

**SUSTAINABLE  
FREIGHT TRANSPORT  
IN  
ASEAN  
CHALLENGES  
AND  
OPPORTUNITIES**

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The report was shared with ASEAN secretariat who circulated it to ASEAN Member States for their inputs which have been duly reflected.

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## I.INTRODUCTION

Economic connectivity is a key political priority for Southeast Asian countries that are members of ASEAN.<sup>1</sup> Growing subregional transport and trade have generated an ‘economy of scale’ effect for the economic and social development. Over the last decade, a rapidly expanding labour force and a shift in economic activity towards the higher-productivity manufacturing sectors have contributed to the poverty reduction outcomes.

The transformational trade benefits of geographical proximity can be harvested only when the freight and logistics connectivity is efficient and sustainable. Global and regional developments in the economic, geopolitical, environmental, climate, and financial dimensions are reaching an upsurge, creating both unique challenges and opportunities for countries in Southeast Asia. Thus, the freight and logistics sector among the ASEAN Member States (AMS) is at crossroads.

Regional consultations<sup>4</sup> carried out by ESCAP have established that developing efficient transport connectivity among countries faces unique challenges that need a comprehensive subregional approach towards sustainability. Since freight transport is so often a cross-border activity, concerted action at the ASEAN level will enhance the chances of success.

The sustainable freight and logistics sector is now universally recognised as one of the core enablers of economic and social development.<sup>5</sup> Since 2000, there has been a surge in global and regional initiatives and agreements that support the implementation of sustainable freight by encouraging stakeholders to improve freight transport efficiency and reduce external costs (like emissions and accidents) and strengthen resilience.<sup>i</sup>

The proposed **ASEAN Sustainable Freight Strategy 2030** is a fit-for-purpose and future-proof freight strategy that will position the ASEAN subregion to meet the needs of the emerging economic, environmental, and social risks and opportunities. The approach adopted is circular, i.e. the starting point is the identification of ‘problems’ in the freight and logistics sector that need to be addressed, around which the strategy is then developed.

The strategy is founded on the principle of “**Common Borders; Common Vision; Common Solutions**” and acknowledges that freight transformation in the subregion will take years. However, based on past and present experiences, there is a general acceptance that a series of no-regret or quick win actions should be identified for immediate action. By focusing on no-regret actions, the strategy responds to the call from within the freight community for guidance on how the Paris Agreement and the Sustainable Development Goals should be integrated within the freight operations.

The **ASEAN Sustainable Freight Strategy 2030** is not intended to replace existing plans and investments but rather aims to provide actions to maximise the outputs of the system. The strategy must be seen together with and not in isolation from existing national logistics plans and trade and transport facilitation plans.<sup>ii</sup>

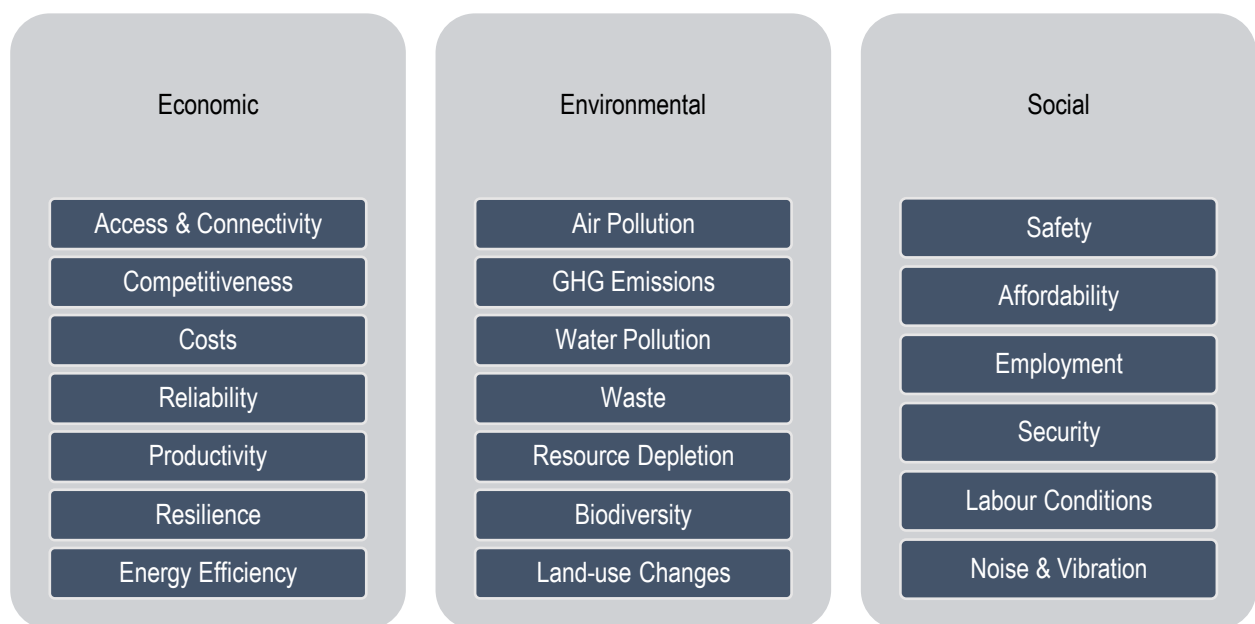
The strategy provides direction to all parts of the freight and logistics supply chain, including all modes. As well as setting out governments intention for freight and logistics, it provides for an important role for the private sector entities and civil society members. The strategy would facilitate the implementation of the ASEAN Transport Strategic Plan 2016-2025.

Ultimately, the outcome of the strategy will be as strong as its actors. Its success will depend on its ownership and how it is ultimately synchronised into national plans.

## II. WHAT IS SUSTAINABLE FREIGHT TRANSPORT?

Sustainable freight transport (SFT) entails, among other features, the ability to provide transportation that is safe, economically efficient, competitive, socially inclusive, accessible, reliable, affordable, fuel-efficient, environmentally friendly, low-carbon, and resilient to external shocks such as disruptions resulting from climate change factors and natural disasters.<sup>6</sup> Sustainable freight transport could consider several economic, social, and environmental objectives, as illustrated below.

Figure 1. Sustainable Freight Transport Objectives in the ASEAN



Source: Author based on UNCTAD SFT Framework

In the strategy, improvement options in the ASEAN sub-region are identified using the “AASI” framework of sustainability. The AASI framework refers to – Access, Avoid, Shift and Improve levers (figure 2). The framework considers optimal interaction of infrastructure, logistics solutions, transport techniques and regulations. By integrating four pillars (Access, Avoid, Shift and Improve), freight externalities can be decoupled with the economy, ensuring holistic growth. The relative importance of these levers varies with the level of economic and logistic development. The overall success of a SFT strategy will depend on winning on several fronts at once, i.e. improving access and connectivity, managing freight demand, modal shift, and improving mode efficiency.

Figure 2. Sustainable freight transport framework



Source: Author

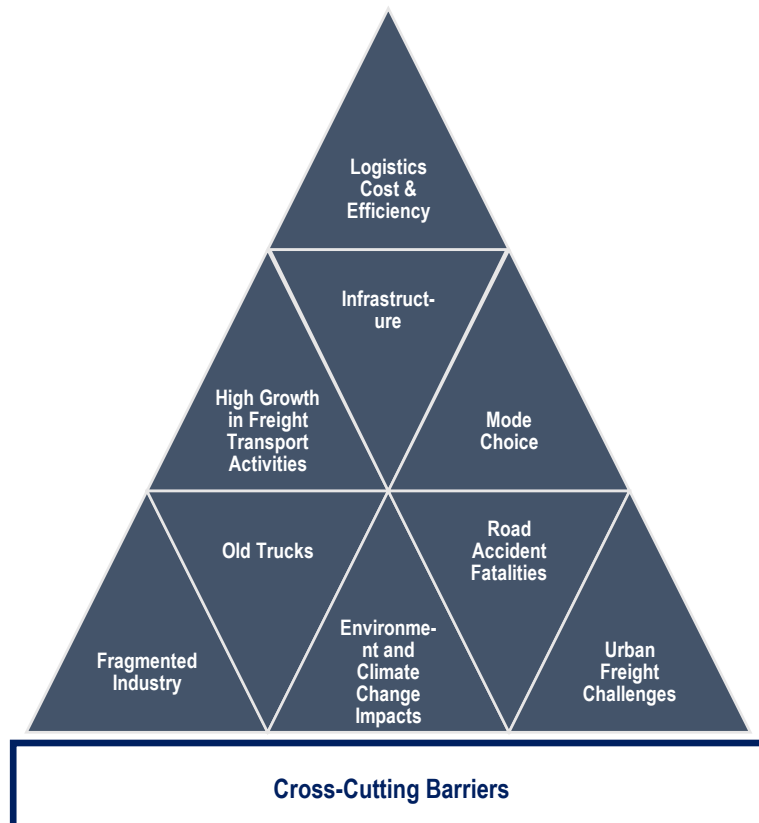
### III. SCOPING FREIGHT TRANSPORT SUSTAINABILITY IN THE ASEAN

The logistics and freight transport needs of the ASEAN countries have changed dramatically from the previous era when the countries were largely isolated from the global economy. With globalisation, new patterns of trade have emerged, and there has been an increasing focus on trade and logistics, which now constitutes a significant share of gross domestic product (GDP).

Freight transport and logistics enables economic growth, provides access to marketplaces, connects producers and consumers, determines trade competitiveness, supports effective integration into global supply chains, and contributes to social progress and inclusive development. However, at the same time, freight activities also generate high external costs that undermine sustainability objectives such as economic efficiency, social inclusiveness, and environmental protection. Freight transport activities result in conflicts; for example, the economic dimension on one hand and social and environmental challenges on the other.

The ASEAN countries face several structural challenges (figure 3) that result in disproportionately large economic, social, and environmental impacts. Addressing such conflicts and trade-offs associated with freight transport movements requires change and innovation in both the public and private sectors. The ASEAN countries have a broad geographical range that generates exceptionally diverse economic conditions. However, despite numerous differentiations, several common challenges exist among ASEAN countries, as discussed below.

