



# Transport Sector in Belize

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**Inter-American  
Development Bank**

Infrastructure and  
Environment Sector/  
Transport Division

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# **Transport Sector in Belize**

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## **Abstract**

This Technical Note was prepared to support the transport sector policy dialogue between the Inter-American Development Bank (IDB) and the Government of Belize. The note provides an overview of the main characteristics of the transport sector in Belize and the challenges going forward. The note recommends developing and implementing specific policies and infrastructure investments in the transport system that are necessary to sustain economic growth and to improve the access of the rural and urban poor to jobs and essential services. It also recommends supporting initiatives that open up mutually beneficial transit opportunities with neighboring countries and enables the transport sector to play a more significant role in strengthening disaster preparedness.

**JEL Codes:** R48

**Keywords:** Belize, government pricing, regulatory pricing, transport

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## **1. Justification**

A well-developed transport infrastructure network is essential for Belize's economic development. A comparative analysis of countries demonstrates a close correlation between the extent of the transportation network in a country and its level of development (World Bank, 1994). Strong infrastructure lowers production costs and increases productivity. In contrast, high transport costs limit internal and external trade, the latter being particularly crucial to economic development in small countries (Mesquita Moreira, Volpe Martincus, and Blyde, 2008).

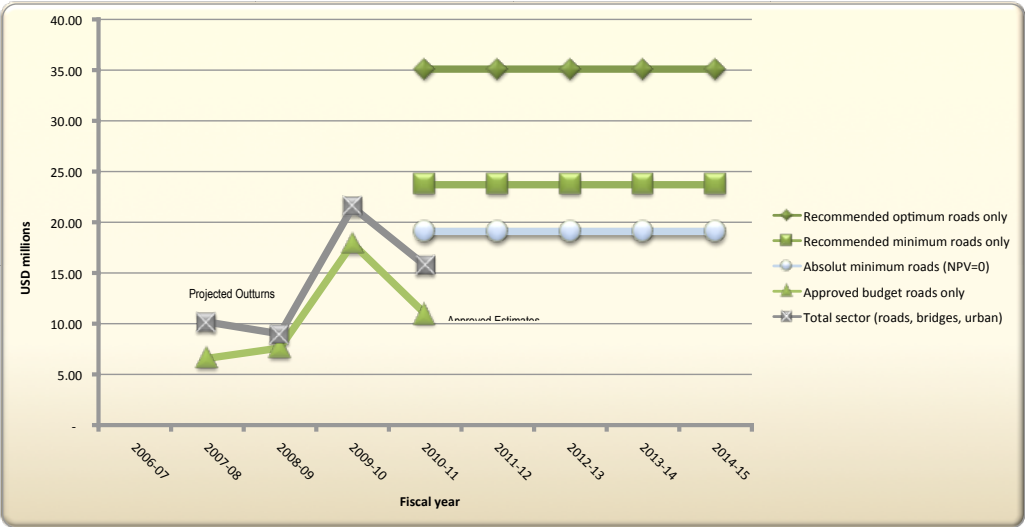
Deficiencies in Belize's transport infrastructure hamper trade and economic growth. Despite notable progress in the last decade, the extent and quality of transport infrastructure in Belize still lags behind other developing countries in the Latin American and Caribbean (LAC) region. Deficiencies in road infrastructure and ports constitute an important and costly barrier to international trade. Moreover, limited connectivity with neighboring countries is an impediment to Belize's closer economic integration with Central America and Mexico. Poor accessibility to extensive areas of land in the country's interior, particularly in the South and during the rainy season, not only affects agricultural production and limits the use of the country's historical and ecotourism sites, but also impacts human development in the rural population.

Improved transport infrastructure is needed to underpin the growth that is planned for Belize's tourism sector over the next two decades. The government's plan, as articulated in the National Sustainable Tourism Master Plan of Belize 2030 (NSTMP) (Belize Tourism Board, 2011), is to achieve a doubling in overnight tourism arrivals by 2030. The NSTMP recognizes that this can only be achieved by the development of national transportation connectivity, and addresses the need for transportation infrastructure improvements, such as for highways and roads; increasing regional and international airport safety and capacity; and upgrading seaport and pier facilities. Belize's Medium-Term Development Strategy 2010–2013 (MTDS) (Mendoza, 2010) also identifies efficient transport services as being crucial for economic development, as they facilitate access to world markets, strengthen regional integration, and attract foreign investment.

The transport infrastructure network is Belize's single most expensive asset, which needs to be protected and maintained. If the road network (of 3,281 kilometers in total) were to

deteriorate, the replacement cost would be approximately US\$3.3 billion in 2013 dollars.<sup>1</sup> The road network is a substantial asset by any standard and requires adequate routine and periodic maintenance to keep it in a stable, durable condition that will enable it to be a catalyst for socioeconomic development. A lack of investment in this area could lead to a deteriorated road network, which could become a constraint on future investment, particularly in agriculture, a sector that is highly dependent on rural roads. According to Robinson (1986), there is evidence that every dollar that is not spent on required road maintenance increases the cost of operating a vehicle by up to 10 dollars over the life of the road. Further, the cost of repair or reconstruction can be up to 20 times more expensive than the cost of sustained maintenance over the life of the road. Despite awareness in Belize that maintenance is necessary for the optimal performance of road infrastructure (a fact that is reinforced by the country’s known vulnerability to natural disasters) maintenance has not always received the level of investment it requires; fiscal constraints have played a significant role in limiting the amount of investment in transport infrastructure. The Belize Maintenance Study of 2011 (see Figure 1) shows this trend and concludes that the road sector received on average US\$15 million a year less than was needed for maintenance and repair.<sup>2</sup>

**Figure 1: Financing for the Road Sector in Belize, Recommended vs. Budgeted**



Source: Belize Maintenance Study of 2011.

