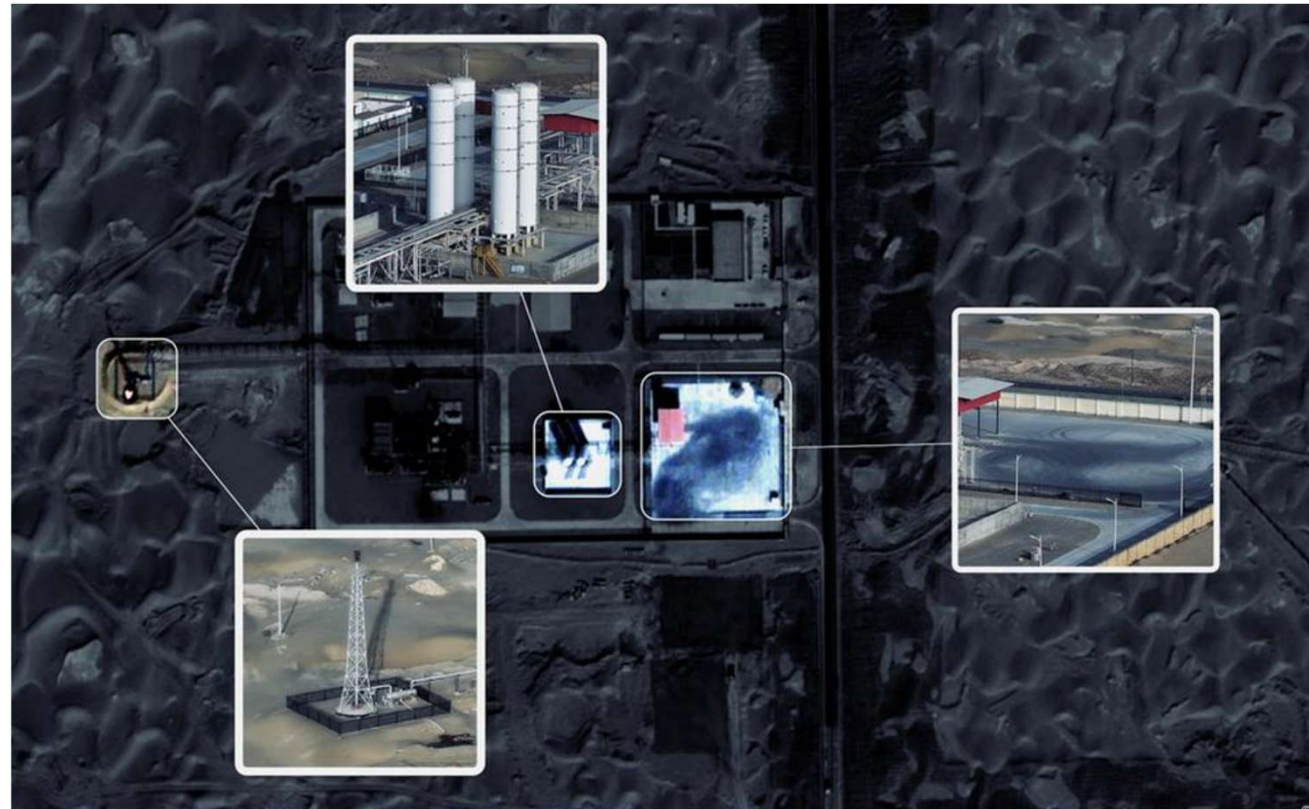
The investigation by DW and ZDF reveals that **Beijing Karbon** created dozens of these projects in China, claiming they would save millions of tons of carbon emissions. However, the projects were found to be non-existent or grossly exaggerated. Despite this, German authorities approved these projects, allowing companies like **Verbio**, a German biofuel producer, to purchase carbon credits worth around **€1 billion** (\$1.05 billion) since 2020.

This highlights the lack of oversight and control by German authorities, who failed to verify the legitimacy of these projects. It also raises questions about the role of auditors and whether they were complicit in the fraud. The investigation found that many major oil companies, including Shell, Exxon, Total, and BP, invested in these fraudulent credits.



In total, the German Environment Agency approved 66 projects in China. Project documents obtained by DW allowed us to identify at least 16 projects that were, in all likelihood, fraudulent.

Almost all of them followed a similar pattern: An existing installation was submitted as if it were new.





virtue signalling

noun [U] UK (US **virtue signaling**)

UK  /'vɜː.tʃuː ,sɪɡ.nəl.ɪŋ/ US  /'vɜː.tʃuː ,sɪɡ.nəl.ɪŋ/

Add to word list 

an attempt to show other people that you are a good person, for example by expressing opinions that will be acceptable to them, especially on social media:

- *Virtue signalling is the popular modern habit of indicating that one has virtue merely by expressing disgust or favour for certain political ideas or cultural happenings.*

Source: Cambridge Dictionary

Elon Musk: I See People Who Care About Looking Good While Doing Evil, F**k Them

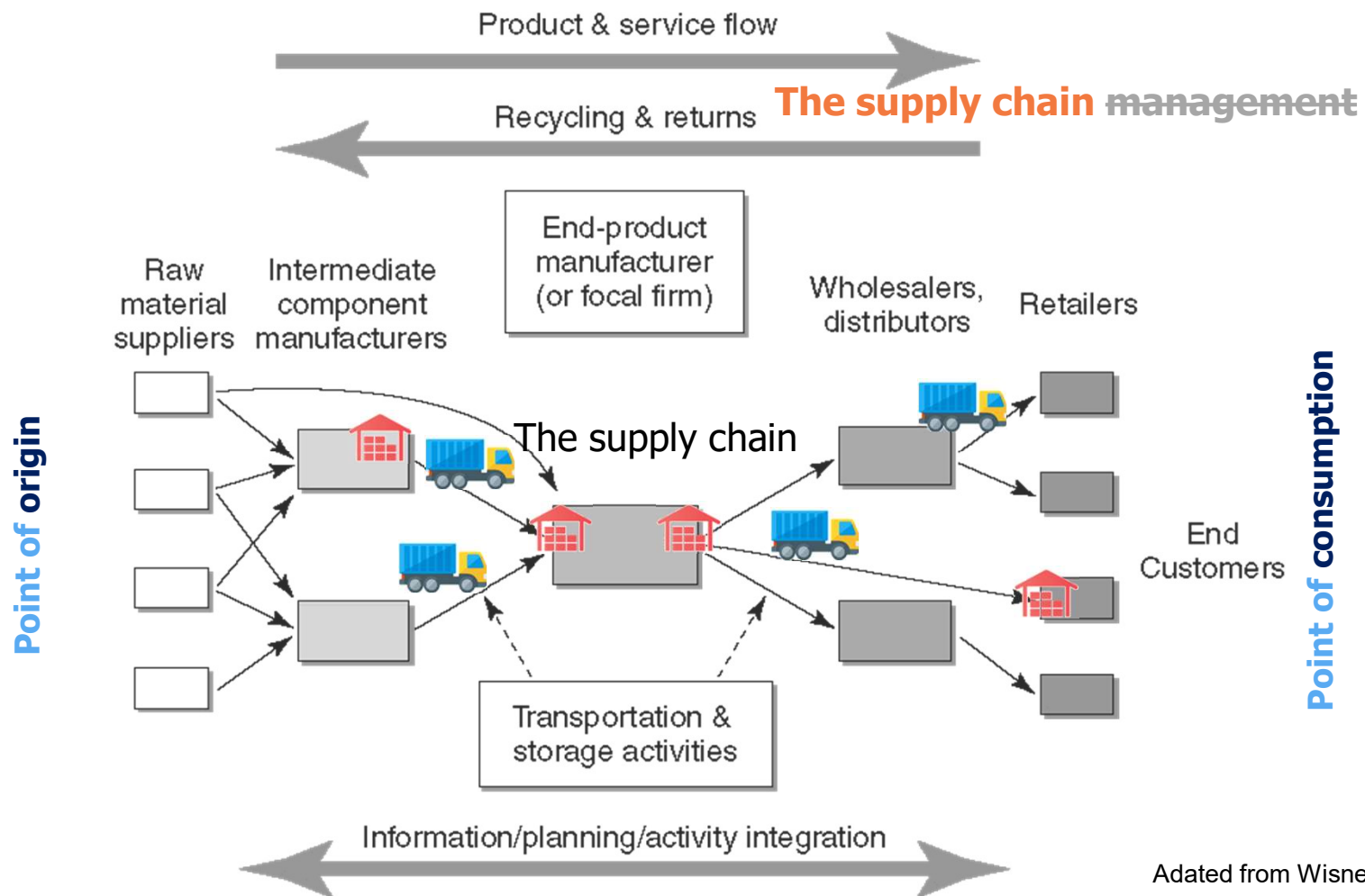


Posted By [Ian Schwartz](#)
On Date November 29, 2023



Credit: Real Clear Politics

Elon Musk on Wednesday talked about Twitter/X and his alleged anti-Semitic remarks in an interview with Andrew Ross Sorkin at a New York Times/DealBook summit broadcast on CNBC.

