Green Freight and Logistics Policy Development in the Philippines
Assessing Freight Transportation in Support of a National Green Freight Programme

July 2018
Disclaimer

Findings, interpretations and conclusions expressed in this document are based on information gathered by GIZ and its consultants, partners and contributors.

GIZ does not, however, guarantee the accuracy or completeness of information in this document, and cannot be held responsible for any errors, omissions or losses which emerge from its use.

Acknowledgements

This report was prepared by Dr. Jane Romero and Pia May Agatep, EnP. of Clean Air Asia for the GIZ Energy Efficiency and Climate Change Mitigation in the Land Transport Sector in the ASEAN Region project, also known as the Transport and Climate Change (TCC) Project.

This document was edited by Hannah Ebro and Friedel Sehlleier of GIZ, and Kathleen Dematera and Glynda Bathan of Clean Air Asia. Contributors to this report include Tali Trigg and Cristina Villaraza of GIZ, and Alan Silayan and Mark Tacderas of Clean Air Asia.

The survey implementation was supported by the Philippine Department of Trade and Industry Supply Chain and Logistics Management Division (DTI-SCLMD).
Green Freight and Logistics Policy Development in the Philippines
Assessing Freight Transportation in Support of a National Green Freight Programme

Jane Romero and Pia May Agatep

The Project Context

The TCC Project ‘Energy Efficiency and Climate Change Mitigation in the Land Transport Sector in the ASEAN region’ (Transport and Climate Change (TCC)) aims to develop strategies and action plans for more sustainable transport. The project is funded by the German Federal Ministry for Economic Cooperation and Development and implemented by GIZ in cooperation with the ASEAN secretariat. More information can be found at www.TransportandClimateChange.org.

TCC’s regional activities are in the area of fuel efficiency, strategy development, green freight and logistics, as well as data, indicators, and MRV. At the national level, the project supports relevant transport and environment government bodies in Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam for the development of national action plans on sustainable transport and improvement of policy monitoring systems. TCC also offers capacity building through different training courses.
# Table of Contents

List of acronyms ........................................................................................................... 3

Executive summary ......................................................................................................... 6

1. Introduction ................................................................................................................. 7
   1.1. Background ........................................................................................................... 7
   1.2. Objectives and scope of the green freight assessment ........................................... 8

2. Freight and logistics in the Philippines ...................................................................... 9
   2.1. Philippine country profile ...................................................................................... 9
   2.2. Logistics performance and challenges ..................................................................... 12
   2.3. Transport infrastructure ......................................................................................... 14
   2.4. Climate change and energy demand ...................................................................... 14
   2.5. Vehicle profile ...................................................................................................... 16

3. Policies and stakeholders ......................................................................................... 18
   3.1. Stakeholders ......................................................................................................... 18
   3.2. Policies and initiatives .......................................................................................... 23

4. Road freight sector assessment ................................................................................. 28
   4.1. Freight assessment survey for trucking companies ............................................... 28
      4.1.1. Profile of respondent companies ...................................................................... 29
      4.1.2. Fleet characteristics ......................................................................................... 33
      4.1.3. Trucking operations ......................................................................................... 34
      4.1.4. Vehicle fleet management and maintenance .................................................... 38
      4.1.5. Fuel-saving technologies and strategies ........................................................... 41
      4.1.6. Emissions reporting ......................................................................................... 43
      4.1.7. Institutional framework and Green Freight Programme planning .................... 44

5. Recommendations and conclusion ........................................................................... 46
   5.1. Recommendations for greener freight and logistics in the Philippines .................. 47
   5.2. Conclusion ............................................................................................................. 50

Annex: Freight assessment survey for trucking companies ........................................... 52

List of tables ..................................................................................................................... 61

List of figures .................................................................................................................... 61

References ......................................................................................................................... 63
## List of acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>ASPBI</td>
<td>Annual Survey of Philippine Business and Industry</td>
</tr>
<tr>
<td>ATOME</td>
<td>Anti Truck Overloading Mobile Enforcement</td>
</tr>
<tr>
<td>BBB</td>
<td>Build Build Build programme</td>
</tr>
<tr>
<td>BMZ</td>
<td>Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Germany’s Federal Ministry for Economic Cooperation and Development)</td>
</tr>
<tr>
<td>CALABARZON</td>
<td>Administrative region consisting of the five provinces Cavite, Laguna, Batangas, Rizal, and Quezon</td>
</tr>
<tr>
<td>CAR</td>
<td>Cordillera Administrative Region</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon monoxide</td>
</tr>
<tr>
<td>CoA</td>
<td>Certificate of Accreditation</td>
</tr>
<tr>
<td>CO2</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CO2e</td>
<td>Carbon dioxide equivalent</td>
</tr>
<tr>
<td>COMPETE</td>
<td>Advancing Philippine Competitiveness (USAID project)</td>
</tr>
<tr>
<td>CPC</td>
<td>Certificate of Public Convenience</td>
</tr>
<tr>
<td>CTAP</td>
<td>Confederation of Truckers Association of the Philippines</td>
</tr>
<tr>
<td>DO</td>
<td>Department Order</td>
</tr>
<tr>
<td>DOTr</td>
<td>Department of Transportation (formerly DOTC)</td>
</tr>
<tr>
<td>DOTC</td>
<td>Department of Transportation and Communications (now DOTr)</td>
</tr>
<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
</tr>
<tr>
<td>DTI-SCLMD</td>
<td>Supply Chain and Logistics Management Division</td>
</tr>
<tr>
<td>EO</td>
<td>Executive Order</td>
</tr>
<tr>
<td>EST</td>
<td>Environmentally sustainable transport</td>
</tr>
<tr>
<td>FGD</td>
<td>Focus group discussion</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse gas</td>
</tr>
<tr>
<td>GIZ</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (Germany’s international development agency)</td>
</tr>
<tr>
<td>GVW</td>
<td>Gross vehicle weight</td>
</tr>
<tr>
<td>ITS</td>
<td>Intelligent transport system</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
</tbody>
</table>
JICA  Japan International Cooperation Agency
KL TSP  Kuala Lumpur Transport Strategic Plan
ktoe  kilotonne of oil equivalent
LEI  Logistics Effectiveness Index
LGU  Local government unit
LPI  Logistics Performance Index
LTFRB  Land Transportation Franchising and Regulatory Board
LTO  Land Transportation Office
MIMAROPA  Administrative region consisting of the five provinces Mindoro (Occidental and Oriental), Marinduque, Romblon, and Palawan
MRV  Monitoring, reporting and verification
MSME  Micro, small and medium enterprise
MTCO2e  Million tonnes of carbon dioxide equivalent
MVIS  Motor Vehicle Inspection System
MVUC  Motor Vehicle User’s Charge
NCR  National Capital Region
NESTS  National Environmentally Sustainable Transport Strategy
NGO  Non-government organisation
NIP  National Implementation Plan on Environment Improvement in the Transport Sector
NLMP  National Logistics Master Plan
NOX  Nitrogen oxides
PDP  Philippine Development Plan
PM  Particulate matter
PSA  Philippine Statistics Authority
PUV  Public utility vehicle
RORO  Roll-on/roll-off
SEC  Securities and Exchange Commission
SM  Shoe Mart
SME  Small and medium enterprise
TCC  Transport and Climate Change
TESDA  Technical Education and Skills Development Authority
TTTL  Transport Infrastructure, Trade and Logistics
TRAIN  Tax Reform for Acceleration and Inclusion
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSC</td>
<td>Transportation, storage and communications</td>
</tr>
<tr>
<td>UNCRD</td>
<td>United Nations Centre for Regional Development</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile organic compound</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>WEF</td>
<td>World Economic Forum</td>
</tr>
</tbody>
</table>
Executive summary

In recent years, the freight and logistics sector of the Philippines has been growing steadily along with the national economy. As most of the freight transport activity is road-based, the sector’s growth increases greenhouse gas (GHG) emissions from the transport sector. Therefore, initiatives to improve the overall efficiency of the sector are imperative, especially to mitigate negative environmental impacts. Greening freight transport logistics can help decouple transport impacts from economic growth. A crucial part of this is to ensure that goods are transported efficiently and with the least emissions.

This study provides an overview of the freight and logistics sector and lays out the next steps to develop a Green Freight Programme in the Philippines, in Sections 1 and 2, respectively. Section 3 contains a review of existing policies in the freight transport sector and other relevant development plans, and a discussion about the roles of each stakeholder in advancing the improvement of freight and logistics.

Noting that road transport is the dominant mode of moving goods in the country, the study focuses on understanding the trucking industry, including its structure and the needs of the stakeholders. It delves into how the industry operates, its structure, the relevance of the modes, the characteristics of the vehicles, and the operational characteristics of freight travel, among others. The study recognises that available and disaggregated trucking data are limited, so surveys and consultations were conducted with truckers, freight forwarders and logistics service providers to generate insights. This effort was done in close coordination with the Department of Trade and Industry (DTI). The green freight survey gathered information on the following aspects: (i) profile of respondent companies; (ii) fleet characteristics; (iii) trucking operations; (iv) vehicle fleet management and maintenance practices; (v) fuel-saving technologies and strategies; (vi) emissions reporting; and, (vii) institutional framework and Green Freight Programme planning. The results of the survey and focus group consultations are presented in Section 4.

Finally, in Section 5 provides a list of specific recommendations focusing on increasing efficiency of trucks and improving the trucking industry that the government and private sector could implement through coordinated actions. Recommendations include: 1) improving trucking data collection, as well as monitoring and reporting frameworks; 2) professionalising the logistics industry; 3) improving truck efficiency; 4) consolidating small and medium enterprises (SMEs) in the trucking industry; 5) reducing empty miles; 6) decongesting Manila, and improving efficiency and performance of freight operations in other urban areas; 7) enhancing multimodal freight transport connectivity; 8) establishing public-private partnerships through a Green Freight Programme; 9) participating in regional and international initiatives; and, 10) establishing an interagency coordination for the freight and logistics sector.

Ultimately, the study recommends the establishment of a Green Freight Programme in the Philippines that includes an action plan to improve the overall efficiency of the freight and logistics sector.
1. Introduction

1.1. Background

The Philippines is a rapidly growing emerging economy with an expanding freight transport and logistics industry that facilitates the nation’s economic development. This industry is not only a major employer but also has a significant and increasing environmental footprint. To address the latter, mitigation actions are necessary, and environmental as well as socio-economic sustainability needs to be embedded in the country’s relevant sectoral strategies and plans.

The concept of green freight and logistics (see definition below) has arrived in the policy and corporate agendas in Asian countries in recent years, driven by a number of factors, including: climate change mitigation; the need to improve logistics performance; technological advancements; demand by multinational shippers and logistics service providers; and the interest of companies in opportunities to become more efficient and cut costs. However, compared to other emerging economies in the region, the Philippines has seen little discussion or initiative on green freight and logistics thus far.

The Philippines became a signatory to the Global Green Freight Action Plan in 2013. This is a voluntary, multi-lateral, multi-stakeholder global partnership to enhance the efficiency of global goods movement in ways that significantly reduce the impacts on climate, health, energy, and the economy. In 2016, the ASEAN Transport Ministers developed the Kuala Lumpur Transport Strategic Plan (KLTSP) 2016-2025 which highlights the role of green freight and logistics in the region. While the Philippine Development Plan 2017-2022 and the National Logistics Master Plan 2017-2022 prioritise the improvement of transport and logistics services in the country, there is limited coverage on the environmental impacts of increasing freight and logistics or on how to green the sector. This report is a first milestone to assess the status quo and to lay the foundation for moving from intention to action by working across ministries to include environmental sustainability in the planning of freight and logistics.

In a nutshell, a Green Freight Programme intends to assist governments and businesses to promote trade in a cost-efficient way, thereby improving people’s quality of life while preserving the environment. It is an important strategic pillar for a sustainable transport system and for improving logistics performance of countries and their economies. A report1 by GIZ in 2017 found that such policies and measures can produce a myriad of co-benefits and contribute to the achievement of 13 of the 17 Sustainable Development Goals.

Green freight and logistics can be realised by following the strategy of ‘Avoid – Shift – Improve’.2 ‘Avoid’ strategies generally reduce the number of trips and the travel distance of road vehicles. ‘Shift’ strategies move freight activities towards more energy-efficient and environment-friendly transport

---


modes. And ‘Improve’ strategies address the energy efficiency in road transport vehicles and systems through operational and technological enhancements. Close cooperation among governments, businesses, academia, NGOs and other key stakeholders is necessary to ensure a cohesive and successful implementation of green freight initiatives.

### What is green freight and logistics?

A set of strategies, policies, practices and standards…

…targeted at the movement of goods via road, rail, marine, inland waterways and air…

…aiming to:

- reduce the environmental, climate and public health impacts through reduced air pollution and greenhouse gas emission intensity;
- improve social conditions, including road safety, and health and working conditions of people involved in freight movement; and
- enhance economic development through improved energy efficiency, fuel security, and efficiency and competitiveness of the freight and logistics sector overall;

…developed and implemented by government, the private sector and other stakeholder groups jointly or individually.

(Source: UNCRD, 2014)

### 1.2. Objectives and scope of the green freight assessment

The main objectives of this report are the following:

- Assess the status quo concerning elements necessary to establish a Green Freight Programme.
- Propose policies, measures and institutional mechanisms to develop a Green Freight Programme in the Philippines.