Figure 3. **Freight Transport Challenges in the ASEAN**

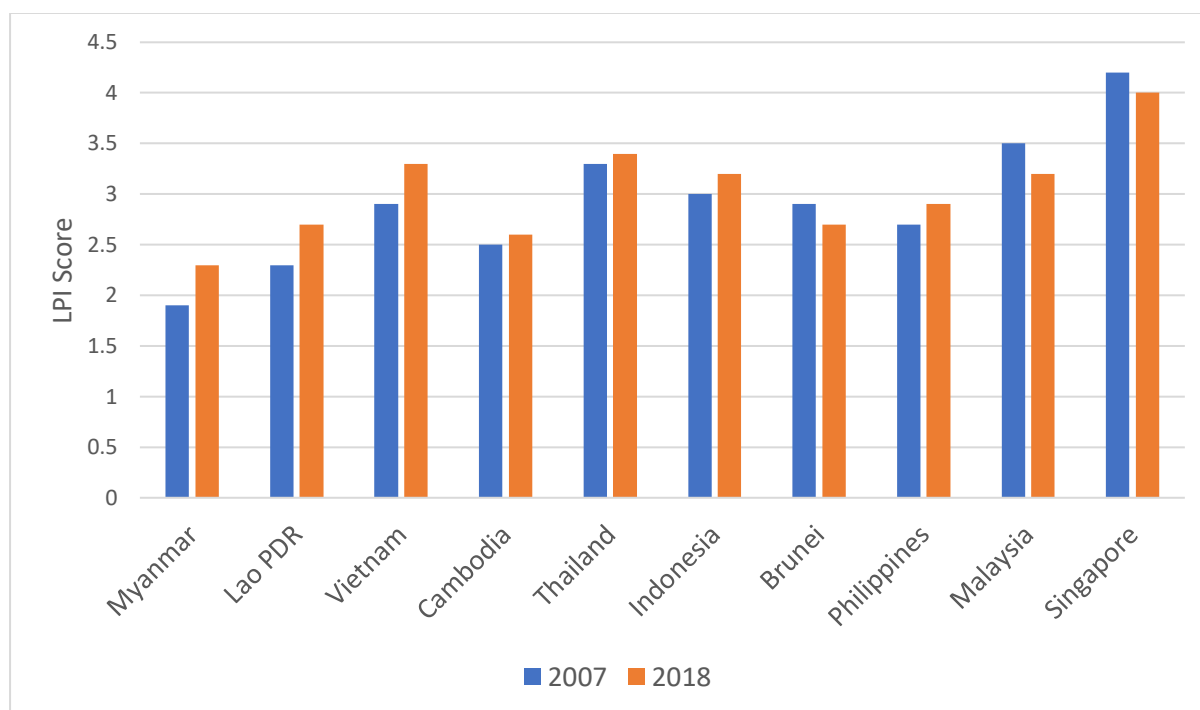




## A. Freight transport and logistics cost

Logistics costs, as a percentage of GDP in ASEAN countries (for example, Viet Nam 21 per cent and Thailand 14.5 per cent) are significantly higher compared to OECD countries (less than 10per cent) due to inadequate quality of logistics services and transport infrastructure and reduced efficiency of freight modes (figure 4). The more advanced economies spend less on freight and logistics as not only do they operate more efficient infrastructure but also have more flexibility in terms of mode choice. Developing countries, on the other hand, are more dependent on road freight systems, which often results in higher costs for long haul movements and has a significant impact on the social and environmental dimensions.

Figure 4. Logistics Performance Index (2007-2018)



Source: World Bank LPI Index

Freight transportation is the primary driver of logistics costs in ASEAN with a share of 50 to 60per cent.<sup>7, 8</sup> Surveys conducted by the Asian Development Bank highlight that fuel costs make up the significant share of operating costs for truck companies, estimated at between 30per cent and 40per cent.<sup>9</sup>

Over the past decade, the ASEAN countries have made limited progress in improving overall freight transport and logistics performance. Since 2007, growth in logistics performance in Thailand and Viet Nam have out-performed their income group peers and the global average.<sup>10</sup> However, in contrast, the Lao People's Democratic Republic, Myanmar, and Cambodia have under-performed against their income group peers and the global average. The overall improvement over the last decade was mainly due to improvements in trade and

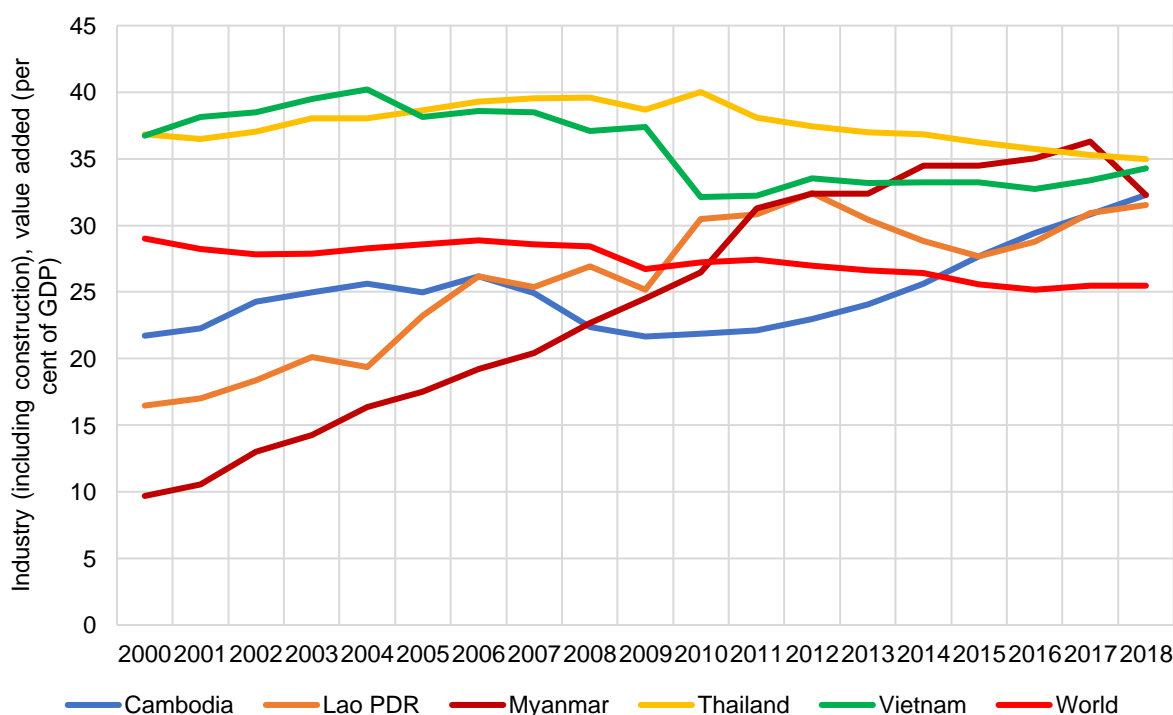
transport infrastructure and cross-border transport facilities, including the time to complete trade transactions.

ESCAP’s consultations in the region have highlighted the continuing need for reforms in building connecting infrastructure and facilitating transport at the borders.<sup>11</sup> There is also a need to broaden the scope of freight transport and logistics policies beyond facilitating transport, connecting infrastructure, removing border bottlenecks, and addressing the challenge of sustainability.<sup>12</sup>

## B. High growth in freight transport activity

Freight transport demand is a derived demand, i.e. freight movement depends on the trade of goods and raw materials. Since 2000, industrialisation has grown rapidly in the ASEAN (figure 5), which is also indicative of growing trade in the region. At the early stages of economic development, freight transport typically grows in tandem with economic growth. The massive increase in economic activity promises high growth in freight activity.

Figure 5. Growing industrialisation in select ASEAN countries

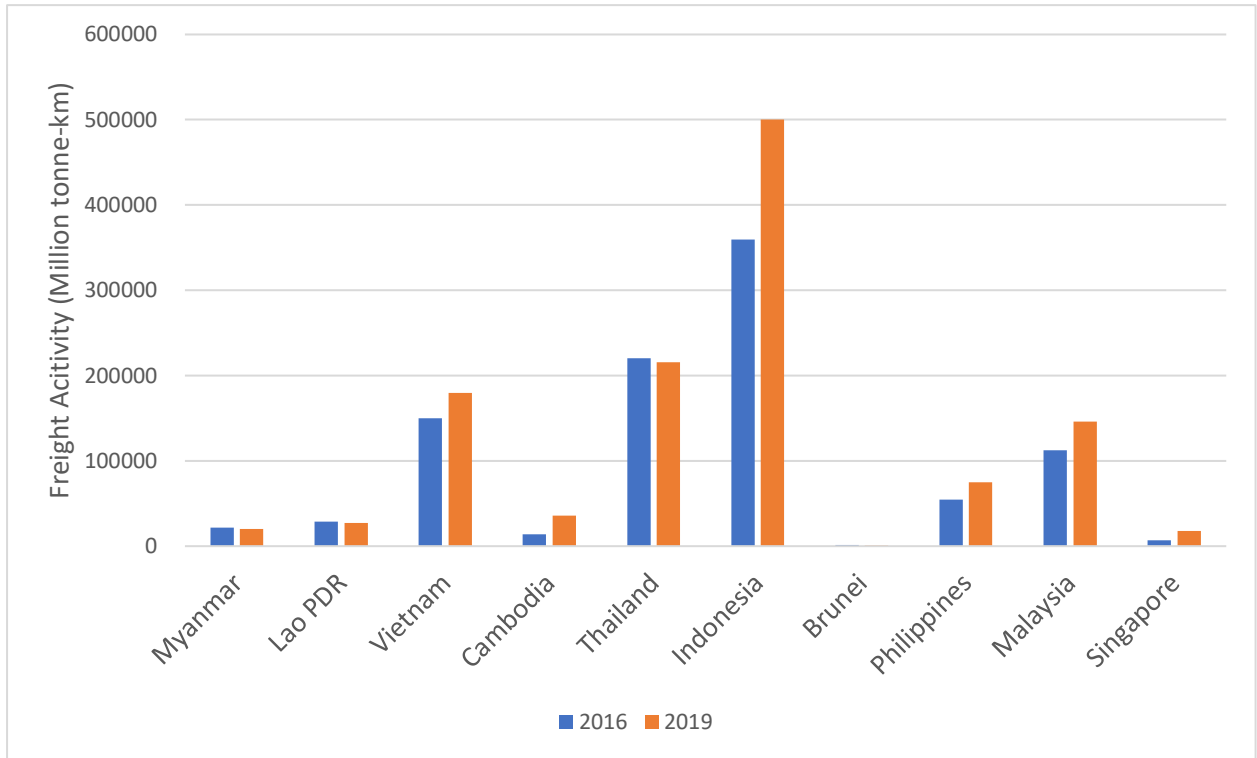


Source: World Bank

In general, freight activity (in tonne-km) has shown a tendency to increase in the ASEAN countries from 2016 to 2019 (figure 6). Freight activity in Singapore had increased by about 175 per cent, followed by Cambodia with an increase of 165 per cent, then both Indonesia and the Philippines with about 40 per cent, and Malaysia and Viet Nam with 30 per cent and 20 per cent, respectively. As mentioned before, an increase in freight activity implies economic

growth. However, the continued growth in freight volumes is giving rise to a range of increasingly complex challenges for governments, industry, and the public. Growing urbanisation and globalisation have also ensured that most of the world's population is directly exposed to these positive and negative impacts.

