

**Response to questionnaire for:**

**Assessment of strategic plans and policy  
measures on Investment and Maintenance in  
Transport Infrastructure**

**Country:**

**Mexico**

# **Infrastructure mode: ROAD**

## **1 INTRODUCTION**

### **1.1 Infrastructure**

In 2012<sup>1</sup>, the average annual growth rate of the Federal Highway Network is 1.2 percent from 323 thousand kilometers in 2000 to more than 374 thousand in 2012. This network is formed by coated roads (39.7 percent), paved roads (37.8 percent), improved gaps and earth roads (22.5 percent). The increase in the length of the network according to the surface has been higher in paved roads that have had an increase of 30.3 percent between 2000 and 2012, followed by improved gaps and earth roads, with an increase of 21.4%, and the last are the coated roads with an increase of 2.4% over the same period.

The National Road Network is divided into the Rural Network (which includes improved gaps and rural roads) of 244,386 kilometers, the Feeder Network (consisting of 31 State networks) of 80,774 kilometers and the Federal Network (basic, and toll and free regional) of 49,102 kilometers, the average annual growth rate in highway infrastructure in Mexico is 1.2 percent, still the Feeder Network which presents the largest annual growth, from almost 65 thousand kilometers in the year 2000 to more than 80 thousand kilometers in the year 2012.

In the period 2000-2012, while the Toll Federal Network grew by 28.2 percent, from 6,600 kilometers in the year 2000 to 8,460 in 2012, the Free Federal Network had a reduction due to the change of jurisdiction caused by the growth of urban areas in the country to move from 41,866 kilometers in the year 2000 to 40,643 km in 2012. Currently the country has a network of roads that connect to the productive regions of the country among themselves and with the main nodes for the trade and the transportation of goods in the national territory, and between Mexico and the world's major markets.

### **1.2 Performance**

In 2011, the 11.9 percent of the length of the Toll Free Federal Road Network, operates with a level of service of A, the 38.8 percent at level B, and the 24.4 percent at level C; while the 13.4% operates at level D, 8.5 percent at level E and 2.9 percent at level F (see the table below).

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<sup>1</sup> Secretary of Communications and Transportation, 6th Government Inform, 2012.

ESTADO	LENGTH OF THE TOLL-FREE FEDERAL ROAD NETWORK BY LEVEL OF SERVICE <sup>2</sup> (Km)						
	A	B	C	D	E	F	TOTAL
AGUASCALIENTES	96.23	88.75	79.18	79.77	22.20	-	366.13
BAJA CALIFORNIA	309.39	901.16	256.13	186.67	76.03	17.60	1,746.98
BAJA CALIFORNIA SUR	48.10	592.99	458.14	84.20	28.50	-	1,211.93
CAMPECHE	239.10	769.00	196.96	15.00	74.75	-	1,294.81
COAHUILA	457.44	796.04	511.52	112.41	55.14	15.00	1,947.55
COLIMA	84.05	60.10	139.24	69.43	6.30	-	359.12
CHIAPAS	348.85	714.17	513.86	447.38	79.21	24.20	2,127.67
CHIHUAHUA	406.30	1,077.45	384.00	60.00	255.49	-	2,183.24
DURANGO	362.69	1,155.25	448.74	78.33	-	-	2,045.01
GUANAJUATO	158.95	293.01	322.58	116.57	112.57	98.53	1,102.21
GUERRERO	125.67	770.37	560.83	359.10	132.87	25.37	1,974.21
HIDALGO	110.95	292.91	137.88	196.80	82.61	12.72	833.87
JALISCO	16.50	367.87	463.73	660.28	521.04	134.40	2,163.82
MÉXICO	73.15	91.86	148.96	59.80	190.13	143.52	707.42
MICHOACÁN	186.22	369.44	611.42	507.77	318.22	265.23	2,258.30
MORELOS	20.32	79.26	101.17	55.06	44.71	15.76	316.28
NAYARIT	14.50	308.87	134.66	70.65	203.03	28.22	759.93
NUEVO LEÓN	129.26	653.36	188.77	218.82	56.57	71.11	1,317.89
OAXACA	56.00	1,111.67	1,066.78	314.09	260.57	1.35	2,810.46
PUEBLA	89.21	143.95	409.68	249.77	141.52	46.70	1,080.83
QUERÉTARO	26.62	127.16	171.27	52.52	-	22.30	399.87
QUINTANA ROO	177.72	515.80	105.65	37.25	9.64	7.26	853.32
SAN LUIS POTOSÍ	250.56	664.61	271.71	233.72	235.49	27.28	1,683.37
SINALOA	131.19	178.99	233.66	193.84	6.43	-	744.11
SONORA	106.19	1,213.07	56.98	169.39	189.93	-	1,735.56
TABASCO	143.67	146.14	155.97	103.96	32.10	-	581.84
TAMAULIPAS	245.78	1,017.71	628.17	66.79	37.00	184.12	2,179.57
TLAXCALA	43.72	146.37	81.18	82.33	60.62	6.60	420.82
VERACRUZ	137.41	476.65	957.64	619.33	299.87	79.99	2,570.89
YUCATÁN	293.58	794.25	106.90	98.43	39.91	9.33	1,342.40
ZACATECAS	176.35	601.87	496.54	121.57	36.54	-	1,432.87
<b>KILOMETERS</b>	<b>5,065.67</b>	<b>16,520.10</b>	<b>10,399.90</b>	<b>5,721.03</b>	<b>3,608.99</b>	<b>1,236.59</b>	<b>42,552.28</b>
<b>PERCENTAGE</b>	<b>11.91</b>	<b>38.82</b>	<b>24.44</b>	<b>13.45</b>	<b>8.48</b>	<b>2.91</b>	<b>100.00</b>

<sup>2</sup> The level of service is a qualitative measurement to characterize the operating conditions of the transit which depend on a number of factors, among which may be mentioned: the speed, travel time, interruptions to the continuous motion of the transit, the freedom of handling, comfort and the costs of operation. In the practice are handled six levels to identify the conditions of operation of a road: A, the traffic flow is free and the speed is developed within the limits imposed by the traffic signs; B, the flow is stable and drivers have the freedom to choose their speeds and the lane of operation; C, the flow is stable, the drivers perceive some restrictions, so much to choose their speed and the lane of operation; D, the flow is close to the unstable; the speed is less than the indicated on the traffic sign; E, the flow is unstable and can occur short stoppages; vehicular speed is less than 50 km per hour; and F, it is forced to flow and the speeds are significantly reduced causing stops medium to long duration.