The assessment focuses on land transport, as freight activity is dominated by road transport, which carries 58% of cargo in the Philippines (while water and air transport carry 41.95% and 0.06% of goods, respectively), mostly by truck fleets owned by small and medium enterprises (Asian Development Bank, 2012). Desk research was done to understand the status of freight transport in the Philippines and to review the current policy framework. Primary data gathering through surveys and focus group discussions with key stakeholders augmented the desk research to gauge the status of truck fleets and their operating characteristics. Discussions and analyses looked more closely into
environmental performance linked with energy and operational efficiency. The assessment of the social impacts was more limited, due to the limited data available.

The recommendations were based on the survey results and on the insights from consultation workshops with the Department of Transportation (DOTr), the Department of Trade and Industry (DTI), and the private sector.

This report is a product of the cooperation between DOTr, DTI, Clean Air Asia, and Germany’s international development agency, the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). The GIZ project titled Energy Efficiency and Climate Change Mitigation in the Land Transport Sector in the ASEAN Region (also referred to here as the Transport and Climate Change or TCC project), with funding from Germany’s Federal Ministry for Economic Cooperation and Development (BMZ), supports transport ministries of its partner countries, such as the Philippines, in developing sustainable transport strategies and action plans aligned to the ASEAN Kuala Lumpur Transport Strategic Plan (KLTSP) 2016-2025.

2. Freight and logistics in the Philippines

2.1. Philippine country profile

Demography and geography

The Philippines is an archipelago made up of about 7,641 islands stretching across 300,000 square kilometres bordered by the waters of Bashi Channel to the north, Sulu and Celebes Seas to the south, the Pacific Ocean to the east, and the South China Sea to the west. Luzon, Visayas and Mindanao are the three major groups of islands. The country’s population is estimated at 103.3 million based on 2016 census data of the Philippine Statistics Authority (PSA). With a population still increasing at a rate of 1.89% per year, about 48.8% of the total population live in urban areas in 2011 following a 2.16% rate of urbanisation in the last 5 years. Major urban areas include Metro Manila (12.88 million people), Davao (1.63 million), Cebu (0.92 million) and Zamboanga (0.88 million).

The Philippines’ archipelagic setting and growing urban population highlight the need for improved accessibility and mobility to support the people’s needs and the country’s economic growth. The islands need to be linked by a seamless transport infrastructure network to enable cost-efficient movement of people, goods and services within the country to achieve inclusive growth.

Economy

The country’s gross domestic product (GDP) is expected to be among the fastest-growing in Asia, at 6.9% and 6.8% projected annual growth in 2018 and 2019, respectively. In 2017, the Philippine economy grew by 6.7%. Industry players project that the logistics sector could grow faster than the rest of the economy.

---

In 2017, the PSA also reported that the transportation, storage and communications (TSC) sector collectively posted a 5.4% growth. The growth of TSC benefited from positive contributions of the subsectors: land transport, 1.9%; water transportation, 1.4%; air transportation, 6.7%; and storage and services incidental to transport, 8.5%.

Latest available data from the 2014 Annual Survey of Philippine Business and Industry (ASPBI) showed that there were 1,108 establishments with 20 or more employees engaged in the transport and storage sector in the Philippines. Many more trucking operators are small-scale enterprises with less than 20 employees. This information is captured in the primary survey conducted in partnership with DTI's Supply Chain and Logistics Management Division (DTI-SCLMD). Within the sector's businesses counting at least 20 staff, the largest single category was made of support activities for transportation such as warehousing and logistics services, with 445 establishments or 40%. This was followed by industries engaged in other land transport with 287 establishments (26%) and transport via buses with 151 establishments (14%), as shown in Figure 1.

At the regional level, more than half (54.9%) of the number of establishments were in the National Capital Region (NCR), comprising 608 establishments. The region of CALABARZON (consisting of the provinces of Cavite, Laguna, Batangas, Rizal, and Quezon) followed, with 125 establishments (11.3%), and Central Visayas came in third with 94 establishments (8.5%).

The sector had 138,573 employees in 2014 (see Figure 2). Of the total, 99.0% were paid employees (137,251) and the rest were unpaid workers. Among the different industry groups, support activities for transportation had the largest number of employees with 50,921 or 36.7%. Transport via buses ranked second, employing 30,001 people or 21.6%, and other land transport came in third with 17,120 or 12.4%. Figure 2 shows the distribution of employment by industry group.

---

Figure 1. Percentage distribution of establishments by industry group (Source: ASPBI, 2014)

---

6 Unpaid workers are mostly family members or apprentices and learners without regular pay who work for at least one-third of the working time normal to the establishment.
By region, NCR was the highest employer with 81,266 employees (58.6%). CALABARZON came in second with 11,051 employees (8.0%), closely followed by Central Visayas with 9,704 employees (7.0%).

Value added for the sector was estimated at PHP155.3 billion (US$2.9 billion). Support activities for transportation contributed more than half (55.6%) of the total value added, or PHP86.3 billion. Both sea and coastal water transport and passenger air transport industries followed, with value added of PHP18.5 billion or 11.9%. Inland water transport generated the least with PHP148.6 million. Figure 3 shows the distribution of value added for the sector.

Figure 2. Distribution of employment of transport and storage establishments with total employment of 20 and over by industry group in the Philippines (Source: ASPBI, 2014)

Figure 3. Value added for transportation and storage establishment with employment of 20 and over by industry group in the Philippines (Source: ASPBI 2014)
2.2. Logistics performance and challenges

The country's Logistics Performance Index (LPI), as monitored by the World Bank, has been deteriorating over the past six years. The Philippines ranked 44th out of 155 countries in 2010 and 71st out of 160 countries in 2016. Details of its LPI performance from 2010 to 2016 is shown in Table 1 while a comparison among selected ASEAN countries based on the 2016 LPI is shown in Table 2.

Table 1. Philippine LPI scores 2010-2016 (Source: World Bank, 2016)

<table>
<thead>
<tr>
<th>Year</th>
<th>LPI Rank</th>
<th>LPI Score</th>
<th>Customs Infrastructure</th>
<th>International Shipments</th>
<th>Logistics Competence</th>
<th>Tracking and Tracing</th>
<th>Timeliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>71/160</td>
<td>2.86</td>
<td>2.61</td>
<td>2.55</td>
<td>3.01</td>
<td>2.70</td>
<td>2.86</td>
</tr>
<tr>
<td>2014</td>
<td>57/160</td>
<td>3.00</td>
<td>2.60</td>
<td>2.60</td>
<td>3.33</td>
<td>2.93</td>
<td>3.00</td>
</tr>
<tr>
<td>2012</td>
<td>52/155</td>
<td>3.02</td>
<td>2.80</td>
<td>2.97</td>
<td>3.14</td>
<td>3.30</td>
<td>3.3</td>
</tr>
<tr>
<td>2010</td>
<td>44/155</td>
<td>3.14</td>
<td>2.67</td>
<td>2.57</td>
<td>3.40</td>
<td>2.95</td>
<td>3.29</td>
</tr>
</tbody>
</table>

Note: Scores are out of 5 (5 being the perfect score).

Table 2. LPI scores of select ASEAN countries (Source: World Bank, 2016)

<table>
<thead>
<tr>
<th>Country</th>
<th>LPI Rank (out of 160)</th>
<th>LPI Score</th>
<th>Customs Infrastructure</th>
<th>International Shipments</th>
<th>Logistics Competence</th>
<th>Tracking and Tracing</th>
<th>Timeliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippines</td>
<td>71</td>
<td>2.86</td>
<td>2.61</td>
<td>2.55</td>
<td>3.01</td>
<td>2.70</td>
<td>2.86</td>
</tr>
<tr>
<td>Singapore</td>
<td>5</td>
<td>4.14</td>
<td>4.18</td>
<td>4.20</td>
<td>3.96</td>
<td>4.09</td>
<td>4.05</td>
</tr>
<tr>
<td>Malaysia</td>
<td>32</td>
<td>3.43</td>
<td>3.17</td>
<td>3.45</td>
<td>3.48</td>
<td>3.34</td>
<td>3.46</td>
</tr>
<tr>
<td>Thailand</td>
<td>45</td>
<td>3.26</td>
<td>3.11</td>
<td>3.12</td>
<td>3.37</td>
<td>3.14</td>
<td>3.20</td>
</tr>
<tr>
<td>Indonesia</td>
<td>63</td>
<td>2.98</td>
<td>2.69</td>
<td>2.65</td>
<td>2.90</td>
<td>3.00</td>
<td>3.19</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>64</td>
<td>2.98</td>
<td>2.75</td>
<td>2.70</td>
<td>3.12</td>
<td>2.88</td>
<td>2.84</td>
</tr>
<tr>
<td>Brunei</td>
<td>70</td>
<td>2.87</td>
<td>2.78</td>
<td>2.75</td>
<td>3.00</td>
<td>2.57</td>
<td>2.91</td>
</tr>
</tbody>
</table>

The worsening traffic congestion problem in the country is reflected in low scores on timeliness, tracking and tracing, and logistics competence. The recent consolidation of logistics companies and the entry of big players such as SM Investments and Chelsea Logistics can improve logistics competence and move the sector away from being fragmented and dependent on small enterprises.

Reliability is also a challenge, as it is hampered by poor transport infrastructure and cumbersome processes managed or regulated by different government agencies in an uncoordinated manner. The 2016-2017 edition of the Global Competitiveness Report\(^7\) placed the Philippines 8\(^{th}\) among ASEAN countries, beaten by Viet Nam, Lao PDR, and Cambodia. The Global Competitiveness Index (GCI)

---

measures national performance using 114 indicators that are grouped into 12 pillars, one of which is infrastructure and connectivity. Table 3 shows the historical ranking of the Philippines in several indicators within that pillar that assess the quality (extensiveness and condition) of road, port, and air infrastructure.

Table 3. Philippine ranking in infrastructure indicators in 2012-2013 and 2016-2017 editions* (Source: WEF Global Competitiveness Report)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2012-2013</th>
<th>2016-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of roads</td>
<td>87</td>
<td>106</td>
</tr>
<tr>
<td>Quality of railroad infrastructure</td>
<td>94</td>
<td>89</td>
</tr>
<tr>
<td>Quality of air transport infrastructure</td>
<td>112</td>
<td>116</td>
</tr>
<tr>
<td>Quality of port infrastructure</td>
<td>120</td>
<td>113</td>
</tr>
</tbody>
</table>

*The ranking shows the Philippines’ position on each of the indicators among the economies covered by the respective editions of the GCI. GCI 2012-2013 covered 144 economies, while GCI 2016-2017 covered 138.

In 2016, the World Bank surveyed the manufacturing logistics performance in selected provinces in collaboration with DTI to better understand the granularity of varying transport and logistics costs and to identify areas for cost reduction (Banomyong, 2017). The study revealed that the logistics costs as a percentage of sales in the Philippines is 27.16%, which is higher than Thailand (11.11%), Viet Nam (16.3%) and Indonesia (21.40%). Transport and cargo handling costs represent a significant percentage of the sales (10.71%), followed by inventory carrying costs (8.78%), warehousing costs (5.20%), and logistics administration costs (2.47%). Businesses in Mindanao have the highest logistics costs as a percentage of sales (Table 4). Shippers in Metro Manila likewise find shipping to Hong Kong or Taipei to be less expensive than sending their cargoes to some parts of Visayas and Mindanao.

Table 4. Logistics cost as percentage of sales, by region (Source: World Bank, 2016)

<table>
<thead>
<tr>
<th>Logistics Costs/Sales</th>
<th>Region</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport and cargo handling cost (including</td>
<td>Luzon</td>
<td>7.78%</td>
</tr>
<tr>
<td>transport packaging)</td>
<td>Visayas</td>
<td>9.40%</td>
</tr>
<tr>
<td></td>
<td>Mindanao</td>
<td>10.93%</td>
</tr>
<tr>
<td>Warehousing (cost of running own warehouse or</td>
<td>Luzon</td>
<td>3.94%</td>
</tr>
<tr>
<td>buying the service)</td>
<td>Visayas</td>
<td>3.80%</td>
</tr>
<tr>
<td></td>
<td>Mindanao</td>
<td>5.79%</td>
</tr>
<tr>
<td>Inventory carrying cost (including cost of capital</td>
<td>Luzon</td>
<td>4.17%</td>
</tr>
<tr>
<td>tied in inventory)</td>
<td>Visayas</td>
<td>9.60%</td>
</tr>
<tr>
<td></td>
<td>Mindanao</td>
<td>10.85%</td>
</tr>
<tr>
<td>Logistics administration (10% of above costs)</td>
<td>Luzon</td>
<td>1.59%</td>
</tr>
<tr>
<td></td>
<td>Visayas</td>
<td>2.28%</td>
</tr>
<tr>
<td></td>
<td>Mindanao</td>
<td>2.76%</td>
</tr>
<tr>
<td>Total Logistics Cost/ Sales</td>
<td>Luzon</td>
<td>17.48%</td>
</tr>
<tr>
<td></td>
<td>Visayas</td>
<td>25.08%</td>
</tr>
<tr>
<td></td>
<td>Mindanao</td>
<td>30.32%</td>
</tr>
</tbody>
</table>

Source: Banomyong, Ruth (2017). The Importance of Measuring Philippines Logistics Performance [PowerPoint presentation at PhilExport GMM, September 2017]

*Most of their respondents were small- to medium-sized enterprises (SMEs).
2.3. Transport infrastructure

As of 2015, 97.19% (31,242 km) of national roads, 61.80% (15,377 km) of city roads, and 28.65% (31,075 km) of provincial roads were paved, and 347,160 linear metres of bridges along national roads were made permanent. Road-based transport infrastructure is a key point of convergence with other productive sectors, but its quality remains poor. Though the country’s air transport sector exceeded by 25.8 percent its overall target increase of 52.51 million annual international and domestic passenger volume, air traffic congestion remains an issue among the major airports. The lack of night-time flying capabilities in other airports adds to the day-time airport congestion. Cargo transported through the country’s port system increased from 166.40 million metric tonnes in 2010 to 223 million metric tonnes in 2015. The country’s port system benefitted from a number of projects, but infrastructure quality and operational efficiency still need to be improved. Overall, gaps in connectivity remain. A network perspective must be adopted in mobilizing the government’s PHP 9 trillion ($180 billion) Build, Build, Build programme to develop not only the landside, airside and portside facilities but also access roads.