Figure 6. **Freight Transport Activity in ASEAN Countries (2016-2019)**



Source: UN Stats

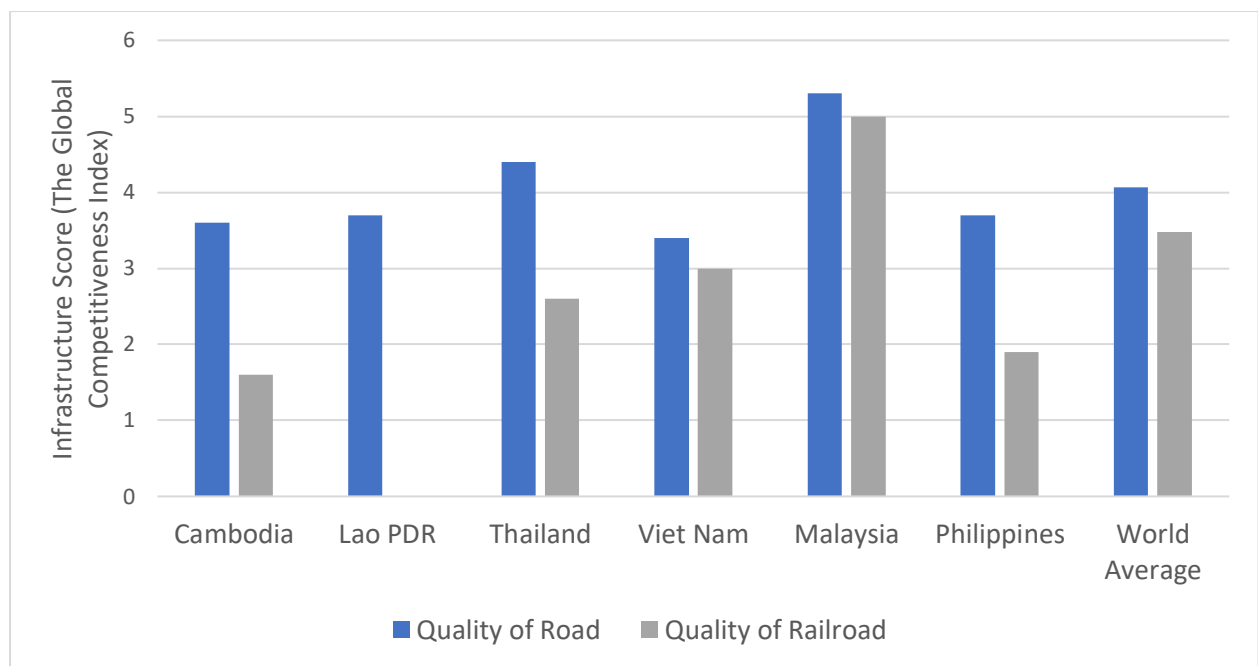
### C. Infrastructure

Efficient logistics infrastructure is a critical enabler of ASEAN countries' economic development policies. However, current research suggests that the quality of logistics infrastructure is less than optimal.<sup>5, 13</sup> Recognising its critical role, the countries have increased their annual spending on logistics infrastructure over the past decade. However, despite this increase, the quality of transport infrastructure of countries is generally lower than world average (figure 7). Furthermore, the network of roads, rail, and waterways will be insufficient to absorb an immense increase in freight movement over the coming decade.

Since a large part of the logistics network is yet to be built, the countries have a chance to add infrastructure optimally to meet the growing demand and make the freight movement more sustainable and affordable for its users.

Currently, the infrastructure standards and regulations are diverse, creating challenges for the international movement of trucks. This diversity can be in national standards for the design and construction of infrastructure as well as vehicles' permissible size, weight, and emissions. Infrastructure standards and regulations could, thus, also be standardised.

Figure 7. **Infrastructure Quality Score in Select ASEAN Countries**



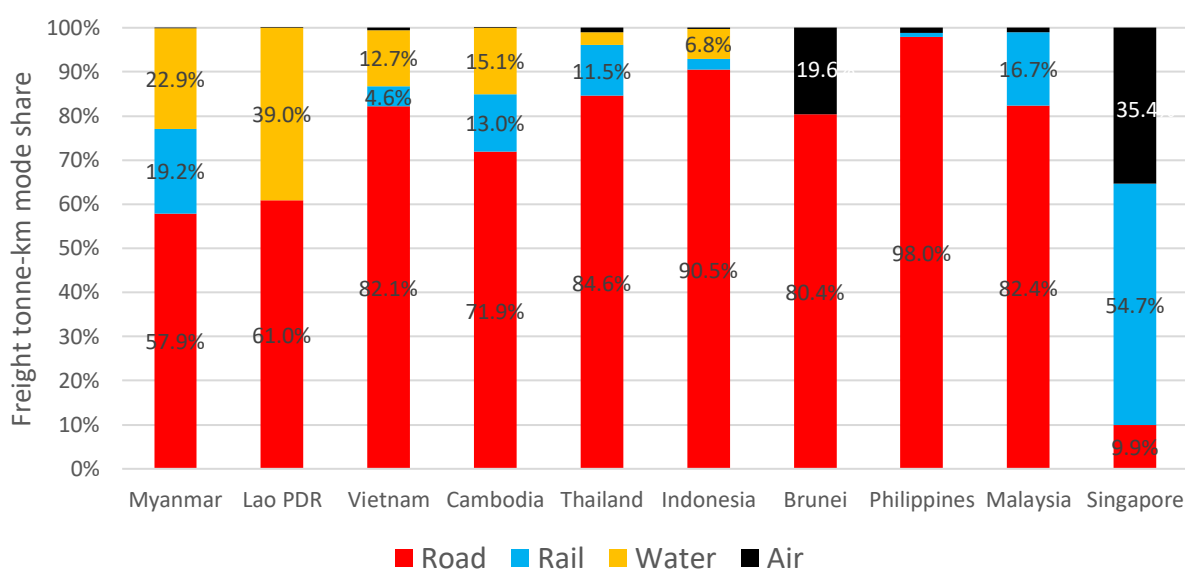
Source: World Economic Forum

## D. Mode choice

Globally, the freight transport mode share varies significantly by region and is primarily determined by geographical, economic, and infrastructure factors. However, in the ASEAN countries, there is a common trend towards the use of road freight transport over other modes, at the expense of alternate and more sustainable options of freight transport such as rail and waterborne freight. In the subregion, most of the freight is transported via roads, especially in the Philippines and Indonesia where more than 90 per cent of the freight was transported via roads. The only exception is Singapore, where railways are used extensively.

Market globalisation is leading to changes in production and consumption patterns and changes in the commodity mix with the development of new patterns of trade. The demand for reliable, flexible, cost-effective, timely, and viable door-to-door freight services indicates a continuing freight prioritisation of road infrastructure over railways and waterways.

Figure 8. Freight Transport Mode Share in ASEAN Countries



Source: UN Stats

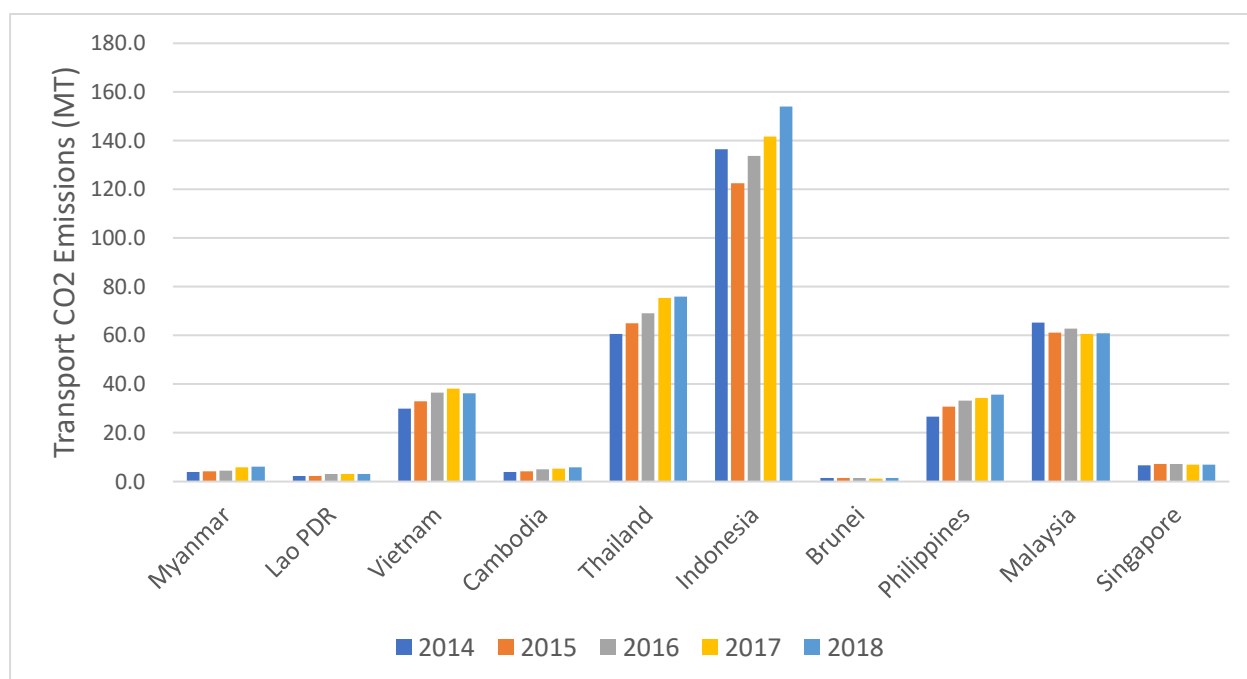
## E. Environment and climate change impacts

CO<sub>2</sub> emissions are a dominant driver of climate change. The global growth in freight demand has contributed to the increase in CO<sub>2</sub> emissions from the sector. As mentioned previously, the development of industrialization has led to high growth in freight activities in Southeast Asia. Due to the significant growth in freight activities, emissions from the transport sector have contributed greatly to climate change.