## 2 MAJOR PROJECTS AND FUNDING

In the communications and transport sector the federal government has proposed to modernize the strategic road network building and/or expanding highway stretches of high specifications, with priority in the transversal and longitudinal corridors that linked to the major cities with ports, borders, tourist centers and industrial complexes.

Within the same network is has foreseen the need to build bypasses, road junctions, road distributors, and road access to improve the continuity and connectivity even in border crossings. At the same time, is also working on the integration of major road axis with interregional axis, thus enhancing this way various poles of development, thereby contributing to the urban rearrangement and the reduction of pollutant emissions by the decongestion of urban roadways.

The main source of financing are public resources and are complemented by private resources, the latter mainly through schemes of public-private partnerships that began to deploy in Mexico since 2002.

As in many other developing countries, in Mexico there is a great need for infrastructure. Unfortunately, they are still very few funding sources other than the public resources. States and municipalities have only limited access to debt financing for infrastructure projects, in addition, persistent weakness of the municipality financial system in Mexico. In the majority of the municipalities the tagged federal contributions are by far the main source to finance the basic social infrastructure. Development banks only have limited funds and there are still important issues related to the risk that inhibit the loans from commercial banks and the participation of capital markets, however, in recent times have been designed instruments that are still maturing. By the side of the public sector the binomial National Infrastructure Fund – Public Works Bank (BANOBRAS by its Spanish acronym) has had success in the promotion of private investment for the financing of the highway infrastructure.

The government can make an initial contribution with public resources, through the National Infrastructure Fund, in addition to the fact that the scheme provides the provision of private resources to be allocated to the construction, operation, maintenance and upkeep of the road infrastructure.

Currently, the funding for the maintenance of roads is obtained from the allocation of public resources, and on a smaller scale the implementation of private resources through public-private partnerships.

Because of the limited resources allocated through the Federal Budget, there have been designed some financing strategies, such as:

Multi-year Contracts for Road Upkeep (CPCC, by its Spanish acronym), through this scheme, a company or group of companies are contracted for a period of seven years to give integral conservation to certain stretches of road in order to comply with

international standards. This scheme takes advantage of the experience gained in previous years with the Program of Integral Maintenance (PROMAI, by its Spanish acronym) and the Pilot Program of Integral Maintenance (PROPIMI, by its Spanish acronym).

The Project Finance Initiatives model in roads (PPS, by its Spanish acronym), which looks for advancing the development of road infrastructure, mainly of federal toll-free roads, raise the quality of service offered to users, increase efficiency and productivity of the delivery of public services, open new spaces for private sector participation and achieve a more efficient risk distribution of highway projects.

Finally, there are the concessions and asset utilization models, where concessioners are responsible for executing the upkeep work, under the private resources and in accordance with the technical and financial forecasts for each project.

The main guideline in this aspect is highlighted in the National Development Plan 2007-2012, which says, "... expand the range of financing sources and forms of public-private participation. With these models of public-private partnership, it seeks to encourage the development of road infrastructure, both toll and toll-free, raise the quality of service offered to the users, to improve the physical conditions of the roads, as well as generating a significant number of direct and indirect jobs..."

And in the second axis of the Plan, entitled "competitive economy and employment generation economy", it raises the economic policy objectives: (i) to achieve higher levels of competitiveness; (ii) to generate more and better jobs for the population; and (iii) to achieve a more vigorous internal market which are essential for achieving "Sustainable Human Development", recognizing that the performance from the entire society and the Government is necessary in order to reach this, by what the Government proposes a joint plan of action with regard to the society to achieve the objectives, higher levels of competitiveness, deliver quality goods and services at affordable prices, through the increase of the productivity, economic competition, the investment in infrastructure and strengthening the domestic market.

The new scheme of public-private partnerships (APP, by its Spanish acronym) for the development of Mexico's Highway was created in the first half of the 2001-2006 administration and its instrumentation began in the second half of that period. Under this new scheme, during the 2001-2006 administration were put in operation the bypasses of Matehuala and Mexicali, with a length of 14.2 and 41.0 kilometers, respectively.

In the present Administration, the results obtained through these schema are the following:

- 21 roads in operation, which add up to a length of 1,088.2 km and an investment of 2,126.6 million dollars (28,709 million pesos @ 13.50 pesos per dollar).
- 33 Works in process of construction or awarded by start using schemas of public-private partnership, totaling 1,887.8 kilometers and an investment of 7,632.4 million dollars (103,037.2 million pesos @ 13.50 pesos per dollar).

- Two works in bidding process under the concession scheme, with a length of 129.2 kilometers and an estimated investment of 488.8 million dollars (6,600 million pesos @ 13.50 pesos per dollar).

In total, the present Administration has attended 56 projects through these schema of public-private partnerships, that adds up to more than 3,000 kilometers and an investment of nearly 10,370 million dollars (140 thousand million pesos @ 13.50 pesos per dollar).

In January of 2012, it was enacted the Public-Private Partnership Law, which seeks to regulate the schema for the development of public-private partnerships projects, under the principles set forth in articles 25 and 134 of the Constitution of the United Mexican States, which will allow you to give continuity to the development of projects with the participation of the private sector.

❖ *Are there any policy/funding structure changes due to the crisis?*

No. In general the structure of funding has been maintained, what has changed are the conditions for access to these financing.

### 3 STRATEGIC PLANS

The National Development Plan 2007-2012 (PND 2007-2012, by its Spanish acronym) establishes within its objectives to ensure the access and extend the coverage of infrastructure and transport and communication services, at both the national and regional levels, in order that the Mexicans will be able to communicate and move smoothly and timely in all the country and the world, as well as do more efficient transport of goods and telecommunications toward the inside and outside of the country, so that these sectors contribute to the comparative advantages that Mexico has.