<sup>1</sup> In the region the average cost of road construction is US\$ 1 million per kilometer.

<sup>2</sup> The authorities are developing a new Road Maintenance Strategy. In the short-run, the prioritization of maintenance needs will be determined on the basis of objective criteria and focused on the National Highway System. Going forward, the authorities are evaluating the adoption of new mechanisms for funding maintenance needs.

Improved transport contributes to reducing poverty. Transportation contributes to poverty reduction through indirect impacts on economic growth or direct impacts on the welfare of poor families (Gannon and Liu, 1997). One of the first studies to recognize the impact of rural transport programs in poverty reduction was conducted by Howe and Richards (1984), which found that welfare is highly correlated with mobility in terms of access to roads and motorized transport. This is particularly relevant for Belize, where low population density prevents agglomeration, and people often have to cover large distances to access work and social services. Investment in the transport sector improves access to economic opportunities by reducing transport cost. Local access roads have a direct and significant impact on the daily lives of the poor in Belize. The provision of transport services, including construction and maintenance of transportation services, generates demand for labor (often unskilled) and thus provides income opportunities for the poor.

This Technical Note describes the general physical infrastructure and institutional condition of the transport sector and identifies the main bottlenecks. When possible, it also examines relevant international experiences and discusses policy interventions that will enable the transport sector to serve as a lubricant for the development process in Belize.

## **2. Analysis of the Transportation Sector**

### ***2.1. General***

According to the World Economic Forum (WEF, 2011), Belize stands at 123rd of the 142 countries that were evaluated. Regarding the overall quality of infrastructure, Belize has a rating of 3.5, which is below the average of 4.1 for Central America and similar Caribbean countries. The worst problem is the quality of the roads, which is rated at 3.0 and again falls below the 3.58 average for Central America and the Caribbean. Similar ratings exist for the ports (3.3) and airports (4.4), both of which are below the regional average of 3.64 and 4.88, respectively. This comparative trend, with Belize scoring the least, is evident even when Belize is compared to similar Caribbean countries, such as Guyana, Jamaica, and Suriname.



**Table 1: Infrastructure Competitiveness Indicators**

	Quality of infrastructure in general	Quality of roads	Quality of ports	Quality of airports
<b>Belize</b>	<b>3.5</b>	<b>3.0</b>	<b>3.3</b>	<b>4.4</b>
Guatemala	4.7	3.9	4.3	5.4
Panama	4.6	4.2	6.4	6.2
Mexico	4.2	4.3	4.0	4.8
Honduras	3.7	3.4	5.1	4.5
El Salvador	4.6	4.8	3.8	5.5
Costa Rica	3.6	2.5	2.3	4.7
Central American average	3.94	3.58	3.64	4.88
Jamaica	4.2	3.8	5.3	5.5
Guyana	3.8	3.8	3.7	4.0
Suriname	4.2	4.2	4.5	4.0
Caribbean average	4.06	3.9	4.5	4.5

Source: WEF (2011).

## 2.2. Maritime Ports and Border Crossings

The main entry and exit points for trade flows are the Port of Belize City and Big Creek Port.<sup>3</sup> Both ports move all types of goods, but there are differences in their activity, with Big Creek currently dedicating its activity to the export of bananas and other fruit and vegetables in season, as well as citrus juice. The highest level of import activity (particularly from the United States) is received through the Port of Belize City. The ports of Belize are privately run and compete with one another to increase their market share. Big Creek Port, created as a banana port, is controlled by a group of banana exporters. The maximum draughts of the ports are low, although the Big Creek channel is currently being dredged. Belizean ports face a natural disadvantage due to the existence of the coral barrier reef, which limits the berthing of Cruise and Panamax ships.

*ISSUE #1 Belize ports face a natural disadvantage due to the existence of the coral barrier reef limiting the draught.*

<sup>3</sup> There is a third Port (Commerce Bight Port, just outside Dangriga), which is almost wholly specialized in the export of citrus concentrates and citrus oil in drums.

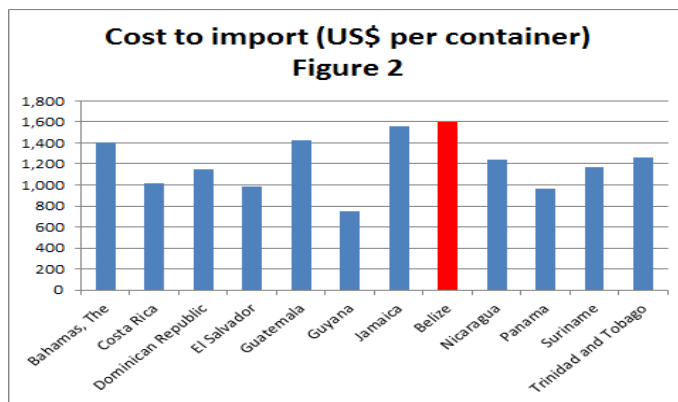
**Table 2: Main Features of Port Infrastructure**

	<b>Port of Belize City</b>	<b>Port of Big Creek</b>
Number of wharves	1	1
Berthing length	800	365
Maximum draught T. containers (feet)	32	22
Warehousing area	101,172	50,000
Management model	Private	Private
Operator / concessionaire	Port of Belize Ltd.	Big Creek Group of Companies

Source: IDB (2010).

In addition to natural physical disadvantages, Belize’s main port faces other institutional challenges. It is in need of modernization, primarily in the provision of cold storage (Arthur, 2010). Additionally, there are major encumbrances such as time delays in loading and unloading, large amounts of paperwork and bureaucratic red tape, which greatly impair the competitiveness of the ports in Belize. In regards to the maritime movement of goods, Belize has been rated as one of the most expensive economies in the CARICOM region in which to trade across borders. Figure 2, taken from the World Bank’s *Doing Business 2012* report (World Bank, 2011), shows that Belize has the highest cost to import ratio among the compared countries. Table 3 shows the disaggregated delays in border trading.