CO<sub>2</sub> emissions from the transport sector have increased by about 15 per cent, from 337 million tons in 2014 to 386 million tons in 2018. As shown in figure 9, in 2019, Indonesia contributed the most CO<sub>2</sub> emissions (around 40 per cent) in the region, followed by Thailand (19.7 per cent), and Malaysia (15.8 per cent). Meanwhile, the transport CO<sub>2</sub> emissions in Brunei and the Lao People's Democratic Republic took up only 0.3 per cent and 0.8 per cent of the region's overall transport CO<sub>2</sub> emissions in 2018.

Most countries have contributed to the growth of transport CO<sub>2</sub> emissions in the region. From 2014 to 2018, CO<sub>2</sub> emissions from the transport sector in Myanmar and Cambodia have increased more than 50 per cent, followed by the Lao People's Democratic Republic with 40 per cent, the Philippines with 34 per cent, and Thailand with 25 per cent. The exceptions are Singapore (only a 2.8 per cent increase), Brunei (0 per cent), and finally Malaysia, whose transport CO<sub>2</sub> emissions had decreased from 2014 to 2018.

Figure 9. **Transport CO<sub>2</sub> Emissions in ASEAN Countries**



Source: CAIT

## F. Road accident fatalities

Approximately 1.3 million people die each year because of road traffic crashes. Road traffic crashes are responsible not only for deaths and injuries, but also for economic losses – they cost most countries around 3 per cent of their gross domestic product.<sup>16</sup> One of the Sustainable Development Goals (SDGs) is to improve road safety and halve the number of global deaths and injuries from road traffic accidents by 2030.

South-East Asia has the road traffic death rate at 20.7 per 100,000 population, which is above the global rate of road traffic deaths at 18.2 per 100,000 population. This could be due to freight-related factors such as unsafe road/logistics infrastructure and unsafe trucks.

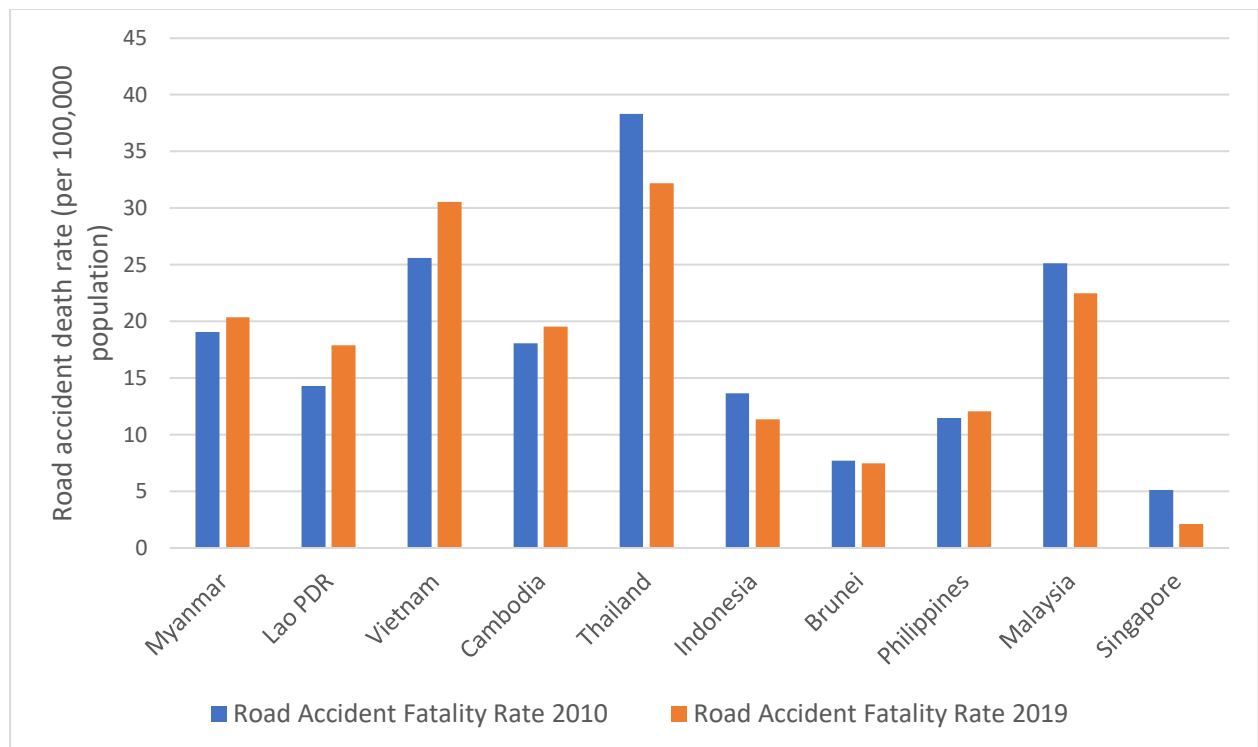
Thailand and Viet Nam have the highest rates of road traffic deaths at 32.2 and 30.6 deaths per 100,000 population respectively (figure 10). This is followed by Malaysia, Myanmar, and Cambodia, with the road traffic deaths rates at 22.5, 20.4, and 19.6 per 100,000 population

respectively. On the other hand, Singapore has the lowest rate of 2.1 deaths per 100,000 population.

From 2010 to 2019, ASEAN countries have made different progress in achieving better road safety. Several countries have seen success in reducing road accident deaths, led by Singapore with a decline of about 60 per cent. Indonesia, Thailand, Malaysia, and Brunei have also shown their success in improving road safety. However, the Lao People's Democratic Republic and Viet Nam have seen an increase in road accident fatalities.

To achieve road safety, new regulations, better quality infrastructure, and new vehicle standards are key factors.

Figure 10. Road accident fatality rates in the ASEAN Sub-region (2010-2016)



Source: World Health Organization

### G. High usage of old trucks

The truck fleet ownership has different characteristics with relatively old trucks in Cambodia, the Lao People's Democratic Republic, Myanmar, and Viet Nam and relatively new trucks in Thailand. Most operators (especially in Cambodia, the Lao People's Democratic Republic, and Myanmar) prefer second-hand trucks (import or local). Since the reliability of operations is uncertain in old trucks due to frequent breakdowns, they operate within a small geographic area and generate high emissions per activity performed.

Newer trucks are generally bought by big logistics companies and truck operators (especially in Thailand and Viet Nam) with easy access to finance. The large truck operators usually take a loan to purchase trucks and the ownership cycle is generally short (<5/6 years). Since freight transport demand is seasonal, unidirectional, based on commodities, and highly competitive,

the main priority is to keep trucks operational (with limited maintenance interventions) rather than looking for ways to drive more efficiently.

These trucks are often sold to smaller operators at reduced prices (or they import them). Small and medium enterprises (SMEs) with less than five trucks, which cannot access extensive finance, buy these used trucks, and try to maximise their usage while reducing further expenditures on maintenance.

Since trucks are kept on short ownership cycles, the primary emphasis is on low investment in preventive maintenance, thereby ensuring poor efficiency. For example, in Viet Nam, 94 per cent of the truck fleet is more than five years old<sup>17</sup> with an average age of 8 years. The presence of old trucks in fleets coupled with poor maintenance practices results in reduced fuel efficiency, reduced productivity, increased emissions, and adverse health impact.

Furthermore, there is a significant market failure in the penetration of fuel efficiency improvement technologies in trucks (for example, aerodynamics and rolling resistance) due to high investment costs, despite significant savings and short payback periods. There have been few technology demonstration initiatives, but the technology penetration is yet to scale-up due to the reluctance of banks and financiers to lend money to truck drivers and small companies and a lack of experience in energy service companies with trucking fleets.

## **H. Fragmented road freight sector**

The road freight transport sector in ASEAN countries is highly fragmented with most trucks owned by SME's. The fragmented freight transport industry acts as a catalyst for inefficiency in the freight sector. Operators are forced to sustain high empty or partially loaded trips and, to compensate the losses, use overloaded trucks more often. Overloaded trucks on roads can cause roads to deteriorate prematurely and cause significant economic loss. The high share of poorly organised SMEs with limited platforms for efficient supply-demand matching results in high empty or partially filled backhaul for some operators. In some cases, empty backhaul for some operators is in the range of 50-70 per cent.<sup>17</sup>

Also, since the SMEs are not organised, high competition in the market drives down the margins and sustainability of the trucking sector. For example, the average profit margin in the road freight industry in Thailand is just 2-3 per cent for SMEs.<sup>18</sup> They also face the challenge of a lack of affordable financing. The average interest rate for truck financing is in the range of 10-20 per cent due to structural challenges, small business size, collateral requirements, documentation and financial literacy, weak credit skills, and poor business practices. The low profitability in the sector further prevents industry consolidation, creating a vicious cycle.

## **I. Urban freight challenges**

With increasing urbanisation and e-commerce, urban freight deliveries are rapidly increasing. High intensity of freight movement within a small geographical area does not translate into high efficiency due to several barriers. The urban freight in the ASEAN countries is a significant contributor to urban traffic congestion, resulting in a high economic penalty (a loss of GDP from 2-5 per cent)<sup>19</sup> and health impacts due to air pollution.

Bangkok is already considered as one of the most congested cities in the world<sup>20</sup> and slow



goods traffic in a congested environment generates high emissions per delivery.<sup>21</sup> Current research<sup>15</sup> shows that in the Greater Mekong Subregion (GMS), major populated cities such as Bangkok and Ho Chi Minh were ranked 28 and 35 among top cities in terms of transport-related air pollution deaths.

Currently, urban freight is not well-integrated into the transport and economic development strategies of ASEAN cities. Planning authorities mainly prioritise the movement of passengers in master plans and related investments.<sup>22, 23</sup> As a result, low or minimal investments are made to facilitate efficient and environment-friendly urban deliveries.

## **J. Cross-cutting barriers**

### **• Coordination**

The challenge with ASEAN countries' infrastructure and logistics investments are that they are not well-integrated and efficient. This is reflected in the existence of separate master plans for each mode (road, railway, shipping/inland-waterways, and aviation). Development of separate master plans for each mode increases inefficiency and duplication of efforts both nationally and regionally. Considering the multiple challenges at hand, ASEAN countries need to urgently pursue an integrated and coordinated approach that not only closely aligns the development of each mode and its efficiency – railways, roads, and waterways – with the countries and subregional priorities but also makes optimal use of existing assets. Freight supply chains are increasingly cross borders and thus some factors that drive freight sustainability are largely beyond the control of any single government and should be addressed sub regionally.