The Philippine Development Plan (PDP) 2017-2022 intends to enhance the efficiency of the transport sector to sustain economic growth and increase competitiveness by providing adequate, accessible, reliable, and safe access for people and goods across the country, neighbouring regions, and the world by implementing the following strategies:

- Physically link production areas to markets through road and rail-based transport, inter-island water transport and logistics systems.
- Improve backbone services, such as financial, telecommunications, distribution, transport, and logistics services to facilitate the movement of people, goods, services, knowledge, and ideas as well as link firms, especially MSMEs, to domestic and global markets.
- Improve the business climate by implementing structural reforms to create more open, well-functioning, transparent, and competitive markets, including the creation of a competent national body for multimodal transport.
- Provide adequate infrastructure and logistical support to achieve connectivity, ensure efficient flow of goods and services domestically and internationally, and lower the cost of production and delivery.

Chapter 19 of PDP 2017-2022 focuses on addressing such transport issues, recognizing the inadequacy of current transport systems vis-à-vis the growing demand. In the short term, road-based transport will be improved by addressing traffic congestion through ‘engineering, enforcement, and education,’ but the road network will ultimately be upgraded and expanded to the highest standards. The government will exhaust all possible means to improve the operational efficiency of airports and to address capacity bottlenecks. Port facilities will be improved to ensure that inter-island shipping, including a stronger roll-on/roll-off (RORO) network, will remain a viable option for transporting people and cargo.

The government also plans to enhance trade facilitation and strengthen linkages and connectivity, and review and implement laws, rules and regulations to reduce costs to exporters and importers as well as facilitate and streamline procedures for engaging in trade.

2.4. Climate change and energy demand

The Philippine’s per-capita GHG emissions are relatively low at 1.6 tonnes of carbon dioxide equivalent (CO2e) emissions in 2012 compared with the global average of 6.5 tonnes. However, the
trend is increasing with 4% annual growth between 2006 and 2012. The country’s GHG inventories show an increase in transport emissions in absolute terms and relative to other sectors from 1994 to 2000 (see Figure 4).

![Figure 4. GHG emissions from energy sector for 1994 and 2000, in MtCO2e (Source: DENR and Manila Observatory, 2010)](image)

Transport consumed the largest share of energy at 36.8% or 9,063 kilotonnes of oil equivalent (ktoe) in 2010, which emitted about 15% of the total emissions of the whole country amounting to 23.5 million tonnes of carbon dioxide equivalent (MtCO2e). Almost 80% of energy consumed by the transport sector was from road vehicles. Using 2010 data as baseline, a 2017 study by the Asian Development Bank (ADB) projected the fuel consumption of the land sector up to 2050, as shown in Figure 5. The projection shows that the demand for gasoline (or petrol) will be higher than diesel due to a projected increase in private cars. Gasoline consumption is projected to increase by 900% while diesel consumption by 400% from 2010 to 2050.

![Figure 5. Projected fuel consumption of the road transport sector (Source: ADB, 2017)](image)

---

According to the same study, the corresponding annual emissions from road transport might increase seven-fold to 139.9 MtCO2e by 2050, wherein trucks would account for 19% of total emissions (Figure 6). This contribution is significant given that trucks only account for about 5% of vehicles on the road.

![Figure 6. Projected emissions of the road transport sector (Source: ADB, 2017)](image)

### 2.5. Vehicle profile

The share of trucks in the Philippine’s total vehicle population has been about 5% in recent years but it is the second fastest increasing vehicle class after motorcycles and tricycles, as shown in Table 5.

#### Table 5. Number of registered vehicles (Source: DOTC and LTO, 2007-2013)

<table>
<thead>
<tr>
<th>Vehicle class</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>AAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars</td>
<td>744,830</td>
<td>755,108</td>
<td>776,155</td>
<td>804,825</td>
<td>824,829</td>
<td>849,047</td>
<td>868,148</td>
<td>2.6%</td>
</tr>
<tr>
<td>Utility Vehicle</td>
<td>1,788,625</td>
<td>1,790,518</td>
<td>1,865,575</td>
<td>1,961,703</td>
<td>2,032,154</td>
<td>2,081,541</td>
<td>2,140,968</td>
<td>3.1%</td>
</tr>
<tr>
<td>Buses</td>
<td>30,113</td>
<td>29,703</td>
<td>33,006</td>
<td>34,909</td>
<td>34,434</td>
<td>33,564</td>
<td>31,665</td>
<td>1.0%</td>
</tr>
<tr>
<td>Trucks</td>
<td>281,128</td>
<td>296,121</td>
<td>311,496</td>
<td>317,774</td>
<td>329,309</td>
<td>341,505</td>
<td>358,445</td>
<td>4.1%</td>
</tr>
<tr>
<td>Motorcycles and tricycles</td>
<td>2,647,263</td>
<td>2,982,296</td>
<td>3,200,961</td>
<td>3,482,139</td>
<td>3,881,449</td>
<td>4,116,682</td>
<td>4,250,667</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

Note: AAGR= annual average growth rate

Source: Department of Transportation and Communications and LTO. Registered motor vehicles by classification and region (2007-2013).

The 2017 National Logistics Master Plan (NLMP) estimates that as much as 80% to 90% of the current truck population is more than 15 years old. In addition, the estimated GHG emissions from road transport for 2007 was 23.8 MtCO2, of which 70% was from trucks and utility vehicles. Vehicles also account for significant portion of other pollutants such as particulate matter (PM), carbon monoxide (CO), nitrogen oxides (NOx), and volatile organic compounds (VOCs).

Table 6 shows the average loading by type of truck based on an origin-destination survey conducted as part of the Study of Masterplan on High Standard Highway Network Development in the Republic of the Philippines (JICA & DPWH, 2010). The same study found out that about 16% of trucks are overloaded.
Table 6. Average loading by type of truck (in kg) (Source: JICA, 2010)

<table>
<thead>
<tr>
<th>Type of truck</th>
<th>Agriculture, Fishery, Forestry</th>
<th>Mining, Construction</th>
<th>Manufacturing</th>
<th>Gross Average Loading*</th>
<th>Net Average Loading**</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-axle truck</td>
<td>5,840</td>
<td>5,060</td>
<td>3,589</td>
<td>4,917</td>
<td>2,401</td>
</tr>
<tr>
<td>3-axle truck</td>
<td>14,069</td>
<td>13,990</td>
<td>11,509</td>
<td>13,323</td>
<td>6,943</td>
</tr>
<tr>
<td>Truck-trailer</td>
<td>16,067</td>
<td>18,197</td>
<td>11,911</td>
<td>15,663</td>
<td>8,294</td>
</tr>
<tr>
<td>Delivery van</td>
<td>3,370</td>
<td>2,960</td>
<td>1,760</td>
<td>2,573</td>
<td>1,559</td>
</tr>
<tr>
<td>Weighted mean across truck types</td>
<td>7,667</td>
<td>10,694</td>
<td>5,033</td>
<td>7,413</td>
<td>4,008</td>
</tr>
</tbody>
</table>

Notes:  
*Empty trucks are excluded  
**Empty trucks are included

While overloading is a problem as it damages the road network and compromises road safety, empty haul is a problem in terms of efficiency and fuel wasting. As reported by Castro (n.d.), about 79.4% of trailer trucks and 62.4% of three-axle trucks entering Metro Manila are running empty (Table 7). Such empty trips could be a significant driver of high freight transport costs in the Philippines as shippers are usually charged for two-way trips.

Table 7. Percentage empty miles (Source: Castro, n.d.)

<table>
<thead>
<tr>
<th>Type of truck</th>
<th>Inbound (in %)</th>
<th>Outbound (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-axle trucks</td>
<td>39.4</td>
<td>No disaggregated data available</td>
</tr>
<tr>
<td>3-axle trucks</td>
<td>62.4</td>
<td></td>
</tr>
<tr>
<td>Trailer trucks</td>
<td>79.4</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>56.1</td>
<td>35.4</td>
</tr>
</tbody>
</table>

For city logistics, a study titled *Establishing of City Logistic Concept in Improving the Freight Distribution in Metro Manila* collected data on vehicle types used, vehicle weight and fuel consumption, as summarised in
Table 8.
Table 8. Vehicle types and fuel consumption (Source: Cueto, et al., 2015)

<table>
<thead>
<tr>
<th>Vehicle type/Application</th>
<th>Gross weight range (lbs)</th>
<th>Empty weight range (lbs)</th>
<th>Typical payload capacity max (lbs)</th>
<th>Typical fuel economy range in 2007 (mpg)</th>
<th>Typical fuel consumed (gal / 1000 tonne-miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large pick-ups, utility vehicles, multi-purpose, minibus, step van</td>
<td>8,501-10,000</td>
<td>5,000-6,300</td>
<td>3,700</td>
<td>10-15</td>
<td>38.5</td>
</tr>
<tr>
<td>Utility vehicles, multi-purpose, minibus, step van</td>
<td>10,001-14,000</td>
<td>7,650-8,750</td>
<td>5,250</td>
<td>8-13</td>
<td>33.3</td>
</tr>
<tr>
<td>City delivery, parcel delivery, large walk-in, bucket, landscaping</td>
<td>14,001-16,000</td>
<td>7,650-8,750</td>
<td>7,250</td>
<td>7-12</td>
<td>23.8</td>
</tr>
<tr>
<td>City delivery, parcel delivery, large walk-in, bucket, landscaping</td>
<td>16,001-19,500</td>
<td>9,500-10,800</td>
<td>8,700</td>
<td>6-12</td>
<td>25.6</td>
</tr>
<tr>
<td>City delivery, school bus, large walk-in, bucket</td>
<td>19,501-26,000</td>
<td>11,500-14,500</td>
<td>11,500</td>
<td>5-12</td>
<td>20.4</td>
</tr>
<tr>
<td>City bus, furniture, refrigerated, refuse, fuel tanker, dump, tow, concrete, fire engine, tractor-trailer</td>
<td>26,001-33,000</td>
<td>11,500-14,500</td>
<td>18,500</td>
<td>4-8</td>
<td>18.2</td>
</tr>
</tbody>
</table>

3. Policies and stakeholders

This section briefly describes the relevant stakeholders for freight and logistics efforts in the Philippines, highlighting their roles and responsibilities and their interests in transport development. The section also examines relevant policies and initiatives.

3.1. Stakeholders

Several institutions play an important role in the freight and logistics sector in the Philippines. Table 9 shows roles and responsibilities of key institutions from the government, the private sector (including associations) and civil society.