**Figure 2. Cost to Import (in USD per container)**



Source: World Bank (2011).

**Table 3: Trading Across Borders in Belize, 2012**

Export procedures	Duration (in days)	Cost (in USD)
Document preparation	9	300
Customs clearance and technical control	2	200
Port and terminal handling	5	450
Inland transportation and handling	3	400
<b>Totals</b>	<b>19</b>	<b>1,355</b>
Documents reparation	10	350
Customs clearance and technical control	3	300
Port and terminal handling	4	550
Inland transportation and handling	3	400
<b>Totals</b>	<b>20</b>	<b>1,600</b>

Source: World Bank (2011).

Even though there has been much rhetoric about how Belize, with its membership in CARICOM, is geographically positioned to become the bridge between Central America and the Caribbean markets,

*ISSUE #2 Bureaucratic delays impair port competitiveness.*

there are currently no shipping services to Caribbean destinations. This situation places some efficiency limitations on the potential for regional integration with the Caribbean by increasing transport costs and times to Caribbean ports. In terms of the system for the movement of goods, there are only two border crossings (one between Belize and Mexico and one with Guatemala) that have facilities for the passage of people and goods in aggregated loads. Infrastructure links with both countries are generally poor although sufficient enough to support the current traffic of goods.<sup>4</sup> There is little investment across borders and service exports are very limited. For instance, there is a limit on the number of Belizean tractor units for trucks that are allowed to enter Mexico and Guatemala.

*ISSUE #3 The border crossings of Belize have lacked technological upgrading, and there is no unifying bilateral agreement to facilitate the seamless movement of goods.*

In the opposite direction, Belize allows foreign tractor units to enter upon payment of a fee. This situation makes it necessary to have a physical area for goods transfer that is located within the border installations. Also, in comparison to its neighbors, Belize is less advanced in the use of technology; however, a computerized customs management system (Automated

<sup>4</sup> Along the border with Mexico, new infrastructure links will be opened soon as the Government of Mexico has built a second bridge across the Rio Hondo. Yet, the development of cross-border infrastructure in Belize's side is uncertain. Institutional capacity constraints and lack of needed technology to inspect goods could create additional problems and delays.

System for Customs Data, or ASYCUDA) is currently being implemented, which should improve flows once it is fully operational.

### 2.3. Road Networks

With the road extensions that were made over the last decade, Belize’s road network now extends for 3,281 kilometers. Overall, only 20 percent of the network is paved, which is the lowest percentage in the LAC region relative to its surface area, but high in proportion to the size of the country’s population and level of production (see Table 4).

*ISSUE #4 Paved road coverage is only 20 percent.*

**Table 4: Road Transport Indicators, 2012**

<b>Kilometers of road per:</b>	<b>Belize</b>	<b>Costa Rica</b>	<b>Dominican Republic</b>	<b>El Salvador</b>	<b>Jamaica</b>
Thousands of population	10.61	8.09	1.43	1.72	8.21
Square kilometers of land area	0.14	0.7	0.26	0.48	2.01
Billions of U.S. dollars in GDP	2428	1213	284	453	1.572

*Sources:* World Bank (2012).

The condition of secondary roads varies depending on the prevailing weather conditions, the volume of traffic, and the maintenance that the roads receive. Overall, the quality of this secondary network is considered to be in poor to fair condition.

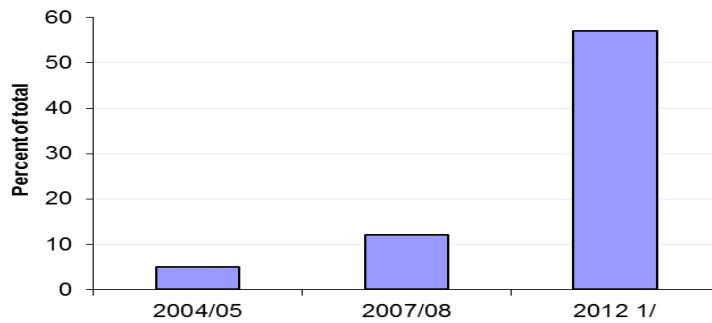
Rural roads were built for specific purposes in relation to agriculture and agricultural products: sugar cane in Corozal; forestry and general farming in Cayo, Orange Walk, and Toledo; and rice, citrus, banana, and general farming in Stann Creek. The condition of these roads is influenced by the economic circumstances in the industries for which they were primarily built; the roads connected with industries that are prospering tend to be in better condition. Many farm access roads need upgrading and some of them are not usable year-round. Progress is being made in this regard in the banana-growing areas by the EU-financed Banana Support program, but the rural road network needs upgrading (preferably paving) throughout the country (Norton, 2009).

The quality of road infrastructure is poor and deteriorating at an increasing rate. The proportion of the road system considered in poor to bad condition increased from 5 to 12 percent

of the total between the periods 2004–05 and 2007–08, and to almost 60 percent in the period 2012–13. While there has been no scientific survey of the current condition of the basic network, experts estimate that the network is 23 percent in good condition, 20 percent regular, 35 percent bad, and 22 percent very bad (see Figure 3). This is attributed to a deficit in resource allocation for maintenance. Historically, there has been a deficit of 41.6 percent in the financial resources needed for an adequate road maintenance program, despite the fact that maintenance has a higher economic rate of return than new infrastructure investments (Belli, 2010).

*Issue #5: Resource allocation necessary to preserve the road network is lower than required.*

**Figure 3: Roads in Poor or Bad Quality**



*Source:* Author’s elaboration based on the Belize Road Maintenance Strategy and Interview with Ministry of Works.