### **• Governance**

Within a country, the institutional mandate for various aspects of the freight and the logistics sector are scattered across several government ministries and administrative agencies. Furthermore, there are significant differences in governance structures across modes. There is no single dedicated public sector agency that has overall responsibility for addressing rising freight and logistics challenges (primarily environmental and social aspects). In the absence of overarching legislative and regulatory framework for improving sustainability, there is a lack of sufficient coherence in policy and investment-related decisions.

### **• Lack of Partnerships**

The freight and logistics sector is increasingly becoming more complex as public and private stakeholders continuously strive for lower costs and greater efficiency in the face of high fuel costs with unreliable supply, pressures to reduce air pollution and climate change impacts, operating in congested and high accident risk environments, difficulty in attracting new talent and recruiting drivers, and competition from a global marketplace. There are multiple public and private stakeholders involved in freight and logistics operations and they often have different priorities. The relationship between stakeholders is likely to interchange among conflict, cooperation, competition, and cooptation,<sup>iii</sup> intensifying the challenges.

The problem of a lack of coordination and institutional fragmentation is further supplemented by a lack of public-private partnerships in addressing freight transport-related challenges. Freight transport is still considered as a private-sector problem, i.e. freight and logistics optimisation is a business-driven interest that does not need government intervention until

there is a severe problem. However, freight and logistics sustainability cannot be improved in isolation by a single stakeholder.

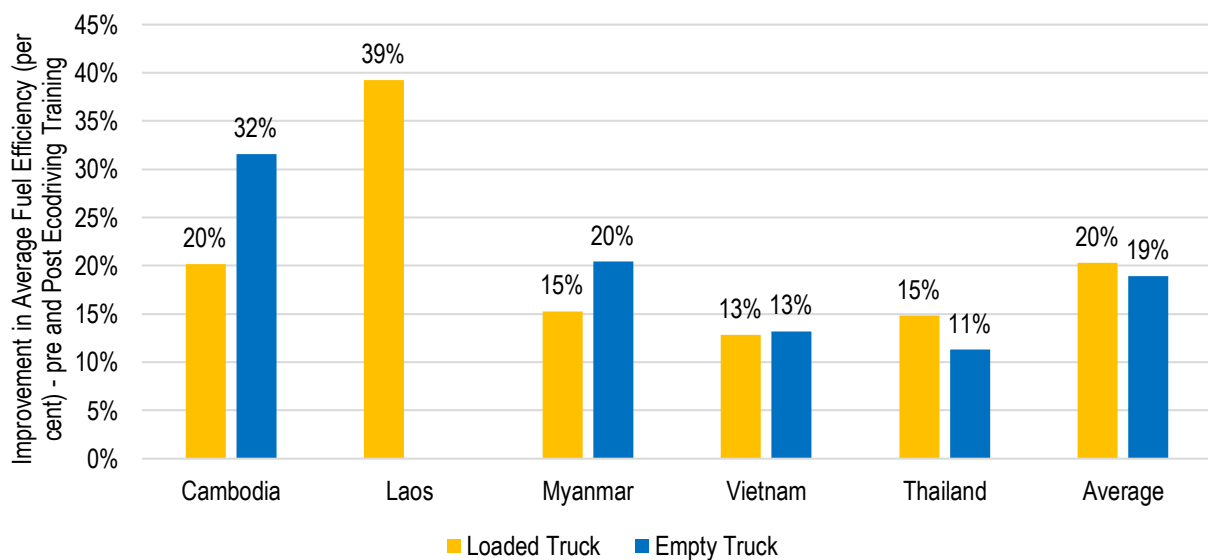
- **Lack of Data**

In the ASEAN countries, freight transport-related data, along with environmental, economic, and social dimension data, are often not collected. When available, these are often limited in scope or outdated. While there are limited efforts to collect freight and logistics data, these are often motivated by outdated objectives or limited by specific applications. However, some initiatives<sup>14</sup> have established that availability of sufficiently detailed data on freight flows and related performance and targeted interventions in specific corridors and subsectors can enable transformational changes in freight logistics performance.

- **Limited Capacity-Building Initiatives**

Most logistics and truck companies are SMEs and lack access to adequately trained human resources. Furthermore, public sector institutions are fragmented with no dedicated institution for the freight and logistics sector. While public sector stakeholders have advanced training in passenger transport, few have formal training on the freight transport sector and do not understand the complexity of challenges. Most of the existing initiatives to improve capacity in the ASEAN countries have focused on short-term eco-driving training for drivers. The GIZ-supported Green Freight Mekong program,<sup>24</sup> for example, found the immediate impact of eco-driving to improve fuel efficiency by 20 per cent. However, training and capacity-building mechanisms have not been incorporated into institutionalised structures. Besides, there is a lack of peer-to-peer exchange programs and comprehensive capacity-building programs for senior officials and private sector representatives.

Figure 11. **Impact of Eco-driving in Select ASEAN Countries**



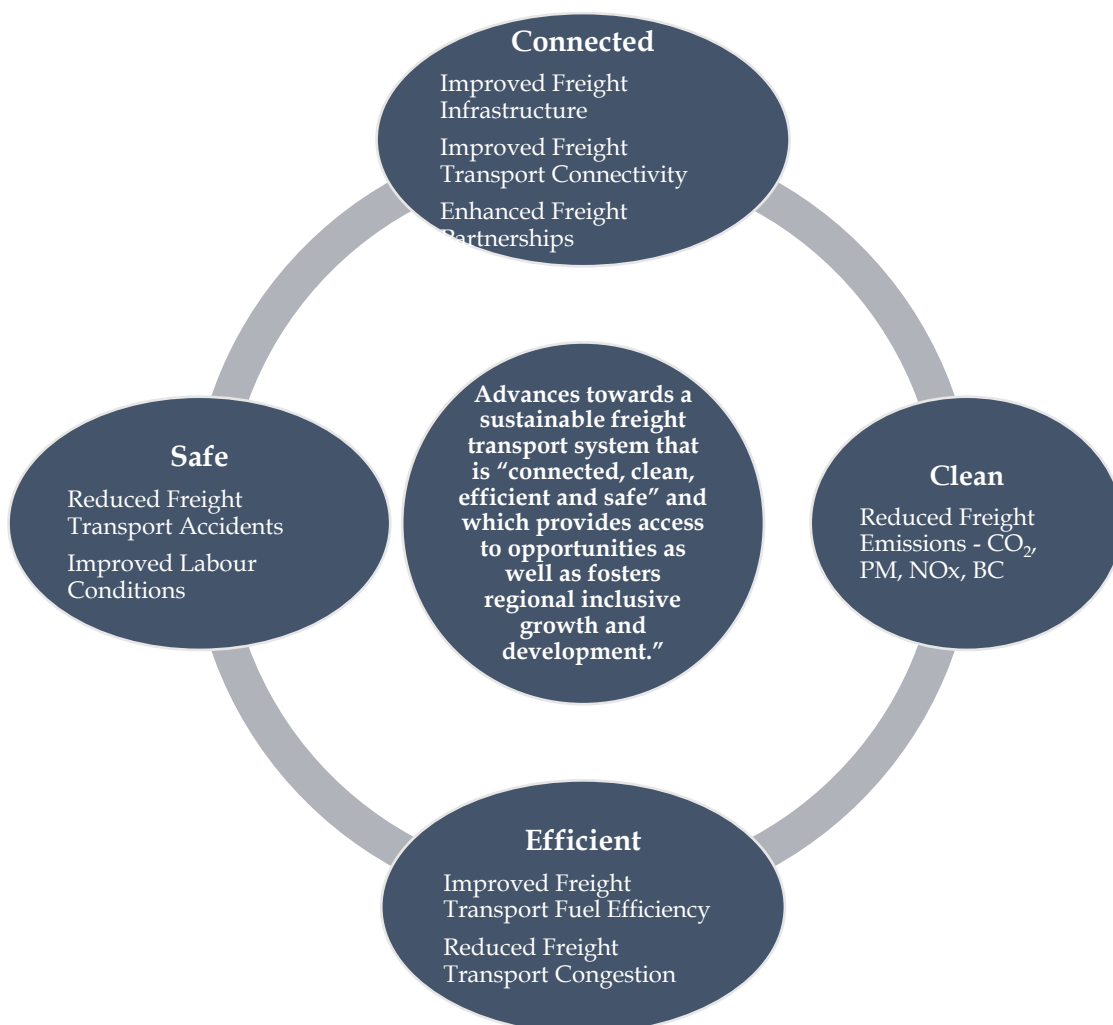
Source: GIZ

## IV.A VISION FOR SUSTAINABLE FREIGHT TRANSPORT

Inspired by overarching principle of “**Common Borders; Common Vision; Common Solutions**” and the Sustainable Development Goals, the proposed 2030 vision for freight in ASEAN countries is to advance towards a sustainable freight transport system that is “**connected, clean, efficient, and safe**” and which provides access to opportunities as well as fosters inclusive regional growth and development. The vision statement is supported by a set of objectives (below figure) to provide a strategic direction to the sustainable freight transport strategy.

The prioritised objectives, when combined, produce an economies of scale effect across large logistics networks - serving as an ‘enabler’ for the achievement of various international and regional processes like Paris Agreement on Climate Change, the Sustainable Development Goals, the United Nations Conference on Trade and Development (UNCTAD), the Nairobi Mandate (Maafikiano), the United Nations Centre for Regional Development (UNCRD), the Environmentally Sustainable Transport Initiative, the Addis Ababa Action Agenda, the Sendai Framework on Disaster Risk Reduction, and the United Nations Global Decade of Action on Road Safety.

Figure 12. ASEAN Sustainable freight transport vision and objectives



Source: Author

## V. TRANSLATING THE VISION INTO ACTION

Freight sustainability is not easily achieved; it requires a paradigm shift in its direction. A quest for sustainability requires a solid foundation, a partnership with diverse stakeholders and continuous improvements over time. A number of innovative measures were considered for inclusion in this strategy. However, the most effective potential measures which can be implemented quickly are elaborated. The proposed initiatives acknowledge the diversity and development asymmetries of the ASEAN countries.