---

10 Refer to https://blog.municibid.com/truck-classification/ for more details about truck classifications.
### Table 9. Stakeholders in freight and logistics in the Philippines

<table>
<thead>
<tr>
<th>Government agencies</th>
<th>Roles and responsibilities in relation to freight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Transportation (DOTr)</td>
<td>The DOTr is the primary policy, planning, programming, coordinating, implementing and administrative agency to promote, develop and regulate a dependable and coordinated transport network in the country. It has been designated as the competent national body to accredit and supervise Philippine multimodal transport operators, through the planned creation of the DOTr Office of Multimodal Transport and Logistics (OMTL), which will place all freight forwarders under the jurisdiction of a single agency.</td>
</tr>
<tr>
<td>Land Transportation Office (LTO)</td>
<td>The LTO is the attached agency of the DOTr responsible for the licensing of drivers and conductors, and inspection and registration of all private and public vehicles nationwide.</td>
</tr>
<tr>
<td>Land Transportation Franchising and Regulatory Board (LTFRB)</td>
<td>The LTFRB is the attached agency of the DOTr responsible for regulating routes and issuing franchises, and which authorises the operation of public transport services. Relevant to freight activity, the LTFRB, as a regulatory entity, determines restrictions on equipment usage, vehicle rental, and fleet size as requirements for a franchise.</td>
</tr>
<tr>
<td>Philippine Ports Authority (PPA)</td>
<td>The PPA is an attached agency of the DOTr and is the lead executing and regulatory agency in the planning, development, financing, operation, supervision, and maintenance of ports and port districts in the country. As part of its developmental function, the PPA prescribes rules and regulations that govern the operation of ports or any structure within a port district, formulates a comprehensive Port Development Plan to programme priority port development projects, and provides and assists in the provision of training programmes and training facilities for port operators and users. The regulatory functions of the agency, which has financial autonomy, include setting and collecting of administrative fees for port operations and services.</td>
</tr>
<tr>
<td>Maritime Industry Authority (MARINA)</td>
<td>The MARINA is the attached agency of the DOTr responsible for the registration and licensing of vessels, rationalisation of routes, zones or areas of operations, and the setting of safety and operational standards for vessels. Moreover, the MARINA inspects all vessels to ensure compliance with regulations, ensures the financial capacity of operators to provide passenger and cargo services, and determines the impact of new services on a given locality.</td>
</tr>
<tr>
<td>Department of Trade and Industry (DTI)</td>
<td>The DTI is the primary coordinating, promoting, and regulatory agency responsible for the trade, industry, and country investment activities, which includes the logistics sector as a key investment area. The DTI collaborates with the United Port Users Confederation and Procurement and Supply Institute of Asia for the development of a comprehensive national multimodal transport and logistics development plan. Broadly, the DTI is responsible in effectuating reforms and mechanisms to address gaps in the logistics chain, such as, adopting and implementing port promotion packages, and providing inputs in marketing and pricing strategies to increase utilisation of ports. The DTI also promotes the</td>
</tr>
<tr>
<td><strong>Supply Chain and Logistics Advisory Council (SCLAC)</strong></td>
<td>The SCLAC is a high-level inter-agency advisory council established by the DTI that oversees and monitors the implementation of the National Logistics Master Plan through the Trade Infrastructure Transport Logistics Working Group. The SCLAC functions as a joint committee between the National Competitiveness Council and Export Development Council, each having respective transport and logistics committees. Composed of the DOTr, DOF, DOT, DPWH, NEDA, DOST, DA, MMDA, DILG, and representatives from various industry associations, the SCLAC conducts regular meetings to advance action plans and submit policy recommendations and other programme-specific actions to the Cabinet Economic Cluster. Included in the focus areas of the SCLAC are the modernisation of selected domestic ports into regional hubs and the adoption of climate change-resilient infrastructure.</td>
</tr>
<tr>
<td><strong>Supply Chain and Logistics Management Division (SCLMD)</strong></td>
<td>The SCLMD, which is under the DTI Competitiveness and Ease of Doing Business Group (CEODBG), is responsible for the drafting of the National Logistics Master Plan that aims to lower logistics costs, address challenges that affect the logistics industry, such as lack of infrastructure, and create a unified strategy to streamline the process of trade and logistics. The SCLMD functions as the secretariat to the SCLAC. SCLMD also formulates policies and measures pertinent to supply chain, trade facilitation, and logistics to support exporters, importers and traders. Moreover, the SCLMD supports traders through ensuring competitive rates and equitable terms and conditions.</td>
</tr>
<tr>
<td><strong>Export Development Council (EDC)</strong></td>
<td>The EDC is a public-private partnership that is responsible for overseeing the implementation of the Philippine Export Development Plan and advocates policy reforms to strengthen national exports, such as imposing or removing tariff measures and other regulatory measures. The EDC also plays a key role in providing inputs to adopt and implement port promotional and incentive packages and in marketing and pricing strategies to increase port utilisation. The EDC forms part of the SCLAC, which highlights its dominant role in the implementation of the National Logistics Master Plan.</td>
</tr>
<tr>
<td><strong>National Competitiveness Council (NCC) – Infrastructure Working Group (IWG)</strong></td>
<td>The NCC-IWG forms part of the SCLAC, which highlights its dominant role in the implementation of the National Logistics Master Plan. The NCC-IWG is composed of members from the government agencies, such as the DPWH, DOTr, DTI, FTEB, EDC, SCMAP, and foreign and local business chambers. A priority activity of the NCC is the promotion of a logistics hub in Luzon.</td>
</tr>
<tr>
<td><strong>Fair Trade Enforcement Bureau (FTEB)</strong></td>
<td>The FTEB, under the DTI, is responsible for the implementation of all restrictions on government and private cargoes that are loaded onto Philippine vessels. In addition, the FTEB is responsible for the accreditation of maritime freight forwarders.</td>
</tr>
<tr>
<td><strong>Department of Environment and Natural Resources (DENR)</strong></td>
<td>The DENR is the lead agency in the overall implementation of the Philippine Clean Air Act, which provides the policy framework for air quality management of the country and which addresses air pollution from the transport sector. The DENR is among the key agencies that work on issues relating to climate change mitigation and collaborates with DOTr in promoting and streamlining of</td>
</tr>
</tbody>
</table>
environmentally sustainable transport (EST) activities. Included in the jointly developed National Environmentally Sustainable Transport Strategy (NEST) is the development of freight transport policies.

Department of Public Works and Highways (DPWH)  The DPWH ensures the quality of infrastructure facilities and services, provides criteria and standards for public highways, and is committed to road planning activities pertinent to establishing the connectivity to the port areas. In addition, the DPWH is responsible for determining and regulating vehicle weight limits. To synchronise weighing operations and limits for each vehicle type, the DPWH coordinates with other agencies and stakeholders.

Department of Finance (DOF) - Bureau of Customs (BOC)  The BOC is mandated to assess and collect all tariff and customs dues, supervision and control over the entrance and clearance of import and export cargoes, landed or stored cargoes in piers, airports, terminal facilities, container yards, and freight stations. The BOC also implements technology for customs management and is directed towards an agenda of undertaking the automation of lodgement entries, payments, cargo release, accreditation of importers, provision of IT support facilities and equipment, and capacity building.

Metro Manila Development Authority (MMDA)  The MMDA is the government regulatory and supervisory authority that is responsible for the delivery of services, which includes transport and traffic management, within Metro Manila. Specifically on traffic management, the MMDA is responsible for the enforcement of traffic operations, including the Truck Ban Ordinance, which prohibits the operation of cargo trucks on assigned times of the day in Metro Manila.

Philippine Economic Zone Authority (PEZA)  The PEZA is tasked with promoting investments, extending assistance to, registering, granting incentives to, and facilitating the operations of economic zone facilities that provide warehousing and logistics services.

Freight associations

Philippine International Seafreight Forwarders Association, Inc. (PISFA)  PISFA is a recognised association of the freight forwarding industry composed of private and government entities that promotes exchanges on freight forwarding practice and management. The PISFA also initiated the development of the Philippine Multimodal Transport and Logistics Roadmap that identifies key challenges and gaps in the logistics industry and provides recommended activities and strategies for the sector. PISFA also conducts training courses on freight forwarding.

Confederation of Truckers Association of the Philippines (CTAP)  CTAP is an organisation of truckers that allows its members to freely negotiate trucking rates and is active in the discussions with government on the plan for refleeting to phase out trucks older than 15 years.

Association of International Shipping Lines, Inc. (AISL)  AISL is a leading international container shipping association in the country that influences and provides policy inputs on shipping operations. AISL also introduces reforms in shipping and port operations that would enhance the efficiency of cargo movement to meet international standards. An integrated system implemented by the AISL involves a web-based 24-hour integrated truck dispatching, appointment,
and booking system to retrieve empty containers is designed to interconnect shipping lines, truckers and depots.

<table>
<thead>
<tr>
<th><strong>Private sector, government-recognised groups</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International Container Terminal Services, Inc. (ICTSI)</strong></td>
</tr>
<tr>
<td><strong>Philippine Chamber of Commerce and Industry (PCCI)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Development agencies, multilateral institutions, banks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Japan International Cooperation Agency (JICA)</strong></td>
</tr>
<tr>
<td><strong>United States Agency for International Development (USAID)</strong></td>
</tr>
<tr>
<td><strong>International Finance Corporation - World Bank (IFC-WB)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Other stakeholders</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic institutions</strong></td>
</tr>
</tbody>
</table>
External Engagement and Participation

DTI-SCLMD participated and required engagement in various supply chain and logistics international technical working groups meetings, conferences and related events where the Philippines has an international commitment (e.g. ASEAN-IMO, APEC, UNESCAP-ICT Logistics, among others).

3.2. Policies and initiatives

Recent discussions among relevant government agencies have identified DOTr as the competent national body to accredit and supervise Philippine multimodal transport operators. The Executive Order to formalise the creation of the DOTr-Office of Multimodal Transport and Logistics (DOTr-OMTL) is in the pipeline for signature. The Executive Order will place all freight forwarders under the jurisdiction of a single agency, the DOTr-OMTL. Under the current setup, sea freight forwarders are accredited and supervised by the DTI-Fair Trade Enforcement Bureau (DTI-FTEB) while air freight forwarders are under the jurisdiction of DOTr-Civil Aeronautics Board (DOTr-CAB). DOTr-OMTL will also accredit and supervise operations of cargo and delivery vehicles, which is currently being undertaken by the Land Transportation Franchising and Regulatory Board (LTFRB).

Logistics services

The freight forwarding industry is not highly regulated. The primary regulatory requirement for service providers wanting to enter the market is accreditation by the Philippine Shippers’ Bureau, a unit under the DTI. A firm cannot operate a freight forwarding business without a Certificate of Accreditation that is valid for two years. Prices are not regulated, and entry and exit are dictated by market forces (Llanto, Navarro, Detros, & Ortiz, 2013).

A major investment restriction in the logistics industry is the 60:40 rule on Filipino equity-foreign equity mix that also applies to foreign investments in domestic freight forwarding business in accordance with the Corporate Code of the Philippines. DTI is spearheading the Project Repeal to repeal/amend the Public Service Act to delist transport and logistics from the list of public services enumerated in the Act requiring the 60:40 Filipino equity-foreign equity mix.11 It is intended that the opening of the logistics industry to foreign players will: (i) provide consumers with alternative transport service providers that can meet their consumption preferences; (ii) increase positive pressure for transport service providers to improve their services amidst competition from foreign entities; and (iii) drive down consumption costs for both cargo shippers and passengers.

Land transportation

For land transport services supporting the logistics supply chain (e.g. trucking services), the LTFRB was set up under Executive Order (EO) 202 series of 1987 as the economic regulator. Economic regulation covers regulation of routes and franchises to operate vehicles. The LTFRB also examines the appropriateness of the vehicle before granting approval of the franchise. For example, if the cargoes would be perishable goods or liquefied petroleum gas, the trucks to be used by the applicant

---

11 Project Repeal is a systematic way of studying rules, regulations, regulations and laws that have outlived their relevance or have been overtaken by developments. It is an initiative to clean up regulations and legislation by repealing provisions or rules that are no longer necessary or may be detrimental to the economy.
should be technically equipped to handle such items. The LTFRB also regulates the maximum age of utility vehicles (15 years from manufacture) but this is not yet being implemented at the time of writing.

**Vehicle age**

DOTr issued Department Order (DO) 2017-09, which reinforces DO 2002-030 on the mandatory 15-year age limit for buses and trucks for hire covered by Certificate of Public Convenience (CPC). Enforcement of DO 2017-09 will require truckers to submit a certificate of date of manufacture, such as a sales invoice or other competent document. As per DO-2002-030, a unit that exceeds the minimum age, as specified by the time of expiration of the covering CPC, cannot file a new application for franchise, for extension of the validity of CPC, for substitution of unit, or for an increase in the number of units. A joint memorandum circular (JMC) from LTO and LTFRB is supposed to be issued within 30 days of effectivity of DO 2017-09 to implement the mandate of the policy. However, the JMC remains unreleased as DOTr is still considering the inclusion of roadworthiness as a possible main criterion, rather than vehicle age, in determining truck performance, as advocated by trucking associations.

**Overloading**

DPWH and DOTr, through the Land Transportation Office (LTO), enforce the anti-overloading law with the operation of 24/7 weighbridge stations and portable weighing machines at strategic locations through Anti Truck Overloading Mobile Enforcement (ATOME) along national roads, and the imposition of penalties on overloaded vehicles. The anti-overloading policy is pursuant to the provisions of Republic Act 8794 otherwise known as An Act Imposing a Motor Vehicle Users Charge on Owners of all Types of Motor Vehicle and for Other Purposes. This aims to promote motorist safety and prevent early deterioration of roads caused by overloading. Under the law, overloaded trucks are fined 25% of the Motor Vehicle User’s Charge (MVUC) applicable to the vehicle at the time of infringement.

The maximum allowable gross vehicle weight (GVW) under Code 12-2 for trucks consisting of semi-trailers with three axles at the motor vehicle and two axles at the trailer, for a total of 18 wheels, has been 41,500 kg since January 1, 2018, while the maximum GVW under Code 12-3 for trucks consisting of semi-trailers with three axles at the motor vehicle and three axles at the trailer, for a total of 22 wheels, has been 42,000 kg. The previous deadline for these limits of 30 June 2017 was moved as per requests from the Confederation of Truckers Association of the Philippines (CTAP).

DPWH issued DO-22 series of 2011 on minimum pavement thickness and width of national roads to upgrade the design standards of national roads to avoid early deterioration of pavement due to uncontrolled overloading. The agency is also looking at the possibility of using intelligent transport system (ITS) for contactless apprehension and at the same time, is being more proactive in creating awareness among truckers the extent of damage subjected to the road by overloading.

**Emission standards**

The DENR Department Administrative Order No. 2015-04 was issued in 2015, mandating that all new vehicles to be used or introduced in the Philippine market by January 1, 2016 be equipped with

---

Euro 4/IV engines and compliant with Euro 4/IV emission limits/standards. Then, from 1 January 2018, all vehicles purchased, including trucks, must be equipped with Euro 4/IV engines and be compliant with Euro 4/IV limits/emission standards. Pursuant to Republic Act 4136, otherwise known as the Land Transportation and Traffic Code, motor vehicles, including heavy duty, are required to register annually at LTO. Requirements include Certificate of Emission Compliance (CEC) which is secured from private emission testing centres upon the mandatory inspection. The veracity of the results of the emission tests are in question as there are reported cases of falsification for profit of private emission testing centres. This issue can be rectified once a government-controlled and -run motor vehicle inspection system is in place.