Since the late 1990s, the Ministry of Works and Transport has supported a routine and periodic maintenance work program, the functioning of which has been aided by its maintenance management system. The system establishes the annual routine maintenance resource scheduling program, generates and justifies requests for budget allocations, and prioritizes activities based on the funding received. It also develops routine and periodic maintenance schedules, which must be verified by on-site inspections. Although the system is already installed and in use in all maintenance districts, the basic data that are necessary to operate the system (i.e., road inventory, roughness, deflections, traffic counting, and safety measures) have not been updated due to a lack of logistical and supporting equipment; thus the system does not function as well as it should for planning activities and for the sound accounting of capital and recurrent expenditures.

Road expenditures in Belize are financed by the national government through annual budget allocations to the Ministry of Works and Transport and by grants and loans from bilateral and multilateral sources. Expenditures on roads—particularly capital expenditures—fluctuate from year to year because they are funded mainly by external financial assistance and because capital expenditures tend to be the predominant variable for fiscal adjustment.

The rate of car crashes and subsequent fatalities in Belize is high for the size of the population and the level of traffic volume. Belize has one of the highest rates of road fatalities in the LAC region (28.9 per 100,000 people). This rate is well above the average for the LAC region (16.2), Central America (14.6), and Caribbean (17.8). Table 5 below shows the trend of traffic accidents in Belize.

**ISSUE #6** *The rate of car crashes and subsequent fatalities in Belize is one of the highest in the LAC region.*

**Table 5: Belize City: Number of Road Accidents and Casualties, 2005–08**

	Year			
	2005	2006	2007	2008
<b>All</b>				
Fatal	12	6	12	17
Injury	296	285	194	311
<b>Total</b>	<b>308</b>	<b>291</b>	<b>206</b>	<b>328</b>
<b>Pedestrian</b>				
Fatal	5	1	3	6
Injury	57	47	41	31
<b>Total</b>	<b>62</b>	<b>48</b>	<b>44</b>	<b>37</b>
<b>Passengers</b>				
Fatal	0	4	3	5
Injury	102	83	58	136
<b>Total</b>	<b>102</b>	<b>87</b>	<b>61</b>	<b>141</b>
<b>Cyclists</b>				
Fatal	5	0	1	1
Injury	85	68	40	52
<b>Total</b>	<b>90</b>	<b>68</b>	<b>41</b>	<b>53</b>
<b>Drivers</b>				
Fatal	2	1	5	5
Injury	52	87	55	92
<b>Total</b>	<b>54</b>	<b>88</b>	<b>60</b>	<b>97</b>

Source: Belize Police National Headquarters  
(see <http://www.belizepolice.bz/download/Dec%2007%20-%20Jan%2008%20CompAnaly.pdf>).

#### ***2.4. Public Transport***

Buses and taxis provide public transport in Belize; their systems, however, are largely unregulated and inefficient.<sup>5</sup> Many people rely on rural and intercity bus transport to get to work or to access social services, but deficiencies in the quality of the existing bus fleet and the system in general hamper the reliability of this means of transportation. Many of the buses are retired school buses that are too large for the narrow streets of downtown Belize. There is also a lack of depot facilities for buses in Belize due to land constraints. Consequently, small and scattered informal areas are used for parking buses when they are not in operation; these areas have little or no support facilities, such as fuel stations, cleaning services, repair shops, and inspection capabilities. The public transport landscape is also characterized by a high number of unregulated, unmetered taxis. Most taxis are part of an association or labor union, which usually attempt to regulate their members by maintaining standards of safety and service. Aside from these efforts, however, there are no specific safety or service standards for the industry.

In general, the system of public transport needs to be more rationally planned, with the first step being the design of a study that considers the basic mobility needs of all persons, taking into account the proposed growth rates of tourism, employment, and settlements, as well as considering the cost-effectiveness and the efficiency of travel. It is also important to consider the coordination among the transport providers, overall safety and security, the environmental impact, and support for planning objectives when designing the study.

#### ***2.5. Airports***

Belize's air transport system consists of an international airport and a network of domestic airstrips, which are both publicly (15) and privately owned (20). The Philip S. W. Goldson International Airport (PGIA), which the Belize Airport Concession Company Limited has privately managed since 2004, has adequate capacity for the foreseeable future and generates revenue sufficient to meet its requirements, including maintenance. The runway was recently lengthened from 2,165 to 2,981 meters, allowing larger aircraft to operate in Belize. Seven publicly owned municipal airstrips (Belize City, San Pedro, Dangriga, Caye Caulker, Placencia, Corozal, and Punta Gorda) currently serve commercial airlines.

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<sup>5</sup> Permits are issued, though the level of regulation is rudimentary.

With tourism earmarked as the top sector and engine of growth, it is important to improve PGIA and the network of aerodromes and to manage them in accordance with international standards and recommended best practices established by the United Nation's technical agency for aviation, the International Civil Aviation Organization (ICAO).

*Issue #7 According to ICAO standards, PGIA and the network of airstrips in Belize require improvements.*

Belize's tourism sector caters to two distinct market segments: overnight or stay-over visitors and cruise ship passengers. The first represent around one-third of all arrivals, but their expenditures make up more than 80 percent of the total revenue derived from tourism. Although only four destinations account for 75 percent of total overnight tourists annually<sup>6</sup>, it is recommended that all aerodromes comply with international standards, in recognition of the need to further diversify the tourism industry.

## **2.6. Institutional Analysis of the Sector**

Institutional capacity is an issue that cuts across all transportation sectors. Given the small population of Belize, the number of trained and experienced knowledge workers is limited. Following the elections in March of 2012, responsibility for oversight of the three transport subsectors was centralized in the Ministry of Works and Transport, creating a pool of expertise. The Ministry is responsible for planning, construction, and maintenance of the country's network of roads and bridges, as well as for maintenance of drains, waterways, and district airfields. The Ministry has good systems in place for the supervision and monitoring of construction firms, as well as experience in the public tendering processes. However, due to a lack of statistical data and tools, it is difficult to forecast the medium- to long-term investments needed for improvement and sustainability. Road maintenance work is done by force account and by private contractors, which are both considered as generally satisfactory approaches. Due to a limited number of technical personnel in the Ministry, private sector contractors have performed about 65 percent of the maintenance of the road network in the past several years.