To comply with this objective, the transport sector have been raised the following strategies:

- Expand the coverage of the transport in all its forms, to modernize the infrastructure and provide reliable and quality services for the entire population.
- Bring down the economic cost of transport, improve safety and comfort of the users, as well as to promote the competitiveness and efficiency in the provision of the service of transport.
- Modernize the management of the transportation system, strengthening the normative exercise, rector and promoter of the State in order to ensure the development and use of transport infrastructure.
- Propose financing schemes and improve existing ones to promote the development of infrastructure projects and promote its role as a generator of opportunities and jobs.

Within the policy objectives related to economic and social growth the PND 2007-2012 provides the following:

Achieve an accelerated sustained economic growth and generate more formal jobs that allow all Mexicans, especially to those living in poverty, have a decent income and improve their quality of life.

Having a competitive economy that offers quality goods and services at affordable prices, through increased productivity, economic competition, the investment in infrastructure, the strengthening of the internal market and the creation of favorable conditions for the development of enterprises, especially the micro, small and medium ones.

A goal of environmental policy that deserves a special mention is that which refers to the reduction of greenhouse gas (GEI, by its Spanish acronym) emissions.

A central theme in this task is the reduction of GEI emissions in strategic sectors in which there are very important cobenefits as the energy efficiency, industrial competitiveness, security and care to the environment.

In this sense within the strategies in which the transport sector has intervened are the following:

- Promote the efficient use of energy in the domestic, industrial, agriculture and transportation sphere.
- Promote the adoption of international standards on vehicle emissions.

To do so, it is necessary to have cleaner fuels and establish economic incentives to encourage the use of more efficient vehicles, and the renewal of the vehicular fleet, and use the Government procurement to boost this market. Should be set rules and standards that require to increase the efficiency of new vehicles and thus reduce the emissions of CO<sub>2</sub>. We need to establish throughout the country regular and systematic programs of inspection and vehicle maintenance, as well as efficient public transportation systems and promote rail transport.

In the stage of obtaining the elements for the tender of the works that were considered within the Program of Road Infrastructure, one of them otherwise, the most important, is the release of the right of way in build and modernization of roads, which presented the following obstacles:

- *The historic right of way.* It is the greatest challenge that has been found mainly by the intervention of social and political groups, with the intention to advise communities and cooperative land owners in a negative way against the Secretary of Communications and Transportation (SCT by its Spanish Acronym), in such a way that does not accept the negotiations proposed to them. This, coupled with the lack timely involvement of state and municipal governments, has caused delays in the construction of the works and in some cases until the suspension of the project;
- Negative to sell by those affected, as the prices of the National Institute of Administration and appraisals of National Assets (INDAABIN by its Spanish Acronym) did not cover current rateable values;
- *Intestates.* Cooperative lands which did not have the documentation to certify the property, individuals without supporting documentation, owners based overseas, etc.

One more challenge, was to obtain the environmental permits and land-use change, as for obtaining these is due to meet a number of special requirements, which directly impact on the adequacy or modification of the executive projects and therefore, in the cost of the works to carry out.

Finally, it is important to mention, that in the implementation of some projects, were used for cutting edge technologies, new materials, new equipment, new tools, as well as, innovative financing schemes and public-private financing that weakened the federal economic burden. Within these works we can mention the innovative construction of the highways Durango - Mazatlan and Mexico - Tuxpan; bridges "Baluarte" and "San Marcos"; and the tunnels "El Sinaloense", "Huauchinango" and "Xicotepec".

### 3.1 Long Term



In Mexico, with the Planning Law which provides "the basic principles and norms according to which will be carried out the Development National Planning, based on this, the activities of the Federal Public Administration".

This planning process considers the long, medium and short-term actions, that in the area of infrastructure allow outline strategies to build and modernize the infrastructure that the country demand.

### **3.2 Mid Term**

Aligned with the National Development Plan are developed special sectoral plans that are part of a planning document of medium-term, with the definition of the lines of action to be executed in a period of 6 years.

It is here where you can take the National Infrastructure Program 2007-2012 (PNI 2007-2012, by its Spanish acronym) , which sets out the objectives, goals and activities that will boost the federal government to increase the coverage, quality and competitiveness in this strategic sector for national development. The program assumes the challenge of building a solid infrastructure, updated and extended for the benefit of the generations of today and tomorrow. For this reason, defines actions with a comprehensive, long-term vision.

In particular in the field of highway infrastructure strategies are set to complete the modernization of the transversal and longitudinal corridors that communicate to the main cities, ports, borders and tourist centers of the country roads with high specification roads; develop interregional axes, to improve the communication between regions and the connectivity of the road network; giving special attention to the construction of bypasses and access to facilitate the continuity of the traffic flow; and improve the physical condition of the road infrastructure and reduce accident rate.

In specific, the sectoral Program of Communications and Transport 2007-2012 is for the Ministry of Communications and Transport the guiding instrument for their actions in the medium term to fulfill the primary objective of the National Development Plan and the goals of the National Infrastructure Program in the items that are the responsibility of the Ministry.

The program is structured around four sectoral objectives that have marked the work during this administration: to increase the geographic coverage and social infrastructure, improve its quality and efficiency, increase their levels of security and convert the country into one of the main competitive logistics platforms of the world.

## **4 ASSESSMENT METHODOLOGY**

The various investment projects in the transport sector, are always accompanied of feasibility studies and economic feasibility based on the methodology of cost-benefit assessment, in order to ensure the domestic profitability. In addition, you must also comply with the requirements laid down by the authorities responsible for preserving

the ecological and environmental balance, by conducting studies of manifestation of the impact that can have various infrastructure projects in the environment.

In the case of the methodologies of cost-benefit assessment there are considered to be the estimate of the profitability indicators that consider in their valuation primarily investment costs and the benefits derived from the savings in vehicle operating costs and in travel time of the users of the various modes of transport. In the case of the methodologies of environmental impact assessment, lists are used for the verification of potential impacts, cause-effect networks to identify the final impact associated with the activities of the infrastructure project, finally, the array of Leopold modified to assess environmental impacts. The result of this methodology of study includes mitigation measures and environmental management plans that are submitted to the authorities for approval.

