



# **Trucking Services in Belize, Central America, and the Dominican Republic: Performance Analysis and Policy Recommendations**

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Distances in Central America are short and cargo volumes are small to build a dense network of short sea shipping. Furthermore, there is no transnational railway network. This gives trucking services a key role in international transport. This preliminary study characterizes trucking services in Belize, Central America and the Dominican Republic and concludes with policy recommendations to improve performance.

This report was edited by Pablo Guerrero and Julieta Abad, from the Transport Division, Infrastructure and Environment Sector, based on a document prepared by the Advanced Logistics Group (ALG).



# Trucking in Belize, Central America and the Dominican Republic: Performance Analysis and Policy Recommendations



Think piece

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Transport Division,  
Infrastructure and Environment Sector

FEBRUARY 2013  
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## Executive summary

This study is part of a series of actions promoted by the Inter-American Development Bank (IDB) in the area of freight logistics in Central America, Belize, and the Dominican Republic. It encompasses a preliminary analysis of trucking, which will be updated as the data collection process proceeds.

International freight transport within Central America faces two complex challenges: distances are short and cargo volumes are small to consolidate a dense network of short sea shipping. But the territory is extensive and the road network is not developed enough to efficiently serve the freight market. Furthermore, no transnational railroad network exists. This context gives trucking a key role in international transport.

The importance of trucking in freight transport in the countries studied makes it necessary to identify the areas that require decisive public policy to improve its performance.

The following points list the main conclusions of the diagnosis of the sector, as laid out in this report:

- **Regulatory framework.** National regulations show little progress in training requirements for truck drivers, which results in a low professionalization of the sector and quality of service. Another relevant aspect is that government efforts to control weight are not effective, according to carriers. Access to national markets by foreign carriers is restricted by protectionist measures, which make it difficult to acquire return freight and drive up tariffs.
- **Activity, productivity, and efficiency.** In El Salvador and Nicaragua trucking services have a high share in long-distance international trade: the proportion of the trucking fleet with respect to the total (57.1% and 43.1%) is much higher than in Guatemala and Costa Rica (20.5% and 15.3%), where sea shipping is more important for international trade. The productivity of fleets is similar in other Central American countries and inferior in the Dominican

Republic, in part because of geographical limitations. In terms of efficiency, private fleets and courier service operators with national reach are more productive in all countries than transport companies dedicated to import and export, whose productivity is tied to that of logistics hubs, like ports and border crossings. Thus, the inefficiency of the logistics hub (loading, inspection, and unloading) is transferred to the next link, trucking.

- **Business organization and commercialization.** The corporatization of the sector is low considering its importance in the regional logistics chain. The scarce supply of resources and management tools, along with the atomization of the market and low capacity of the business sector, highlight the need to overhaul current conditions of management and sectoral regulation. Smaller business owners do not have enough instruments to measure their costs. The lack of large-scale joint purchasing mechanisms, added to suboptimal business practices, make some segments of trucking the weakest link in the regional logistics chain.

- **Consumption and impacts.** The diesel distributed in the countries studied has a sulfur content greater than 2,000 parts per million, close to an average of 5,000 ppm. Fuels with a high sulfur content lower the working lifespan of more modern engines, which is why business owners in the sector prefer older units that better resist the high sulfur of Central American diesel.

- **Average cost of freight.** Though the tariff per km varies slightly with distance, the average values are similar for the whole region, varying between a range of 1.21 and 1.85 USD/km. The case of the Dominican Republic stands out with an average price of 4.75 USD/km, more than three times the average of Mesoamerica. Among the countries of Central America, Panama lies on the high end of the price range, while Nicaragua, Honduras, and El Salvador are on the low end with costs between 1.20 y 1.30 USD/km.

- **Cargo security.** Supply chain security is essential to companies' competitiveness. This aspect is worrying in some countries under the



study. According to those interviewed, the costs of security measures can reach up to 22% of the value of freight. Contracting insurance on cargo is an increasing practice.

- **Transport facilitation over land borders.**

The increase in volume of transport affects border crossings, which are not designed for such a quantity of vehicles. The lack of integration and exchange of information between authorities extends the time necessary to cross a border. Against this backdrop, the International Goods Customs Transit project is being implemented. However, a large part of the customs network continues to apply procedures that predate this project. Furthermore, the lack of knowledge of customs staff about legal regulations and their procedural aspects leads to a discretionary implementation.

The report proposes the following policy recommendations to improve the performance of trucking in the countries analyzed:

- Standardize regulations related to trucking at the regional level, especially with regards to:

- *Weight and size.* The Central American Agreement on Road Circulation defines and limits both. However, on occasion the national regulations vary. It is necessary that all limits defined in the agreement are applied consistently, and compliance ensured through national regulations.

- *Technical and mechanical inspections and minimum operating conditions for vehicles.* Though national regulations exist in this area, technical conditions and inspection periods should be standardized. In 2009 the SIECA drafted a policy manual for the mechanical inspection of vehicles according to the regulations of the time, but compliance with the manual is not mandatory.

- *Licenses and authorization of drivers.* There are considerable differences in the minimum age and experience required to obtain licenses in each country, which impedes progress toward world-class freight transport services that, in time, will generate the conditions to provide value-added logistics services.

- *Control of maximum driving hours.* As the sector organizes itself to face the challenges of the expansion of the Panama Canal, it will be important to monitor the maximum work day for drivers and minimum required working conditions.

- *Vehicles with greater capacity.* The use of b-doubles is increasing in the region, mainly in Guatemala and the Dominican Republic. This type of vehicle requires specific conditions of infrastructure, regulations and controls, and security. Though they may improve some load and productivity indicators, their operation requires a solid regulatory framework.

- Update and apply international ground transport reciprocity agreements:

- *Reach regional agreements* on access to national markets for foreign fleets that would improve load factors and reduce the number of empty trips.

- *Discussion and dialogue* with unions, freight producers, the public sector, and carriers to generate integral policy agreements on the modernization of the sector.

- Improve efficiency and productivity of units in the fleet:

- *Create a regional network* of truck centers in the main freight corridors of Central America and the Dominican Republic.

- *Implement a regional freight pool* to increase fleets' productivity and efficiency in facilitating return cargo, and foster fleet integrated management, which would help reduce costs and strengthen sector competitiveness.

- *Define, implement, and monitor indicators* for time spent loading, inspecting, and unloading, controlling total logistical times for transport and down time per unit.

- *Professionalize the sector* through business training courses to improve management of SMEs, and training for drivers.

- Develop infrastructure to support trucking services in border crossings:

- *Parking lots* for heavy vehicles tailored to the traffic volumes of each crossing.
- *Adequate facilities* to provide services to drivers.
- *Creation of specific lanes* for the transit of international goods.
- *Double lane access to border crossings*, adapted to traffic volumes of each crossing.
- *Inter-border road infrastructure*, especially of the bi-national bridges in Paso Guabito between Panama and Costa Rica and Pedro Alvarado-La Hachadura between Guatemala and El Salvador.
- Improve and optimize processes in border crossings.
  - Despite having made a great effort to implement side-by-side and integrated customs in many border crossings in the region, it is necessary to continue this type of integration in land crossings with the greatest cargo flows:
    - Panama-Costa Rica: Paso Canoas
    - Costa Rica-Nicaragua: Peñas Blancas
    - Nicaragua-Honduras: Guasaule and Las Manos
    - Honduras-El Salvador: El Poy and El Amatillo
    - Honduras-Guatemala: El Florido
    - Guatemala-Belize: Benque Viejo-Melchor de Mencos
    - Guatemala-El Salvador: Pedro Alvarado-La Hachadura
    - Guatemala-Mexico: Tecún Uman
    - Belize-Mexico: Santa Elena-Chetumal
  - *Reduce crossing times*, among other actions, through the alignment of customs service hours and other migration organisms: institutions in charge of phytosanitary permits, etc.
  - *Improve training of staff* in charge of border crossing administration.
  - Improve and optimize infrastructure conditions in international trade nodes (ports and land crossings):
    - *Authorized zones for parking and driver services facilities* in ports. Provide support in-  
 frastructure for trucking services in adjacent areas to port facilities and in perimeter zones to large urban areas, usually subject to hourly restrictions for heavy vehicle circulation.
    - *Create a regional traffic monitoring system*: Carry out traffic studies that establish a hierarchy in the Mesoamerican road network, correctly sizing the network backbone and the feeder network.
    - Improve security and minimize the environmental impact of trucking.
    - *Optimize en route conditions with information systems* that allow for real-time monitoring of freight, its traceability, and visibility.
    - *Develop secure areas* to minimize security incidents for carriers, principally related to minor equipment robberies (computers, fuel, replacement parts, etc.).
    - *Progressively introduce low-sulfur fuels* (DLS; 50-500 parts per million) to facilitate the renovation of fleets and reduce environmental impact. Currently lower quality fuels are used, with up to 5,000 ppm of sulfur, which impedes the use of new engines. Engines are modified to use with fuel sold in the region, while some large companies import their own fuel.
    - *Incentives to recycle vehicle parts and consumables* like batteries, tires, and oil.
    - *Encourage modernization, repowering, and scrapping* of the fleet, implementing functional ages and maximum use times.

## Introduction and objectives

This study is part of a series of actions promoted by the Inter-American Development Bank (IDB) for freight logistics in Central America, Belize, and the Dominican Republic. It encompasses a preliminary analysis of trucking, which will be updated as the ongoing data collection process proceeds.

Trucking services have a dominant position in intra-regional trade movements, motivated by a reduced competition with other modes of transport. The non-existence of a transnational railroad network or consolidated alternatives for short sea shipping leaves roads as the only available option for freight transport within the region.

The poor performance of the trucking sector, added to possible future threats, make it necessary to identify the areas that require assertive public policy to boost efficiency.

This document analyzes trucking performance based on six main themes: the regulatory framework, vehicle fleets, activity level, productivity and efficiency, business organizations and commercialization, and consumption and impacts.

In addition, a series of recommendations are proposed based on the main obstacles and threats identified, which are classified according to the themes mentioned in the previous paragraph. Policy recommendations are structured around three themes:

- Improving the efficiency and productivity of the service.
- Improving security and minimizing energy consumption and environmental impact.
- Protecting road infrastructure.

## Regional trucking

### *Regulatory framework and vehicle fleet*

In the region as a whole, the greatest development in standards and regulations is structured around national ground transport laws, circulation codes, and size and weight regulations, which all countries have. Table 1 summarizes the regulatory frameworks and laws of the countries analyzed, characterized by nine dimensions. Levels of progress are unequal. El Salvador is the country with the most extensive regulatory framework, along with Costa Rica, Honduras, and Nicaragua. However, part of this regulatory framework is obsolete because in some cases it dates from the 1950s and 1960s.

The row corresponding to regulations for driver training shows a limited degree of development, which translates to a general perception of a lack of training and professionalization in the sector and low levels of corporatization and innovation in the service.

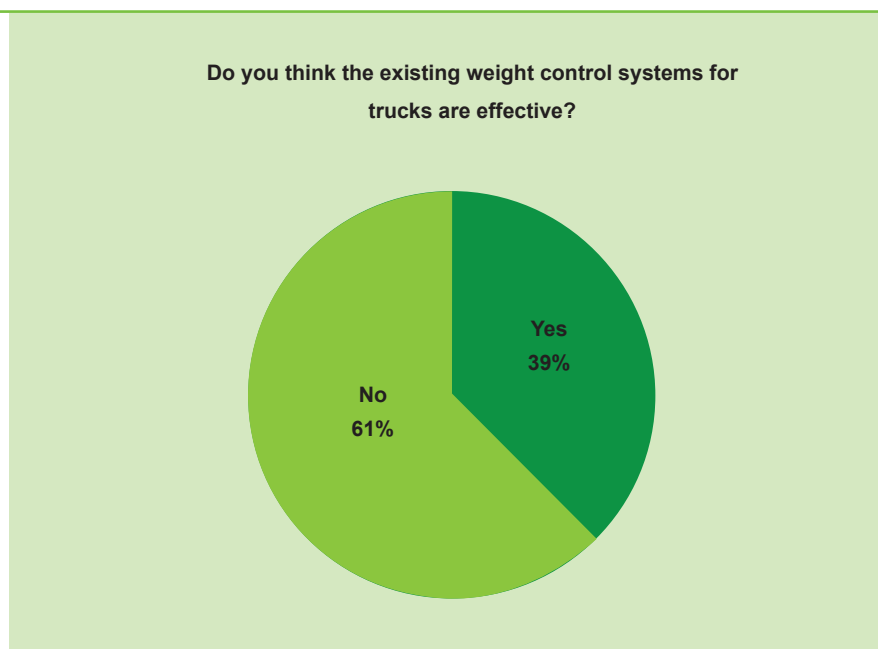
In relation to size and weight regulations, the general perception of operators in the sector is that government weight control measures are not effective, making it necessary to improve current systems. The same perception is reflected in the partial results of the integrated questionnaire.

Table 1: Legislation and national regulations

	BZ	CR	SV	GT	HN	NI	PA	DO
1. Legislation/transport regulations	✓	✓	✓	✓	✓	✓	✓	✓
2. Size and weight regulations		✓	✓	✓	✓	✓	✓	✓
3. Regulations on special permits for transport of goods (refrigerated, dangerous goods, etc.)		✓	✓		✓	✓	✓	
4. Regulations for vehicle conditions to undertake activity		✓	✓					
5. Circulation code	✓	✓	✓	✓	✓	✓	✓	✓
6. Price-fixing regulations						✓	✓	
7. Regulations related to access to the activity/market			✓			✓	✓	
8. Legal aspects on training drivers (operator training)								
9. Other regulations (related to limited use of infrastructure, etc.)		✓		✓			✓	

Source: ALG. Under review.

Figure 1: Perception of the effectiveness of weight control systems for trucks






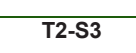





Source: ALG study based on interviews in Central America, Belize, and the Dominican Republic. Under review.

Table 2 summarizes the regulation of maximum tonnage. Highlighted cells represent values that do not correspond to the regulations established by the Central American Agreement on Road Circulation, which unifies trucking criteria, looking at aspects related to vehicle weight and size. The values established in the agreement are shadowed in gray in the table. Belize and the Dominican Republic, not included in the agreement, are presented separately. Only El Salvador has applied the provisions in the modification protocol of the

Central American Agreement on Road Circulation to its regulations. The rest of the countries show differences with respect to the agreement, though these are only significant in the case of Costa Rica and Panama. The Dominican Republic maintains weight regulations related to the length of heavy vehicles (not linked to axle loading) which complicates controls.

