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**FINANCING HIGHWAY IN MEXICO: CONCESSIONS (BOT)  
AND PUBLIC - PRIVATE PARTNERSHIPS (PPP)  
ASPECTS, CHALLENGES AND RECOMMENDATIONS**

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# Introduction

**2008**

<b>National Road Network</b>	<b>366,095</b>	<b>100%</b>
<b>Federal network</b>	<b>48,627</b>	<b>13%</b>
▪ <b>Toll</b>	<b>8,064</b>	<b>2.2%</b>
▪ <b>Toll-free</b>	<b>40,563</b>	<b>11%</b>
<b>Regional network</b>	<b>77,911</b>	<b>21%</b>
<b>Rural network</b>	<b>239,557</b>	<b>66%</b>

- **97.7% of the passenger transport and 57.0% of the national weight is moved via the national network**
- **2.2% of the national network are toll highways**

# Introduction

## Surface

<b>Total</b>	<b>366,095</b>	<b>100%</b>
<b>Paved</b>	<b>132,728</b>	<b>36%</b>
▪ <b>Two lanes</b>	<b>120,753</b>	<b>33%</b>
▪ <b>Four lanes</b>	<b>11,975</b>	<b>3.3%</b>
<b>Semi-paved</b>	<b>151,287</b>	<b>41%</b>
<b>No paved</b>	<b>82,080</b>	<b>23%</b>

- Are paved one of each three kilometers of the national network
- Only 3.3% of the national network are four-lane high quality roads.

# National highway plan

## The most important subprograms are:

- Strategic modernization of the network
- Bypass and access to cities
- Federal network conservation
- Interstate roads
- Complementary works
- Rural roads.
- The total investment considered to complete the program is 26,299 million dollars (2007 quote)



# National highway plan

- **The strategic modernization of the network and the bypass and access to cities are the fundamental parts of the Mexican road program**
- **The investment of these two subprograms in six years will be of 15,639 million dollars (60% of the total investment)**
- **The private sector investment in these projects will be of 8,781 million dollars in the period by means of Public Private Partnerships**
- **The projects of these subprograms are located in the 14 principal corridors of the national highway system, by which most of the passenger and weight terrestrial transport of the country is moved**

# Principal corridors of the national highway system





# Origins of toll highways in Mexico

- **The Mexican experience in the high quality road infrastructure provision with public funds was initiated in 1950.**
- **Nearly a thousand kilometers of toll highways were built in the next twenty years as public works.**
- **Between 1989 and 1994, 6,223 kilometers of toll highways were constructed, of which 4,657 kilometers were made by the private sector by means of 52 concessions (BOT).**
- **Due to diverse errors of instrumentation, two thirds of the network under concession had to be rescued financially in 1997.**

# Origins of toll highways in Mexico

**The enormous size of the concession's program caused four basic problems:**

- The highway program was so vast that the income by toll was insufficient to financially support most of the projects.
- The project allocation based on the smaller-scale concessions, stimulated the bidders to offer very short terms of concession and high tolls
- The projections of the construction's cost and traffic given by the authorities were deficient in many cases.
- Toll-free parallel roads should be available in all routes under concession.
- In addition, there was no suitable integral planning of the projects.



# Traffic in selected highways

Highway (Operation start)	Length (Km.) Lanes	1994	1997	2008
		dt	dt	dt
<b>Under concession</b>				
<b>México-Toluca (1990)</b>	<b>22 (6)</b>	<b>22,238</b>	<b>19,215</b>	<b>36,170</b>
<b>Mérida-Cancún (1992)</b>	<b>241 (4)</b>	<b>828</b>	<b>1,162</b>	<b>2,787</b>
<b>Rescued</b>				
<b>Guadalajara-Zapotlanejo (1993)</b>	<b>26 (4)</b>	<b>12,174</b>	<b>14,628</b>	<b>35,522</b>
<b>Cuernavaca-Acapulco (1992)</b>	<b>263 (4)</b>	<b>2,944</b>	<b>3,780</b>	<b>12,539</b>

# Rate in toll highways

- The high tolls were a characteristic of the highway program 1989-94.
- The Mexican authorities promoted reduction of rates before and after the 1997 financial rescue.
- With these measures, to increase the traffic and the income of the toll highways.

