MIDTERM REVIEW OF THE VIENNA PROGRAMME OF ACTION FOR LANDLOCKED DEVELOPING COUNTRIES FOR THE DECADE 2014-2024

SESSION 2: CONNECTIVITY AND TRANSPORT INFRASTRUCTURE DEVELOPMENT
Overview

Priority 1
Fundamental transit policy issues

Priority 2
Infrastructure development and maintenance

Priority 3
International trade and trade facilitation

Priority 4
Regional Integration and Cooperation

Priority 5
Structural economic transformation

Priority 6
Means of Implementation

Priority 2.a Transport Infrastructure

- Review of transport connectivity in the Plurinational State of Bolivia
- Review of transport connectivity in Paraguay
Priority 2a – Development & Maintenance of Transport Infrastructure
Investment in Transport and Services Infrastructure

Total Public and Private Investment in Infrastructure (% of GDP)

<table>
<thead>
<tr>
<th></th>
<th>Bolivia</th>
<th>Paraguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>7.68</td>
<td>6.73</td>
</tr>
<tr>
<td>2015</td>
<td>8.43</td>
<td>4.42</td>
</tr>
<tr>
<td>2016</td>
<td>11.04</td>
<td>4.04</td>
</tr>
</tbody>
</table>

Bolivia

Paraguay

Public Investment in Transport Infrastructure (US$ millions)

<table>
<thead>
<tr>
<th></th>
<th>Bolivia</th>
<th>Paraguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>32.77</td>
<td>10.1</td>
</tr>
<tr>
<td>2015</td>
<td>1,343.88</td>
<td>592.64</td>
</tr>
<tr>
<td>2016</td>
<td>1,430.74</td>
<td>610.35</td>
</tr>
</tbody>
</table>

Source: Elaborated by the authors on the basis of data obtained from INFRALATAM (http://infralatam.info/), 2019
Main road corridors:

- **The East-West corridor**: Connects ports located in the north of Chile and the south of Peru on Pacific coast with the ports of Santos and Paranaguá in Brazil on the Atlantic coast. This corridor also connects with the Eastern and Western railway networks.
- **The Northern corridor**: Connects the State of Rondonia, Brazil with the East-West corridor.
- **The Southern corridor**: Connects with East-West corridor; links Buenos Aires, Argentina with Lima, Peru; and provides Paraguay access to the Pacific Ocean.

<table>
<thead>
<tr>
<th>Indicator/Year</th>
<th>2014</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total km road</td>
<td>86,855</td>
<td>89,613</td>
</tr>
<tr>
<td>Total km paved road</td>
<td>7,134</td>
<td>7,959</td>
</tr>
</tbody>
</table>
Priority 2a – Development & Maintenance of Transport Infrastructure
Road Transport Connectivity in Bolivia: current status

Bolivia’s road network

Source: Administradora Boliviana de Carreteras (ABC).
Priority 2a – Development & Maintenance of Transport Infrastructure
Road Transport Connectivity in Bolivia

Achievements

2,758 km of additional roads built between 2014-2016 and 3,445 km under construction in 2016.

Construction of tunnels, two-way highway, bridges and contention walls in strategic location (el Sillar) along the Santa Cruz-Cochabamba highway.

Challenges and Bottlenecks

Slight decrease in the length of road network per inhabitant.

Topographical reality paired with poor road surface quality (only 8.5% of the roads are paved) means slower transit, higher transport costs, higher infrastructure investment costs, and limited territorial access during the rainy season.

<table>
<thead>
<tr>
<th>Indicator/Year</th>
<th>2014</th>
<th>2016</th>
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</thead>
<tbody>
<tr>
<td>km total/100 km2</td>
<td>7.9</td>
<td>8.2</td>
</tr>
<tr>
<td>km paved/100 km2</td>
<td>0.65</td>
<td>0.72</td>
</tr>
<tr>
<td>km total/1,000 inhab</td>
<td>8.4</td>
<td>8.2</td>
</tr>
<tr>
<td>km paved/1,000 inhab</td>
<td>0.68</td>
<td>0.72</td>
</tr>
</tbody>
</table>
Priority 2a – Development & Maintenance of Transport Infrastructure
Inland Water Transport Connectivity in Bolivia: current status

Two major water systems leveraged for transportation:

- **Amazon river basin (central and northern region): 5,728 km** of navigable rivers on Bolivian territory. Traditionally used to transport Bolivian exports such as rubber and elastic rubber to the Atlantic Ocean through the Madera river and other tributaries of the Amazon river to Manaus, Brazil, it continues to be a principal means of internal mobility for passengers, freight and the cabotage of merchandise.

- **Plata river basin (south-east edge of the country): 56 km** in Bolivian territory. Due to its integration with the Paraguay-Paraná Waterway (PPW), it is the most important inland waterway for the transportation of freight destined for import (fuels, iron bars and wire, barley malt) and export (grains, cement and iron ore).
Priority 2a – Development & Maintenance of Transport Infrastructure
Inland Water Transport Connectivity in Bolivia: current status

Source: ECLAC (2019).
Priority 2a – Development & Maintenance of Transport Infrastructure
Inland Water Transport Connectivity in Bolivia

Achievements

Construction of Puerto Jennefer and Puerto Busch Freight Terminal.