Table 2: Maximum weight permitted in the region per vehicle type (tons)

Vehicle type	Element	Regional	CR	SV	GT	HN	NI	PA	DO
 <b>C2</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	4.0	9.0
	Tractor axle	10.0	10.0	10.0	10.0	8.0	9.0	10.0	9.0
	Total	15.0	16.0	15.0	15.5	-	-	-	-
 <b>C3</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	16.5	15.0	16.5	16.5	16.0	16.0	16.4	14.5
	Total	21.5	21.0	21.5	22.0	-	-	-	-
 <b>C4</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	20.0	23.0	20.0	20.0	20.0	20.0	22.0	-
	Total	25.0	29.0	25.0	25.0	-	-	-	-
 <b>T2-S1</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	9.0	10.0	9.0	9.0	8.0	9.0	10.0	9.0
	Trailing axle	9.0	10.0	9.0	9.0	8.0	9.0	10.0	9.0
	Total	23.0	26.0	23.0	23.0	-	-	-	19.5
 <b>T2-S2</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	9.0	10.0	9.0	9.0	8.0	9.0	10.0	9.0
	Trailing axle	16.0	16.5	16.0	16.0	16.0	16.0	16.4	14.5
	Total	30.0	32.5	30.0	30.0	-	-	-	27.3
 <b>T2-S3</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	9.0	10.0	9.0	9.0	8.0	9.0	10.0	9.0
	Trailing axle	20.0	23.0	20.0	20.0	20.0	20.0	22.0	-
	Total	34.0	39.0	34.0	34.0	-	-	-	30.1
 <b>T3-S1</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	16.0	16.5	16.0	16.0	16.0	16.0	16.4	14.5
	Trailing axle	9.0	10.0	9.0	9.0	8.0	9.0	10.0	9.0
	Total	30.0	32.5	30.0	30.0	-	-	-	30.1
 <b>T3-S2</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	16.0	16.5	16.0	16.0	16.0	16.0	16.4	14.5
	Trailing axle	16.0	16.5	16.0	16.0	16.0	16.0	16.4	14.5
	Total	37.0	39.0	37.0	37.0	-	-	-	30.1
 <b>T3-S3</b>	Front axle	5.0	5.0	5.0	5.0	5.0	5.0	5.5	9.0
	Tractor axle	16.0	16.5	16.0	16.0	16.0	16.0	16.4	14.5
	Trailing axle	20.0	23.0	20.0	20.0	20.0	20.0	22.0	-
	Total	41.0	45.5	41.0	41.0	-	-	-	-
<b>B-double</b>		No	Yes	No	Yes	-	-	Yes	No

Source: own analysis based on official sources. Under review.

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Regarding regulations for access to national markets, the Multilateral Treaty of Free Trade and Central American Economic Integration (1958) stipulates that companies in signatory countries that provide goods transport services should receive national treatment in the territories of the other states. However, protectionist or preferential measures for national companies makes access to foreign markets difficult, minimizing the practical possibilities of capturing return freight in transnational services. The impossibility of

capturing return freight and innovating in the integral management of freight transport services reduces the general competitiveness of the Central American logistical system, and makes the transportation of goods more expensive. An example is the customs requirements of the Colon Free Zone in Panama, which requires accreditation for access. These practices prompt reciprocity measures on the part of affected countries.

Table 3: Fleets, classification, and average ages in the region

	CR (2011)	GT (2010)	HN (2012)	NI (2010)	PA (2010)	DO (2010)
<b>Total shipping vehicles</b>	1,059,076	2,051,945	1,229,004	406,330	464,040	2,917,573
<b>Heavy vehicles (whole trucks and tractor units)</b>	33,959	121,753	19,958*	38,240	25,730	355,337
<b>Light vehicles (vans and pick-ups)</b>	154,062	225,318	-	134,960	79,044	
<b>Semi-trailers</b>	-	18,954	-	-	8,742	-
<b>Average year for total fleet</b>	-	1997	1994	-	-	-
<b>Average year for heavy load</b>	-	-	-	1989	1998	-
<b>Average year for light load</b>	-	-	-	1996	1998	-
<b>Average year for semi-trailers</b>	-	-	-	1986	1992	-
<b>Cargo fleet / total</b>	15.08%	14.47%	-	29.89%	22.58%	10.86%

Source: own analysis based on official sources. No official data have been identified for Belize and El Salvador. The year indicated in the header corresponds to the most recent information available in each country.

\* Indicates only the number of tractor units. Does not include trucks.

## B-doubles

The operation of B-doubles or road trains in the region is in its beginning stages. The countries where greater use of this kind of vehicle is detected are Guatemala and the Dominican Republic.

The limited national and regional development of size and weight regulation for this type of vehicle has created challenges to their actual use. Currently, Costa Rica, Guatemala and Panama are the only countries in the region that take the use of this type of vehicle into account in their weight and size regulations, limiting their maximum length to 23.5 meters.

In addition, road infrastructure in the region is not designed to facilitate the operation of B-doubles; the main impediment to their correct operation stems from the layout of the networks.

However, the use of b-doubles is common in private fleets and in the routes between farms and mills for crops like sugar cane. In private fleets, the appearance of this mode of transport aims at reducing operating costs. In the case of agricultural products it results from the way in which transport services are paid for, usually proportional to the weight transported, which incentivizes carriers to operate with B-doubles.



### Activity, productivity, and efficiency

Regional and cross-border trucking services travel distances that are on average greater than national overland transport services. Given that the origin or destination of freight in a cross-border service tends to be a logistics hub in a foreign country, the average distance travelled is greater than in national services. In the same way, freight moved to and from airport hubs tends to cover shorter distances by road, given the usual proximity of these hubs to major centers of production and consumption.




In El Salvador and Nicaragua for example, trucking has a high participation in long distance overland trade. This dependence on overland transport translates to a greater proportion of the trucking fleet (43.1%) as compared to the total. The inverse situation occurs in Guatemala and Costa Rica, where sea shipping is more important to foreign trade. This occurs in part as evidence of the focus on exportation in these countries, which requires

long distance sea shipping, as well as because of the geographical conditions of localization and commercial dynamism in their neighbors.

Table 4 shows the distribution of total foreign trade freight moved in each country by mode of transport, obtained from the foreign trade databases.

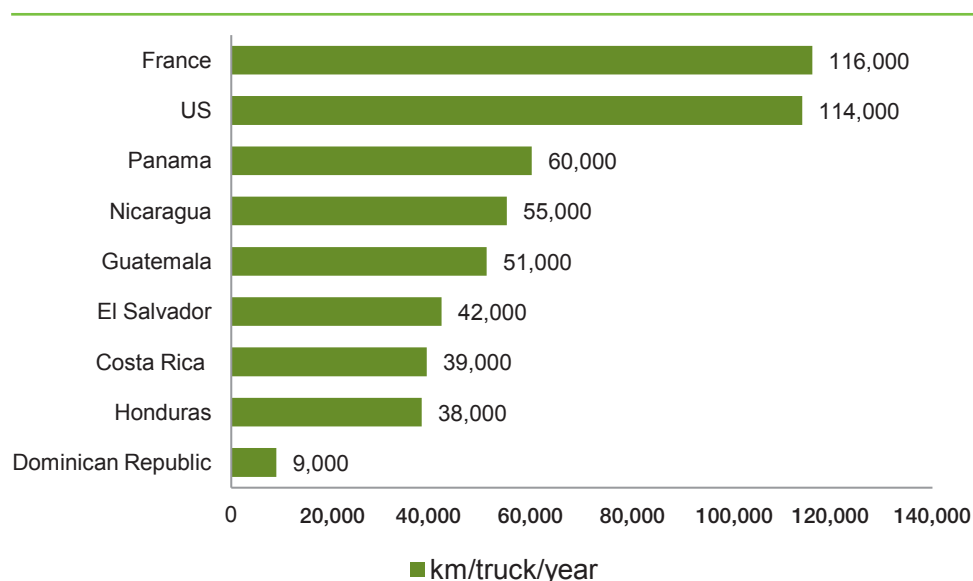
There are many factors that influence the productivity and efficiency of trucking. Fleet productivity (measured by kilometers travelled annually per unit per year) allows the identification of average distances travelled and the determination of average operating conditions in a country. At the national level, this indicator is similar in the countries of Central America (see Figure 2). However, the Dominican Republic shows inferior results in comparison to the averages registered in other countries, in part caused by differences in tariffs that allow the activity to be profitable even with lower mileage. Geographical limits also influence transport activity on the island.