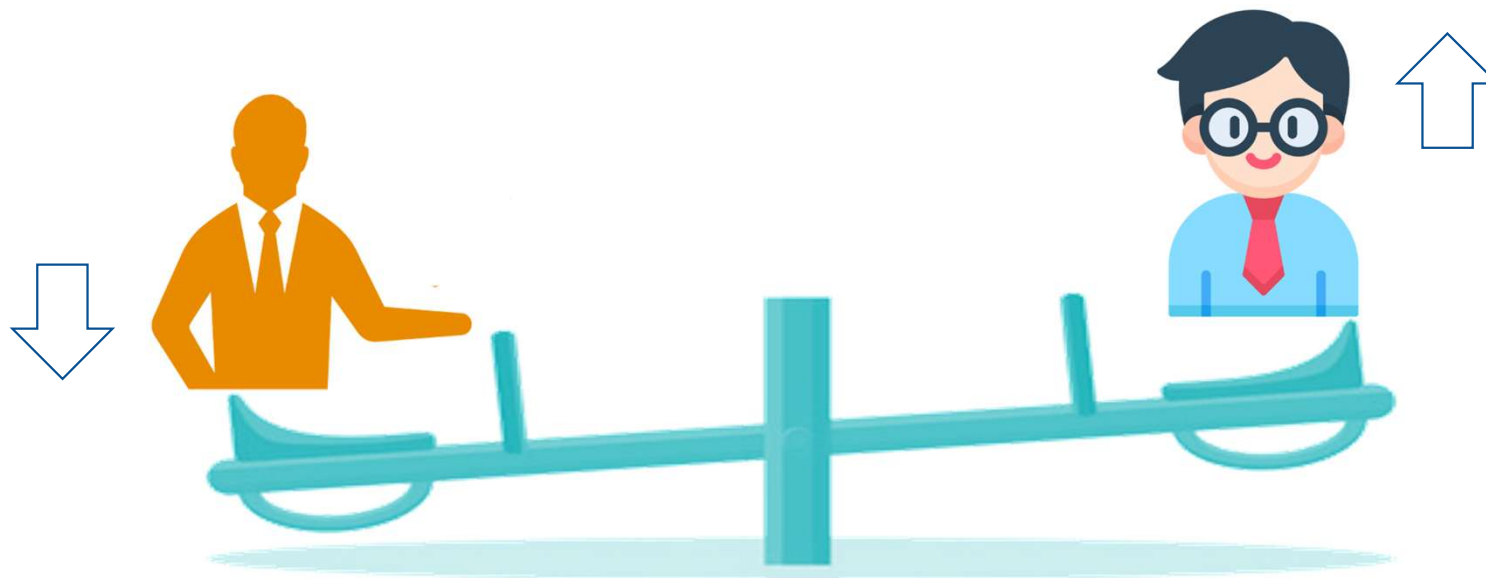


Adated from Wisner



Supplier

Customer





Definition: Supply Chain Management

The systemic, strategic **coordination** of the traditional business functions and the tactics across these business functions **within** a particular company **and across** businesses within the supply chain for the purposes of improving the **long-term performance** of the **individual companies** **and** **the supply chain** as a whole

Mentzer et. al. (2001)