*Issue #8 There is a shortage of professionals, as well as statistics in the sector to sustainably manage the transportation system.*

<sup>6</sup> The four destinations are San Ignacio and surroundings (Cay District), Ambergris Caye (Belize District), Placencia Peninsula (Stann Creek District), and Belize City (Belize district).



Air transport in Belize is administered under the Civil Aviation Act of 2000. The BAA regulates PGIA and the country's airstrips. The Department of Civil Aviation is responsible for administering aerodrome licenses, operating the municipal airstrips, and staffing the control tower at PGIA. It also provides aerial navigation services for the immediate area of the international airport. The *Cooperación Centro Americana de Servicios de Navegación Aérea* (COCESNA) provides regional aerial navigation and air traffic control services.

Along with limitations in staff, the BAA faces a lack of a clear institutional structure for regulation, supervision, and commercial management of the municipal airstrips. Even if new investments raise the standard of infrastructure for the key airstrips, this will not ensure the ongoing safety of operations or the commercial viability of the network, unless it is accompanied by institutional strengthening to implement a sustainable operational model, standardized procedures, and robust commercial management practices (Advanced Logistics Group, 2009).

The Ministry of Works and Transport, under the newly centralized configuration, also manages and regulates the country's ports, namely Port of Belize and Big Creek. Within this ministry, the Belize Port Authority (BPA) is responsible for channels, lighthouses, and all other navigation aids in the country.

### **3. Current Policies**

The policy framework related to the transportation sector in Belize is contained in the following three documents.

#### ***3.1. Belize Development Framework 2030*** (Government of Belize, 2012)

The Belize Development Framework 2030 does not explicitly define strategic policies and programs related to transport, but rather articulates a general vision based on the following four pillars:

- 1. To develop effective governance through the improvement of public service delivery.** To achieve this, it is important for the government to elaborate a National Transportation Plan that facilitates the multiyear planning of activities and budgets.
- 2. To build a resilient economy via the development of the domestic market as a springboard for growth.** To accomplish this, given Belize's low population and lack of scalable production, it is necessary for the government, in cooperation with

the private sector, to make an innovative shift from competing on price to competing on quality in its headline sectors of agriculture and tourism. This requires careful public investments in policy reformulation and the training of workers, as well as in the economic infrastructure of the country—especially the road network and transportation systems, which both support the logistics of moving goods, services, and people.

3. **To care for the natural environment by promoting environmental sustainability and green energy in development planning.** This calls for the adoption and implementation of a comprehensive natural resources and environmental strategy, which includes climate change mitigation planning, as well as a strategy to ensure safety and efficiency in vehicle, marine, and aquatic, and air transport with the lowest environmental impact.
4. **To promote healthy people in a healthy environment.** To achieve this, it is necessary to implement legislation and the necessary supportive measures aimed at increasing road, marine, and aviation safety.

### ***3.2. Medium-Term Development Strategy (2010–2013)*** (Mendoza, 2010)

The MTDS states that the availability of efficient transport services is crucial for accessing world markets, strengthening global integration, and attracting foreign investment. Through the national export strategy formulation process, the following policy actions that support economic expansion and improve transportation infrastructure are emphasized:

- Develop and implement a National Transportation Policy and strengthen existing legislation.
- Develop and implement a National Maritime Ports Policy.
- Address the issue of high port charges.
- Negotiate and introduce new maritime and land shipping services.
- Provide refrigeration services at ports of exit.
- Negotiate appropriate shipping routes to provide faster access to export markets.

### ***3.3. National Sustainable Tourism Master Plan for Belize, 2030*** (Belize Tourism Board, 2011)

The National Sustainable Tourism Master Plan for Belize, 2030 states that tourist destinations must be equipped with transportation infrastructure that increase national connectivity. According to an analysis of Belize's tourism industry, which points out the infrastructure deficiencies that constrain its development, the following policy actions are recommended:

- Develop a national transport connectivity that responds to the need for transportation infrastructure improvements, such as enhancing highways and roads, regional and international airport safety and capacity, and seaport and pier facilities development.
- Improve means and possibilities of arrivals (in terms of quality, quantity, and safety issues), and facilitate movement throughout the destination.
- Enhance transportation handling capacities and the modern development of national connectivity.
- Through the subprogram for air infrastructure and transportation improvement, further develop and improve infrastructure and facilities of the international airport terminals, and enhance the services offered in order to cater to the expected numbers of tourists travelling to Belize.
- Through the subprogram for land connectivity and road infrastructure improvement, develop Belize's inadequate land and road infrastructure to meet international quality and safety requirements, as well as to increase access for tourists to rural areas and neighboring countries and alleviate traffic congestion throughout the country.
- Through the subprogram for sea connectivity and transportation improvement, create additional connections to national tourist destinations by boat, ferry, and water taxi, and further develop the piers in terms of size and available facilities.

### ***3.4. CDB Road Safety Loan***

Under a Caribbean Development Bank (CDB) road safety loan, the government is implementing a policy to establish road safety management capacity. The CDB loan supports capture of information on all road safety activity, which is essential for diagnosing the causes of road

crashes and for monitoring road safety efforts. It is important to identify the categories of road users that are involved in crashes, the maneuvers and behavior patterns that lead to crashes, the road conditions that cause crashes, and the hot spots on the road network in order to focus on safety activities.

## **4. Policy Options**

Given the state of the transport sector in Belize and its limitations, as well as the country's fiscal constraints, this section provides policy options for efficient and modern transport infrastructure and institutions.