Table 4: Import and export freight according to mode of transport in the region (2011)

	CR	SV	GT	HN	NI	PA
 <b>Weight (mill.t)</b>	2.58	6.22	3.83	1.45	2.42	3.45
<b>% of total</b>	15.3%	57.1%	20.5%	18.0%	43.1%	33.0%
 <b>Weight (mill.t)</b>	14.21	4.64	14.71	6.55	3.18	6.89
<b>% of total</b>	84.2%	42.6%	78.9%	81.4%	56.7%	66.0%
 <b>Weight (mill.t)</b>	0.09	0.03	0.11	0.05	0.01	0.11
<b>% of total</b>	0.5%	0.2%	0.6%	0.6%	0.3%	1.1%

Source: own analysis.

Figure 2: Average annual kilometers travelled per unit



Source: analysis ALG and IDB based on interviews carried out between July 2012 and February 2013. Question 23 of the questionnaire on trucking performance. IDB 2013.

### Freight pool

A freight pool is a virtual meeting point between the supply and demand of transport and logistics services, usually realized with the help of electronic means. In general, it consists of an informational communication platform, which contains a database that updates supply and demand for transport and logistics services in real time. The user pays a monthly use fee, or can opt in to various subscription plans: weekly, monthly, annually, etc.

The objectives of a freight pool are to promote contact between supply and demand of logistics services, optimize movements, and reduce the costs of users and service providers, as well as promoting the commercialization of new value-added logistics services. Also, it aims to provide technical assistance in the formalization of contracts.

In Central America, Belize, and the Dominican Republic, private fleets and logistics operators that specialize in courier services with national reach show higher productivity than transport companies dedicated to freight import and export. In this last case, the productivity of units is tied to the productivity of logistics hubs, like ports and border crossings. Thus inefficiencies in the operation of the logistics hub (loading, inspection, and unloading) are transferred to the next link, in this case trucking. On the contrary, private fleets and couriers, with operations subject to scheduling and without the influence of third-party performance in logistics hubs, can optimally size their fleets to maximize unit productivity.

The lack of mechanisms to improve the supply and demand of trucking services by connecting freight providers and carriers in an efficient manner for adequate fleet management, which in turn allow for the reduction of empty trips (improving load factors), are in large part responsible for the average costs of transport in the region.

There also exists a widespread practice in the region to protect the national trucking sector before transport fleets from neighboring countries. All current legal frameworks restrict practices known as “internal cabotage”, consisting of a carrier in



foreign territory taking advantage of the return route to carry out a freight service within said territory. In an open and competitive market, regulatory restrictions and the absence of information systems for better fleet management cause carriers in foreign territory, intending to pick up return cargo in order to profit from the route, to offer lower prices than local carriers. This situation often leads to tariffs set below operating costs, pushing local carriers to lower their margins in order to be competitive.

Another factor that makes more efficient returns difficult is the zero-sum game of flows between territories, which increases waiting times for carriers to acquire cargo in some destinations with an imbalance between production and consumption.

### Business organization and commercialization

This section evaluates the channels used for the commercialization of services, as well as the dynamic of business organization in unions and transport trade associations.

#### Trade associations and business training

The role played by associations and unions in trucking sector performance is important on several levels:

- At the operational level, one of the main functions of carrier associations is the management of customs procedures, such as registering companies in the Central American Economic Integration Secretariat (SIECA), one of the requirements to operate international services, or to provide the seals for freight under the international transit regime;
- The associations and unions play an important role in the commercialization of services, acting as intermediaries between transport companies and potential clients.

In the Dominican Republic and the Colon Free Zone in Panama, associations and unions also play a role in the protection of local markets, because of access restrictions to foreign carriers.

It should be noted that the corporatization of the sector is moderate compared to its importance in the regional logistics chain. The scarce supply of

resources and management tools, along with the marked atomization of the market and the low training in the business sector, make it necessary to overhaul current conditions of management and sectoral regulation. The smallest business owners do not have sufficient tools to effectively monitor their companies' cost structure, and they set fees that occasionally do not cover operating or asset depreciation costs. The absence of joint purchasing mechanisms on a large scale (for items such as fuel and parts), added to non-optimal business practices and inefficient management conditions, mean that in some segments trucking is the weakest link in the whole regional logistics chain.

### Consumption and impacts

Fuel consumption is related to the average age and maintenance of vehicles. Consumption levels directly influence the service's operating costs. That is why the price of diesel, the most commonly used fuel in the trucking sector, is so important.

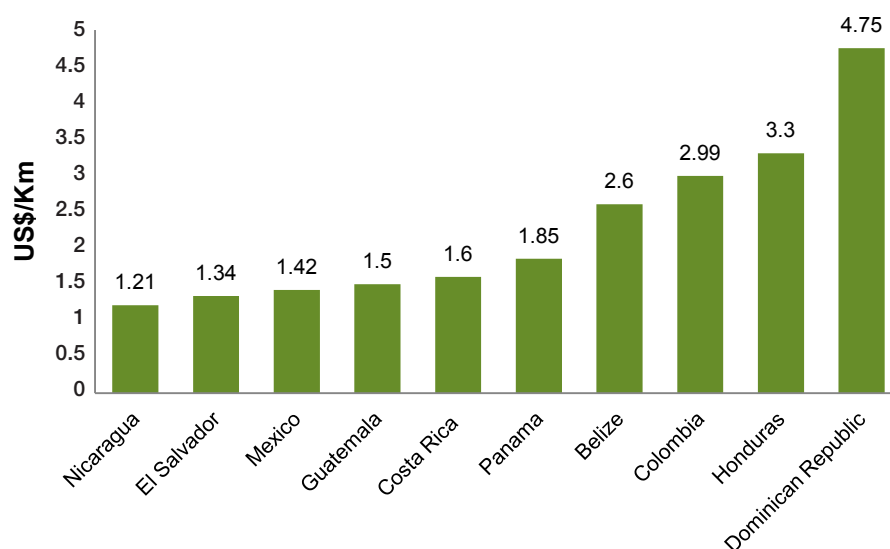
Table 5: Average price of regular diesel fuel. 2010

	BZ	CR	GT	HN	NI	PA	RD	SV
Price (USD/liter)	0.98	0.97	0.85	0.92	0.99	0.77	1.03	0.89

Source: German Agency for International Cooperation.

The quality of fuel constrains the potential of fleet renewal in Central America and the Dominican Republic. Currently, the diesel distributed in the countries studied has a sulfur content higher than 2,000 ppm (parts per million) and nears an average of 5,000 ppm. Only in Costa Rica diesel sulfur content controls applied, containing between 16 and 50 ppm. This hinders the introduction of more efficient and environmentally-friendly engines. Fuels with high sulfur content lower the usable life of more modern engines, which is why business owners in the sector preferentially choose older units that are not as seriously affected mechanically by Central American diesel sulfur content.

Figure 3: Average freight price for a 40 ft container (USD/km)



Source: own analysis based on data from the IDB Freight Transport and Logistics Yearbook

### Average cost of freight

Figure 3 shows the average cost of freight for a 40 ft container. Though the cost per km varies slightly with distance, the average values are similar in the whole region, ranging between 1.21 and 1.85 USD/km.

The case of the Dominican Republic stands out, with an average freight price of 4.75 USD/km, more than three times higher than the average price in Mesoamerica. Among the countries of Central America, Panama lies at the high end of the price range, while Nicaragua, Honduras, and El Salvador are on the low end with prices between 1.20 and 1.30 USD/km.