Clean Air Act

The Clean Air Act of 1999 is a comprehensive air quality management policy and programme which aims to achieve and maintain healthy air for all Filipinos. It outlines the government’s measures to reduce air pollution and incorporate environmental protection into its development plans. However, until now, it has not been fully enforced. The Clean Air Act sets the national total suspended particulate matter (TSP) target of 90 µg/Ncm but recorded data have exceeded it. Annual average concentration of PM10 and PM2.5 levels at monitoring stations close to roads often exceed the national ambient air quality standard of 60 µg/Ncm, according to the 2012-2014 data of the Environmental Management Bureau. Incidentally, there is a growing awareness of the health impacts of air pollution to health, estimated at $2.5 billion or about 1.55% of GDP in 2009 (Asian Development Bank, 2009), which magnifies the urgency to find low-emission and low-carbon transport alternatives, including for handling freight and logistics.

Intended Nationally Determined Contribution (INDC)

The Philippines’ INDC to the Paris Agreement on Climate Change pledges to reduce emissions by 70% relative to business-as-usual by 2030, if sufficient international financial and technical support is provided. The 70% goal is among the highest reduction values pledged by a country but the Climate Change Commission (CCC) is currently consolidating inputs from various sectors to align the country’s development agenda and timeline with the emission reduction goal.

Other relevant policies and projects related to transport and logistics

Table 10 below shows a summary of current and future policies and projects, which are not limited to road transport, as envisioned by respective agencies. It also shows the status and plan of action of the different initiatives.

Table 10. Future policies and plans on freight and logistics

<table>
<thead>
<tr>
<th>Policy / Plans</th>
<th>Description</th>
<th>Status</th>
<th>Responsible agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement of freight transportation complex, truck terminals and physical distribution centres</td>
<td>Broadly outlined as a future priority action listed in the Philippine National Implementation Plan on Environment Improvement in the Transport Sector (NIP)</td>
<td>Plan of action</td>
<td>DoTr</td>
</tr>
</tbody>
</table>
### Regulatory reforms to improve shipping services

Includes: the removal of opportunities for incumbents to object to the granting of a certificate of public convenience; the removal of dry dock requirements and repair of domestic ships exclusively in the Philippines; facilitating the chartering of foreign vessels to operate in domestic routes by clarifying tax liabilities; the replacement of PPA share of cargo handling fees with a fixed rate to reduce conflict of interest; and providing more information on cargo flows and passenger services to the public.

**Proposed reform**

| DoTr, MARINA, PPA |

---

<table>
<thead>
<tr>
<th>MMDA Resolution No. 3, s.2015: Reimplementing of uniform truck regulation in Metro Manila</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers cargo trucks that are identified through license plates, including trucks, vans, tankers or other delivery vehicles, whether loaded or empty, having a gross capacity weight of more than 4,500 kilos are not allowed to pass along 10 major routes, and a total truck ban is implemented in EDSA except on Sundays and holidays; Violation of the Truck Ban Ordinance is subject to a fine of PHP500-2000 ($10-40) or imprisonment of 7-30 days.</td>
</tr>
<tr>
<td>Implemented</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>RA 9295 Domestic Shipping Development Act of 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lays out investment incentives, deregulation of the shipping industry and authority of MARINA, setting of cargo rates, shipbuilding and ship repair.</td>
</tr>
<tr>
<td>Implemented</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Certification system for low carbon companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>International certification standards on environmental management systems is adopted in the Philippines as a national standard. The Philippine Environment Partnership Program (PEPP), pursuant to DENR Administrative Order No. 2003-14 encourages establishments to adopt mandatory self-monitoring and compliance to environmental standards by awarding those with superior environmental performance with DENR Official Seal of Approval.</td>
</tr>
<tr>
<td>Implemented</td>
</tr>
<tr>
<td><strong>Tax incentives for efficient vehicles</strong></td>
</tr>
<tr>
<td><strong>National Logistics Master Plan (NLMP)</strong></td>
</tr>
<tr>
<td><strong>Philippine Multimodal Transportation and Logistics Industry Roadmap</strong></td>
</tr>
<tr>
<td><strong>Executive Order 170, series of 2003 Promoting private sector participation and investment in the development and operation of the road roll-on/roll-off (RO-RO) Terminal System</strong></td>
</tr>
</tbody>
</table>
### Public-Private Sector Task Force Under EO 372 (Oct 2006)

Among the task forces created by this policy, a Task Force on Logistics was established. This task force envisions the Philippines as becoming a world-class logistics hub. To attain the task force’s goal, it focuses on the consolidation of logistics services especially in automotive, appliance, food, and electronics sectors.

 Implemented by DTI, NEDA, DoF, Tariff Commission, Bureau of Customs

---

### 4. Road freight sector assessment

Road transport is the predominant mode of moving cargo in the Philippines. Roads carry 58% of cargo traffic in the Philippines (water: 41.95%; air: 0.06%), and freight is mostly by truck fleets owned by small and medium enterprises (Asian Development Bank, 2012). It also links other modes, particularly ports and airports. As commercial activities multiply as a result of enhanced economic growth, logistics and last-mile distribution will become even more critical. A JICA study in 2010 revealed that truck trips per day are estimated to reach 1 million by 2030, of which 60% will be in Metro Manila. In 2013, 53% of all trucks in the Philippines operated in Luzon. (LTO, 2013).

There are opportunities to minimise the impact of road freight transport and make the logistics sector more environmentally sustainable by shifting road freight transport to other modes such as rail and water transport. However, the present assessment will focus only on road freight transport, specifically on trucks, to identify actionable short- and medium-term opportunities to green the freight and logistics in the country.

Availability of disaggregated data on truck fleets is scarce. A primary survey was conducted for this study to gather a decent sample size to be able to characterise the logistics industry that uses trucks, understand current operations, and identify potential measures to improve its overall performance.

### 4.1. Freight assessment survey for trucking companies

In consultation with DOTr, DTI and GIZ, Clean Air Asia partnered with DTI’s Supply Chain and Logistics Management Division (DTI-SCLMD) to conduct surveys, focus group discussions (FGDs), and workshops in eight cities including La Union (Region I), Tuguegarao (Region II), Balanga (Region III), Tagaytay (Region IVA), Puerto Princesa (Region IVB), Bacolod (Region VI), Zamboanga (Region IX) and Metro Manila (NCR). The said workshops were conducted between September to December 2017.

The green freight survey was conducted on the sidelines of DTI-SCLMD roadshows, wherein DTI-SCLMD and the World Bank (WB) shared results and validated information gathered for the Logistics Effectiveness Index (LEI) study, which was administered by DTI-SCLMD and supported by the WB in 2016. Complementing the LPI monitored by WB, the LEI study intends to pinpoint specific indicators that make logistics costs in the Philippines relatively high compared to other ASEAN countries, and to explore measures on how it can be lowered.

While the LEI-related discussions delved more into trade facilitation aspects, the green freight component provided a venue to focus on transport-related problems enriching the depth of focus...
group discussions (FGDs) and/or workshops with invited SME representatives and local policymakers. The FGDs and workshops engaged a wider audience composed of SME representatives from various industries, government officials, local policymakers, academia and local NGOs. The discussions often revolved around the inadequacy of available transport infrastructure, lax enforcement of rules, regulations and standards, the lack of funding, and spatial concerns affecting locations of key logistics facilities. It also provided an open venue to raise awareness of the importance of greening the freight industry. It is valuable that trucking and logistics companies understand, embrace, and appreciate efforts to shift to green freight, and to prefer green freight services if available.

The green freight survey was structured to gather information on the following aspects: (i) profile of respondent companies; (ii) fleet characteristics; (iii) trucking operations; (iv) vehicle fleet management and maintenance practices; (v) fuel-saving technologies and strategies; (vi) emissions reporting; and (vii) institutional framework and Green Freight Programme planning.

4.1.1. Profile of respondent companies

Demographics of respondents

A total of 75 respondents from 10 regions were surveyed during the eight roadshows. It should be noted that respondents from some regions joined workshops in their respective neighbouring regions. This sample represents about 5% of truck operators nationwide. In 2014, LTFRB received 33,000 applications from truck operators, of which 2,145 have port-related operations. About 1,634 applications for CPC for trucks for hire were approved, with some franchises covering applications for more than one truck unit (Almonte, 2014). The archipelagic nature of the country is captured by a well-distributed sample size wherein 29% of respondents were from island provinces, 4% from Mindanao and 67% from Luzon as shown in Figure 7.

Figure 7. Demographics of the green freight survey respondents

Profile of respondents Figure 8 shows that out of 75 respondents, 88% are engaged in trucking services, 25% are freight forwarders, 8% are third-party logistics providers and 25% are truck owners engaged in businesses such as hardware, palay (unhusked rice grain) trading, and the provision of farming supplies. Note that some of the companies offer dual services, providing trucks for hire as well as trucking services. A company may even have multiple lines of business, for example freight forwarding,
third-party logistics, and other activities. Seasonal demands can trigger companies to engage in more than one type of business.

![Figure 8. Number of companies by nature of business](image)

The respondents are mostly SMEs, with 43 out of 75 companies under sole proprietorship and registered under the DTI, while 27 companies are corporations registered under the Securities and Exchange Commission (SEC). Five respondents did not specify the status of their business.

**Types of goods transported**

Most of the companies transport agricultural products, both raw and processed, as shown in Figure 9. Other dominant cargoes are construction materials and manufactured items. The profit margin of those transporting raw agricultural products is tight, so transport costs are often squeezed, resulting in turn in overloading and the use of old and dilapidated trucks.

Those transporting manufactured items usually have negotiated time schedules for the delivery of goods, so time and reliability are essential to avoid penalties for delays. Few companies follow just-in-time delivery operations, but it is becoming more popular for delivery of high-value products such as medicines and other pharmaceutical supplies.

![Figure 9. Types of goods transported](image)
Truck delivery routes and frequency of trips

Most trucks are registered to operate to any point of Luzon. However, as shown in Figure 10, only 17% said that they operate on a national (or inter-regional, e.g. Region I to Region II) scale. About 42% have regional operations that cover inter-provincial transport of goods (e.g. Cagayan to Isabela or Palawan to Romblon) while 21% of the companies have provincial operations that cover inter-city or inter-municipality route delivery (e.g. Quezon City to Makati City, or Meycauayan to Guiguinto, Bulacan). There are also those that operate at a city level or cover short distances for delivery purposes.

![Figure 10. Truck delivery routes](image)

About a quarter of the respondents indicated a range of 1 to 10 trips per month for those operating at a national scale while 17% of respondents have 11 to 20 trips per month. About 8% usually do 21 to 40 trips per month, while those operating on short distances, 11% of respondents, said their trips range from 41 to 80 trips per month.

Profile of employees

As mostly SMEs, more than half of the respondents have 1 to 10 employees including drivers, administrative staff, mechanics and other staff. Other staff include labourers (full-time and/or seasonal), *kamaderos*¹³ and checkers. Some respondents do not employ mechanics in-house and only seek their services during routine maintenance or mechanical problems. Figure 11 shows the breakdown of employees.

Demand for trucking services is seasonal, especially in agricultural regions. One respondent from Region II, a trader of palay (unhusked rice grain), shared that they tend to employ more staff during harvest seasons, usually from April to May, and October to November.

¹³ *Kamaderos (n)*. Tagalog word for a person who organises and loads goods in the trucks. It is from its root word *kamada* or an orderly pile of goods.
Figure 11. Number of employees
4.1.2. Fleet characteristics

Table 11 shows that the enterprises use both articulated and rigid trucks. The highest number of trucks were used for dry, general goods. In that category, 57% of trucks were rigid, with an average tonnage in the range from 15 to 50, and 43% were articulated, with tonnage ranging from 25 to 50. Results also show that the use of light commercial vehicles is widely used especially for deliveries up to 5 tons.