Recently there have not been substantial changes in the methodologies employed in Mexico. In the case of cost-benefit assessment, have been estimated from an economic perspective the benefits due to the savings in travel time, derived from the increase that could have the consumer surplus by having less time to travel from his work and pleasure activities. On the other hand it is a periodic update of the operating costs of the different types of vehicles on the national road network, through the use of the cost model of operation that suggests the World Bank (VOC).

# **Infrastructure mode: PORT**

## **5 INTRODUCTION**

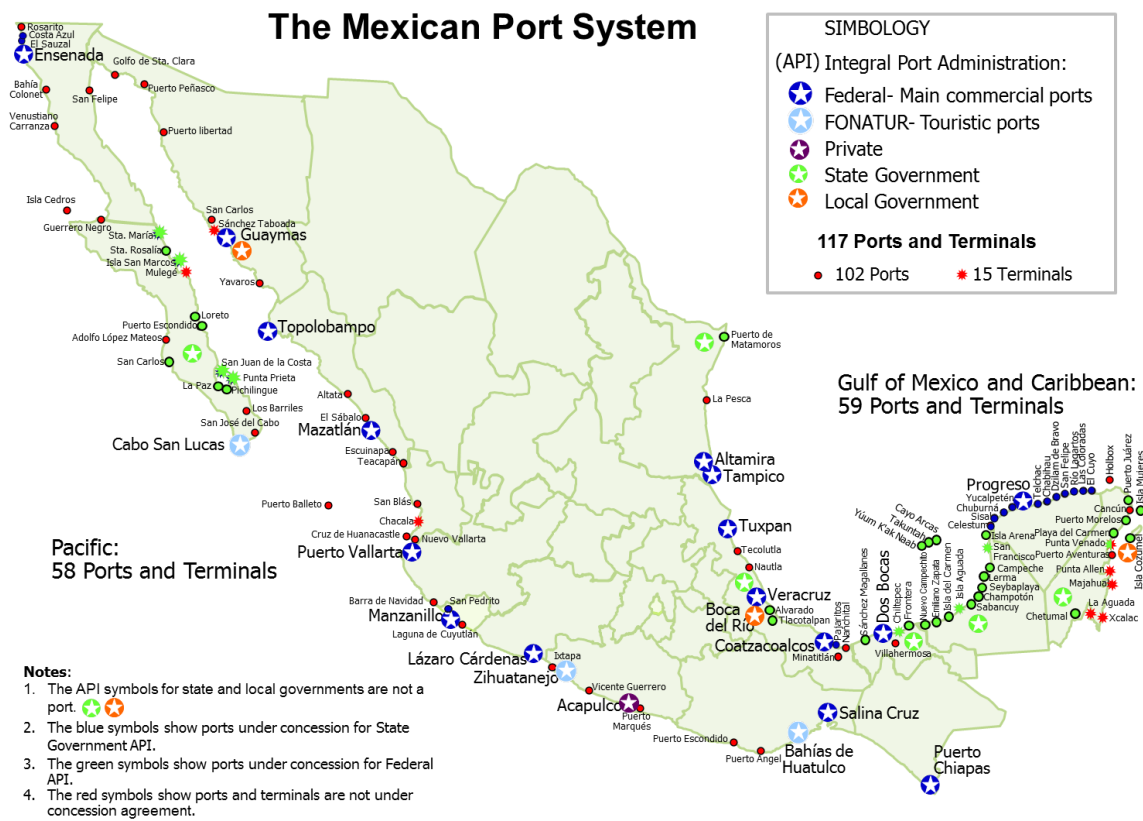
### **5.1 Infrastructure**

Mexico is supported by a large port system consisting of 117 ports and terminals. Mexican ports hold a presidential decree, which establishes their official name, navigation regime (oceanic or coastal) and specific geographic location.

There are 58 ports and terminals along the Pacific coastline and 59 along the Gulf of Mexico and Caribbean Sea, 69 are used for oceanic navigation and 49 for coastal navigation only (cabotage).

The most important ports and terminals of the country subscribe to the regime of Port Integral Administration, hereinafter API, for its acronym in Spanish. Mexican government grants a concession to 29 mercantile companies that combine Mexican Port System as follows: 16 API are managed by the Public Parastatal Administration (Federal Government), 3 by the Tourism Fund, 6 by State Governments, 3 by Municipal Governments and one by a private entity.

- Federal government APIs are: Ensenada, Baja California; Guaymas, Sonora; Topolobampo and Mazatlán, Sinaloa; Puerto Vallarta, Jalisco; Manzanillo, Colima; Lázaro Cárdenas, Michoacán; Salina Cruz, Oaxaca; Puerto Madero, Chiapas; Altamira, and Tampico, Tamaulipas; Tuxpan, Veracruz and Coatzacoalcos, Veracruz; Dos Bocas, Tabasco and Progreso, Yucatán.
- Tourism Fund APIs are: Cabo San Lucas, Huatulco and Zihuatanejo.
- State APIs are: Baja California Sur, Tamaulipas, Tabasco, Campeche, Quintana Roo and The port system of Veracruz.
- Municipal APIs are: Cozumel, Boca del Río and Guaymas
- Private API is: Acapulco



Port infrastructure in 2010 summed up 211.2 thousand meters for berth, 164.8 thousand meters of protection works, such as breakwaters, jetties, groins and marginal protections, plus 7.7 square meters of storage areas.

**Length of berthing and docking works 2011 (meters)**

Coast	Commercial		Fishing	Tourism	Oil al	Army	Others b/	Total
	Foreign Trade	Domestic only						
<b>National</b>	<b>36,438</b>	<b>9,848</b>	<b>35,975</b>	<b>88,301</b>	<b>14 485</b>	<b>5 313</b>	<b>22 219</b>	<b>212 579</b>
Pacific	17,036	2,703	14,107	62,550	4 072	3 706	9 531	113 705
Gulf of Mexico and Caribbean	19,402	7,145	21,868	25,751	10 413	1 607	12 688	98 874

Notes: including others protective works and storage areas outside of 117 ports.  
a/ Berths in terminals of Mexican state-owned Petroleum company (PEMEX).  
b/ Including berths of shipyards, ferry passenger terminals, offshore supply facilities, maritime academies and Harbor Master facilities.