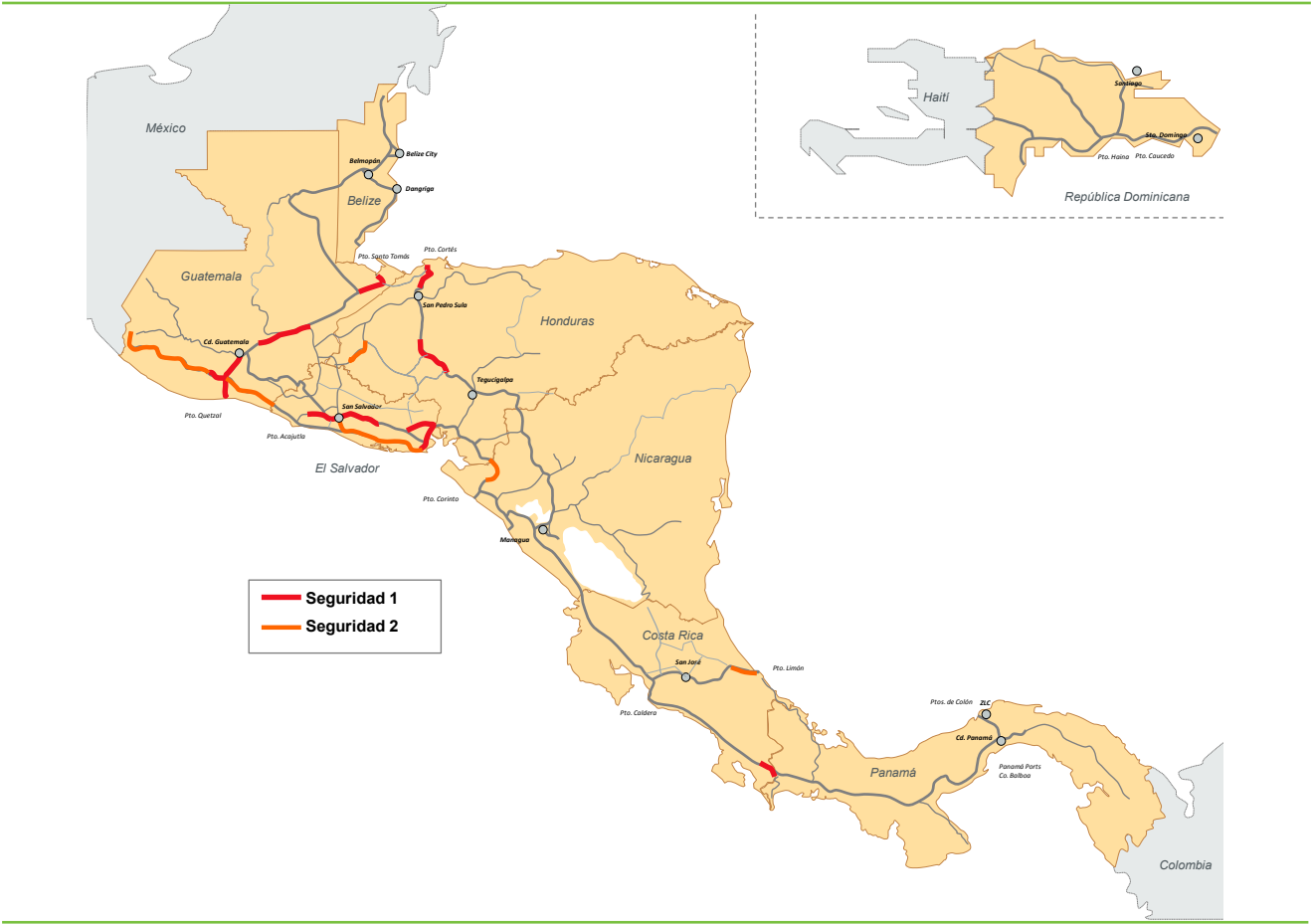
### Cargo security

The security of the logistics chain is fundamental to the competitiveness of companies that trade in both national and international markets. This aspect is worrying in some countries, and directly affects drivers and cargo. Based on interviews, Map 1 shows areas with frequent incidents of robbery or assault (in red) and areas where occasional incidents occur (in orange).

Generally, the risk of assault is greater in areas where vehicles must reduce their speed, and increases according to the type of cargo, affecting routes where higher value-added products are transported.

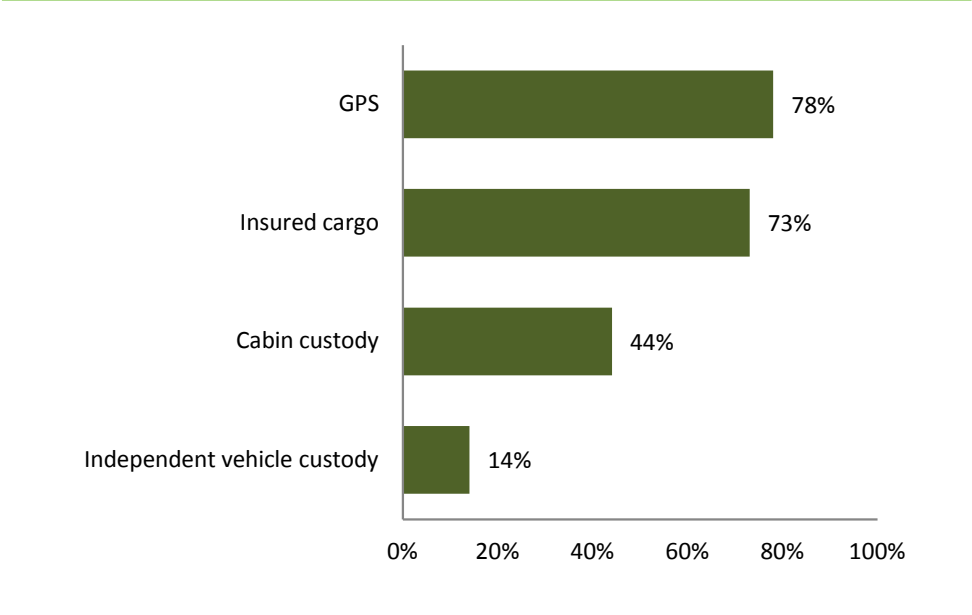
Figure 4 reflects the measures taken by carriers to improve cargo security, represented as a percentage of freight transported using security measures. According to those interviewed, the cost of security measures can reach up to 22% of freight value.

Map 1: Carrier perceptions of risky areas in the road network



*Source:* own analysis based on interviews and the Program for the Design and Application of Common Central American Policies (ADAPCCA). Map under review.

Figure 4: Security measures adopted for trucking.  
Percentage of total freight transported (%)



Source: ALG analysis based on questionnaire results (question 32).

Insuring freight is an increasingly common practice. At every stage of the supply chain risks must be identified, analyzed, and subsequently minimized, whether physically or by contracting insurance. Many stakeholders intervene in this process and the vehicle, the carrier, the cargo, and the warehouse may all be insured.

In Central America, two types of insurance policies are used: the owner of the cargo will contract a property insurance policy that compensates him against damage to the goods transported. The carrier, logistics operator, or warehouse contract a civil responsibility policy. Furthermore, the carrier obtains vehicle coverage according to the regulations and laws currently in effect in the country. However, some countries demand additional insurance for freight in transit that is contracted with national companies, in addition to the civil responsibility policy contracted in the country of origin of the merchandise.

Finally, another factor of insecurity is present at some border crossings. According to the Central American Uniform Customs Code (CAUCA), the driver is the person in charge during the customs inspections procedures. But drivers themselves do not undertake the paperwork so as not to abandon the equipment, for fear of robbery of materials and freight. These practices make transport more expensive and slow down the transit process, as security conditions lead to the hiring of intermediaries on the part of the drivers to carry out customs procedures.