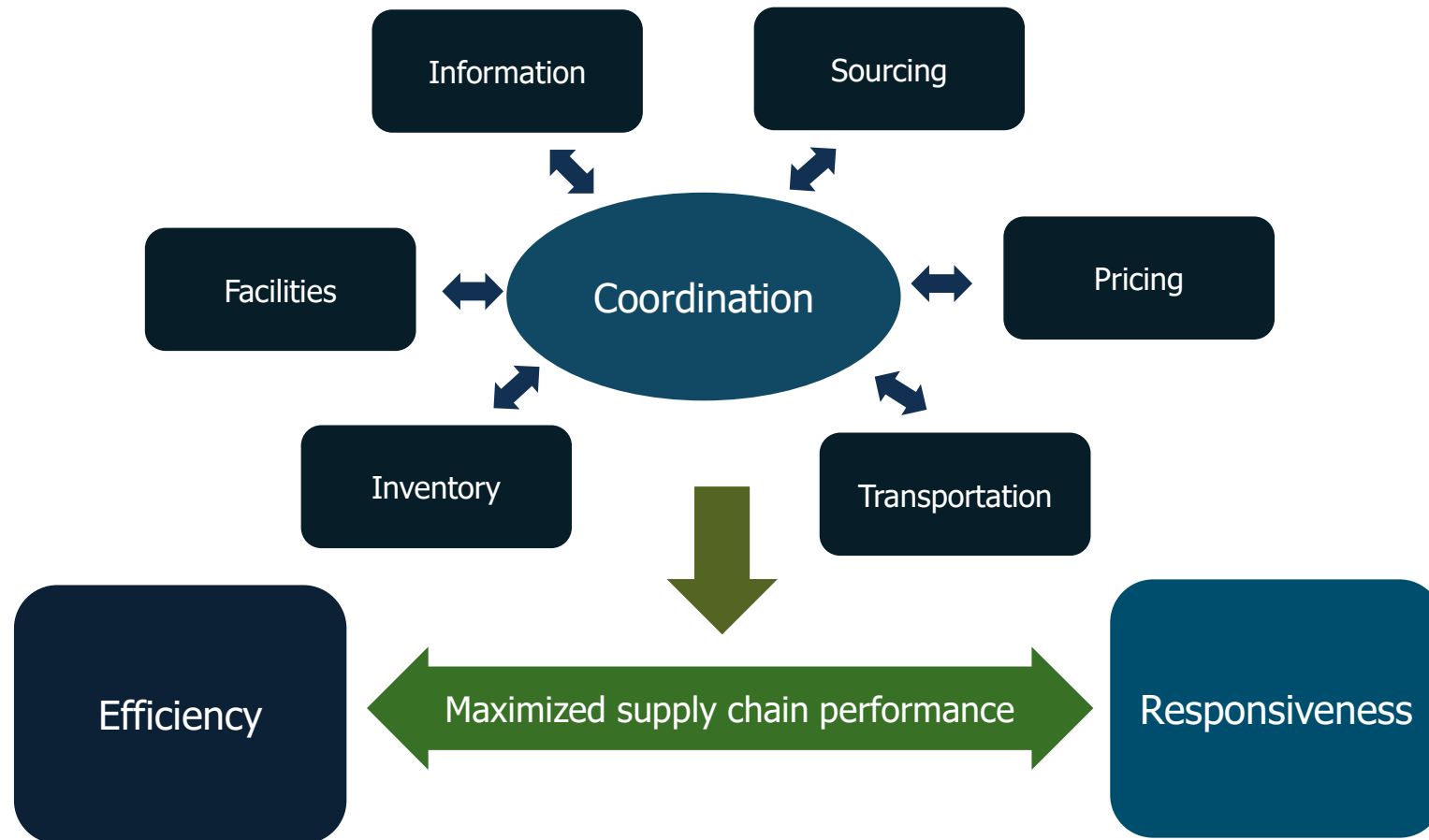


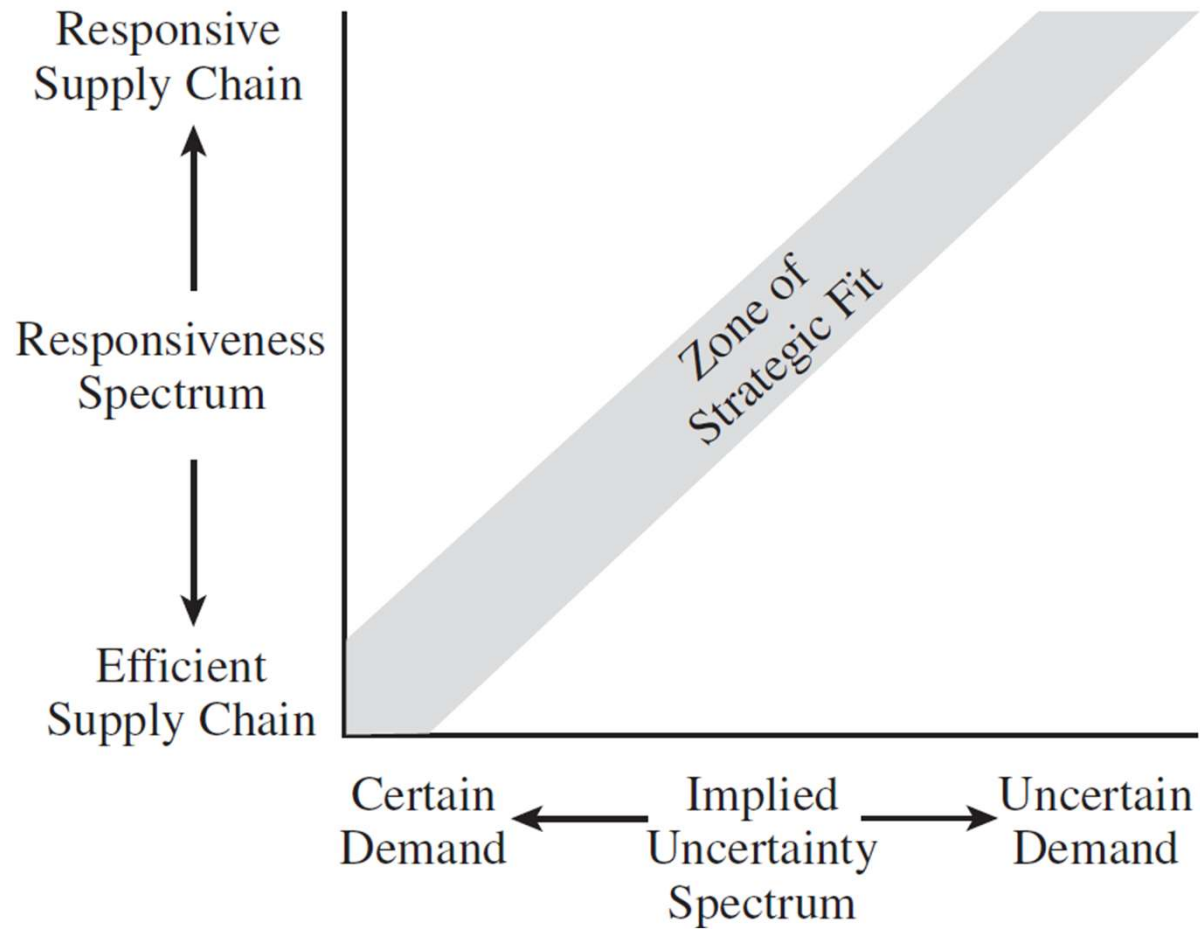
Understand

Coordinate

Align









Sustainable supply chain strategy representing one of the most important success factors for achieving sustainable development for your company—must exhibit the following characteristics:

1. It is aligned to the underlying corporate and competitive strategy
2. It considers demand, supply, and in particular other, wider general conditions
- 3. It incorporates environmental, social, and economic perspectives in all proposed actions**
4. It builds increased shareholder and stakeholder value, especially customer satisfaction



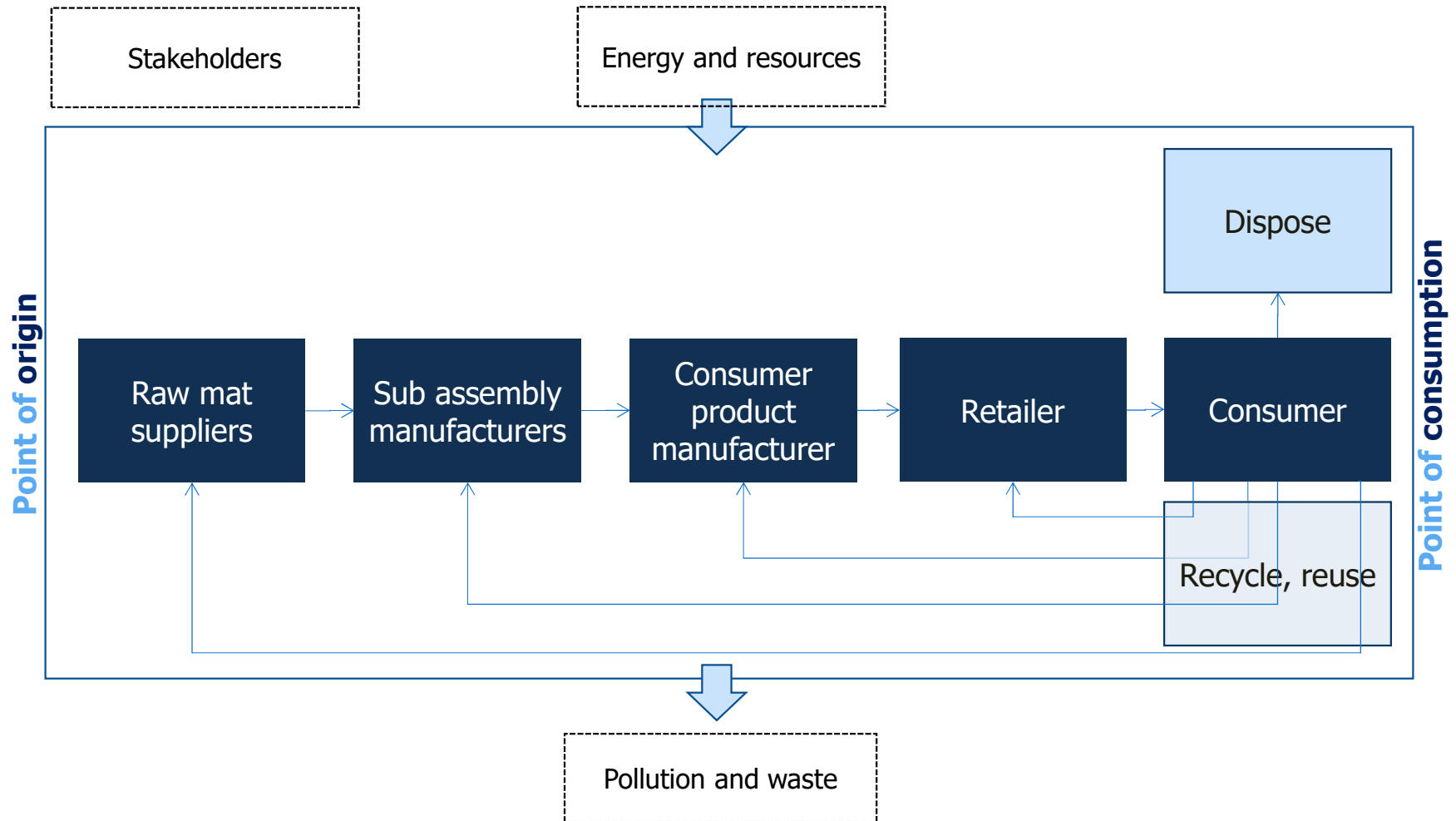
The challenge is to assess the economic, in particular financial, aspect of a practice. Best practice companies are capable of this. They have extended their supply chain KPI systems **to include social and environmental measures** and can link this whole operational KPI system with their financial measurement systems