**Protective works and storage area 2011**

Coast	Protective works (meters)					Storage Area (m <sup>2</sup> )			
	Total	Breakwaters	Jetties	Groins	Marginal Protections	Total	Yards	Sheds	Warehouses
<b>National</b>	<b>166,944</b>	<b>28,734</b>	<b>37,455</b>	<b>18,397</b>	<b>82,358</b>	<b>7,791,591</b>	<b>7,179,038</b>	<b>66,942</b>	<b>545,611</b>
Pacific	81,335	16 507	13 794	7 539	43 495	4,093,361	3 827 639	15 790	249 932
Gulf of Mexico and Caribbean	85,609	12 227	23 661	10 858	38 863	3,698,230	3 351 399	51 152	295 679

Notes: including others protective works and storage areas outside of 117 ports.  
Jetties are perpendicular structures built at river mouths from the shoreline into the ocean.

Groins (similar to jetties, but smaller) are hard structures constructed perpendicularly to the beach.

## 5.1 Performance

### 1.2.1 Port movement

Mexico adopted an external trade strategy based on openness and diversification which now rules port operations. Port companies and operators in Mexican hub ports work with the highest international standards and productivity indicators, comparable with leading ports over the world.

Cargo movement in the Mexican Port System  
(January-December, thousand tons)

Type of Cargo	2009	2010	2011	Share 2011	Growth 2011
Conventional general cargo 1/	15,972.7	18,761.4	20,070.6	7.1%	7.0%
Containerized cargo	23,588.6	29,581.8	34,930.0	12.4%	18.1%
<b>Dry bulk</b>	<b>66,162.4</b>	<b>75,874.6</b>	<b>81,952.8</b>	<b>29.0%</b>	<b>8.0%</b>
• Agricultural cargo	11,631.8	11,165.9	12,184.2	4.3%	9.1%
• Others	54,530.6	64,708.7	69,768.6	24.7%	7.8%
<b>Liquid bulk</b>	<b>136,199.5</b>	<b>148,593.5</b>	<b>145,855.1</b>	<b>51.6%</b>	<b>-1.8%</b>
• Oil and derivatives 2/	127,287.2	138,008.0	136,405.8	48.2%	-1.2%
• Others 3/	8,912.3	10,585.5	9,449.3	3.3%	-10.7%
<b>TOTAL</b>	<b>241,923.2</b>	<b>272,811.3</b>	<b>282,808.5</b>	<b>100.0%</b>	<b>3.7%</b>
Subtotal Commercial Cargo 4/	114,636.0	134,803.3	146,402.7	51.8%	8.6%
Containers (TEUs)	2,884,487	3,691,374	4,223,631		14.4%
Vehicles (Unids)	532,857	871,759	1,089,627		25.0%
Cruise ship passengers	5,425,267	6,658,212	5,661,652		-15.0%

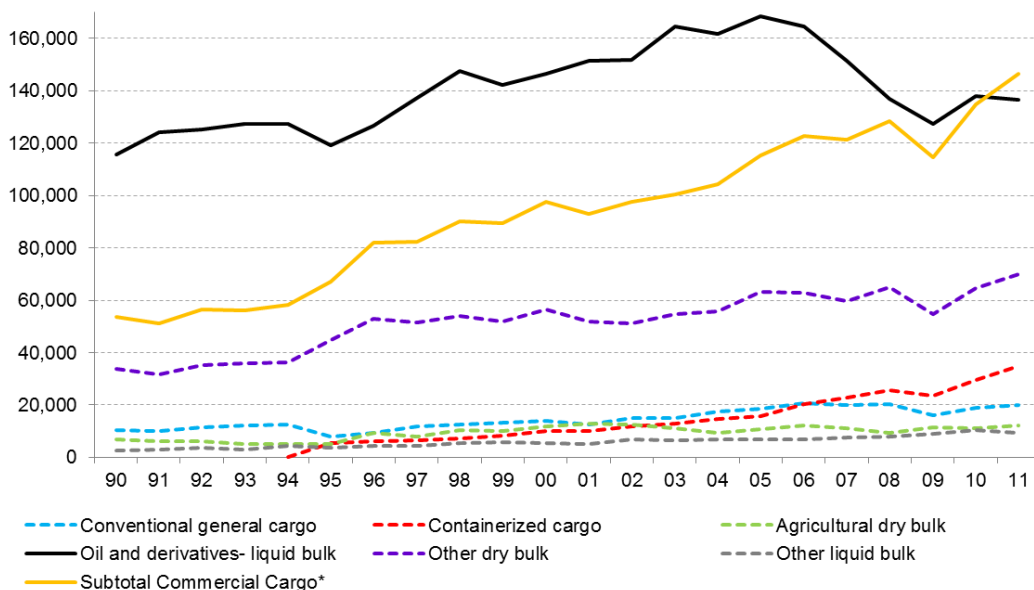
1/: Including vehicles.

2/: Oil and derivatives handled by Mexican state-owned Petroleum company (PEMEX) terminals.

3/: Including Liquefied Natural Gas (LNG) handled by private operators.

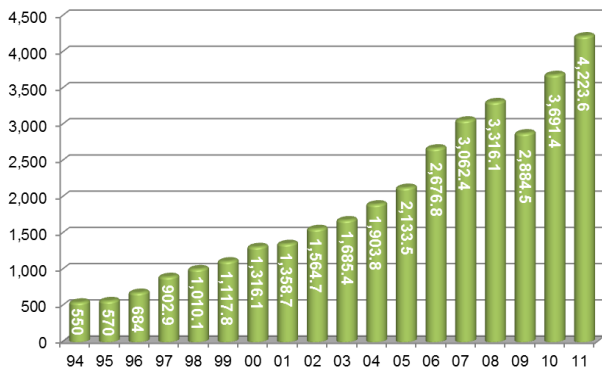
4/: Not including oil and derivatives.