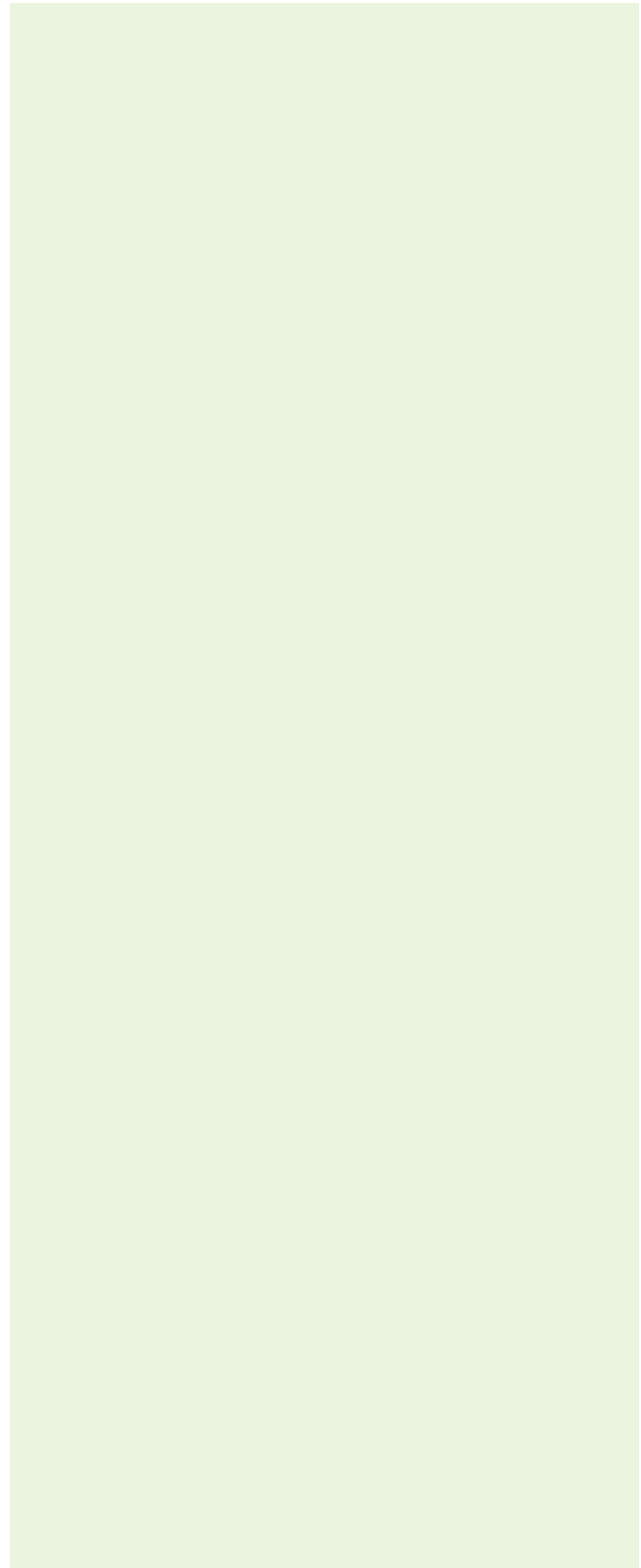
### *Transport facilitation over land borders*

The procedures that must be carried out at border crossings are mainly comprised of customs, migration, and phytosanitary and quarantine permits. These proceedings are not applied in all countries. Fumigation only takes place on the borders of Mexico-Guatemala (Mexican side), Mexico-Belize, Belize-Guatemala (Belize side), Honduras-Nicaragua, Nicaragua-Costa Rica, and Costa Rica-Panama. It is not a usual practice in Guatemala, El Salvador, or Honduras.

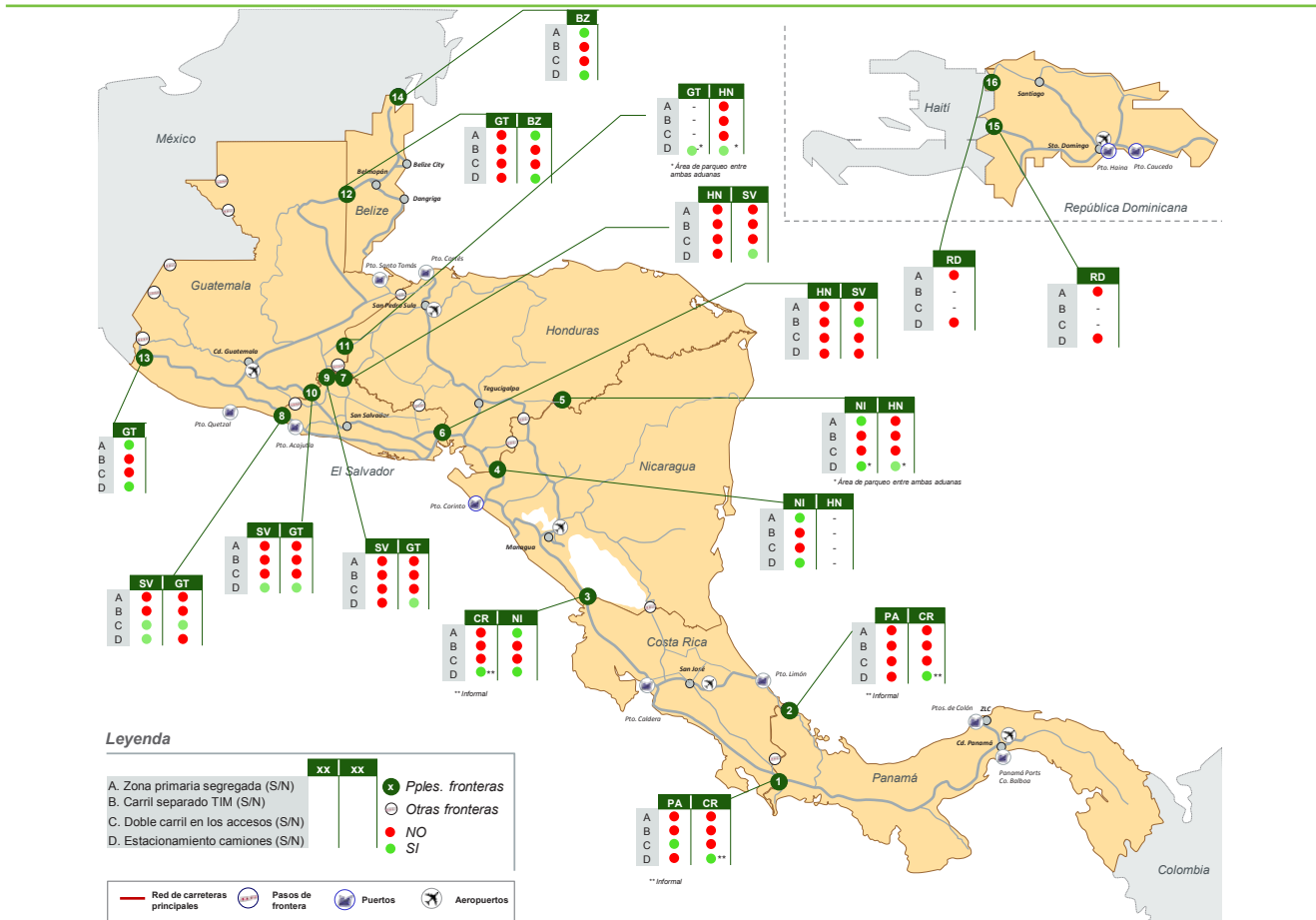
The migration processes require, in most cases, that drivers undergo the same procedures as travelers, meaning they have to step down from the vehicle and process their own documentation, in

addition to the necessary procedures for the crossing of merchandise. Sometimes, the integration of these processes does not exist. This means more time spent crossing the border.