Sustainability requires **Supply Chain Management**

Extended supply chain

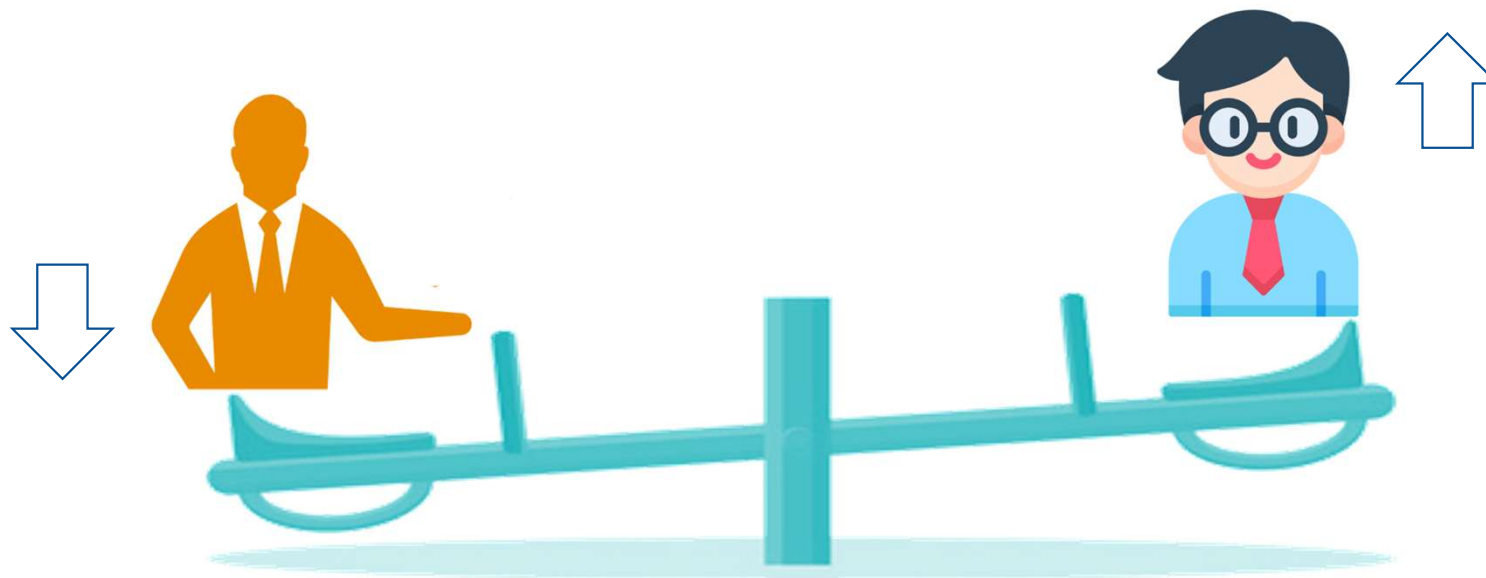
Looking at product life cycle





Supplier

Customer





Trends in supply chain

Pandemic

Geopolitics

Inflation

Reshaping



2019

2025



Trend in supply chain

Resilience

Digitalization

Sustainability

Diversification



Diversification of supply chains

Trump announces 'reciprocal tariffs' on both allies and adversaries

US President Donald Trump stated his plans to impose tariffs on products coming to the US from a foreign country at the same level as that country's tariffs on American products, a policy that would also affect US allies.

Le Monde with AFP

Published on February 13, 2025, at 8:29 pm (Paris), updated on February 13, 2025, at 9:16 pm ⌚ 2 min read

Source: Le Monde with AFP





‘A sea change’: Biden reverses decades of Chinese trade policy

Forget tariffs. Biden’s actions to crack down on Beijing’s tech development will do more to hinder the Chinese economy — and divide the two nations — than Trump ever did.

Source: Politico, 28 Dec 2022



Inflation, consumer prices (annual %)

International Monetary Fund, International Financial Statistics and data files.

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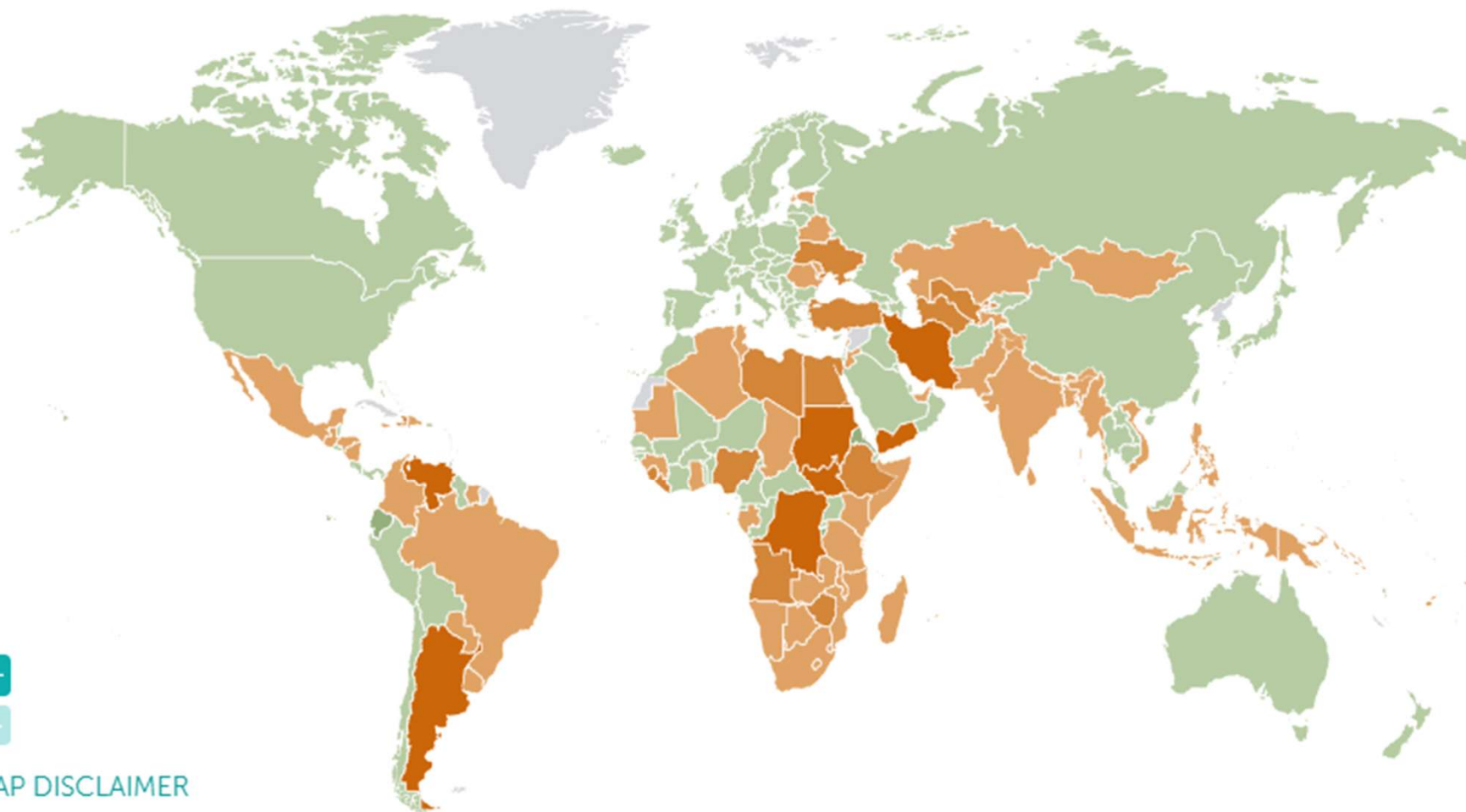


Source: World Bank

MAP (2018)



● 25% or more ● 10% - 25% ● 3% - 10% ● 0% - 3% ● less than 0% ● no data



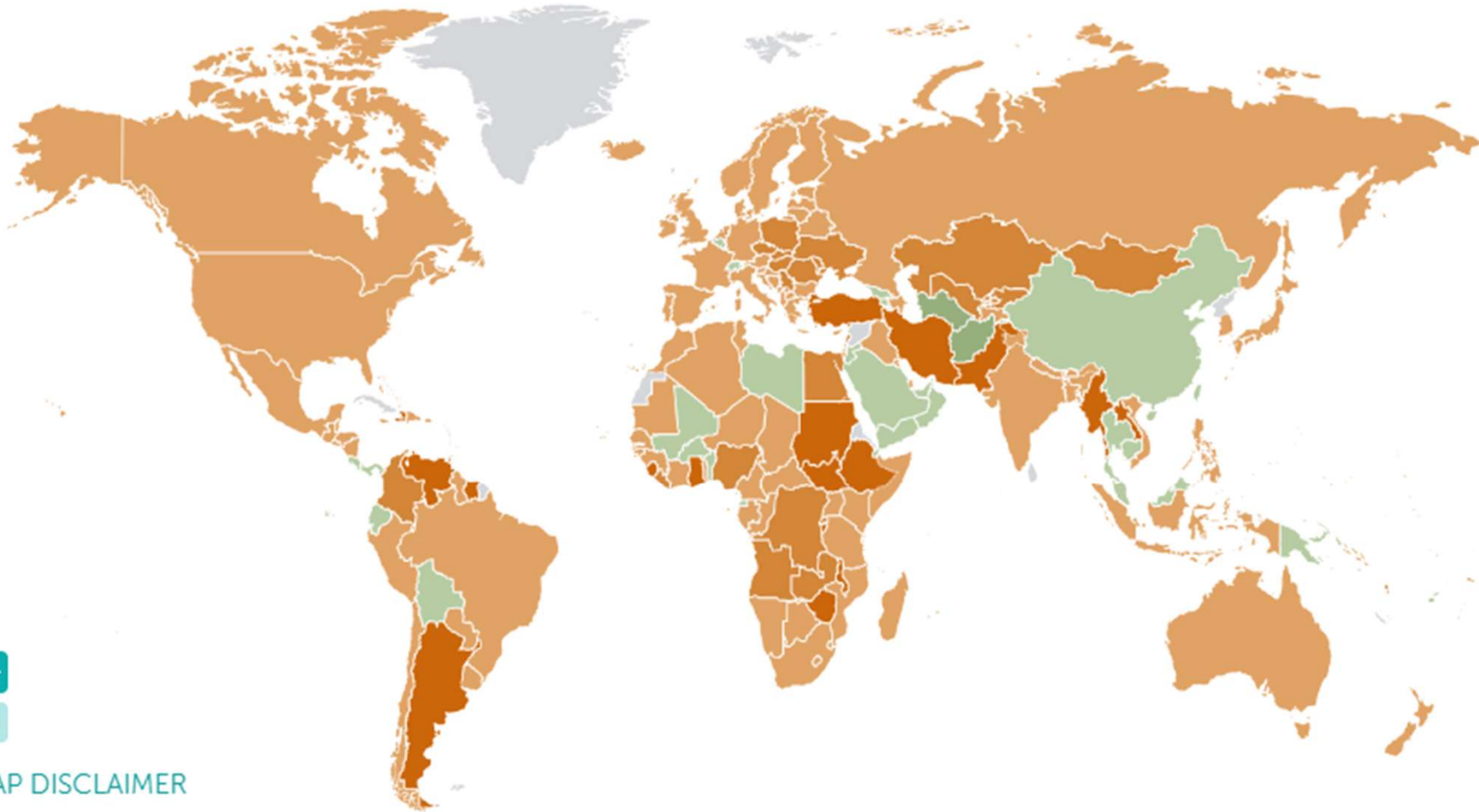
MAP DISCLAIMER

Source: IMF

MAP (2023)