### **Historical data on cargo movement in the Mexican Port System 1990-2011** **(thousand tons)**

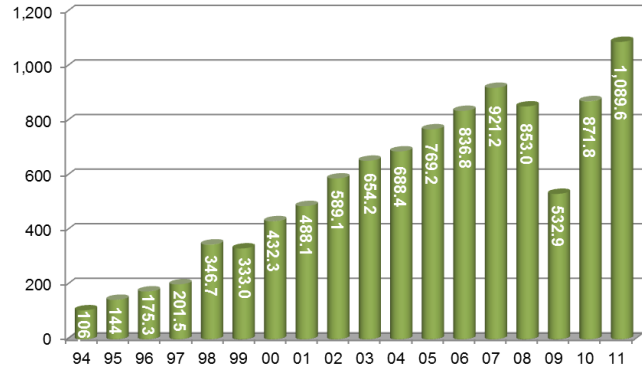


National port movement grew 3.7% in 2011 compared to the previous year, at the same growing rate as Mexican GDP. Also, 2011 was a groundbreaking year for cargo movement. Commercial cargo grew 146.4 million tons, likewise containers augmented 4.2 million TEU and vehicles incremented 5.6 million units.

**Container throughput  
(thousand TEUs)**

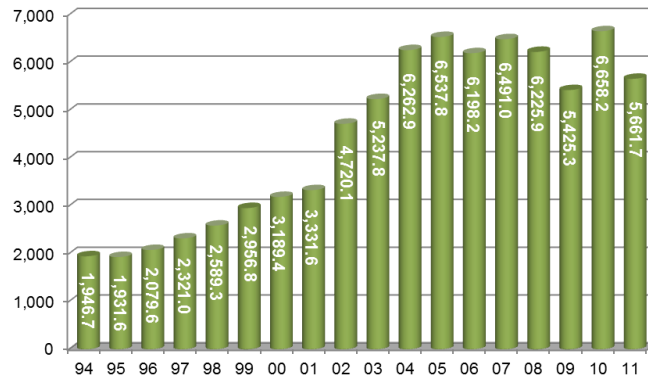


**Vehicle movement  
(thousands)**



Mexico is a leading cruise destination. During 2010 cruisers movement reached its highest record with 2,692 arrivals and 6.6 million passengers. Conversely, in 2011 there was a downfall in cruiser movement due to the United States crisis, the main cruiser destination in Mexico. That year there were only 1,341 arrivals and 5.6 million passengers. Almost 70% of tourist visited Caribbean routes and 32.3% visited the Mexican Riviera.

**Cruise ship passenger  
(thousands)**



### 1.2.2 Operation performance indicators

The transformation of the Mexican Port System in 1993, initiated with the entry into force of the Port Law, which created a favorable environment by fostering productivity at different levels. Since then, investment in infrastructure, modern equipment and specialized terminals has grown considerably. In addition modern labor relationships promote new technologies at work and high quality procedures.

Operation performance has experienced a significant improvement, specifically in performance indicators related to first maneuvers, that is, transferring cargo from the ship to storage areas in the port terminals and vice versa, shortening ships stay times, thus lessening time and cost to shipping companies, port terminals and users.

All types of cargo upgraded their performance: new specialized terminals in dry and liquid bulk has tripled their load and upload performance, from 250 tons per hour/ship to 750 tons per hour/ship.

The main container terminals located in Veracruz, Manzanillo and Lázaro Cárdenas, have increased their operative performance 400 per cent. Manzanillo reached the highest national rate with 95 containers per ship/ hour in operation during the first trimester of 2012. Simultaneously, stay times in containers ships reduced almost 70%.

**Port performance indicators 2012**  
(Operational productivity, averages January-March)

	Port	MSHP	MSHB	MSHO	MCH
Specialized Container Terminal	Ensenada	25.8	34.6	50.1	25.1
	Lázaro Cárdenas	42.0	74.7	94.1	35.4
	Manzanillo	47.0	58.0	95.0	42.0
	Progreso	7.3	11.4	28.3	24.5
	Veracruz	42.4	63.7	82.1	26.0
	Port	TSHP	TSHB	TSHO	TCH
Conventional general cargo (unitized loads)	Altamira	113.2	230.7	290.2	163.3
	Coatzacoalcos	45.0	65.0	81.0	41.0
	Ensenada	135.0	152.6	220.6	110.3
	Guaymas	114.0	143.4	234.7	96.7
	Lázaro Cárdenas	149.1	159.6	350.0	146.6
	Manzanillo	348.0	381.0	601.0	241.0
	Mazatlán	265.3	287.3	433.7	254.0
	Port	29.4	33.5	38.9	40.6
	Progreso	74.6	78.0	98.0	33.2
	Tampico	162.0	169.0	230.0	76.7
	Tuxpan	120.0	146.0	201.0	111.0
Veracruz	180.6	234.4	297.1	160.6	
	Port	TSHP	TSHB	TSHO	TCH
Dry bulk - Agricultural cargo with specialized handling tools	Altamira	217.0	255.9	317.5	204.3
	Guaymas	85.4	369.1	1303.9	648.6
	Lázaro Cárdenas	162.0	246.8	362.6	362.6
	Manzanillo	309.0	399.0	525.0	525.0
	Veracruz	244.8	287.7	345.1	172.6
	Port	TSHP	TSHB	TSHO	TCH
Dry bulk - mineral and other cargoes with specialized handling tools	Altamira	131.0	176.7	199.0	231.8
	Coatzacoalcos	135.0	196.0	301.0	150.0
	Dos Bocas	10.0	10.2	16.3	0.0
	Ensenada	96.6	98.6	947.7	947.7
	Guaymas	369.0	417.4	652.6	390.9
	Lázaro Cárdenas	893.3	1342.7	1611.3	878.6
	Manzanillo	597.0	794.0	733.0	733.0
	Tampico	84.0	87.0	352.0	176.0
	Topolobampo	618.0	759.7	1541.0	1031.0
Veracruz	304.3	350.0	383.7	189.3	
	Port	TSHP	TSHB	TSHO	TCH
Liquid bulk 1/	Altamira	105.8	217.3	382.3	0.0
	Coatzacoalcos	189.0	404.0	742.0	742.0
	Dos Bocas	189.3	194.9	466.2	0.0
	Guaymas	490.1	512.9	729.2	488.0
	Lázaro Cárdenas	226.8	258.5	302.7	302.7
	Progreso	62.4	67.4	109.2	109.2
	Tampico	132.0	136.0	249.0	249.0
	Tuxpan	81.0	143.0	292.0	289.0
	Veracruz	169.5	193.0	272.4	222.7