2018 resolution to stimulate transport through the PPW by prioritizing public and private sector partnerships to complete Puerto Busch.

Ports of Aguirre, Gravetal, and Jennefer have been declared international ports and investment in infrastructure and services have been made.

Promotion of the revival of the Madera-Amazonas route through Porto Velho Brazil, as an intermediate point to reach Manaus.

Challenges and Bottlenecks

Lack of dredging and beaconing along the Paraguay-Paraná Waterway (PPW) slows transport and creates waiting times for transshipment operations.

Water intake of Corumbá restricts the passage of barges to and from the Tamengo Canal.

Challenges range from the development of port infrastructure and subsequent coordination with countries involved.
**Priority 2a – Development & Maintenance of Transport Infrastructure**

**Rail Transport Connectivity in Bolivia: current status**

Two networks:

- **Andean Network** (managed by Empresa Ferroviaria Andina S.A. - FCA): **2,274 km** long. Crosses departments of La Paz, Oruro, Potosí, Chuquisaca, and Cochabamba, and connects to the railway networks of Argentina, Chile, and Peru (but only network to Antofagasta is currently operational).

- **Eastern Network** (managed by Ferroviaria Oriental S.A. – FOSA): **1,424 km** long. Connects the departments of Chuquisaca, Tarija and Santa Cruz, and is connected to the networks of Argentina (Yacuiba) and Brazil (Puerto Suárez). Responsible for the biggest share of export and import freight and is crucial for the transport of soybean derivatives and other products that transit through the PPW.
Priority 2a – Development & Maintenance of Transport Infrastructure
Rail Transport Connectivity in Bolivia: current status

Bolivia’s rail network

Source: Logistics Cluster; WFP (2015).
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Rail Transport Connectivity in Bolivia

Achievements

Construction of the Montero-Bulo Bulo segment (for urea and ammonia plants).

Discussion surrounding construction of: Bi-Oceanic railway corridor; Eastern and Western railway network connection; Motacucito-Mutún-Puerto Busch feeder line; C-15 feeder line between Argentina's Belgrano and Bolivia’s Eastern Network.

Challenges and Bottlenecks

Consecutive delays in the construction of the Montero-Bulo Bulo segment.

Lack of progress regarding the connection of the Eastern and Western railway networks.

Need for agreement by all the countries involved in the Bi-Oceanic Railway Corridor project.

Suspension of the International Public Bidding process to rehabilitate the C-15 feeder line.
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Air Transport Connectivity in Bolivia: current status

Infrastructure:

• **Four international airports:**
  - La Paz (El Alto)
  - Cochabamba (Jorge Wilsterman)
  - Chuquisaca (Alcantarí)
  - Santa Cruz (Viru Viru): strategic location and usable for all airplane sizes; its renovation and conversion into a freight and passenger hub is a priority of the PDES 2016-2020 and the Patriotic Agenda 2025.

• **39 airports of varying characteristics** in the nine administrative departments.
## Priority 2a — Development & Maintenance of Transport Infrastructure

### Air Transport Connectivity in Bolivia

#### Achievements

- **PNDS 2016-2020:** Strategic importance of strengthening air transport to promote the economic and social development of intermediate cities, and to further massify transport and integrate remote regions.

- 245,418 m² of platforms and 160,201 m² of airport buildings constructed between 2014-2017.

#### Challenges and Bottlenecks

- Adequate financing has yet to be identified for expansion projects, such as the Viru-Viru airport hub project.
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Pipeline Transport Connectivity in Bolivia: current status

Pipeline system of varying dimensions and capacity, covering two thirds of the territory and seven departments:

• **Oil pipelines**: 2,605.6 km
• **Multi-purpose pipelines**: 1,512.1 km
• **Gas pipelines**: 6,133 km; cover local demand and transport contracted volumes of gas to Brazil and Argentina.
  • YPFB-Petrobras Agreement (1999-2019): currently 30.08 million cubic meters per day
  • YPFB-ENARSA Agreement (2006-2026): currently 27.7 million cubic meters per day
Priority 2a – Development & Maintenance of Transport Infrastructure
Pipeline Transport Connectivity in Bolivia: current status

Bolivia’s gas pipeline network

Source: National Hydrocarbon Agency of Bolivia (ANH)
Priority 2a – Development & Maintenance of Transport Infrastructure
Pipeline Transport Connectivity in Bolivia

**Achievements**

Planning is under way to construct two pipelines to transport LPG to Peru and Paraguay.

Inauguration of virtual gas pipeline that has a liquefied natural gas plant, a fleet of cryogenic cisterns, mobile regasification stations and regasification satellite stations.