### ***4.1. Strengthen Existing Institutions***

Across all transportation subsectors, it is important that the transport infrastructure is managed within a framework of the continuous improvement of institutional capacities. For Belize to achieve greater development from projects in the transport sector, it is necessary to pursue strategies that support more efficient and effective project management mechanisms, higher levels of specialization for technical and management teams, and the provision of adequate human resources to meet the demands of the sector.

It is important, given the country's small size, that special attention is paid to the question of how to sustainably develop a group of professionals to achieve greater levels of specialization in different technical areas of land, sea, and air transportation. Key areas that should be part of an institutional development agenda include geometric design; structural, hydraulic, and geotechnical engineering; pavement management; economic assessment; road safety; climate change; contract administration; environmental and social management; logistics and intermodal transportation; port and airport management; and transport statistics. The Transportation Master Plan will define a situational framework for the sector and address the physical, institutional, and political challenges in the sector. In this respect, it is important to consider the following policy options: (i) to explore government-to-government arrangements that consider transport professional personnel exchange programs; (ii) to develop incentive programs to attract retired transport professionals from the developed world, exchanging lifestyle

options for institutional support; and (iii) to establish a faculty of transportation and engineering staff at the tertiary institutions in Belize.

#### ***4.2. Maintain Road Infrastructure***

The proper allocation of funds for road maintenance, based on the technical prioritization of road network needs, is key to improve and maintain the quality of road infrastructure, thereby minimizing the need for future investments in the rehabilitation of the network. Given that maintenance is a recurrent rather than a project specific activity, the government must pursue policy options that guarantee the stability and adequacy of resources, including the introduction of a road maintenance fund (which is currently under consideration by the authorities) and the increased provision of funds from the central budget or from specific fees from the sector. While it is administratively simple to provide additional funding from the central budget, it may prove challenging if the allocation depends on annual budget debates.

As the financing of road maintenance through taxes has never worked satisfactorily in most countries, it is misleading to assume that this will change for the better in the case of Belize. An alternative way to secure an adequate and stable flow of funds is to charge road users a fee for maintaining the road. Most people, however, view road maintenance as a public service that is supervised by a regulatory body. Thus, to implement such a fee, the following conditions should be met: the road users should pay based on their usage, and receive adequate road maintenance service, while those not using the road system should not be required to pay. In addition, the collection system should be easy and inexpensive to administer, yet difficult to evade. The method that best suits these criteria is to place a levy on the consumption of motor fuels on roads, which shadows the use of a service meter. Heavy vehicles would require an additional charge to compensate for the greater usage of roads due to relatively higher axle loads. The only disadvantage of collecting the fee in this manner is psychological, as most people would likely consider these fees to be another tax used to finance the general expenses of the government rather than road maintenance services. Therefore, if the policy option is adopted, it will be crucial to identify and clearly distinguish this charge, and to collect the receipts in a separate fund, independent of any department, while ensuring that the proceeds are used only for road maintenance.

However, even if road users can be convinced that the levy will be used as promised, they may argue that the government already receives enough funds from taxes on motor fuels to cover the cost of road maintenance. Resistance on the part of road users to paying maintenance fees stems from the lack of recognition that poor road conditions lead to higher vehicle operating costs. In fact, it is estimated that investing one-third of the total vehicle operating cost on road maintenance would save the road user the other two-thirds in the long run (see Table 6).

**Table 6: Savings Affected by Paying Road User Fees in El Salvador**

<b>Cost element<sup>a</sup></b>	<b>Passenger car (USD per 100 km)</b>	<b>Heavy truck (USD per 100 km)</b>
Vehicle operating cost driving on bad roads	14	64
Vehicle operating cost driving on good roads	10.5	52
Savings in vehicle operating costs	3.5	12
Equivalent road user charges	-1.0	-3.5
Resulting savings	2.5	8.5

*Source:* UN ESCAP (2005).

<sup>a</sup> Vehicle operating cost on asphalt concrete roads.

Another alternative to finance road maintenance services should include the evaluation of performance-based contracts, which enable the participation of the private sector in the maintenance process through fixed budget contracts and payments linked to, performance-based indicators. These types of contracts can lead to a more efficient process, and can be applied with or without the establishment of a road fund. The biggest advantage of using performance-based contracts is that they are more simplified and provide accurate budget planning, because the resources required are constant on a yearly basis. There is also a clear definition of quality standards that can be used for monitoring the contracts, and that can be tailored according to the requirement of any specific region of the country—agricultural and tourist areas may have different traffic volume and characteristics. The biggest disadvantages are that these contracts tend to reduce budget flexibility and require efficient supervision. The implementation of this alternative also requires a better understanding of the markets in which the contracting firms compete.

For locations with low traffic, the engagement of small and medium-sized community-based organizations (CBOs) or individuals in specific activities (e.g., roadside cleanup and light maintenance projects) through performance-based contracts can increase road maintenance efficiency. This policy addresses both the infrastructure issues and the social concerns, as it engages local communities in maintaining their own infrastructure and also generates local jobs. Belize should also consider the implementation of international standards for road maintenance, safety, and design (e.g., traffic signaling laws and maintaining appropriate road shoulders), which requires low investments in some cases and can considerably improve the road infrastructure and reduce accidents.

#### ***4.3. Expand Road Coverage***

At the present time, there is a need to increase the coverage of the road network to improve connectivity to places with the potential for tourism, as well as to open new routes to remote areas of the country that may have agriculture potential. The Tourism Master Plan and MTDS 2011–2013 articulate a policy over the medium term to target poor, isolated communities and to improve access to the services provided in larger population centers through the expansion of road and telecommunication infrastructure with a view toward linking targeted communities. This will be accomplished through the extension of the road network into remote areas of Belize.