● 25% or more ● 10% - 25% ● 3% - 10% ● 0% - 3% ● less than 0% ● no data



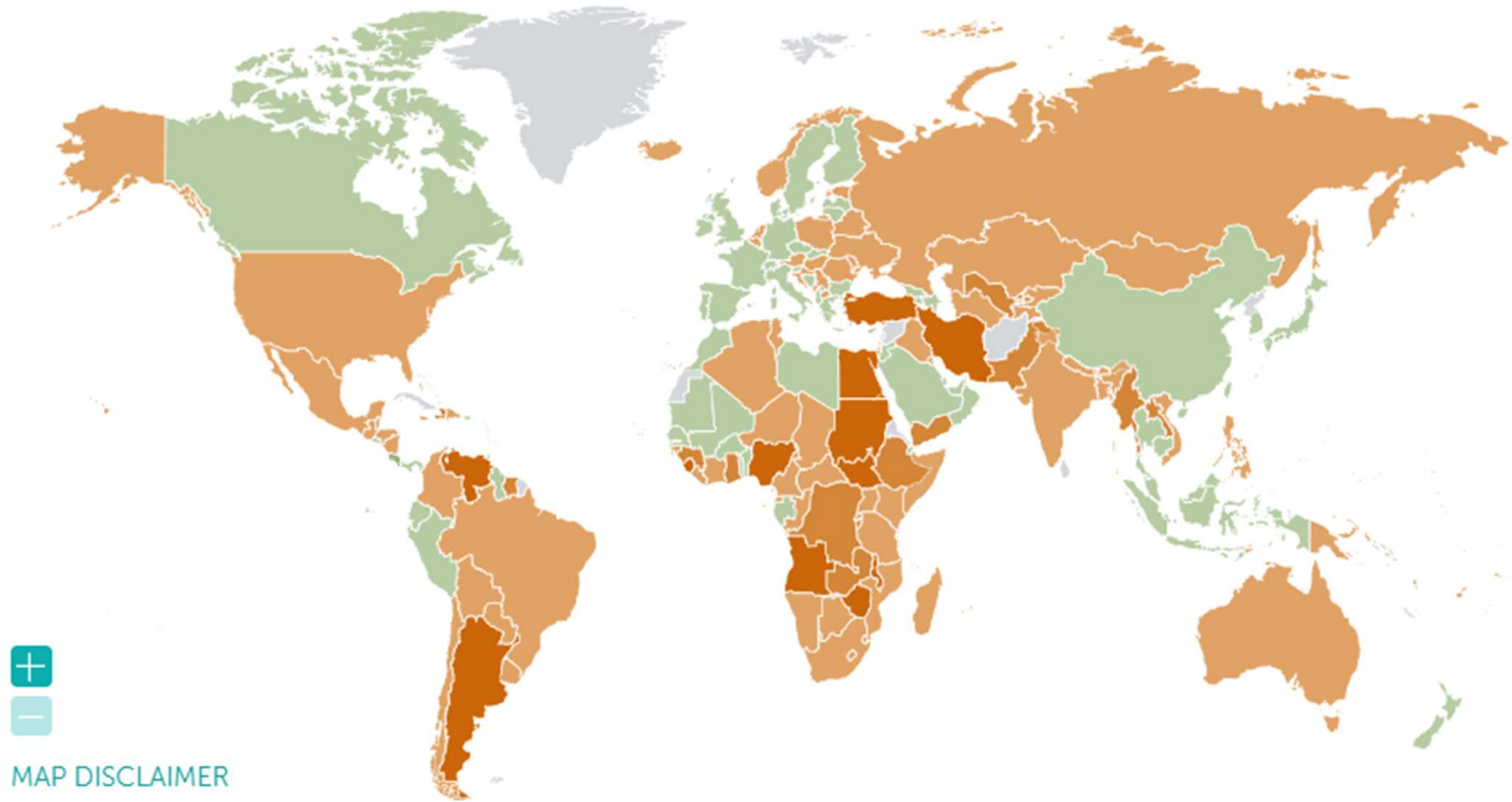
MAP DISCLAIMER

Source: IMF

MAP (2024)



● 25% or more ● 10% - 25% ● 3% - 10% ● 0% - 3% ● less than 0% ● no data



MAP DISCLAIMER

Source: IMF



Brent Crude Oil (USD/Bbl) 75.142 0.402 (+0.54%)



1D 1W 1M 6M 1Y 5Y 10Y 25Y 50Y All

Source: Trading Economics



Leveraging advanced tech to improve resilience

Source: Supply Chain Management Review 2021

By combining that now-historical data (that companies previously lacked) with artificial intelligence (AI), companies can design their supply chains to withstand future shocks and disruptions



The digital supply chain isn't a nice-to-have; it's a must-have

Source: Logistics Management 2023

The digital supply chain is no longer a luxury; it's a necessity.



Generative AI: A game-changer for supply chain management

Source: Logistics Management September 2023

Producing simulation models, identify new inventory optimization opportunities, locate new sources of supply, create new transportation routes.



ChatGPT



deepseek



Digitalization - Servitization comes to the forefront

Source: Logistics Management 2023

Robots as a Service (RaaS), Software as a Service (SaaS)



Driven by 3 major trends in technology

Big data

Advances in computing

Advances in robotics





Project is taking sensor data from automated vehicles in the warehouse to build a live digital twin

Kelly said the basic map would just show an object, like a pallet containing cartons of parts. But to catalogue inventory accurately, you need to know what's in those boxes. "Our job is to take the raw map information and turn it into a product that says, 'at these coordinates you're looking at a pallet that is stacked with camshafts', for example. **It's basically tagging everything in the world with an identifier that says what it is and where you would find it in inventory.** So then, as a warehouse operator, you would query your digital twin and say, 'Today we're planning to ship 3,000 coolant hoses in boxes. Where are they in the warehouse?'"



Photo: TuSimple

First in Freight: In 2021, San Diego-based startup TuSimple plans to deploy autonomous trucks that drive themselves from pickup to delivery without anybody on board.



AMR
Autonomous Mobile Robot

Credit: Logistics Management

Mobile robots are capable of transporting larger payloads across a facility.

By Oliver Morrison [↗](#)