*MSHP: Moves per Ship-Hour in Port.*

*MSHB: Moves per Ship-Hour at Berth<sup>2/</sup>.*

*MSHO: Moves per Ship-Hour in Operations<sup>3/</sup>.*

*MCH: Moves per Crane-Hour.*

*TSHP: Tons per Ship-Hour in Port.*

*TSHB: Tons per Ship-Hour at Berth<sup>2/</sup>.*

*TSHO: Tons per Ship-Hour in Operations<sup>3/</sup>.*

*TCH: Tons per Crane-Hour.*

*1/ not including oil and derivatives handled by Mexican state-owned Petroleum Company (PEMEX) terminals.*

*2/ at berth: the total time a vessel is berthed at the terminal.*

*3/ in operations: the time for loading/unloading a ship, excluding waiting time and shift breaks.*

## 6 MAJOR PROJECTS AND FUNDING

### 6.1 Main projects

Main projects in the Pacific Ocean

Port/Project	Investment Millions USD <sup>3</sup>	Description	Funding source
Guaymas			
Terminal for Iron Minerals	13.86	It can mobilize up to 500 thousand tons.	Private
Terminal for solid and liquid fertilizers	7.7	Provides services to the Northwest of the country and south of the United States. Capacity built for 140 thousand tones.	Private
San Jose Beltway Highway -Douglas Bridge	4.7	Relieves traffic by making cargoes transportation more efficient.	Public
Cruisers Terminal	9.7	Offers new destinations for tourism in the Pacific Ocean. This terminal is especially convenient for frequent cruise lines that represent 50% of the market.	Public
Topolobampo			
Enlargement of the Southwest area	58	Covers 25 hectares of land filling works in the ocean. The development includes a multipurpose terminal, dredging works, train lines and modernization of existing facilities.	Public
Mazatlán			
Alignment of the docks 1-5	26.7	Increases port capacity and maneuverability with one new berths and 1.8 hectares of yards.	Public
Cruises dock	12	Expands port capacity and touristic offer. Increases security for ships and passengers.	Public
Puerto Vallarta			
Two Cruisers docks	20	The docks triple port installed capacity, fostering the arrival of international cruises.	Public
Manzanillo			
Cruiser docks	7.3	Capable of receiving two cruisers at the same time.	Public
Cuyutlán			

<sup>3</sup> 1 peso= 0.077 USD / Exchange rate from: 06/08/12



Port infrastructure for a Natural Gas Terminal of the Federal Electricity Company	333.6	Includes dredging works, two breakwaters and protection works that provide functionality to the terminal. The terminal is equipped to receive tankers with a capacity of 70-200 thousand cubic meters.	Public
<b>Lázaro Cárdenas</b>			
Specialized Containers Terminal I	264.8	Triples the port capacity for container handling.	Private
Terminal for Mineral Bulk	38.5	First specialized terminal of its kind in the Pacific Ocean. Receives Panamax, Post-Panamax and Cape size ships. Includes 52 feet dredging works and the constructions of 180 meters of docks.	Private
Albatros Bridge	52.6	Reduces from 22 to 9 Km the distance between the bridge and the highway XXI century, accelerating cargo transferring.	Public
Dredging works for the Northern and Eastern Basin	73	Offers 15 new berths for new maritime terminals.	Public

### **Main projects in the Gulf of Mexico**

Port/Project	Investment Millions USD <sup>4</sup>	Description	Funding source
<b>Altamira</b>			
Industrial plants: Plastic films, Iron sheets and Soot.	431	Plants diversify port activity increasing its capacity for importing and exporting goods, and expanding the productive chains in the surrounding areas.	Private
Marine Platforms	117	They foster naval industry and are suitable for vessels construction.	Public/Private
Beltway highway	24	Relieves cargo traffic in the northern cities of Veracruz, Tampico and Altamira on the way to Monterrey, one of the largest cities in the country.	Public
<b>Veracruz</b>			
Urbanization of the Logistic Activities Zone	100	This development increases the port competitiveness by lowering transport costs and by implementing value added services that improve logistic operations. Once finished, it will be a distribution center covering the entire country.	Public
Logistic Center for	18.2	Saves waiting time to road cargo, freeing internal areas within the port boundaries	Public

<sup>4</sup> 1 peso= 0.077 USD / Exchange rate from: 06/08/12

Transport Care		that can be offered to private investors. It can handle 650 trailers approximately.	
Beltway highway Km 13.5	27	Relieves road cargo traffic from trailers and trucks coming from the northern area of the Port of Veracruz. Connects with other Highways in the State.	Public
Dos Bocas			
Urbanization of the Industrial park	18.3	Fosters industrial activities in the Southwest.	Public

## 2.2 Financing

Ports are financed jointly by federal government, port administrations and private investors. As mentioned before, APIs are public companies in charge of one or more ports administration. They pay a concession to federal government to operate, charge tariffs and offer concessions to private investors to build and manage docks.

Federal government, through the Ministry of Communications and Transport, is the Port Authority, therefore it grants concessions, permits and authorizations. In addition, federal government must regulate tariffs in those cases where there is not enough competition. Public funds are used to maintain and built basic port infrastructure.