Table 11: Types of trucks used by type of goods

<table>
<thead>
<tr>
<th>Type of goods</th>
<th>Rigid/articulated</th>
<th>No of trucks/unit</th>
<th>Percentage per type</th>
<th>Average tonnage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry, general goods</td>
<td>R</td>
<td>251</td>
<td>57%</td>
<td>15 to 50 tons</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>186</td>
<td>43%</td>
<td>25 to 50 tons</td>
</tr>
<tr>
<td>Refrigerated goods</td>
<td>R</td>
<td>81</td>
<td>19%</td>
<td>5 to 30 tons</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>335</td>
<td>81%</td>
<td>5 to 15 tons</td>
</tr>
<tr>
<td>Flatbed transport</td>
<td>R</td>
<td>69</td>
<td>27%</td>
<td>25 to 50 tons</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>187</td>
<td>73%</td>
<td>25 to 50 tons</td>
</tr>
<tr>
<td>Liquid or bulk goods</td>
<td>R</td>
<td>19</td>
<td>63%</td>
<td>5 to 40 tons</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>11</td>
<td>37%</td>
<td>-</td>
</tr>
<tr>
<td>Re-use/recycle</td>
<td>R</td>
<td>12</td>
<td>67%</td>
<td>5 to 50 tons</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>6</td>
<td>33%</td>
<td>-</td>
</tr>
<tr>
<td>Specialty or others</td>
<td>R</td>
<td>6</td>
<td>50%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>6</td>
<td>50%</td>
<td>-</td>
</tr>
<tr>
<td>Light commercial</td>
<td></td>
<td>389</td>
<td>100%</td>
<td>Up to 5 tons</td>
</tr>
<tr>
<td>Container chassis</td>
<td>A</td>
<td>61</td>
<td>100%</td>
<td>-</td>
</tr>
</tbody>
</table>

Most respondents (85%) indicated that their fleets were composed of trucks with manual transmission. They preferred this type of transmission because of its lower price. Some of the respondents also said that trucks with manual transmission have more available parts in the market and can be repaired more easily compared to trucks with automatic transmission. Only 10% of the respondents said that they

A rigid truck is a vehicle with two axle sets, a driver’s position, a steering system, motive power and a single rigid chassis while an articulated truck is a vehicle which has a permanent or semi-permanent pivot joint in its construction, allowing the vehicle to turn more sharply.
selected automatic transmission vehicles for the convenience of the driver, which results in faster turnover for deliveries especially on long hauls.

Vehicle age, especially for trucks, is a contentious issue. Often, owners only count the years since their purchase of a vehicle, even if second hand. Some used vehicles are packaged as refurbished, some even claiming as good as brand new, without disclosing prior years of service. As shown in Figure 12, 30 companies said that their fleet vehicles have average age of 4-6 years, while 23 companies had fleets that average a vehicle age of 7 to 10 years. Eleven companies answered that their trucks were relatively new at 1 to 3 years old. Nine of the companies answered that their vehicles were 11-15 years old. It is interesting to note, however, that only 1 company said that the vehicles in its fleet were older than 15 years.

![Figure 12. Average age of truck fleet](image)

4.1.3. Trucking operations

Monitoring empty miles

Freight efficiency can be determined through the amount of freight hauled per litre of fuel used. Dead mileage or empty miles is when a truck or trailer operates without carrying cargo. It is important to monitor empty miles to limit fuel wastage and increase freight efficiency. Figure 13 shows that more than half of the companies or 59% said that they monitor this, while 28 companies or 37% said otherwise. Three of the respondents did not provide an answer.

Out of the 44 companies that monitor their empty miles, 50% said that empty miles consist of 21 to 30% of their total trips while five companies (11%) said about 1 to 10% and 18 companies (39%) said 11 to 20% of their trips run empty.
Figure 13. Responses of companies when asked if they monitor empty miles

**Allocation of operating expenses**

Figure 14 shows that 48% or 36 of the respondents said that around 21 to 30% of their expenses is on fuel costs while 14 or 19% of the respondents said fuel expenses is around 31 to 40%. Seven respondents or 9% said that as high as 51% to 60% of their operational expenses goes to fuel costs. On the average, fuel costs accounts for about one-third of their operating expenses.

![Figure 14. Distribution of respondents based on how much they allocate for fuel costs out of the total operational costs](image)

On maintenance costs, 42 respondents or 56% said that around 11 to 20% of operational expenses is allotted to maintenance costs of their fleets, shown in Figure 15. This includes oil changes, brake maintenance, part replacements and repair, and repainting among others. Four respondents said that they spend up to 50% of operational expenses on maintenance. When asked further, they responded that some of the units in their fleets are old and require more repairs and rigid maintenance. One also indicated that they purchased cheap trucks with low quality which would need more repairs over time.
Depicted in Figure 16 are the responses of companies regarding salaries and other benefits for their employees. A total of 44 respondents (59%) said that up to 30% of their operational expenses goes to salaries of their employees while 17 respondents (23%) indicated that salaries of their employees cover up to 20% of their operational expenses.

Other operational expenses include registration fees, business permits, fees for truck stickers, *lagay* or under-the-table payments, overhead expenses, and food of employees, insurance, among others. Twenty-four of the respondents (32%) said that around 20% of their operational expenses go to the payments, and two of the respondents or 3% said that they go beyond 50% of their operational expenses due to unexpected payments especially when their trucks are apprehended for violating the truck ban or are towed.

Based on the results, fuel expenses consist of around 30% of the overall operational expenses, an equal share as salaries. Up to 20% goes to maintenance costs, and the same goes to other operational expenses.
Measures to maximise fuel efficiency

When asked about what measures to maximise fuel efficiency they are familiar with, 87% (65 out of 75) of the respondents said that they use different measures with the hope of reducing their expenses on fuel and increasing the longevity of their trucks. The remaining 13% said that they have not availed themselves of any measures to maximise fuel efficiency. When asked why these companies were not using measures, respondents gave answers ranging from a lack of technical knowledge on new technologies, to high costs for such measures, to a belief that the measures would not have much impact on fuel efficiency.

For the respondents who are using measures to maximise fuel efficiency, preventive maintenance tops the list with 61% of 65 respondents doing it followed by tire pressure monitoring at 57%, route planning and management at 56%, and wheel alignment checks at 51% as shown in Figure 17.

According to the respondents, the top four answers are the most practical measures to be employed without much additional investment. They also said that those measures are required to properly maintain their fleets. Some respondents shared that they are not familiar with some measures listed and are interested to know more about them.

On monitoring their fleet fuel efficiency, more than half or 39 companies (52%) said that they measure their fleet’s fuel efficiency, as shown in Figure 18. Some of the respondents use downloadable mobile applications that compute fuel usage and evaluate driving performance, while some of the respondents
use logbooks to monitor fuel consumption and manually compute against distance travelled. Some more advanced companies use scan gauges to keep track of everything from fuel cost to distance travelled. However, some truck owners said that this kind of technology requires additional investments.

Of the 39 companies that answered the question on measuring fuel-saving effectiveness of a new technology or feature that they invested in, 16 of the respondents said that they measure or monitor the effectiveness of a technology after investing while 24 of the respondents skipped the question. When asked about their motivation to measure, they said it was to know whether their investment is worth it and to know better technologies that they should invest more in. However, 35 of the respondents said that they do not measure the effectiveness of the technology or feature. Respondents that answered ‘no’ said that they are yet to design a monitoring and evaluation mechanism to evaluate the effectiveness of the measures they have invested in.

### 4.1.4. Vehicle fleet management and maintenance

The respondents were asked to rank the factors they consider when buying a truck with 1 as the highest priority and 8 as the least priority, as shown in Figure 19. Results show that cost of unit is the highest priority with an average ranking of 1.84 followed by fuel efficiency at 1.95 while companies ranked aftersales service and country of origin as their least priorities at 5.46 and 4.76, respectively.

When buying a truck, 32% said that they prioritise investing in a brand-new unit to ensure quality and to not have to worry about repairs for three years. About 27% of the respondents said that they usually invest in second-hand vehicles. Some of the respondents who prioritise buying second-hand said that they usually have mechanics to check whether the units are still in good condition or will only require minor repairs. Interestingly, 31% of the respondents said that they usually invest in a mix of brand new and second-hand units depending on the need or situation.
Figure 19. Average ranking of parameters considered when buying a truck (scale: 1=highest, 8=lowest)

When asked if the manufacturer’s claims regarding fuel efficiency affect their buying decision, 45% of respondents said yes while 16% said no and 39% had no answer. Some of the respondents who answered ‘yes’ said that they usually consider the manufacturer’s claim so that they will have a basis on whether they should invest more in the brand or not. They also said that they consider fuel efficiency features of the trucks for the long-term management of their fleet.

Respondents were asked how often they replace their units. Based on Figure 20, about 36 (48%) of companies said that they replace their trucks as needed. They said that it is more practical to invest when it is needed rather than having a fixed plan for investing in new units. Twenty companies (27%) said that they usually replace their units after 9-10 years. Those who answered that they replace units at 9-10 years are usually the ones who answered that they prefer buying brand new units with consideration of the brand, performance and durability.

Figure 20. Number of years considered by companies when re-fleeting/replacing units
Figure 21 shows that many respondents (63%) said that they have a fixed schedule for maintenance to increase the longevity of their units (either monthly, quarterly, semi-annually or annually). The respondents who also answered this question are usually the ones operating in long distances that answered that their areas of operations are provincial, regional or national scale. They said that they are motivated to have a fixed maintenance schedule for safety and reliability of their units while 11% said that they do not have fixed schedule for maintenance.

Figure 21. Frequency of inspection and maintenance of fleet

Other than those with fixed schedules of maintenance, 25% of the respondents said that they only check as needed. Definition of ‘as needed’ varied, with some saying this included a check before every trip, and others only in case of necessary repair or breakdowns. Others (12%) answered that they check the vehicles every week or every two months. Listed in Figure 22 are the types of maintenance measures normally performed by the respondents to their fleet.

Figure 22. Types of maintenance measures
4.1.5. Fuel-saving technologies and strategies

The respondents across the board showed high level of awareness about new technologies related to vehicles and fuels as shown in Figure 23. The main sources of information are through internet and television followed by newspapers and by word of mouth. Conferences and networking activities with organisations are at the bottom of the list. Some respondents shared during FGDs that there are not many locally accessible conferences for the freight sector and that trucking associations need to be more empowered and exposed to new technologies and strategies for fuel savings.

![Figure 23. Source of information on new vehicle and fuel technologies](image)

Results show, as listed in Table 12, that, among the main considerations of companies in making investment decisions on fuel-saving technologies and operational strategies, are costs in operations and durability of the technology for the adoption of new technologies. Among the strategies related to operations, they said that skills needed to adopt fuel-saving technology is equally important, otherwise, the initiative will be useless. On adoption of technologies, estimated fuel savings is more important than initial outlay.

Table 12. Considerations in making investment decisions on fuel-saving technologies and operational strategies

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Irrelevant</th>
<th>Not so important</th>
<th>Somewhat important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategies related to operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>1</td>
<td>1</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Estimated fuel consumption benefits</td>
<td></td>
<td></td>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td>Negative disruptions to overall operations</td>
<td></td>
<td>3</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>Time needed for implementing the strategy</td>
<td>1</td>
<td></td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>Manpower/skills needed</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Others (please specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adoption of technologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>1</td>
<td></td>
<td>4</td>
<td>30</td>
</tr>
</tbody>
</table>
About 60% of the respondents said that they calculate the payback period of their investment on fuel-saving technologies. They said that this helps them monitor if they will need to invest more on this type of technology. About 20% said that they do not calculate payback period while another 20% did not provide answers.

Figure 24 shows that those who monitor the payback period found out that it can be as short as 1-2 years for around 12% of them, with the most frequently reported period being 4-5 years. They also expressed importance in knowing the features of the technology to maximise the benefits, otherwise, payback period is much longer. About 34% of the companies did not answer because either they do not calculate this or are unsure of their calculations.

When asked how much they are willing to invest on fuel-saving technologies, 57% of the respondents said over PHP 200,000 as shown in Figure 25. This is quite a significant amount, indicating an openness to explore new technologies that eventually will yield them fuel savings. The breakdown of the responses is shown in Figure 23 with 19% saying up to PHP 50,000, 12% said up to PHP 100,000 and 7% said up to PHP 200,000 in fuel-saving technologies.

<table>
<thead>
<tr>
<th>Estimated fuel consumption benefits</th>
<th>8</th>
<th>37</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>Durability</td>
<td>5</td>
<td>46</td>
</tr>
<tr>
<td>After sales service</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Maintenance requirements (skills, etc..)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Warranties</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 24. Distribution of respondents based on their calculated payback period of investment
4.1.6. Emissions reporting

About half of the companies indicated that they have carbon emissions reporting mechanisms while 27% said they do not and 17% did not provide answers. It is interesting to note that 35% report and share their carbon emissions data externally while 17% keep it internally as detailed in Figure 26. While the LTO requires yearly carbon emission reporting to renew the truck registration, compliance and enforcement is quite weak so it is commendable that almost half of the respondents calculate and report emissions, while about 48% do not report their emissions data.

One trucking company in Palawan said that they do carbon emissions reporting internally by counting the fuel consumption of their fleets and computing its equivalent emissions.

On their awareness on any initiatives (either private or public) on the freight sector that address environmental issues, 48% of the respondents said that they are aware while 49% said they are not aware. When asked further, respondents said that the concept of green freight was new to them and
has never been discussed or mentioned before. They also added that they usually have local initiatives through locally-formed trucking associations in different areas in the country and may have promoted green freight-related measures but were not labelled as such.

4.1.7. Institutional framework and Green Freight Programme planning

Almost all respondents share the sentiment that better transport infrastructure is important to improve fuel efficiency and reduce GHG emissions from the freight sector. About 83% of the respondents also highlighted that closer collaboration between government and private sector would be critical to improve fuel efficiency and environmental performance of the trucking sector in the country. During one of the roundtable discussions held in Tuguegarao City in November 2017, it was mentioned that poor infrastructure affects the quality of goods and turnover of deliveries. Overloading is also widespread causing cyclic damage to roads in the mountainous areas. The heavy dependence on road transport since ports in Cagayan are underutilised, poses road safety concerns in traversing the steep terrain and sharp curves between Nueva Ecija and Nueva Vizcaya.

Another issue that was repeatedly raised in Palawan and Bacolod was the need to transport goods to the Port of Manila before it can be exported to other countries. While this is a common practice to consolidate cargo, island province-based exporters are looking for ways to lessen the holding time so as not to increase transport costs and ensure faster delivery of their cargo exports.