20-Apr-2021 - Last updated on 20-Apr-2021 at 13:54 GMT



RELATED TAGS: Technology & Automation, Technology, Amazon

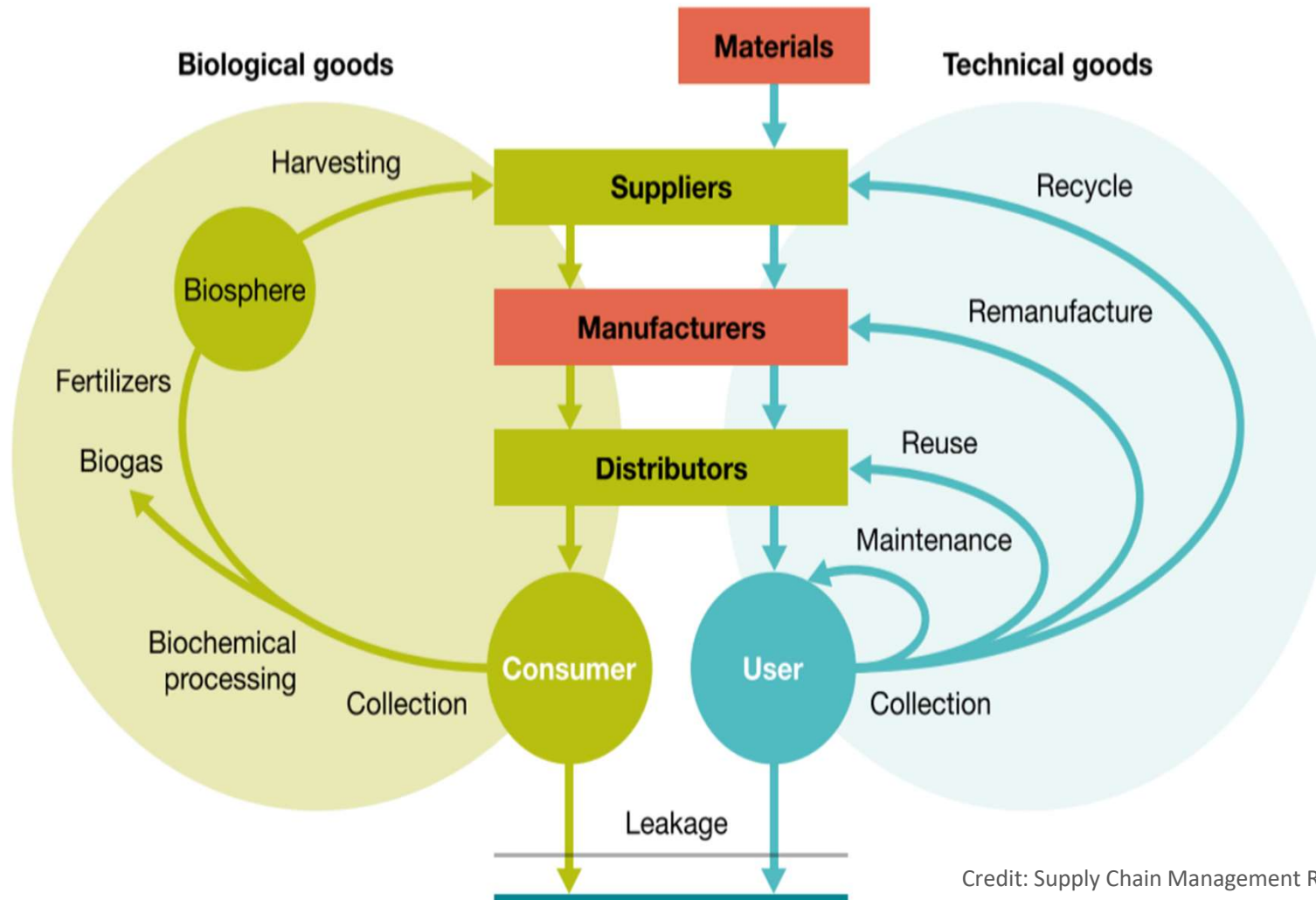
The drone industry is celebrating after the UK Civil Aviation Authority (CAA) approved trials to test the remote piloting of drones.



Sustainability



The circular economy and supply chain cycles





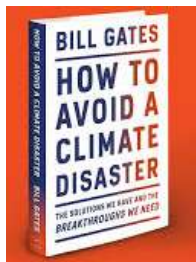
Source of greenhouse gases (GHG)

(Percent GHG emitted)



Credit: Supply Chain Management Review 2021

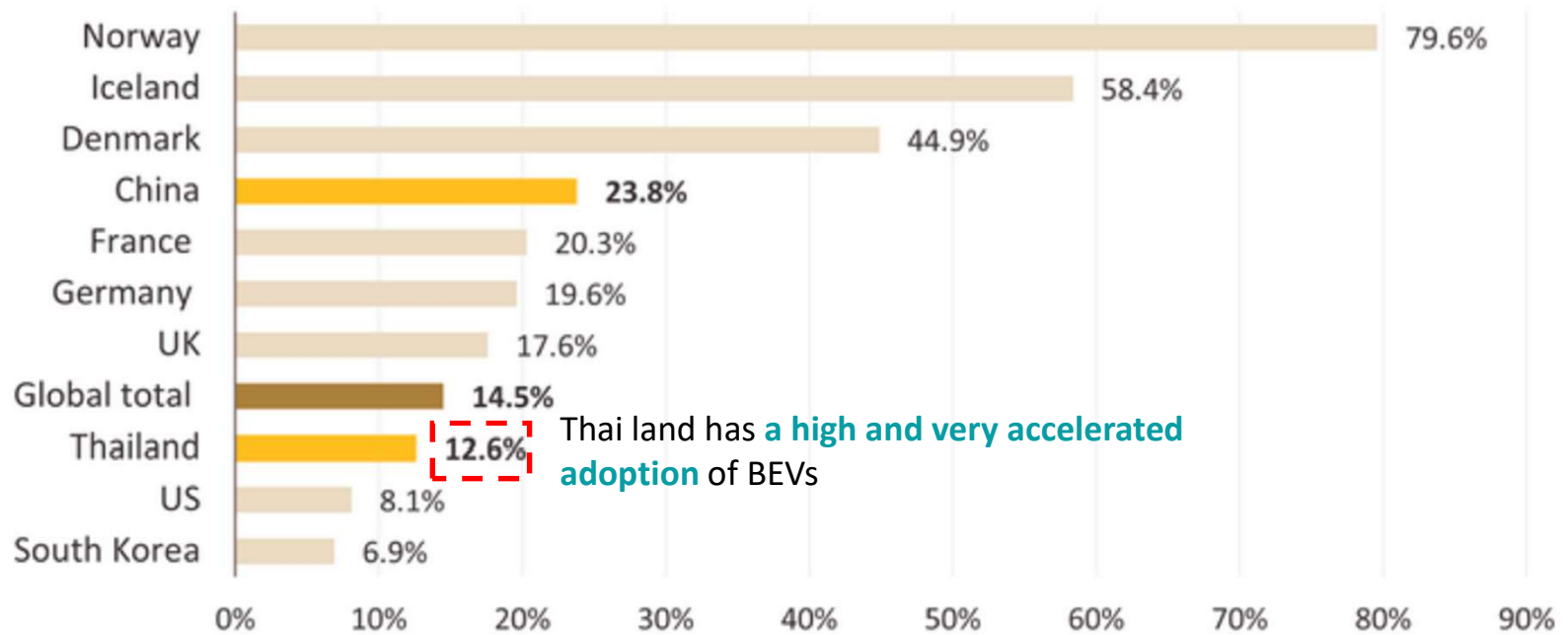
Source: *How to Avoid a Climate Disaster*



Source: Bill Gates 2021



BEVs adoption rates in selected countries (% share of new cars, 4Q2023)