The main border crossings, as well as their main infrastructural characteristics, are presented in Map 2.



Map 2: Network of main border crossings and their infrastructural characteristics



Source: own analysis based on visits and secondary documentation (Report on the Peripheral Customs Investment Plan and Interregional Customs Limitation, SIECA).

The increase in the volume of transport in the region affects border crossings, which are not designed to serve high levels of heavy traffic. Parking areas become saturated and, due to the lack of space, the shoulders of access roads are occupied. The lack of integration and exchange of information between authorities extends the time to cross the border. The implementation of a single window has been achieved in all countries but Belize, which is implementing a customs management information system as a preliminary step. Other countries are at the stage of automating this management tool, in order to offer an electronic single window. This is the case of Panama, within the framework of the Program for Competitiveness and Trade Openness. Despite their spread, it has been noted that these

systems suffer operational outages, which cause considerable delays in passing through customs.

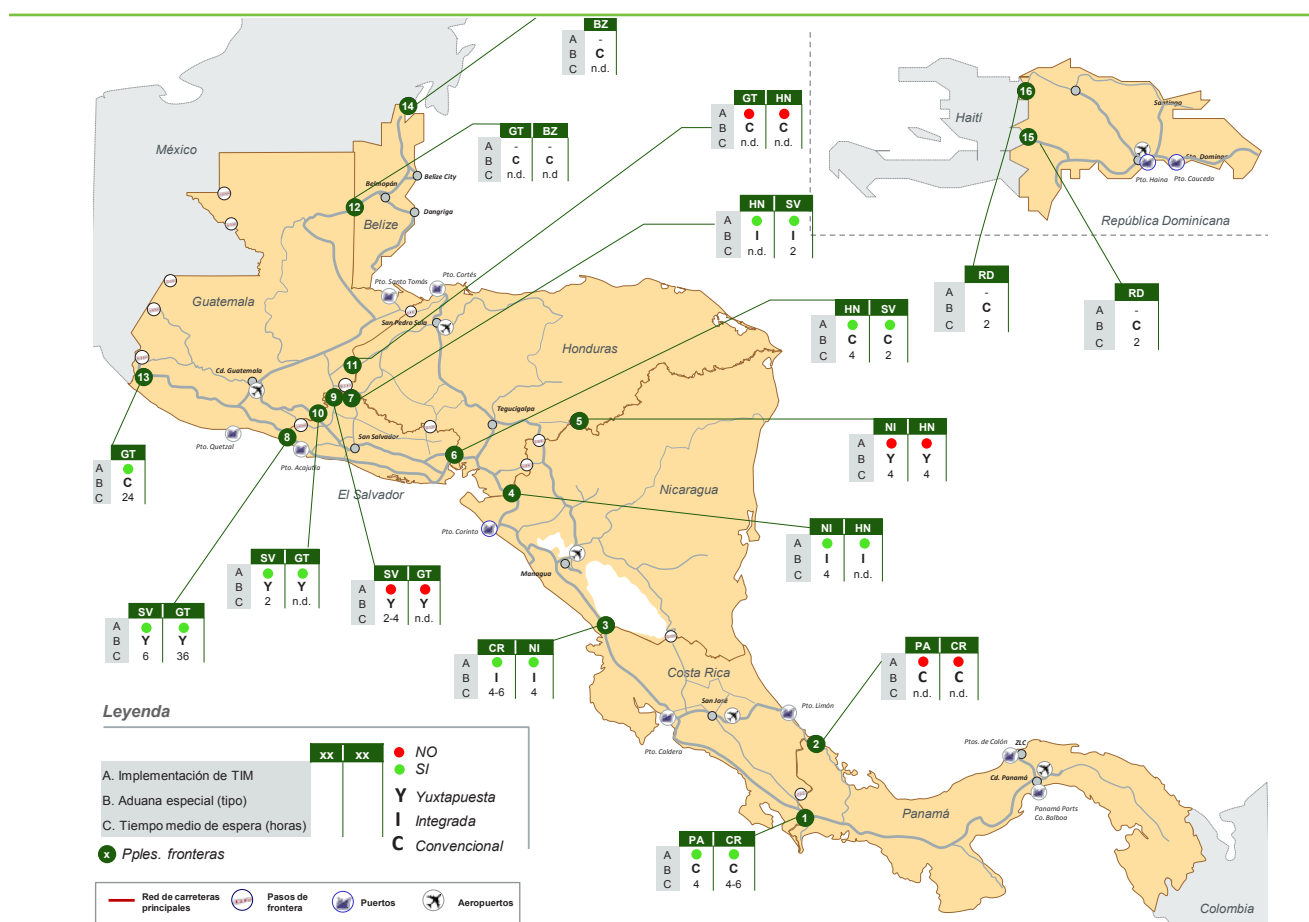
The International Goods Customs Transit (TIM) is scheduled to operate in more than 3000 km of the Pacific Corridor, crossing seven countries (Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama) and constitutes one of the main tools for trade facilitation, customs control, and border security for the whole region. Its implementation has taken place in phases; currently the second phase has been completed. This means implementation at the following borders (customs in both countries):

- Ciudad Hidalgo-Tecún Umán (México-Guatemala)

- Ciudad Pedro de Alvarado-La Hachadura (Guatemala-El Salvador)
- San Cristóbal (Guatemala-El Salvador)
- El Amatillo (El Salvador-Honduras)
- El Poy (El Salvador-Honduras)
- Guasaule (Honduras-Nicaragua)
- Peñas Blancas (Nicaragua-Costa Rica)
- Frontera Paso Canoas (Costa Rica-Panamá)
- Puerto de Acajutla (El Salvador)

The next step consists of extending the TIM to all borders in the region (land, maritime, airports in the region), in its multimodal modality, with which other countries such as Belize, Colombia, and the Colon Free Zone in Panama would be incorporated into the system.

Map 3: Summary of the management characteristics of the main border crossing network



Source: own analysis based on visits and secondary documentation (Report on the Peripheral Customs Investment Plan and Interregional Customs Limitation, SIECA).

Despite TIM implementation in some borders such as Peñas Blancas (NI-CR) is a fact, others are in a process of adaptation. Though TIM proposes to facilitate and reduce customs paperwork, with only one document valid for transit in the whole region, procedures that predate the implementa-

tion of TIM are still being applied in most of the customs network. Additionally, some migration or quarantine services do not rely on the implemented system, missing out on the objective of integrating documentation and management.



The training of customs staff influences border crossing performance. This aspect worries users and administrators, because sometimes the lack of knowledge about legal customs regulations and their procedural aspects leads to a discretionary implementation.

### **Impact of improvements in other modes on trucking performance**

There are project and plans in the region that could have a significant impact on trucking.

#### **Dry corridors in countries of the region.**

Nicaragua and Guatemala are promoting studies and initiatives to develop linking corridors between ports on both the Pacific and Atlantic coasts. In Nicaragua, a feasibility study is underway for the first deepwater port in the country on the Atlantic side at Monkey Point. This project conforms to national strategic planning (though its development is not yet confirmed) as a key element in the development of a dry highway canal between the two oceans, which would unite Monkey Point with Puerto Corinto.

If built, this port would change the structure of transport and logistics in the country, by giving Nicaraguan freight direct access to the Atlantic coast, avoiding a detour to Limón (Costa Rica) or Puerto Cortés (Honduras), which would reduce the cost of land transport to ports and improve the competitiveness of local exports. Additionally, the potential creation of a dry canal would produce a new flow and create new overland freight transport services (mostly containers) between the Corinto and Monkey Point ports.