For Belize to sustainably expand its paved road network, particularly into rural areas and in line with growing needs, it will require a sustained, technologically efficient effort that includes different methods of planning, design, financing, implementation, and maintenance. Considering the existing budgetary limitations, this effort must be coupled with the institutional capacity to conduct the economic evaluations that provide the insight that is needed to prioritize interventions and ensure the efficient use of resources. All of these efforts are based on the goal of minimizing vehicle operating cost for users.

#### ***4.4. Improve Public Transport***

Considering the lack of information on public transport, further studies are needed to provide an analysis of the legislative, institutional, and financial framework of public transport in the main population centers in Belize. How transportation works between these larger cities and the smaller towns and rural areas is of particular interest, because a precise understanding of

consumer demand for transportation services along these routes is central to the effort to tailor effective policies to manage public transport across the country.

Given that demand for public transport is comparatively small in rural areas, moving people around efficiently in such areas is a challenge. One solution is for the government to provide the services. However, since such efforts tend to be poorly funded and often become neglected by the users, there may be less incentive for the operators (for example, local governments) to strive for efficiency or to attract customers by raising quality. An alternative that captures some of the incentives of competition (cost-cutting and profit-seeking) is a system based on the awarding of route franchises. This involves companies bidding for the rights to service the market. Accordingly, operators are invited to bid for the right to operate a defined rural service for a period of time in return for revenues collected and for a periodic subsidy payment, with the contract awarded on the basis of the minimum cost with the understanding that operating rights will be up for re-bid at the end of the franchise period. The advantages of such arrangements are that performance under the franchise agreement can be monitored, and the level of subsidy periodically weighed against the perceived benefits of the service.

#### ***4.5. Increase Efficiency in Ports and at Border Crossings***

Belize should pursue policies to improve port efficiency both in terms of cost and time, reducing the gap in efficiency compared to the Caribbean and Central American ports. This strategy should be coupled with other measures to improve integration with neighboring countries with the aim of exploiting its geographical position and improving its competitive positioning as a potential gateway to the Caribbean, Europe, and the United States. Furthermore, as the flow of goods passing through the ports increases, a virtuous cycle will be created that further reduces operating costs at the port due to realizing economies of scale. One option is to explore the possibility of renegotiating the concession agreements in ways that incentivize making gains in efficiency based on an agreed level of service. Other options are to pursue the optimization of the custom clearance process and to decrease inland transportation time; the latter might require a high level of investment, and thus a thorough cost-benefit analysis before reaching the program stage.

Ports currently operate with idle capacity, which prevents economies of scale but provides the opportunity to improve trade flows. Capturing the flow of larger vessels in the



region is not possible due to the natural limitations imposed by reefs. Even with these limitations, policy options are available. Considering the dynamics of the region and the expansion of the Panama Canal, policy options that merit exploration should include the performance of value-added activities at the port using the available resources and physical space; furthermore, any renewed concession agreement should allow for the upgrade of the facilities with the inclusion of cold storage capacity as part of the services delivered.

Policies that lead to the modernization of Belize's border crossings and facilitate the seamless movement of goods and services, while concomitantly exploring bilateral agreements with its Latin American neighbors (thus integrating with the Mesoamerican block) can also contribute to increased exports and economic growth. Improvement of border crossings should consider both hard infrastructure, such as small facilities to store goods and trucking services, and soft measures, such as regulatory agreements that enable vehicle and driver crossing and the optimization of customs and security checks.

#### ***4.6. Enhance the Safety of Aviation Transport***

With tourism earmarked as the engine of growth in the medium to long term, the main policy objective is to ensure that the aviation sector is primarily safe and in keeping with ICAO standards. Belize is an emerging destination, but one safety incident in this sector could scar the image of the destination and seriously affect its brand. Accordingly, the government should adopt best practices in aviation governance with structures that provide a clear separation of policy making, regulatory, and operating functions, as well as a review of the needs of the legal framework. This will help to both ensure compliance with the international treaties of which Belize is a signatory and to permit the reengineering of the institutional structure in accordance with ICAO standards.

## **5. Recommendations**

The recommendations contained in this Technical Note are derived from the obvious needs of the transport sector, the existing policy analysis, the potential of Belize to overcome barriers to growth, and international trends that solve similar problems.

### ***5.1. Strengthen the Institutional Capacity of the Sector***

It is important to conduct a comprehensive review of the organizational structure of the institutions responsible for transportation, and then assess the feasibility of strengthening the existing entities so they can better manage the government's role as a regulator and planner. This assessment should be made in the context of existing fiscal constraints. The following specific activities are recommended:

- Develop a master plan to define the following: the situational framework for the sector; the physical, institutional, and political challenges; and the main interventions that need to be considered in the coming years.
- Strengthen the institutional capacities for better road maintenance, including budget planning, procurement, and contracts administration, and continuous monitoring of road quality to meet international standards.
- Focus on the definition and institutionalization of a road safety strategy that (i) strengthens management of road safety at the national level with interagency participation and (ii) increases intrinsic safety qualities for the protection of road users.

### ***5.2. Increase the Budget for Road Maintenance***

There are currently data available on the financial resources required annually for executing routine and periodic maintenance of the entire road network at an optimal level. Based on this information, the government should increase the budget allocation for maintenance activities to meet international standards and evaluate the feasibility of establishing a road maintenance fund. The government should also evaluate the options for implementing performance-based contracts for maintenance, as this will support working within a fixed budget.

### ***5.3. Implement Cross-Border Trade Strategies***

Belize should consider the appropriate strategies employed by its neighbors (in the context of the Mesoamerica Project) to improve the movement of goods in the region (logistical interventions). Specifically, the government should negotiate “soft” initiatives to promote cross-border trade with Mexico and Guatemala to facilitate the seamless passage of trucks, thus reducing time and facilitating better logistics.