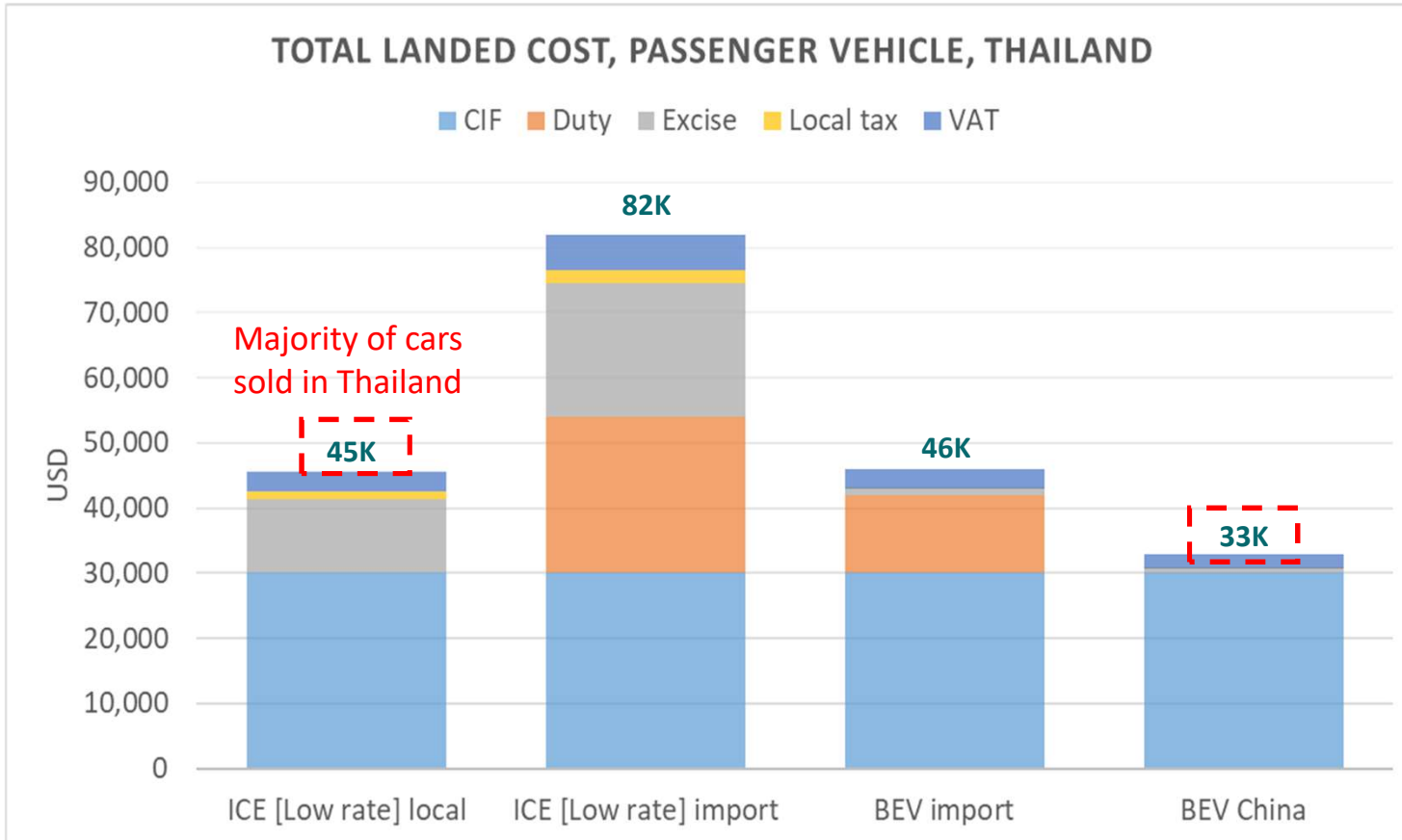


Source: Bloomberg (2024), Krungsri Research

Credit: Krungsri Research

Comparative landed cost, an average passenger car

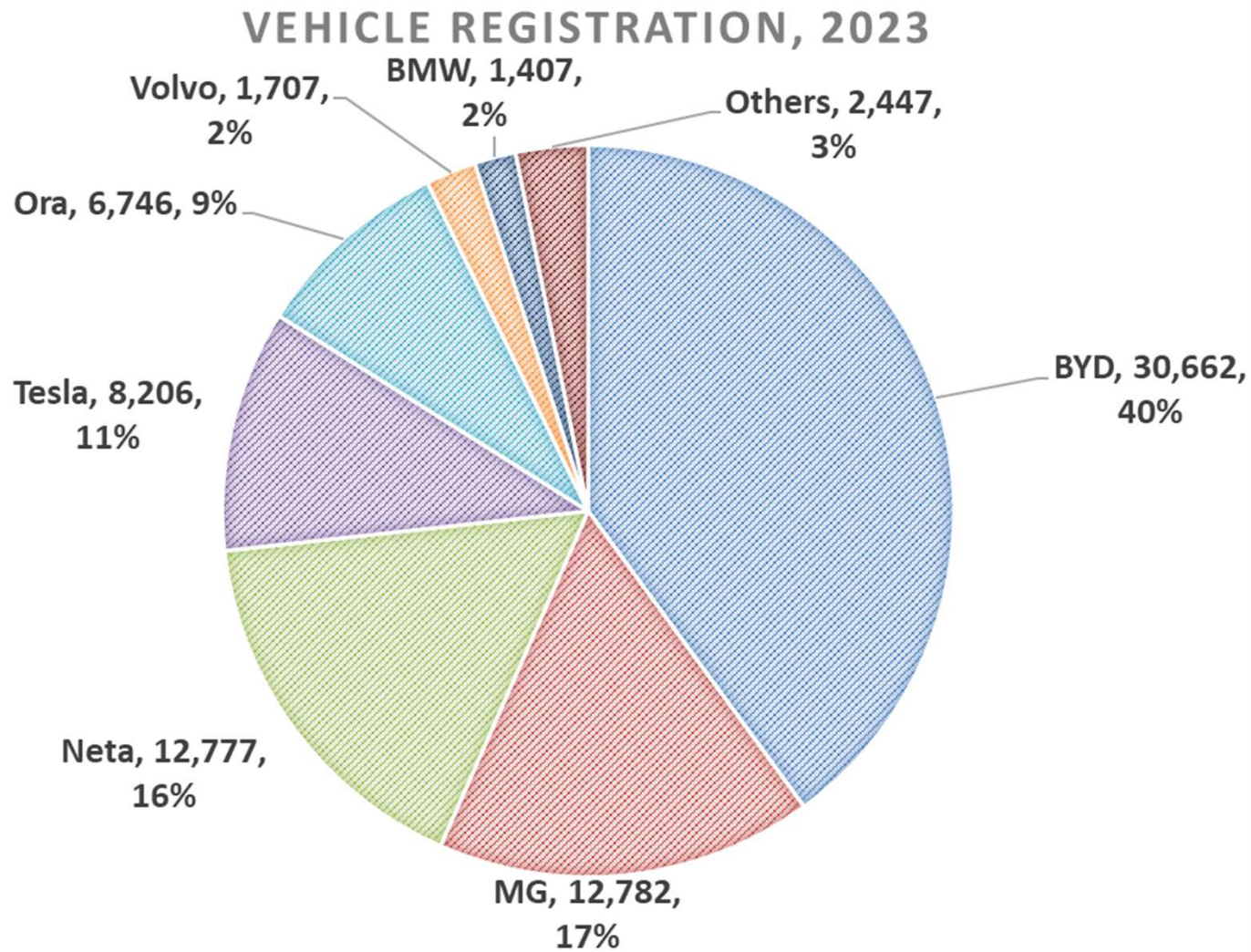
If the out-of-factory cost is the same of USD 30,000, a **BEV with FTA will have a cost advantage of 27%** over a locally made ICE vehicle.



Picture credit: Edmunds.



Picture credit: Rever



Chinese BEVs dominate the market



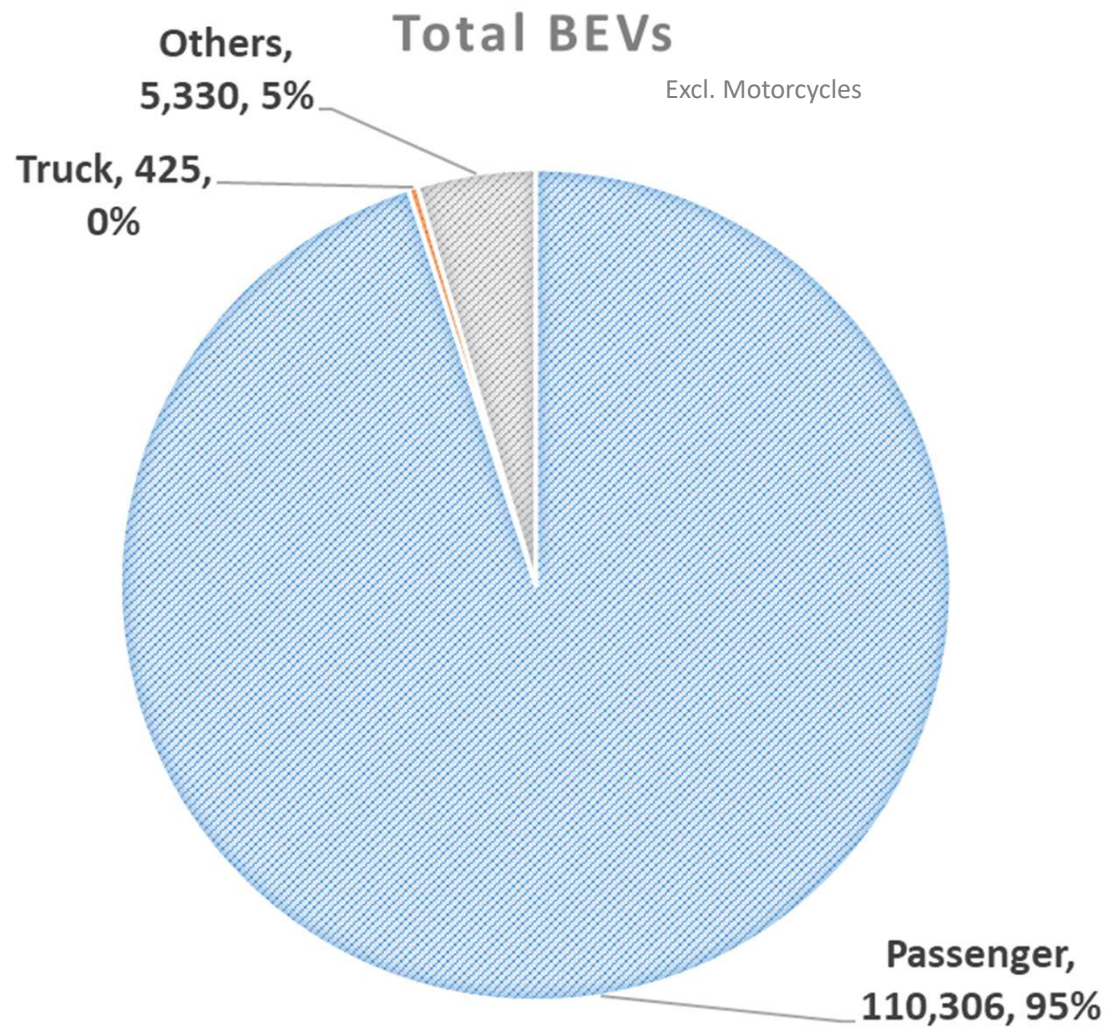
Ambitious plan – yet to be realized.