Many deliveries from Manila to the provinces return empty. The clients are charged two-way transport costs making the rates expensive. Some logistics companies like Air21 are offering discounted rates to haul back cargo from the provinces to lessen the empty miles. This initiative is beneficial to SMEs in the province who would normally balk at the high transport costs. A mechanism to consolidate cargo in the province facilitated by a good freight matching mechanism for supply and demand would be a win-win solution to help SMEs as well as decrease empty miles and fuel wastage.

Table 13 shows the responses of the companies when asked of their views about various strategies in improving the efficiency and environmental performance of the trucking sector.

Table 13. Responses of companies regarding improvement of efficiency and environmental performance of the trucking sector

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Number of companies</th>
<th>Irrelevant</th>
<th>Not so important</th>
<th>Somewhat important</th>
<th>Very important</th>
<th>Total responses</th>
<th>No. of respondents that did not respond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closer collaboration between government and private sector</td>
<td>72</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>62</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Government incentives for energy efficient fleets</td>
<td>56</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>43</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>
Increased access to reliable information about available technologies in the market  
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>0</th>
<th>18</th>
<th>30</th>
<th>48</th>
<th>27</th>
</tr>
</thead>
</table>

Better matching of freight supply and demand  
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>9</th>
<th>65</th>
<th>75</th>
<th>0</th>
</tr>
</thead>
</table>

Better transport infrastructure  
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>0</th>
<th>3</th>
<th>71</th>
<th>74</th>
<th>1</th>
</tr>
</thead>
</table>

Capacity building on green practices and technologies  
<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>0</th>
<th>15</th>
<th>35</th>
<th>50</th>
<th>25</th>
</tr>
</thead>
</table>

Note: Multiple answers were allowed in this question.

Other critical factors include the provision of government incentives for energy-efficient fleets, which was suggested to be discussed at future stakeholders’ consultation meetings between relevant government agencies and the private sector. The respondents also emphasised the need for capacity building on green practices and technologies which include eco-driving, and the use of technologies, among others. About 40% of the respondents said that it is ‘very important’ to have increased access to reliable information on available technologies in the market through expos, exhibits, and conferences.

Figure 27 shows that most of the respondents (69%) expressed their support to have a mechanism to monitor fuel consumption and improve their fleet’s fuel efficiency in return for incentives. While 17% of the respondents did not answer the question, none of the companies said that they are not supportive of the idea. This is important when seeking support from the government to assist in re-fleeting old trucks.

![Figure 27. Opinions regarding having a mechanism to monitor fuel consumption and improve fleet efficiency](image-url)
When asked about the assistance needed, more than half (52%) of the respondents answered that they need trainings to enhance technical capacity and know-how on different technologies, strategies and measures for green freight. It is notable that assistance for professional development is a higher priority than financial assistance. Around 40% of the respondents said that the government should provide tax incentives to increase the use of fuel-saving technologies. In addition, 38% said that the government should provide access to low-interest loans for these types of technologies and measures, and 24% that they should provide grants. Only 2% of the respondents said that they do not need any assistance from the government.

Overall, the respondents indicated that they are open to adopting green freight measures to increase fuel efficiency and enhance their environmental performance.

5. Recommendations and conclusion

Greening freight and logistics in the Philippines requires a multitude of efforts and resources among various stakeholders. As a start, this chapter provides 10 recommendations focused on increasing the efficiency of road freight transport. The recommended actions and are based on the assessment of existing institutional and regulatory frameworks within the sector, complemented by on-the-ground insights gathered from surveys and consultations. These actions aim to have a positive impact on improving connectivity, ensuring efficient flow of goods and services domestically and internationally, lowering the cost of production and delivery, and ultimately achieving reduction in GHG emissions from road freight transport.

While many of these actions need additional government effort to address the identified deficiencies in infrastructure, incentives, policies and data, some actions are already gaining momentum in the private sector. For example, a growing number of truckers see the value of using fuel-efficient trucks as they deem it to be more cost effective in the long run especially with the implementation of the Tax Reform for Acceleration and Inclusion (TRAIN) starting January 2018. Under this legislation, several products previously free of excise tax such as diesel fuel are now subject to a new levy – PHP 2.50 per
gallon in 2018, PHP 4.50 in 2019 and PHP 6.00 in 2020. The base cost of vehicles also increased, including that of trucks although they are exempted from excise tax.

### 5.1. Recommendations for greener freight and logistics in the Philippines

**Improve trucking data collection, monitoring and reporting framework**

Trucks account for only about 5% of total vehicle population but their share of GHG emissions is almost four times higher. Available data is limited and not disaggregated by parameters like truck purpose, size, or weight. With the government’s plan to introduce a re-fleeting programme for trucks, an inventory is necessary for coming up with an appropriate programme design. Below are suggested activities to facilitate this.

- Enhance data collection by the LTO on new and old vehicles. It is important to note that the current system does not disaggregate the fleet age of the trucks as well as the fuel technology of the fleet. This data layer can be added in the demographics of vehicles secured in the registration process. This can also help develop enhanced tax schemes or tax incentives for trucking companies.

- Create a Logistics Observatory that can consolidate data harvested from different agencies to serve as repository of a transport and logistics database. A sustainability plan should be established on how the database can be continuously built between agencies. For example, this could include enhancing data collection by including relevant data on the existing business registration system of DTI such as including number of fleets, type of trucks and technologies.

- Establish a feedback loop mechanism utilizing the data from the logistics observatory to design and establish dynamic green freight policies. This will enable progressive adoption of relevant and apt policies.

- Use improved freight transport data for monitoring, reporting and verification (MRV) of transport GHG emissions as an input to the overall GHG accounting framework. This can also be a tie up with the establishment of a motor vehicle inspection system (MVIS), which should be the basis for roadworthiness of vehicles before these are allowed for renewal of registration and franchise.

**Professionalise the logistics industry**

The logistics industry, including trucking operations, has good growth potential but it needs to formalise its workforce and operations. Truck drivers are well-compensated but only few companies have permanent drivers, most hire on a per-delivery basis. There is also a high potential for truck drivers to work abroad. For other workers in the industry, the skill set needed is less defined. To ensure a stable and professional workforce, the following steps are necessary:

- Skills mapping is necessary to identify and match appropriate skills to specific job requirements. This can be a collaborative effort with the Department of Labor and Employment.

- Partner with the Technical Skills and Education Authority (TESDA) and other institutions to provide continuing trainings on various topics such as eco-driving, truck maintenance, troubleshooting for truck mechanics, book keeping, etc.
– Include eco-driving in LTFRB’s Driver Academy curriculum to ensure all drivers gain the knowledge and know-how to drive efficiently.
– Encourage the private sector to strengthen their associations by offering joint trainings and seminars to update the skills of their employees as well as sharing of best practices.

**Improve truck efficiency**

According to NLMP estimates, up to 90% of trucks on the road in the Philippines are at least 15 years old. There is rampant importation of second-hand trucks since these are cheaper and spare parts are also readily available. Previous decisions in buying trucks are mainly based on cost. This will have to change as all vehicles purchased since January 1, 2018 must meet Euro IV emission standards, and truck operators may need improved access to finance to acquire Euro IV-compliant trucks. Overloading is another aspect that has to be minimised to improve truck efficiency. The government should facilitate the transition of modernising truck fleets through the following measures:

– Introduce fleet management mechanisms to institutionalise measures to increase truck efficiency (e.g. periodic maintenance, efficient vehicle use).
– Study policy measures to stimulate truck fleet renewal (e.g. a government-subsidised loan scheme with lower interest rates).
– Develop policy assessments in the areas of truck and fuel efficiency, including technology options (e.g. telematics, low resistance tyres, aerodynamics) as a basis for improved vehicle standards.
– Develop national standards for logistics that would enhance reliability and credibility of the trucking sector.
– Leverage financial support to assist in financing truck fleet renewal.
– Apply effective measures against overloading.

**Consolidate SMEs in the trucking industry**

The trucking industry is dominated by SMEs which are limited in their potential for scaling up operations. There are a few big players that have resources to operate nationwide, and it is important to facilitate complementary arrangements with local SMEs. To be efficient and remain competitive with big companies, consolidating SMEs is a viable option to avoid a fragmented market. Learning from the lessons of consolidating the public utility vehicle (PUV) operators, the following could be implemented:

– Develop a policy paper to explore the potential of promoting consolidation and/or forming trucking cooperatives.
– Improve the licensing system to facilitate consolidation within the industry, e.g. by prescribing the minimum number of trucks and average truck age.

**Reduce empty miles**

In the Philippines, truck trips that run empty contribute to high transport costs. Backhaul to Manila and other logistic centres are often empty, wasting fuel and money while SMEs in the provinces are not able to afford transport costs for their products to reach the market in urban centres. To reduce empty miles and fuel wastage, the following steps are recommended:
Conduct further research and analysis on empty trips, including an analysis of origin-destination (O-D) survey data and a study of empty trip patterns and the root causes on selected corridors.

Create a good freight matching mechanism, which could be in the form of an online platform for freight exchange, to encourage wider use of available logistics management solutions to coordinate supply and demand.

Implement pilot logistics management activities in certain areas and/or with several companies.

**Decongest Manila, improve the efficiency and performance of freight operations in other urban areas**

There is heavy traffic congestion in the roads of Metro Manila and other neighbouring cities. The Port of Manila and Ninoy Aquino International Airport are operating beyond their capacity while the Ports of Batangas and Subic as well as Clark International Airport are underutilised. Decision makers often lack relevant information and knowledge needed to make informed decisions on city logistics, e.g. setting truck bans in their locality. To remedy the situation, the following should be done:

- Conduct an assessment whether it is necessary to develop logistics centres in other urban areas. NLMP is also suggesting to use the Ports of Batangas and Subic as well as Clark International Airport.

- Conduct further assessment on feasibility of developing urban consolidation centres. This is important not only for efficiency gains but also to reduce empty miles.

- Conduct a study on potential dedicated truck routes.

- Coordinate truck bans and collection of passing through fees of different LGUs.

**Enhance multimodal freight transport connectivity**

Improving connectivity is a priority item in PDP 2017-2022. It is important since logistics support services are lacking in ports and airports. Also, upcoming rail projects can contribute in freight distribution. Increasing impact of transport in climate change would be minimised because of seamless multimodal freight transport. This recommendation is also included in the NLMP and the Philippine Multimodal Transportation and Logistics Industry Roadmap.

- Ensure freight transport connectivity is considered in the implementation of infrastructure projects included in the Build, Build, Build programme.

- Connectivity aspects should be included in the forthcoming National Transport Master Plan - design policies to address barriers in conjunction with developing a multimodal transport action plan.

- Conduct a pilot project to implement policies related to multimodal freight transport along freight corridors between major cities.

**Establish public-private-partnerships through Green Freight Programmes**

Freight transport companies in the Philippines are interested in environmentally friendly practices but still waiting for guidance from government. Some activities for cultivating a partnership approach to reduce logistics costs in an environment-friendly manner are as follows:
- Strengthen the close working relationship between the government and private sector.
- Fast-track the creation of DOTr Office of Multimodal Transport and Logistics Office which shall serve as the agency that will consolidate operation from all modes of transport.
- Build capacity and offer guidance regarding development of joint programmes to promote fuel efficiency, and integrate initiatives, actions and measures towards a more comprehensive and coherent approach to green freight and logistics.
- Establish a voluntary standard and label scheme to give recognition to companies who take action. Learn from best practices from other countries that can be adopted and localised in the Philippine context (e.g. green freight labelling and performance recognition programme).

### Participate in regional and international initiatives

Many participants in the consultation meetings from the private sector and LGUs asked about conferences and trainings that they can attend to keep up to date on the technology and policy trends in the industry. Their participation in such initiatives can increase their knowledge and enhance competitiveness. Such learning opportunities also provide room for sharing experiences concerning green freight policies, programmes and activities.

- Involve various stakeholders in developing a Green Freight Action Plan in the Philippines to ensure that all interests and inputs are incorporated and considered in the process.
- Encourage companies to join green freight initiatives and be exposed to green freight labelling programmes.
- Join international green freight networks to learn from best practices and be exposed to the progress made in other countries. This will also increase awareness and understanding on the experiences in other regions.

### Establish an interagency coordination for freight and logistics sector

Currently, there is an existing technical working group on Transport Infrastructure, Trade and Logistics (TITL). However, a more active partnership between agencies such as DOTr, DTI, DOE and DENR is imperative as each agency has a different role to play in improving the overall efficiency of the freight sector.

- Identify and delineate specific roles of each agency and identify activities and initiatives that require collaborative efforts in improving the overall efficiency of the sector.
- Widen the scope of the NLMP to include the roles of other agencies in improving the overall efficiency in the freight and logistics sector.

### 5.2. Conclusion

This assessment presented an overview of the freight and logistics sector in the Philippines and proposed recommendations to develop a Green Freight Programme in the country. In line with the Global Green Freight Action Plan, the programme of the Philippine government should be designed to help freight sector players (carriers and shippers) to modernise and optimise their operations in a way that saves fuel, cuts costs and reduces negative externalities such as GHG emissions. The programme should also facilitate collaboration between government agencies, private sector, and key
stakeholders. As experienced in other countries, a Green Freight Programme should include green freight actions and initiatives such as testing and recognition of technologies to increase efficiency, freight data collection for policy and industry development, performance benchmarking and reporting mechanisms from the different modes of freight transportation. An important element for such programme is to identify a funding mechanism to ensure consistency and sustainability of the programme. Most importantly, green freight targets should be clear from the onset so that the programme will set a strategic direction leading to the development of a roadmap for implementation. Ultimately, the Philippine Green Freight Programme should promote economic growth for enterprises, while minimizing the negative impact of the industry’s development to the environment and human well-being.