#### ***5.4. Improve Infrastructure***

It is necessary to improve the country's overall infrastructure to facilitate its physical, economic, commercial, and social integration with the Mesoamerican region, as well as with the rest of the world, and to promote and develop tourism and agriculture as the country's key economic activities. Specifically, it is necessary to improve the coverage and quality of road infrastructure through the definition, prioritization, and implementation of interventions for paved and unpaved roads (based on an analysis of technical alternatives and economic profitability). This includes the building of new roads or the rehabilitation of trunk roads to provide stable links to production centers and potential tourist areas, as well as the improvement of rural roads, prioritizing progressive interventions that emphasize connectivity and walkability in these areas throughout the year. Improvements to the road network must respond to the challenges of a higher degree of regional and global integration and the need to support key economic sectors in synergy with other productive infrastructure initiatives. Moreover, climate change resilience should be part of the criteria necessary to prioritize any intervention.

#### ***5.5. Modernize Air and Marine Transport***

Investments are needed to bring Belize's municipal airstrips up to ICAO standards and meet the demand from tourism. Investments should be preceded by institutional reforms that strengthen and rationalize the sector, separating the roles of policy maker, operator, and regulator. This is to ensure that an operational model and regulatory framework for Belize's aerodromes could be developed based on the best practices of ICAO, including the following key areas: procedures; services and equipment; information and communication; control, management, and implementation; and the development of an aerodrome manual for each airstrip.

In addition to implementing safety regulations and operational procedures, it is also important to strengthen the commercial management of the network to ensure that funds are well managed, revenues are maximized, and any investments are financially sustainable in the long term. In addition, a full reengineering analysis is necessary to account for the role of existing and contemplated port facilities in moving Belize's economy forward.

## 6. References

- Advanced Logistics Group. 2009. "Municipal Airstrip Expansion Program." Report prepared for the Inter-American Development Bank. Washington, DC: IDB. Unpublished.
- Arthur, O. 2010. "Final Report of CISP/CSME/Result.9.1.1/Ser 99.10: Consultancy to Support the Full Integration of Belize and the OECS in CARICOM." Unpublished.
- Belize Chamber of Commerce and Industry. 2012. "Investments in Belize A Strategy for Innovation, Competiveness, Entrepreneurship and Private Sector Development."
- Belize Tourism Board. 2011. "National Sustainable Tourism Master Plan for Belize 2030." Belize: Belize Tourism Board.
- Belli, P. 2010. "Formulating an Effective Public Sector Investment Program." Belmopan, Belize: Government of Belize.
- Gannon, C.A. and Z. Liu 1997. "Poverty and Transport." Transportation, Water and Urban Development Papers TWU-30. Washington DC: The World Bank.
- Government of Belize. 2012. "Belize Development Framework Horizon 2030." Belize: Government of Belize. Available at <http://www.belize.gov.bz/index.php/government-initiatives/horizon-2030>.
- Howe, J. and P. Richards, eds. 1984. *Rural Roads and Poverty Alleviation*. London: Intermediate Technology Publications.
- IDB (Inter-American Development Bank). 2010. "Analysis, Strategy, and Tools for the Improvement of Freight Logistics and Trade in Mesoamerica." Washington, DC: Inter-American Development Bank. Unpublished
- Martin, D. and O. Manzano, eds. 2010. "Towards a Sustainable and Efficient State: The Development Agenda of Belize." Washington, DC. IDB. Available at <http://www.iadb.org/en/publications/publication-detail,7101.html?dtype=All&dclanguage=en&id=46546%20>
- Mendoza, P. 2010. "Belize Medium-Term Development Strategy 2010–2013: Building Resilience against Social, Economic and Physical Vulnerabilities." Belize: Ministry of Economic Development, Commerce and Industry, and Consumer Protection, Government of Belize. Available at [http://dataspace.princeton.edu/jspui/bitstream/88435/dsp01pn89d662t/1/Belize\\_Development\\_Strategy.pdf](http://dataspace.princeton.edu/jspui/bitstream/88435/dsp01pn89d662t/1/Belize_Development_Strategy.pdf)
- Mesquita Moreira, M., C. Volpe Martincus, and J.S. Blyde. 2008. *Unclogging the Arteries: The Impact of Transport Costs on Latin American and Caribbean Trade*. Washington, DC: IDB/David Rockefeller Center for Latin American Studies/Harvard University. Available

- at <http://www.iadb.org/en/publications/publication-detail,7101.html?dtype=All&dclanguage=en&id=13145%20>.
- Norton. 2009. "Strategic Investment and Policy Priorities for a Competitive Agriculture in Belize." Washington, DC: Inter-American Development Bank. Unpublished.
- Robinson, R. 1986. "Road Maintenance Planning and Management for Developing Countries." *Journal of the Institution of Highway and Transportation* 33(6): 8–13.
- UN ESCAP (United Nations Economic and Social Commission for Asia and the Pacific). 2005. *Transport and Communications Bulletin for Asia and the Pacific: No. 74, Road Safety*. New York, NY: United Nations.
- WEF (World Economic Forum). 2011. "The Global Competitiveness Report 2011–2012." Geneva, Switzerland: WEF. Available at [http://www3.weforum.org/docs/WEF\\_GCR\\_Report\\_2011-12.pdf](http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf).
- World Bank. 1994. "World Development Report 1994: Infrastructure for Development – Executive Summary." Washington, DC: World Bank. Available at <http://documents.worldbank.org/curated/en/1994/06/8470239/world-development-report-1994-infrastructure-development-executive-summary>
- . 2011. *Doing Business 2012*. Washington, DC: World Bank. Available at <http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB12-FullReport.pdf>.
- . 2012. *World Development Indicators, 2012*. Washington, DC: World Bank. Available at <http://data.worldbank.org/sites/default/files/wdi-2012-ebook.pdf>.