Guatemala is also studying the development of a dry corridor that would link the ports of both coasts by railroad, or a backbone logistics corridor, which has been proposed by the private sector. The project's interest is in gaining a market share in the Panama Canal and positioning Guatemala as a logistics center. Besides the railway, the project includes expanding a number of lanes in the highway that links both coasts. Part of this roadway is one of the backbone axes of the country's

road network and is used for transit from Mexico to Central America. The increase in road capacity would suppose an improvement in trucking performance, which would positively affect activity in the region, reducing transit time through Guatemala.

**Rehabilitation of the railway network.** The countries of Central America do not have an alternative to overland freight transport because railroad either does not exist or has deteriorated. Recently, there is a growing interest in recuperating the railway service. A proposal has come from public administration to rehabilitate some passenger transport routes. The case of Costa Rica is different because the country already has a working railroad, though it is for exclusive use of travelers.

However, the possible use of the railway network for freight transport in Guatemala and Costa Rica would imply a change in transport sector behavior at the national level. In both cases it is supposed that the original layout would be maintained, with corresponding improvements and reconstructions. Its impact on trucking would be reflected in greater competition and price pressure. On the other hand, if railway transport absorbs part of the flow that currently moves by highway, it would be possible to improve the capacity of some road segments of elevated interest for international transport. This is the case of the CA-2 highway in Guatemala, which crosses the south of the country and connects Mexico with the rest of Central America. This route is used for goods in transit, and simultaneously serves to transport cane and sugar between plantations and mills, and between mills and Puerto Quetzal. This activity could be absorbed by the railroad.

Other projects have been identified that could have an impact on national transit and, in consequence, could influence to a lesser degree the performance of trucking in the region.

- **Airport expansion and relocation projects:** There are plans to expand and/or relocate some airports in the region such as Tocumen (expansion of air freight center) and La Aurora (Guatemala). Guatemala is aiming to promote the San José airport as a second air freight core. These actions would reduce the saturation that some air freight centers suffer, which would be reflected in an improvement in customs processes and access, with reductions in turnaround time, benefiting carriers in charge of last-mile land transport of air freight.
- **Start of operations at the new La Unión (SV) port:** This new port envisions the possibility of specializing in freight containers, and Acajutla would switch to moving bulk

freight. This situation would suppose a change in freight transport behavior, as it would increase the distance traveled by containers, and in consequence, by the country's import and export freight.

- **Peripheral ring in Guatemala City:** Despite being a local project, this future provision is included due to the notable impact it has on freight transport behavior in the country, given that the current main route of transport crosses the city.
- **Road segment in the south of Belize (Toledo):** This new segment would allow a second land connection with Guatemala, at a point closer to Big Creek, one of the principal ports of the country. It would therefore be possible to incentivize the connection of Central America with the CARICOM market, with increases in the flow of goods on both sides.

## Policy recommendations

### **Standardize regulations related to trucking at the regional level, especially in relation to:**

- *Weight and size.* The Central American Agreement on Road Circulation defines and limits both. However, on occasion the national regulations vary. It is necessary that all limits defined in the agreement are applied, and compliance ensured through national regulations.
- *Technical and mechanical inspections and minimum bearing conditions for vehicles.* Though national regulations exist in this area, technical conditions and inspection periods should be uniform. In 2009 the SIECA drafted a policy manual for the mechanical inspection

of vehicles according to the regulations of the time, but compliance with the manual is not mandatory.

- *Licenses and authorization of drivers.* There are considerable differences in the minimum age and experience required to obtain licenses in each country, which impedes progress toward a uniform force of world-class freight transport services that, with time, will generate the conditions to provide value-added logistics services.
- *Control of maximum driving hours.* As the sector organizes itself to face the challenges of the expansion of the Panama Canal, it will be important to monitor the maximum work day for drivers and minimum required working conditions.
- *Vehicles with greater capacity.* The use of semi-trailers is increasing in the region, mainly in Guatemala and the Dominican Republic. This type of vehicle requires



some conditions of infrastructure, specific regulations and controls, and specific security conditions. Though they may improve some load and productivity indicators, it is necessary to develop specific regulations.

#### **Update and apply international ground transport reciprocity agreements:**

- *Reach regional agreements* on access to national markets for foreign fleets that would improve load factors and number of empty trips.
- *Discussion and dialogue* with unions, freight producers, the public sector, and carriers to generate integral policy agreements on the modernization of the sector.

#### **Improve efficiency and productivity by service unit:**

- *Create a regional network* of truck centers in the main freight corridors of Central America and the Dominican Republic.
- *Implement a regional freight pool* to increase fleets' productivity and efficiency in facilitating return cargo, and the fleet's integrated management, which would improve the competitiveness of the service and reduce its cost.
- *Define, implement, and monitor indicators* for time spent loading, inspecting, and unloading, controlling total logistical times for transport and down time per unit.
- *Professionalize the sector* through business training courses to improve management of SMEs and small national businesses, and training for drivers.

#### **Develop infrastructure to support trucking in border crossings:**

- *Parking lots* for heavy vehicles designed for the traffic of border crossings.
- *Adequate facilities* to give services to drivers.
- *Creation of specific lanes* for the transit of international goods.

- *Double lane access to border crossings*, adapted to handle heavy vehicles.
- *Inter-border road infrastructure*, especially of the bi-national bridges in Paso Guabito between Panama and Costa Rica and Pedro Alvarado-La Hachadura between Guatemala and El Salvador.

#### **Improve and optimize processes in border crossings.**

- Despite having made a great effort to implement side-by-side and integrated customs in many border crossings in the region, it is necessary to continue this type of integration in land crossings with the greatest cargo flows:
  - Panamá-Costa Rica: Paso Canoas
  - Costa Rica-Nicaragua: Peñas Blancas
  - Nicaragua-Honduras: Guasaule y Las Manos
  - Honduras-El Salvador: El Poy y El Amatillo
  - Honduras-Guatemala: El Florido
  - Guatemala-Belize: Benque Viejo-Melchor de Mencos
  - Guatemala-El Salvador: Pedro Alvarado-La Hachadura
  - Guatemala-México: Tecún Uman
  - Belize-México: Santa Elena-Chetumal
- *Reduce crossing times*, among other actions, through the alignment of customs service hours and other migration organisms: institutions in charge of phytosanitary permits, etc.
- *Improve training of staff* in charge of border crossings in some customs offices.

#### **Improve and optimize infrastructure conditions in foreign trade nodes (ports, land crossings) to support trucking services:**

- *Authorized zones for parking and driver services in ports*. In access to port facilities and in the perimeter to large urban areas, which are usually subject to hourly restrictions for heavy vehicle circulation.
- *Create a regional traffic monitoring system*: Carry out traffic studies that establish a

hierarchy in the Mesoamerican network, correctly sizing the network backbone and the feeder network.

### **Improve security and minimize the environmental impact of trucking**

- *Optimize en route conditions with information systems* that allow for real-time monitoring of freight, its traceability, and visibility.
- *Develop secure areas* to minimize security incidents for carriers, mainly related to minor equipment robberies (computers, fuel, replacement parts, etc.).
- *Progressively introduce low-sulfur fuels* (DLS; 50-500 parts per million) to facilitate the renovation of fleets and reduce environmental impact. Currently lower quality fuels are used, with up to 5,000 ppm of sulfur, which impedes the use of new motors. Motors are modified to use with fuel sold in the countries of the region, while some large companies import their own fuel.
- *Incentives to recycle vehicle parts and consumables* like batteries, tires, and oil.
- *Encourage modernization, repowering, and scrapping* of the fleet, implementing functional ages and maximum use times.