Thailand’s trucking industry will decide whether to switch its fleet of 400,000 diesel trucks to electric vehicles in April next year after EV tests, according to the Land Transport Association of Thailand.

Association president Apichart Prairungruang said the plan to switch from diesel to electric trucks came after the government released support measures for **EVs**.

Source: The Nation (2022)

Total number of BEVs in Thailand (up to 2023)



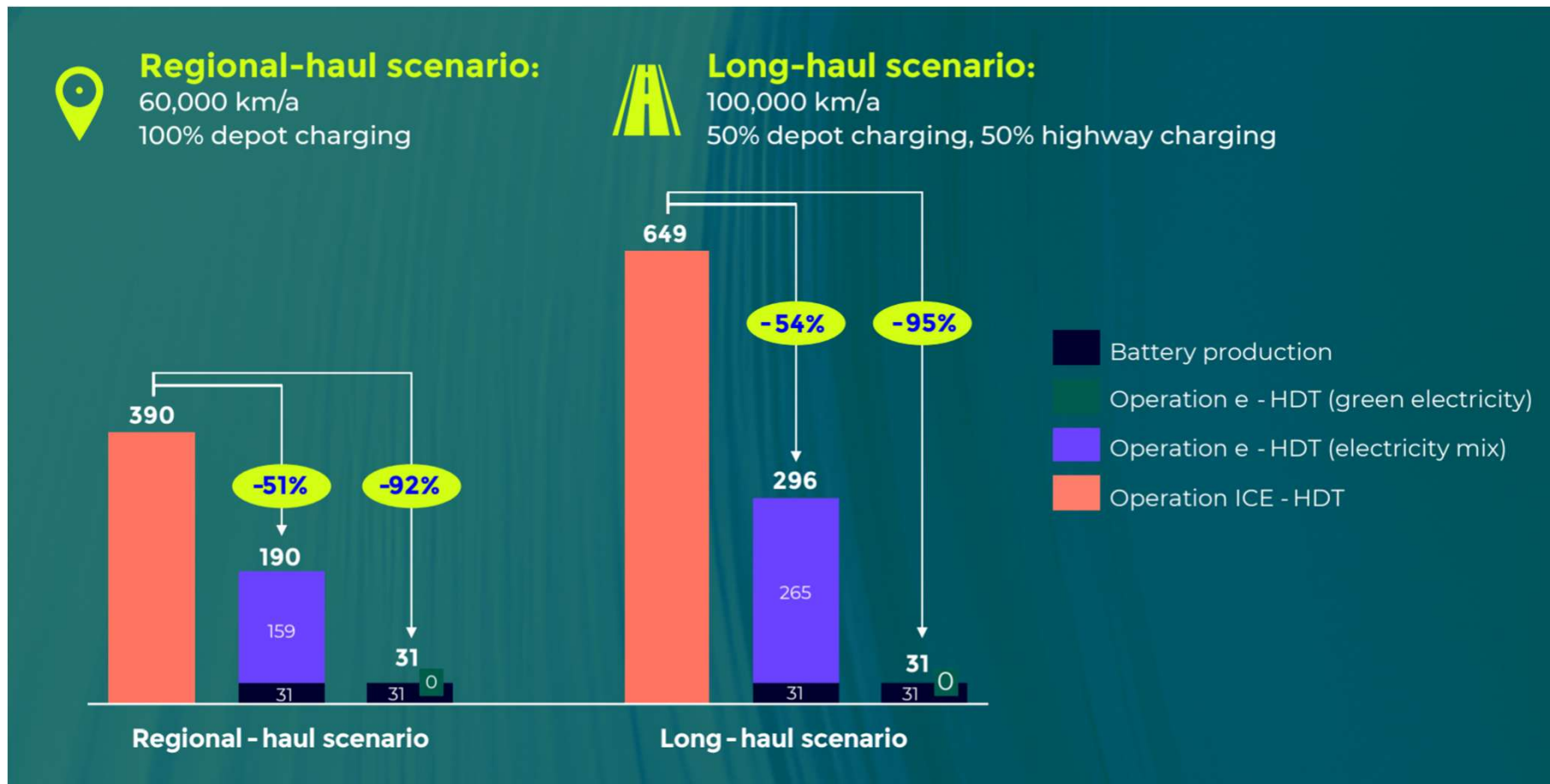
Most BEVs are passenger vehicles

Very little are trucks



Significant reduction in carbon emission (if using a German's electricity mix)

CO₂ (in tons) emission



Source: P3 Group, 2024

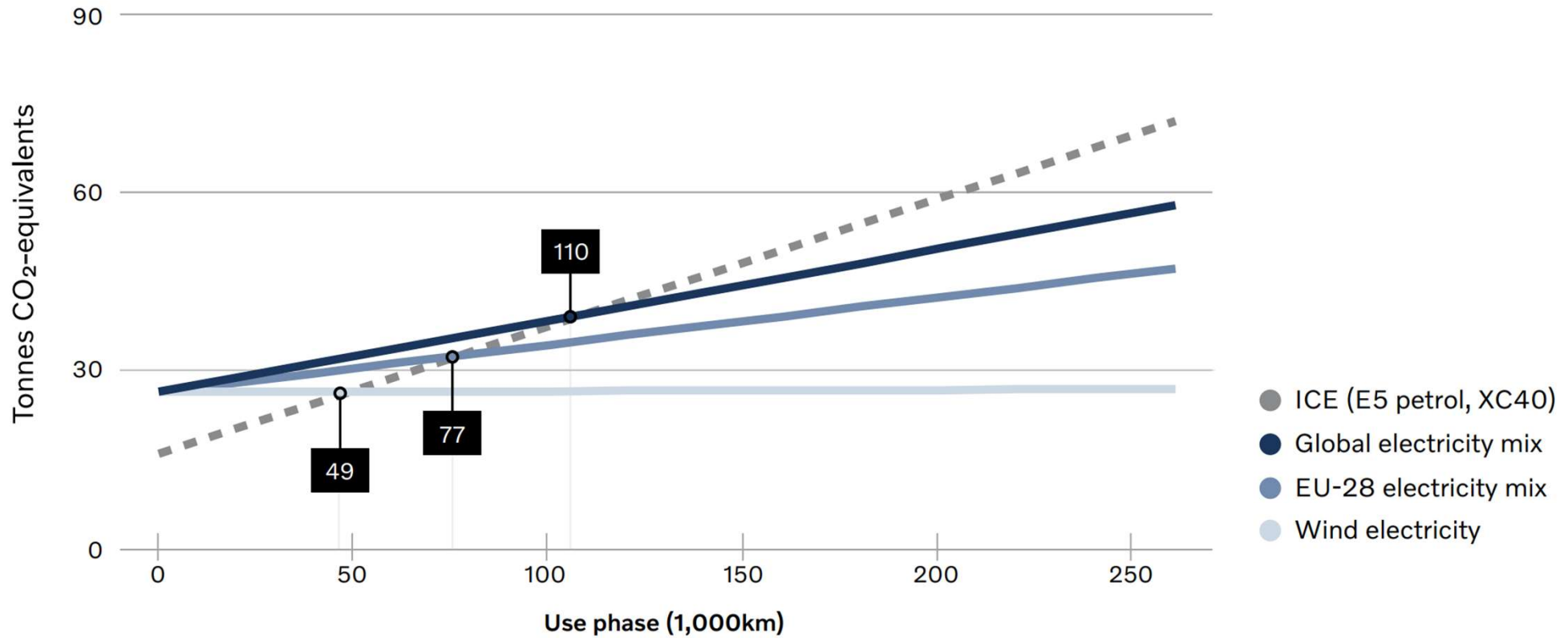


Figure iii. Break-even diagram: Total amount of GHG emissions, depending on total kilometres driven, from XC40 ICE (dashed line) and C40 Recharge (with different electricity mixes in the use phase). Where the lines cross, break-even between the two vehicles occurs. All life cycle phases except use phase are summarized and set as the starting point for each line at zero distance.



Key takeaway

Sustainability need sincerity and caring

Supply chain management and strategy

Incorporating sustainability to supply chain management and strategy

Sustainability requires supply chain management

Trend in supply chain

Resilience

Digitalization

Sustainability

Diversification