Rate in toll highways (dollars/kilometer – prices of December 2007)

<b>Category</b>	<b>1994</b>	<b>1996</b>	<b>1998</b>	<b>2000</b>	<b>2007</b>
<b>Trucks</b>	<b>0.70</b>	<b>0.36</b>	<b>0.28</b>	<b>0.27</b>	<b>0.25</b>
<b>Buses</b>	<b>0.42</b>	<b>0.19</b>	<b>0.16</b>	<b>0.17</b>	<b>0.16</b>
<b>Cars</b>	<b>0.16</b>	<b>0.11</b>	<b>0.10</b>	<b>0.10</b>	<b>0.09</b>



## **PPP in the road infrastructure construction**

- **The results of the highway program 1989-94 forced the Mexican authorities to make changes to the legislation. and the development of a new scheme of concessions.**
- **In the following ten years, it was not possible to attract private investment in the construction of new highways.**
- **In 2003, the Mexican government presented the current public-private partnerships scheme:**
  - **New concession model**
  - **Service provision contracts model (shadow toll)**
  - **Highways assets utilization model**

# **New concession model**

**Its main characteristics are:**

- **The concession is granted by means of public bid for a term of 30 years.**
- **The authorities provides final designs and rights of way.**
- **The government provides an initial contribution of public funds and offers a minimum revenue guarantee to facilitate involvement by private banks.**
- **The concession is awarded to the bidder who requests the lowest amount of public funds**
- **The public sector sets maximum average tolls and the rule for updating them.**
- **The authorities gives the traffic study, the bidders must adapt it to the project characteristics with their own analyses.**



# **Service provision contracts model (shadow toll)**

- **It is a PPP model to modernize existing free highways.**
- **A concession is awarded through a public bidding process**
- **The private company to design, finance, build, maintain and operate a highway to a fixed term of 15 to 30 years.**
- **The service provision is made by the private company in exchange for government periodic payments that consider the availability of the road and its traffic level.**
- **The bidders calculate the periodic payment based on the cost of construction, maintenance and operation, private investment yield, annual traffic considered in a specific band and contract period.**
- **The net present value of the periodic payments flow is the variable of decision for the concession granting.**



# Highways assets utilization model

- In this scheme, the Mexican authorities designs packages composed of existing toll roads and roads to be built by the winning bidder and organizes public bids to transfer these packages to the private sector.
- The winning bidder operates and maintains existing roads and builds, operates, and maintains the new roads in the package.
- The concession is granted to the bidder that fulfills all the requirements established in the bid conditions and that offer the greater amount of resources like compensation to the federal government.





Sharing the road



# PPP projects in Mexico

- In the present highway program, the project selection has been more careful for each one of the association models, like the distribution of risks between the public and private sectors.

## Public-private partnerships projects in Mexico

<b>Model</b>	<b>No. of projects</b>	<b>Length (km)</b>	<b>Amount (mUSD)</b>
<b>New concession</b>	<b>23</b>	<b>1,796.1</b>	<b>5,229.5</b>
<b>Provision service contracts</b>	<b>7</b>	<b>611.8</b>	<b>1,802.9</b>
<b>Highways assets utilization</b>	<b>34</b>	<b>1,294.2</b>	<b>4,002.4</b>
<b>Totals</b>	<b>64</b>	<b>3,702.1</b>	<b>11,034.8</b>

mUSD = million dollars - prices of September 2008

# Conclusions

- **Determination of the expected value of the PPP**
- **Suitable organization**
- **Approach in the results**
- **Project Demand Risk**
- **Programming of the projects**
- **Efficiency evaluation of the PPP**