ASEAN countries have different characteristics, and the aims of this strategy will need to be pursued in ways that are tailored to each. However, the strategy based on the overarching principle of **“Common Borders; Common Vision; Common Solutions”** considers opportunities and economies of scale to be gained from regional action. These “no-regret” actions are at the intersection of regional and national priorities and are based on experiences gained from pilot demonstrations, stakeholder consultations, and a comprehensive literature review. Precedents for all proposed measures exist; the SFT strategy considers these initiatives optimally and effectively. These solutions, when combined, are designed to deliver value for all.

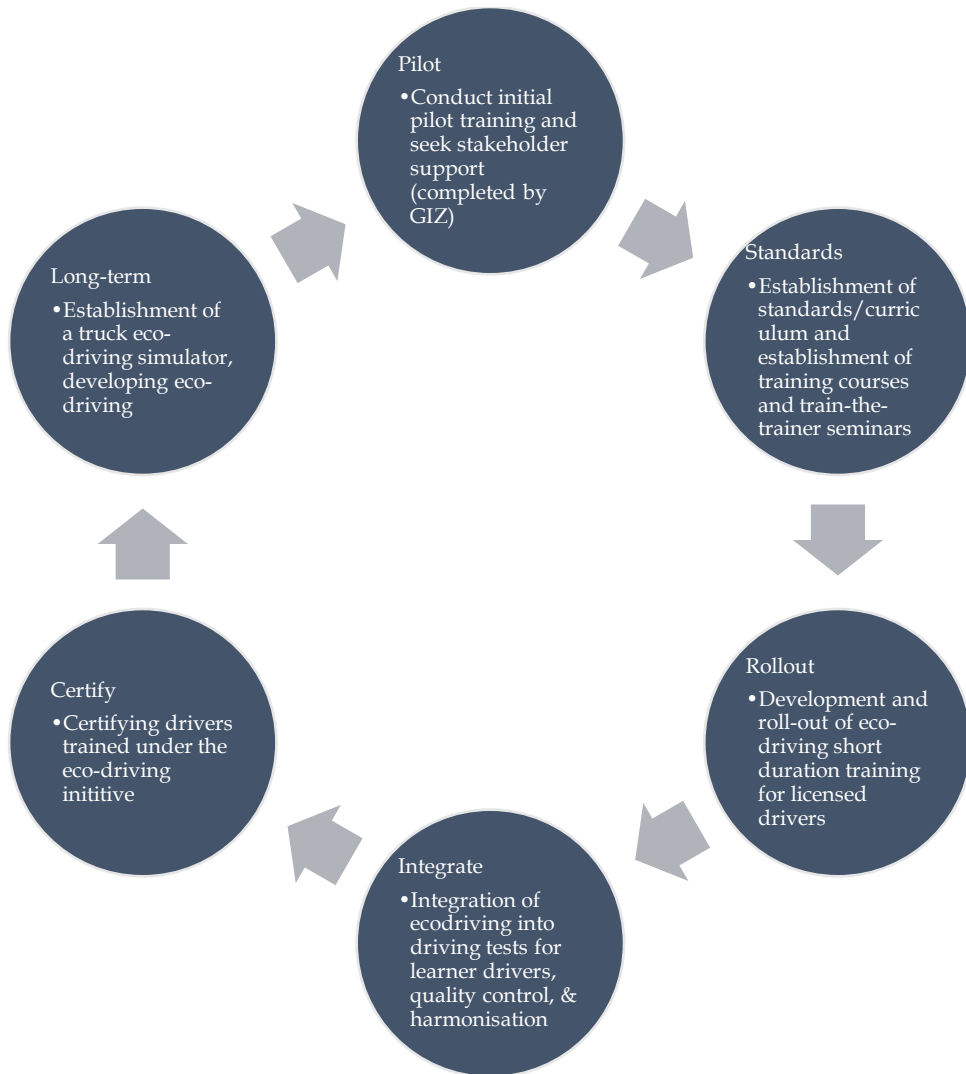
### A. Sustainable freight capacity-building initiative

There have been only a few attempts to comprehensively improve the capacity of policymakers and private sector representatives. Considering sustainable freight’s multidimensional nature, capacity-building is central to the development of sustainable freight and logistics systems. It is also important to develop partnerships and networks to scale up efforts on capacity-building in sustainable freight transport. It is essential to pilot a comprehensive training course on sustainable freight for policymakers and private sector representatives.

On this subject, UNCTAD has developed a dedicated comprehensive global training course<sup>6</sup> (toolkit) on sustainable freight, which can be tailored to suit the expectations and needs of a diverse set of stakeholders from developing countries from different regions. This training course could be piloted in the countries in Southeast Asia. Furthermore, using a train-the-trainers approach, the capacity-building course could be institutionalised with partner organisations. Based on consultations with relevant stakeholders, a Centre of Excellence in Sustainable Logistics (COE-SL) could be developed for the ASEAN countries. The COE-SL can carry out research, provide training and technical assistance.

Further, organising technical study tours to innovative international freight transport projects could enhance stakeholder interest in the ASEAN countries. In the capacity-building initiative, the Mekong Institute, which has the mandate to facilitate integrated human resource development, capacity-building programs, and development initiatives related to regional cooperation and integration, and which has experience in implementing green freight training, could be a potential partner. The figure below captures an example for a long-term regional eco-driving initiative for ASEAN countries.

Figure 13. Example for Scaling-up an eco-driving initiative



Source: Author

## B. ASEAN sustainable freight observatory

For successful policymaking, there is a need to monitor policies and measure their impact. This empirical evidence helps mobilise political support for more effective implementation of policies and regulations. The proposed ASEAN sustainable freight observatory will prioritise collation and dissemination of freight information, developing methodologies and indicators, harmonisation of definitions, the process of data collection and calculations, and improving the capacity of stakeholders to collect, analyse, and report data. The ASEAN sustainable freight observatory will also develop regional, national and local freight demand models and will build productive links with industry, the academic community, and public sector agencies to generate and report freight and logistics data.

The observatory can be institutionalised as a centre of excellence (COE) that will work in close collaboration with multinational and national stakeholders. To guide the COE, a “network of experts” on freight and logistics data is proposed. This network of experts would consist of experts from various data producing agencies at the national level and with some key experts and private stakeholders, a system of sharing, regular dissemination and communication of indicators could be developed.

The COE will not only collect, collaborate, and publish freight and logistics statistics but also develop best practices for information gathering and a training course on data and indicators to improve the capacity of local stakeholders.

The outcome of this initiative will be an improved knowledge base on freight and logistics to benefit policy development and investment planning in the region. The partner institutions that can collaborate for developing this observatory could include: ESCAP, the ADB GMS-EOC, GIZ, and the Centre for Logistics Research at Thammasat University.

### **Objectives of the ASEAN sustainable freight observatory**

- Defining, standardising, and developing indicators for monitoring
- Benchmarking freight sustainability performance among different ASEAN countries, companies, and corridors
- Fostering inter-institutional cooperation and public-private cooperation
- Enhancing cooperation among the various international logistics initiatives
- Improving awareness and capacity

### **C. Setting up ASEAN sustainable freight coordinating platform**

At ASEAN level countries should strive to develop a platform: ASEAN sustainable freight coordinating platform (ASFCP) - bringing together all national representatives from the NSFCC, logistics divisions, freight associations, and leading regional civil society members. The ASFCP could connect and enhance coordination, information exchange, and cooperation among freight and logistics practitioners, government officials, and academia to enable stronger collective action on sustainable freight and logistics.

### **Objectives of the ASFCP**

- Build consensus among public, private, scientific, and other civil society communities
- Pilot regional use of innovative solutions
- Demonstrate innovative, replicable solutions and case studies
- Enhance collaboration, cooperation, and partnerships among national and city governments, civil society, development agencies, and private sector companies
- Foster open peer-to-peer learning and exchange, including sharing and collaborating on the development of standardized methodologies and tools and delivery of training and technical assistance

- Improve public recognition and customer perceptions through involvement in the sustainable freight movement - i.e., secure a public commitment for sustainable freight and logistics from stakeholders
- Act as a forum where all ASEAN members can identify and attract sources of funding for a pipeline of well-developed and investment-ready sustainable freight transport projects

At the national level, countries need to review institutional structures and possibly establish a dedicated logistics division under their Ministry of Transport to function as a single window for the freight and logistics sector. The division will provide a single point of reference for information that the freight and logistics industry require to operate and for sustainable freight policy and regulation consultation.

Such an arrangement could ensure development and facilitation of transparent partnerships with stakeholders with access and exchange of information, expertise, periodic sustainable freight training, documentation, and sharing of good and bad practices and development and dissemination of public outreach materials. A national sustainable freight coordinating committees (NSFCCs) could also be setup with high-level representatives from the line agencies and the government. The committee can provide close coordination among ministries to ensure that sustainable freight initiatives are designed and implemented successfully. A baseline study of existing institutional and stakeholder coordination arrangements may be undertaken to identify gaps and make a strong case for it.

#### **D. Strengthening railway transport in Southeast Asia**

Over the past decade, all countries have increased investments in railways and implementing priority projects for passenger and freight railways. However, these initiatives are mainly related to capacity expansion and rehabilitation of some existing railway lines. The projects may not be comprehensive - i.e. assessment of legal and regulatory frameworks and mechanisms to develop robust commercial capabilities, electrification, and use of modern information technologies. An ASEAN wide strategic plan to enhance rail interoperability is proposed to boost rail competitiveness for more sustainable transport among countries. It would:

- Identify infrastructure gaps and missing links;
- Identify country-specific institutional and regulatory reforms;
- Enhance the modernisation of existing infrastructure with the latest technologies;
- Modern and replacing rolling stock to increase service capabilities, improve operational efficiency, and reduce environmental impacts;
- Identify spatial planning and land-use measures to encourage clustering of logistics activities close to railways;
- Invest in information technology;
- Assess the feasibility of creating a common rail operator;
- Identify taxes, subsidies, and incentives to create momentum for multimodal transport; and
- Mobilise suitable finance arrangements to complete priority railway projects.

Already, ESCAP member countries have adopted “Regional Cooperation Framework for Facilitation of International Railway Transport,”<sup>25</sup> which can serve as a guiding post for harmonising infrastructure, rolling stock, and other legislative requirements for international railway transport till a strategic plan on enhancing rail interoperability is considered by the countries.

## **E. Improving coastal shipping (and inland waterways) among AMS**

In ASEAN countries, the majority of freight is transported using trucks, and alternate modes of freight transport, such as coastal shipping and inland waterways, plays a minor role (except in Viet Nam). Some of the significant challenges in increasing the modal share of coastal shipping and inland waterways include: a lack of efficient inland transport linkages, insufficient depth of water channels, insufficient investment in infrastructure, limited areas for coastal port construction, a lack of availability of sophisticated port facilities and equipment, a lack of interest among private sector logistics companies, etcetera.