Annex: Freight assessment survey for trucking companies

FREIGHT ASSESSMENT SURVEY FOR TRUCKING COMPANIES
ESTABLISHING A CASE FOR THE DEVELOPMENT OF GREEN FREIGHT PROGRAMME IN THE PHILIPPINES

I. COMPANY PROFILE

1. Name of Company: ____________________________________________

2. Nature of business:
   - [ ] Trucking
   - [ ] Freight forwarder
   - [ ] Third party logistics
   - [ ] Other

3. Ownership
   - [ ] Sole proprietorship
   - [ ] Corporation
   - [ ] State-owned

4. Number of employees

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Mechanics</th>
<th>Administrative staff</th>
<th>Other employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Types of goods transported (check all that apply):
   - [ ] Agriculture
   - [ ] Construction materials
   - [ ] Processed agricultural products
   - [ ] Manufactured items
   - [ ] Consumer products
   - [ ] Minerals
   - [ ] Others, please specify: ____________________________________________

6. For companies with constant fixed service routes, what **routes** do you cover?

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Number of trips per month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

53
For companies with constantly varying routes, what **areas** do you cover? (For example, Metro Manila to any point of Luzon)

II. **FLEET CHARACTERISTICS**

1. Please specify the number of units and average gross weight of your fleet

   *Please refer to the guide sheet found at the end of the survey*

<table>
<thead>
<tr>
<th></th>
<th>Number of units</th>
<th>Average gross weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry, general goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerated goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatbed transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid or bulk goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refuse, recycling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refuse, recycling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Container Chassis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty or others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light commercial</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. What is the common transmission type in your fleet?
   - ☐ manual transmission
   - ☐ automated manual transmission
   - ☐ automatic torque-converter transmission

3. What is the average age of your fleet?
III. TRUCKING OPERATIONS

1. Do you know the empty miles percentage of your operations? If yes, kindly indicate the estimate.

<table>
<thead>
<tr>
<th>Yes</th>
<th>If yes, kindly indicate the %</th>
<th>No</th>
</tr>
</thead>
</table>

2. In terms of operational expenses, kindly provide the estimated % proportions for the following items:

<table>
<thead>
<tr>
<th>%</th>
<th>Fuel costs</th>
<th>Maintenance costs</th>
<th>Salaries</th>
<th>Others</th>
<th>100% TOTAL</th>
</tr>
</thead>
</table>

3. What measures do you use to maximise the fuel efficiency of your operations?

- None
- Use of technologies (please check all that apply)
  - Truck aerodynamics
  - Trailer aerodynamics
  - Low rolling resistance tires
  - Tire inflation systems
  - Idle reduction technology
  - Vehicle speed limiters
  - Low-viscosity oils and lubrication
  - Telematics and fleet management software
  - In-cab fuel efficiency coaching software
  - Engine efficiency technologies
  - Transmission technologies
  - Light-weighting via material substitution
  - Improved efficiency accessories
  - Improved efficiency axle configuration

- Strategies employed (please check all that apply)
Consider fuel efficiency as a key criterion for purchasing vehicles
Consistent monitoring of fuel efficiencies of vehicles and drivers
Conduct drivers' training (eco-driving)
Enforcement of company policies (e.g. idling regulations, etc…)
Tire pressure monitoring
Wheel alignment
Preventive maintenance
Route planning and management

☐ Others

\textit{Please specify:}

4. Does your company evaluate its fleet's fuel efficiency?
   ☐ Yes
   ☐ No

4.1 If yes, why? What are your motivations?

4.2 And, can you tell us more about how your company evaluates the fleet's efficiency (what devices, methods are used, how regular, etc)? If no, why not?

5. Do you measure the fuel-saving effectiveness of a new technology or feature?
   ☐ Yes
   ☐ No

If yes, how? If no, why not?

IV. VEHICLE FLEET MANAGEMENT AND MAINTENANCE

\begin{tabular}{|c|c|c|c|}
\hline
\textbf{Scale} (please check one for each parameter) & \textbf{Parameter} & \textbf{Rank in terms of priority} (1-highest priority, 2, 3…) \\
\hline
Irrelevant & Not so important & Somewhat important & Very important \\
\hline
Cost & & & \\
\hline
Fuel efficiency & & & \\
\hline
Emission standards & & & \\
\hline
Brand and model & & & \\
\hline
Country of origin & & & \\
\hline
Power & & & \\
\hline
Body Configuration & & & \\
\hline
After sales service & & & \\
\hline
\end{tabular}
1. What factors do you consider when buying a truck?
2. When you are purchasing a vehicle, do you usually:
   - Buy a new one
   - Buy a second-hand one.
   - Combined (brand new and second-hand). Please specify how many % of your fleet are:
     i. Brand new: _______
     ii. Locally-sourced: _______
3. How do you value manufacturer’s claims about the fuel efficiency of their products?
   - Yes
   - No
   - Others: Please explain further
4. After how many years do you normally replace your trucks?
   - After 3-4 years
   - After 5-6 years
   - After 7-8 years
   - After 9-10 years
   - As needed
   - Others
5. Do you have a fixed schedule for the maintenance for your vehicles?
   - Yes
   - No
6. How often are vehicles inspected and serviced?
   - Monthly
   - Quarterly
   - Semi-annually
   - Annually
   - As needed
   - Other
   
   Please specify
7. What types of maintenance do your vehicles normally undergo?
   - Oil change
   - Coolant change
   - Engine maintenance
   - Gauges
   - Warning lamps
   - Signal indicators
   - Washers
   - Wipers
   - Horn
V. **FUEL-SAVING TECHNOLOGIES AND STRATEGIES**

1. What are your sources of information for new technologies related to vehicles/fuels?
   - Newspaper
   - Internet
   - Conferences and other networking activities
   - Television
   - Organisation
   - Word of mouth
   - Others

2. What are your considerations in making investment decisions on fuel-saving technologies and operational strategies?

<table>
<thead>
<tr>
<th>Scale (please check one for each parameter)</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrelevant</td>
<td>Cost</td>
</tr>
<tr>
<td></td>
<td>Estimated fuel consumption benefits</td>
</tr>
<tr>
<td>Not so important</td>
<td>Negative disruptions to overall operations</td>
</tr>
<tr>
<td>Somewhat important</td>
<td>Time needed for implementing the strategy</td>
</tr>
<tr>
<td>Very important</td>
<td>Manpower/skills needed</td>
</tr>
<tr>
<td>Strategies related to operations</td>
<td>Others (please specify)</td>
</tr>
<tr>
<td>Adoption of technologies</td>
<td>Cost</td>
</tr>
<tr>
<td></td>
<td>Estimated fuel consumption benefits</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
</tr>
<tr>
<td></td>
<td>Durability</td>
</tr>
<tr>
<td></td>
<td>After sales service</td>
</tr>
</tbody>
</table>
3. Do you utilise a payback calculation to estimate how long it will take a technology to pay for itself in terms of fuel savings?
   - Yes
   - No

4. If so, what are typical upper bounds that you utilise for the payback time?
   - 1 year
   - 2 years
   - 3 years
   - 5 years
   - Others

5. What challenges and obstacles do you envision to encounter in using new technologies?
   - Knowledge on using these technologies
   - Sustainability (funding and manpower)
   - Lack of skills for maintenance
   - Others

6. How much additional capital are you willing to spend on upcoming fuel-saving technologies?

7. Are there any technologies that you know of that you’d like to see offered on new vehicles that are not available or are too expensive in the market?

VI. EMISSIONS REPORTING

1. Does your company have carbon emissions reporting mechanism?
   - Yes
   - No

2. How are your carbon emissions reported?
   - Internally
   - Externally
   - Not reported

3. Are you aware of any initiatives (either private or public) in your sector on environmental issues?
   - Yes
   - No
VII. **INSTITUTIONAL FRAMEWORK AND GREEN FREIGHT PROGRAMME PLANNING**

1. How do you feel about the following strategies, in terms of improving the efficiency, and environmental performance of the trucking sector in Philippines?

<table>
<thead>
<tr>
<th>Scale (please check one for each parameter)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrelevant</td>
<td>Not so important</td>
</tr>
<tr>
<td>Closer collaboration between government and private sector</td>
<td></td>
</tr>
<tr>
<td>Government incentives for energy efficient fleets</td>
<td></td>
</tr>
<tr>
<td>Increased access to reliable information about available technologies in the market</td>
<td></td>
</tr>
<tr>
<td>Better matching of freight supply and demand</td>
<td></td>
</tr>
<tr>
<td>Better transport infrastructure</td>
<td></td>
</tr>
<tr>
<td>Capacity building on green practices and technologies</td>
<td></td>
</tr>
</tbody>
</table>

2. How do you feel about a mechanism where the government partners with private trucking companies who are willing to monitor their fleet’s fuel consumption, and commit to improving their fleet’s efficiencies, in return, being provided incentives?

- I am supportive of the idea.
- I am not supportive of the idea.
- Not sure.

3. What support does your company need to increase the use of fuel-saving technologies?

- None
- Tax incentives
- Low interest loans
- Grants
- Technical know-how, trainings
- Others, please specify:
Reference for item 2.1 of the survey:

Types of Freight Trucks

List of tables

Table 1. Philippine LPI scores 2010-2016 (Source: World Bank, 2016)................................. 12
Table 2. LPI scores of select ASEAN countries (Source: World Bank, 2016)............................. 12
Table 3. Philippine ranking in infrastructure indicators in 2012-2013 and 2016-2017 editions* (Source: WEF Global Competitiveness Report) .................................................................................................................. 13
Table 4. Logistics cost as percentage of sales, by region (Source: World Bank, 2016)................ 13
Table 5. Number of registered vehicles (Source: DOTC and LTO, 2007-2013).......................... 16
Table 6. Average loading by type of truck (in kg) (Source: JICA, 2010) ........................................ 17
Table 7. Percentage empty miles (Source: Castro, n.d.)............................................................... 17
Table 8. Vehicle types and fuel consumption (Source: Cueto, et al., 2015)................................. 18
Table 9. Stakeholders in freight and logistics in the Philippines ................................................ 19
Table 10. Future policies and plans on freight and logistics ......................................................... 25
Table 11. Types of trucks used by type of goods ........................................................................ 33
Table 12. Considerations in making investment decisions on fuel-saving technologies and operational strategies .................................................................................................................. 41
Table 13. Responses of companies regarding improvement of efficiency and environmental performance of the trucking sector ....................................................................................... 44

List of figures

Figure 1. Percentage distribution of establishments by industry group (Source: ASPBI, 2014)........... 10
Figure 2. Distribution of employment of transport and storage establishments with total employment of 20 and over by industry group in the Philippines (Source: ASPBI, 2014)................................. 11
Figure 3. Value added for transportation and storage establishment with employment of 20 and over by industry group in the Philippines (Source: ASPBI 2014)........................................................................ 11
Figure 4. GHG emissions from energy sector for 1994 and 2000, in MtCO2e (Source: DENR and Manila Observatory, 2010).................................................................................................................... 15
Figure 5. Projected fuel consumption of the road transport sector (Source: ADB, 2017)................. 15
Figure 6. Projected emissions of the road transport sector (Source: ADB, 2017)............................ 16
Figure 7. Demographics of the green freight survey respondents ................................................ 29
Figure 8. Number of companies by nature of business ................................................................ 30
Figure 9. Types of goods transported .......................................................................................... 30
Figure 10. Truck delivery routes................................................................................................. 31
Figure 11. Number of employees

Figure 12. Average age of truck fleet

Figure 13. Responses of companies when asked if they monitor empty miles

Figure 14. Distribution of respondents based on how much they allocate for fuel costs out of the total operational costs

Figure 15. Distribution of respondents based on how much they allocate for maintenance costs out of the total operational costs

Figure 16. Distribution of respondents based on how much they allocate for salaries and compensation out of the total operational costs

Figure 17. Measures to maximise fuel efficiency

Figure 18. Monitoring fleet fuel efficiency

Figure 19. Average ranking of parameters considered when buying a truck (scale: 1-highest, 8-lowest)

Figure 20. Number of years considered by companies when re-fleeting/replacing units

Figure 21. Frequency of inspection and maintenance of fleet

Figure 22. Types of maintenance measures

Figure 23. Source of information on new vehicle and fuel technologies

Figure 24. Distribution of respondents based on their calculated payback period of investment

Figure 25. Amount (in PHP) the companies are willing to invest on fuel-saving technologies

Figure 26. Carbon emissions reporting

Figure 27. Opinions regarding having a mechanism to monitor fuel consumption and improve fleet efficiency

Figure 28. Assistance needed by companies
References

Almonte, L. (2014, October 9). LTFRB approves more than 1600 truck franchise applications. Retrieved from PortCalls Asia: https://www.portcalls.com/ltfrb-approves-more-than-1600-truck-franchise-applications/


LTO. (2013). Registered motor vehicles by classification by region.