**Challenges and Bottlenecks**

Occasional disruptions in pipeline service due to external factors such as river overflows, mudslides or negligence of truck drivers and heavy machine operators.
Road Transport Connectivity in Paraguay: current status

Road network:

- **National roads**: 3,616 km
- **Departmental roads**: 13,838 km
- **Rural feeder roads**: 57,660 km

<table>
<thead>
<tr>
<th>Indicator/Year</th>
<th>2013</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total km road</td>
<td>32,207</td>
<td>75,120</td>
</tr>
<tr>
<td>Total km paved road</td>
<td>5,474</td>
<td>6,783</td>
</tr>
</tbody>
</table>
Priority 2a — Development & Maintenance of Transport Infrastructure

Road Transport Connectivity in Paraguay: current status

Paraguay’s road network

Source: Ministry of Public Work and Communications of Paraguay (MOPC), 2018
Priority 2a – Development & Maintenance of Transport Infrastructure

Road Transport Connectivity in Paraguay

Achievements
42,913 km of additional roads built between 2013 and 2017 (42,484 km of rural feeder dirt roads and 1,309 km of paved and concrete roads).

Increase in density indicators (2013-2017):

<table>
<thead>
<tr>
<th>Indicator/Year</th>
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<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>km total/100 km²</td>
<td>7.9</td>
<td>18.5</td>
</tr>
<tr>
<td>km paved/100 km²</td>
<td>1.35</td>
<td>1.67</td>
</tr>
<tr>
<td>km total/1,000 inhab</td>
<td>4.9</td>
<td>10.8</td>
</tr>
<tr>
<td>km paved/1,000 inhab</td>
<td>0.83</td>
<td>0.98</td>
</tr>
</tbody>
</table>

Challenges and Bottlenecks
Road network is primarily composed of dirt and gravel roads, with only 9% of the total network that is paved. As a result, transit and accessibility are significantly impacted during the rainy season.

During the harvest season, transport moves from the production areas of the east to the grain ports in the west, creating significant congestion along roadways, posing danger to smaller vehicles and further damaging road surfaces.
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Inland Water Transport Connectivity in Paraguay: current status

Paraguay-Paraná Waterway:  
- Paraguay’s primary import and export channel.
- 3,442 km (from Puerto Cáceres, Brazil, to Nueva Palmira, Uruguay).
- Subject of several agreements, including the Paraguay-Parana Waterway Agreement of Fluvial Transport.

Priority 2a – Development & Maintenance of Transport Infrastructure
Inland Water Transport Connectivity in Paraguay: current status

Maritime ports for product entry and exit:
- Nueva Palmira (Uruguay) and Buenos Aires (Argentina): PPW.
- Paranaguá (Brazil): by land.

Paraguayan fluvial ports:
- Three state-owned ports (Asunción, Encarnación and Pilar).
- 51 privately-owned ports (the major ones are concentrated along the Paraguay river between Concepción and Villeta).
Achievements


Progressive expansion of Paraguay’s merchant fleet, which in 2018 had 2,294 equipped units for transport along the PPW, meeting the demands of national and regional cargo (Bolivia and Brazil).

Challenges and Bottlenecks

Lack of depth and signalization along the PPW limits navigation and affects costs and transport time.

Natural restrictions force convoys to reduce drafts, and fraction barge convoys when approaching tight curves.

Need for involvement of all countries along the PPW to address naturally-occurring limitations.

Congestion in transshipment ports, notably in Buenos Aires, also creates bottlenecks.
Limited railway system:

- Originally, 400km-network connecting Asunción and Encarnación.
- Currently, only a six-kilometer segment of 1.435mm gauge is operational, connecting the grain loading platform in Encarnación with the Argentine railway network for exporting soybean through Argentinean and Brazilian ports.
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Rail Transport Connectivity in Paraguay

Achievements
Reactivation of rail company FEPASA is under discussion, as are the rehabilitation of certain segments and potential construction of a segment to connect to the Bi-Oceanic Railway Corridor project.

Challenges and Bottlenecks
Complexity in public-private investment landscape for railway rehabilitation.
Air Transport Connectivity in Paraguay: current status

- **28 registered airports:**
  - Six airports operate international flights.
    - Two airports (*Aeropuerto Internacional Silvio Pettirossi* – Asunción - and *Aeropuerto Internacional Guaraní* – Ciudad del Este) operate regularly scheduled commercial flights and account for the bulk of international travel.
    - Other paved airports are found in Encarnación, Itaipú, Concepción, Vallemí, Pilar, Ayolas, and Pedro J. Caballero, in the western part of the country, and Mariscal Estigarribia, in the east.
Achievements

Teniente Amín Ayub airport in Encarnación became an international airport.

Paraguay’s favorable weather conditions and flat topography allows the airport network to maintain a 98% operational level.

Strategic and equidistant location among South America’s main cities.

Challenges and Bottlenecks

Structural improvements in airports are needed to meet demand of expected growth.
THANK YOU

Questions?