For enhancing sustainability of freight in ASEAN strengthening of port infrastructure is essential and it would be desirable to forge partnerships with range of stakeholders.

A tripartite task force (TTF) on coastal shipping was established in 2015 by Thailand, Viet Nam, and Cambodia to promote coastal shipping.<sup>26</sup> The TTF has considered a draft MOU and draft agreement to improve collaboration and enhance coastal shipping in the region. In order to scale-up coastal shipping and the use of inland waterways, an ASEAN coastal shipping facilitation committee could be established (a similar step could be taken for inland waterways). Under the aegis of the committee, a feasibility study could be carried out with the following objectives:

- To collect and analyse coastal shipping and inland waterways data to understand the bottlenecks and potential viability of coastal shipping and inland waterways to attract modal share
- Collate experiences from Asia, Africa, Europe, and other countries on regional cooperation on coastal shipping and inland waterways
- To select priority corridors among the routes to be studied and to identify challenges and necessary policy recommendations by route
- Determine the appropriate size of coastal vessels and sailing distances from the coastline for coastal shipping
- To recommend necessary policy and regulatory measures and initiatives to improve coastal shipping and inland waterways modal share
- Develop capacity-building on coastal shipping and inland waterways planning, construction, management, and logistics

## **F. Technology retrofit and financing**

Technology pilot projects in Thailand and Viet Nam by the ADB<sup>27</sup> have established a clear business case for companies to invest in fuel efficient technologies in the freight transport sector. The studies indicate that the combination of technologies such as aerodynamics and low resistance tires with comprehensive driver training could deliver a fuel saving of 10-15per cent with short payback periods. However, such pilots have not been comprehensively evaluated in the Cambodia, Myanmar, and Lao People's Democratic Republic region.



Considering the significance of fuel costs for companies in the region, it is essential to test these technologies with pilot demonstration studies and combine this with a ASEAN-wide affordable finance strategy for technologies.

Implementation of technology demonstration projects would result in: a reduction in operating cost for truck fleets managed by companies, a reduction in fuel consumption, a reduction in CO<sub>2</sub> emissions and air pollutants such as particulate matter, black carbon, nitrogen oxide, etc.

The technology demonstration pilots could be supplemented with a technology verification initiative. Currently, there exists no institutional mandate for developing regional certification protocols, approval of technologies, and information on the per cent reduction (of verified or tested levels) for emission reductions for each technology options.

Thus, a technology verification initiative could be launched by the ASEAN countries, similar to the initiatives carried out by USEPA Smart way Initiative in the United States and Canada. The verification program could include a submission, testing, and certifying mandate. This initiative could also provide stakeholders with the confidence that technology has a proven emission reduction performance and durability. The technology verification initiative could also be launched with the proposed ASEAN sustainable freight coordinating platform.

## **G. Digital platforms for freight transport**

In ASEAN countries, road transport will remain the dominant mode of freight transport by far for the foreseeable future. Thus, efforts should be made to improve the efficiency of road freight transport by improving loading. Currently, the fragmentation of the supply chain and the asymmetry, or gap, in information between the shippers and the carriers results in a lot of empty trips. However, the availability of affordable technologies such as telecommunications, information technology, internet, navigation, and positioning has created several new opportunities for improving the efficiency of trucks.

Freight exchange provides an opportunity for freight carriers and shippers, offering cargo loads to match their freight demand, i.e., connect the demand side (shippers) and supply-side (truck owners) to facilitate freight transport activities. A typical freight exchange could consist of an internet platform for online freight information exchange, a freight exchange software with an online chat window, mobile freight exchange information, a freight map, a local legislation and regulation database, a transport companies directory, a carrier rating system and reliable carrier verification/certification, transport route planning, and debt management. Three typical models of online freight exchange that could be developed include:

- **Spot or Auction Market** - Spot exchange provides a simple posting of loads and capacity of trucks and shippers requirements. It could also provide a value-added service of matching requirements from different shippers and truckers. Auction freight exchange could allow auction capability where several competitors compete (bid) for a load based on price and requirements.
- **Closed or Open System** - Open freight exchange can be accessed by all the companies registered with the corresponding service provider. Closed systems focus only on few predetermined partners (transport companies, freight forwarders, and shippers).

Closed systems are mainly preferred by high-volume and high-value contracts. Only partners selected by the customer may participate due to security and quality issues.

- **Free or Subscription-based Exchanges** - Many online freight exchanges could be subscription-based or completely free. Many freight exchanges are trying out various financial models with additional value-added services which are generally subscription-based and advertising fees. Some freight exchanges also charge a percentage of the agreed charge for the delivery.

A good example of a freight exchange in Southeast Asia is “Kargo” in Myanmar. There are about 4,000 SMEs operating in the transport industry, and the average profit margin is meagre due to high competition and lack of backhaul loading opportunities. Kargo, which was launched in 2016, is an online platform connecting truck operators with shippers. As of June 2019, Kargo had registered 2,306 drivers and 859 SMEs on its platform.<sup>28, 29</sup>

## **H. Promote electric urban freight**

Urban freight is a significant contributor to economic, social, and environmental externalities in Southeast Asia. However, research also indicates that urban freight transformation is technically feasible, economically attractive, and brings broad social and environmental benefits<sup>30</sup>. With the emergence of electric vehicles, urban freight can also contribute significantly to the uptake of electric vehicles, and the introduction of new business models. However, despite this potential and strong policy support, electric vehicle use in the logistics sector has been constrained by several barriers, including high investment costs; limitations concerning range, payload, and volume; and constraints around charging.

A project could be undertaken to demonstrate use of electric vehicles in urban freight. It could provide evidence to prove that the current generation of electric urban freight vehicles can offer a viable alternative to diesel vehicles when combined with innovative urban logistics solutions, financing, and policy measures. The proposed project can also bring freight stakeholders, including freight operators and fleet managers, shippers, city authorities, energy network operators, vehicle manufacturers, and ICT and service providers together including building a partnership between municipalities and the freight and logistics sector.

The proposed project could include following components: new technical concepts for vehicles and charging, innovative urban logistics concepts around freight consolidation (including adaptation of new software), affordable financing solutions, capacity-building to raise awareness and state-of-art policy solutions on a city and national level, and relevant supportive policy instruments for limiting access to city centres to electric trucks. It can also include: the dissemination and exchange of good practices, lessons learnt, and critical recommendations and exchange of experiences on financing for electric freight vehicles.

## **I. Trailer swapping for efficient border crossing**

For efficient cross-border movements and to deal with non-physical barriers, an efficient alternative to manual transloading and container swapping is “trailer swapping.” Trailer swapping refers to cases where cargo remains untouched on the trailer or semi-trailer, and instead of lift-off/lift-on operations, the trailer or semi-trailer is detached from the transporter and attached to another transporter at the border. Trailer swapping has been pilot tested in, and the project indicates that trailer swapping leads to less congestion and emissions. A pilot

demonstration study carried out at the Myanmar-Thailand border (Mae Sot-Myawaddy) demonstrated that semi-trailer swapping could significantly reduce the travel costs and travel time, i.e. the time taken to transport goods between the two countries could be reduced by half using trailer swapping.<sup>31</sup>

The demonstration study was supported by the Ministry of Transport and Communications of Myanmar, the Myanmar International Freight Forwarders Association, the Thilawa-headquartered Daizen Myanmar, and the Malaysia-based Overland Total Logistic Services. For the pilot demonstration study, customs formalities were shifted to inland locations, and the goods were electronically tracked and traced between the border crossing and inland locations.

The trailer swapping initiative could be considered through the Cross-Border Transport Agreement (CBTA)<sup>iv</sup> as well. However, the CBTA has not been fully ratified and implemented. It is essential to generate regional cooperation for trailer swapping using the CBTA.

Furthermore, the pilot studies need to be scaled-up at several border crossings, and the feasibility study should consider the possibility of using the advanced location tracking of trailers and real-time data sharing between trucking companies and associations. The feasibility study should consider the type, size, and responsibility of containers used between traders and include a dispute settlement mechanism.

## **J. Recognition program for sustainable road freight**

Freight recognition programs (Green Freight Asia or Q-mark for example) are able to drive up service standards by recognising and awarding freight and logistics operators that provide examples of good practices in their operations.

A 1 truck operator labelling initiative could be piloted with the funding and support from the governments and multilateral institutions such as ESCAP, the ADB, the World Bank, and GIZ and supported by national and regional truck associations and universities. The proposed truck operator labelling scheme could be green freight Asia or based on ISEAL principles for sustainability standards<sup>32</sup> and the ISO 14020<sup>33</sup> series of standards on environmental labels and declarations.

## **VI. DELIVERING THE STRATEGY**

Strategies are lack worth if they do not translate into actions. The quest for freight transport sustainability in the ASEAN sub-region revolves around how infrastructure, freight transport operations, policies, and regulations interact with each other to generate impact along the economic, environmental, and social dimensions.

The previous chapters illustrate that the freight sustainability has received little attention in the ASEAN sub-region, due, in part, to the highly specialised nature of the private sector operations and limited data, capacity, and literature. Public sector agencies suffer from a lack of strategic planning to prioritise the highest-impact innovative projects, policies, initiatives, and investments.

The proposed SFT strategy is both a prerequisite and a starting point for the ASEAN countries' current and future freight transport initiatives. Making the vision of sustainable freight transport a reality will require big ideas and forward-thinking. There is a need to send the right signals to diverse stakeholders about the importance of sustainable freight transport, supporting innovative initiatives, and developing the right skills and knowledge.

Figure 14. ASEAN Sustainable Freight Strategy Initiatives

Strategy Initiatives	Connectivity	Clean	Efficient	Safe	Crosscutting
Sustainable Freight Capacity-Building Initiative					Main Benefit
ASEAN Sustainable Freight Observatory					Main Benefit
Institutional Coordination and Cooperation					Main Benefit
ASEAN sub-regional Railway Improvement	Main Benefit	Co-benefit		Co-benefit	
Feasibility Study on Regional Cooperation on Coastal Shipping	Main Benefit	Co-benefit		Co-benefit	
Technology Retrofit and Financing		Main Benefit	Co-benefit		
Freight Exchange			Main Benefit		
Promote Electric Urban Freight		Main Benefit	Co-benefit		
Trailer Swapping	Co-benefit		Main Benefit		
Recognition Program					Main Benefit

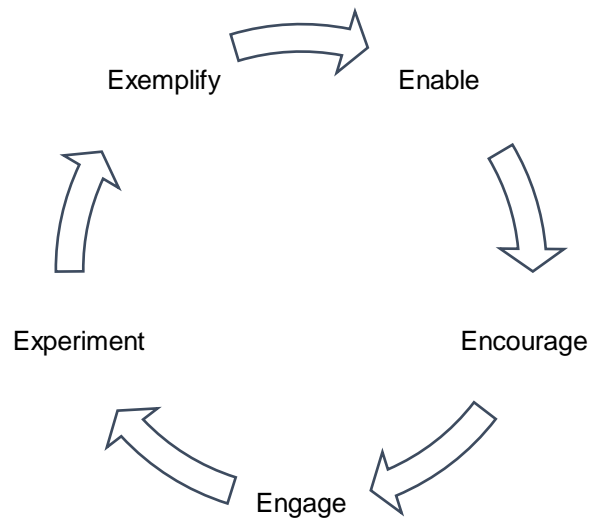
	Main Benefit
	Co-benefit

Source: Author

All identified initiatives in the ASEAN Sustainable Freight Strategy 2030 are designed to meet ASEAN sub-region's institutional, regulatory and operational challenges. The initiatives proposed in this strategy will beneficially affect the business community. The ASEAN Sustainable Freight Strategy 2030 is based on “**Enable, Encourage, Engage, Exemplify, and Experiment**” approach.

The idea is to empower stakeholders by enabling them with institutional transformations and removing barriers (for example implementation of a regional sustainable freight coordinating platform [RSFCP] will boost implementation), encouraging them with incentives (ex: recognition program) and disincentives (ex: instruments for limiting access to city center to electric trucks), engaging stakeholders with consultations and improving capacity to mobilise stakeholder support (ex: capacity building and freight exchange), experiment innovative technologies and solutions (technology retrofit and financing and trailer swapping) and exemplify impact (ex: observatory).

Figure 15. **Enable, Encourage, Engage, Exemplify, and Experiment**



Source: Author

The initiatives need to be implemented immediately. However, this does not mean that additional efforts should not be considered. ASEAN stakeholders should expand the list of actions based on stakeholder consultations, data, and modelling efforts. For each proposed initiative, stakeholders need to develop detailed action plans or implementation proposals.

Ultimately, the ASEAN Sustainable Freight Strategy 2030 is owned by its members. Its impact will be only as strong as its actors. Moving forward, the strategy needs to be synchronised into country, city, corridor, and company plans and the success will require transparent stakeholder consultations, partnerships, and a process to refine, build on, and prioritise actions towards sustainability.

## ASEAN Sustainable Freight Strategy 2030 - Results Framework

Strategy Initiatives	Output	Outcome	Impact
Sustainable freight capacity-building initiative	<ul style="list-style-type: none"> <li>✓ A training needs analysis assessment for stakeholders</li> <li>✓ Development of a regional capacity building training course</li> <li>✓ Piloting regional capacity building training course in 5 countries with 15 trainers trained</li> <li>✓ Study tours to gold standard freight and logistics innovative projects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Improved capacity of stakeholders</li> <li>✓ Enhanced involvement of key universities and research institutions as regional training hubs</li> </ul>	
ASEAN sustainable freight observatory	<ul style="list-style-type: none"> <li>✓ A detailed whitepaper with - identification and prioritisation of KPIs, stakeholders, standardized indicator templates developed, Best Practices for data collection identified</li> <li>✓ Stakeholder consultations</li> <li>✓ Regional, national and local freight demand models developed</li> <li>✓ Expert working group on freight data launched</li> <li>✓ Launch of the centre of excellence in sustainable freight (COE)</li> <li>✓ Communication and outreach strategy for the COE developed</li> <li>✓ Best practices for information gathering and a training course on data and indicators developed</li> </ul>	<ul style="list-style-type: none"> <li>✓ High-quality data available on freight sustainability</li> <li>✓ Enhanced involvement of key universities and research institutions</li> </ul>	<ul style="list-style-type: none"> <li>✓ Enhanced sustainability in supply chains</li> <li>✓ Facilitate an efficient freight and logistics decision-making process</li> <li>✓ New knowledge products and partnerships</li> <li>✓ Scaling-up of sustainable freight investments</li> </ul>
Institutional coordination and cooperation	<ul style="list-style-type: none"> <li>✓ A detailed action plan mapping institutional framework in ASEAN countries</li> <li>✓ Formulation of national sustainable freight coordinating committee (NSFCC)</li> <li>✓ A regional sustainable freight coordinating platform developed</li> </ul>	<ul style="list-style-type: none"> <li>✓ Enhanced collaboration, cooperation and partnerships among civil society, national governments, development agencies, and private sector companies</li> </ul>	

Strategy Initiatives	Output	Outcome	Impact
ASEAN Railway Improvement	<ul style="list-style-type: none"> <li>✓ A strategic plan to enhance rail interoperability in ASEAN and beyond is developed</li> <li>✓ Country-specific institutional, policy, and regulatory reforms identified</li> <li>✓ Identify technologies, spatial planning and land-use measures, feasibility of higher truck taxation, higher fuel duty, the introduction of road user charge, feasibility of creating a common rail operator</li> </ul>	<ul style="list-style-type: none"> <li>✓ Increase in railway's freight modal share</li> <li>✓ Increase in railway freight investments</li> <li>✓ Strengthened cooperation on railways</li> </ul>	
Feasibility study on cooperation on coastal shipping	<ul style="list-style-type: none"> <li>✓ Feasibility study on regional cooperation on coastal shipping completed</li> <li>✓ New projects on coastal shipping identified</li> <li>✓ Country-specific institutional, policy and regulatory reforms identified</li> </ul>	<ul style="list-style-type: none"> <li>✓ Increase in coastal shipping's freight modal share</li> <li>✓ Increase in coastal shipping infrastructure investments</li> <li>✓ Strengthened cooperation on coastal shipping</li> </ul>	
Technology Retrofit and Financing	<ul style="list-style-type: none"> <li>✓ Implementation of technology demonstration projects</li> <li>✓ Feasibility study on technology verification initiative</li> <li>✓ Formulation of technology database with suppliers, cost, and impact</li> <li>✓ Financing mechanism for energy efficiency is established</li> </ul>	<ul style="list-style-type: none"> <li>✓ Enhanced energy efficiency</li> <li>✓ Increased technology penetration in the freight and logistics sector</li> </ul>	
Freight Exchange	<ul style="list-style-type: none"> <li>✓ Feasibility study on national freight exchange</li> <li>✓ Good practices case studies on collaboration between private sector companies</li> </ul>	<ul style="list-style-type: none"> <li>✓ Enhanced efficiencies through reduced empty and overloaded trips</li> <li>✓ Enhanced collaboration, cooperation, and partnerships among the private sector</li> </ul>	
Promote Electric Urban Freight	<ul style="list-style-type: none"> <li>✓ Project on the use of electric vehicles for urban freight</li> </ul>	<ul style="list-style-type: none"> <li>✓ Increase in electric vehicles use for urban deliveries</li> </ul>	

Strategy Initiatives	Output	Outcome	Impact
	<ul style="list-style-type: none"> <li>✓ Demonstration pilot to test electric vehicles in real-world urban logistic operations</li> <li>✓ Policy toolkit for restricting access to electric vehicles for urban deliveries</li> <li>✓ A community of practice for exchanging experiences/enhancing financing for electric freight vehicles</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reduced emissions from freight vehicles</li> </ul>	
Trailer Swapping	<ul style="list-style-type: none"> <li>✓ Demonstration pilot in all ASEAN countries</li> <li>✓ Policy recommendations to enhance trailer swapping</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reduced costs for cross-border transport</li> <li>✓ Enhanced reliability of deliveries</li> </ul>	
Recognition Program	<ul style="list-style-type: none"> <li>✓ Development of truck operator and shipper labelling scheme</li> <li>✓ Development of a sustainable freight award scheme for shippers, carriers, cities, and innovative projects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Enhanced collaboration, cooperation and partnerships among civil society, national governments, development agencies, and private sector companies</li> <li>✓ Improved capacity of stakeholders</li> <li>✓ High-quality data on freight sustainability</li> </ul>	



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31. ThaibizMyanmar.com : Pilot project illustrates that semi-trailer swapping at Mae Sot-Myawaddy border halves the time spent on travelling between Thailand and Thilawa SEZ and is thus an effective cross-border logistics solution. *ThaibizMyanmar.com*

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32. ISEAL Credibility Principles. <https://www.isealalliance.org/credible-sustainability-standards/iseal-credibility-principles>.

33. 14:00-17:00. ISO 14020:2000. *ISO*

<http://www.iso.org/cms/render/live/en/sites/isoorg/contents/data/standard/03/44/34425.html>.

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<sup>i</sup> These agreements and processes include the Paris Agreement on Climate Change, the Sustainable Development Goals the Addis Ababa Action Agenda, the Sendai Framework on Disaster Risk Reduction, and trade and transport specific agreements such as the United Nations Conference on Trade and Development (UNCTAD), the Nairobi Mandate (Maafikiano), the United Nations Centre for Regional Development (UNCRD) Environmentally Sustainable Transport Initiative, and the United Nations Global Decade of Action on Road Safety.

<sup>ii</sup> The freight and logistics sector are influenced by several parallel planning processes and strategies. For example, in Myanmar existing plans include: the National Logistics Master Plan, the National Transport Master Plan, the National Export Strategy, the National Strategy for Rural Roads and Access, the Urban Transport Development Plan of the Greater Yangon (YUTRA), and the Master Plan for Arterial Roads Network Development.

<sup>iii</sup> “Coopetition” is a state where competitors need to cooperate on developing a market before they can truly compete. For example, competitors may need to agree on standards, practices, and industry-wide goals in order to develop a true market for competition and innovation. Source - UN Habitat ([http://www.civitas.eu/sites/default/files/unhabitat\\_2013\\_planning\\_and\\_design\\_for\\_sustainable\\_urban\\_mobillity\\_chapter4\\_0.pdf](http://www.civitas.eu/sites/default/files/unhabitat_2013_planning_and_design_for_sustainable_urban_mobillity_chapter4_0.pdf))

<sup>iv</sup> The GMS Cross Border Transport Facilitation Agreement was signed by the Lao People's Democratic Republic, Thailand and Vietnam in 1999. Cambodia acceded to the Agreement in 2001, followed by the People's Republic of China in 2002, and Myanmar in 2003.