### 2.2.1 Finance policy for infrastructure maintenance

Port Administrations charge for the use of the port infrastructure according to the following rate scheme:

- Fixed port: A fixed amount per ship calling the port
- Variable port: A fixed amount per unit in the ship's Gross Tonnage (rate per ton)
- Dockage: A fixed amount per unit of ship's length and unit time (rate per meter per hour)
- Wharfage: a fixed amount per loaded / unloaded container (rate per container)

Revenue derived from Fixed and Variable port tariffs, is employed for dredging works and administrative expenses. Additionally, revenue from dockage tariffs covers the cost of dock maintenance.

### 2.2.2 Private-public funding policy as financing sources

The Port Law of 1993 provided legal framework for private firms to build and operate port infrastructure, terminals and facilities. The reform allowed ports to become self-sufficient, thus they pay consideration to the government and make their own investments. This is a public-private association scheme that has proven successful over 18 years. Whilst private funding is oriented towards cargo and passengers specialized needs, public funding is key to develop basic infrastructure and connectivity through other transportation modes. Long-term port investments such as entrance channels, coastal protections and breakwaters are entirely financed with public funds because they have larger life spans and cost recovery takes between 20-30 years. The abovementioned infrastructure benefits national and regional

economies. On the other hand, private investors are attracted to faster cost-recovery projects such as terminals, docks, yards, equipment and service technology. This process is made through “partial rights cession contracts” between Port Administrations and private companies.

The Public-Private association scheme used in port infrastructure was adapted in Mexican legislation from the Build-Operate-Transfer model. Currently, public funds are scarce, thus private agents are making more investment in public infrastructure projects such as port terminals, where they build the facilities needed for services, docks and equipment. Once the concession expires (generally between 20 and 30 years-there is a possibility to obtain an extension for the same amount of time-), buildings, facilities and equipment are given back to the government.

Recent amendments to the legal framework offer private stakeholders greater certitude in their investments, promoting private investment in Mexican ports and infrastructure projects. Examples can be found in the Public-Private Association Law that entered into force in January 2012, and the reforms of the Port Law in June 2012. The reforms stress the following:

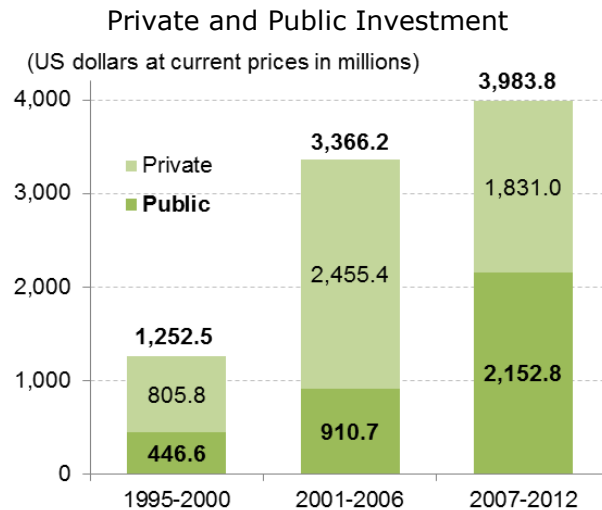
- All container and general cargo terminals should be labeled as public.
- Ports with two or more terminals of the same category should be carefully regulated in order to grant more terminal concessions.
- Creation of a Planning Committee with representatives of public and private sectors.
- Efficient and expedite proceedings.

### 2.2.3 Specific changes in financing policy due to economic crisis

After the 2009 crisis, Mexico’s GDP plummeted 6%, however by 2010 economic activity grew 5.4% due to external demand caused by an increased industrial production.

As a consequence of the 2009 crisis, several requests for tender were postponed. However, nowadays private investment in port terminals and facilities has increased. For instance, The Specialized Automobile Terminal, in Lázaro Cárdenas was postponed during that time, notwithstanding, in 2012 it was put into tender to provide services to Car Carrier vessels with an approximate investment of 34 million dollars.

From 2007 to 2012 federal government has made an unprecedented investment in port infrastructure. During this period investment totalizes 3,983.8 million dollars, 54.7% of public investment and 45.3% of private investment. As a counteractive measure, federal government accelerated investment in public infrastructure to increase productivity, raise employment rates, and develop coastal regions of the country. Public investment in ports during these last six years will be of 2,152.8 million dollars, doubling the investment made from 2001 to 2006.



## 7 Strategic Plans

Ports policy is based on the following:

**Decentralization:** implies that each port must have an autonomous, self-financing, independent port administration (APIs) supervised by federal government.

**Privatization:** implies that the port industry must be open to the participation of private investors, both nationals and foreign, for the operation of terminals and other facilities. Private participation has now been introduced through concession contracts between APIs and private firms to provide port services. Private participation has induced significant changes improving quality of service and tariffs, as a consequence private investment has grown 300% since the Port Reform in 1993.

**Competition:** allows ports to compete between them and promotes competition amongst operators within ports. It implies liberalization of tariffs and elimination of cross-subsidies and barriers to entry. Tariff regulation is limited to those cases where there is not enough competition between operators.

**Operative efficiency:** implies continual improvement in ports processes through simpler paperwork and by integrating stakeholders and authorities. The electronic platform called "Port without papers" and a certification called "quality brand" are examples of programs implemented in the port sector that contribute to the efficient and secure operation of port systems.

**Planning:** means to optimize port planning to expand and modernize port infrastructure according to market needs, noting that each port master plan should be in line with national plans and strategies. Long term planning includes adding new territories to those ports that have overcome their capacity (in land and water fronts). Examples can be found in enlargement projects in Guaymas, Topolobampo, Mazatlán and Veracruz, amongst others.

**Infrastructure development:** ensures basic port infrastructure (dredging works and breakwaters) with public funds, in to order to guarantee port operation and improve land connectivity between ports and their influence zone.

Added value activities: promote logistic activities zones that grant added value to cargo by offering integral services and creating economic infrastructure zones that respond to regional development.

Harmonious relationship with the community and the environment: infrastructure projects must include an environmental impact assessment that determines mitigation actions taken to minimize negative implications the project might have upon the environment. In addition, federal ports own the certification called "clean industry" granted by the environment agency, they also have ISO 14001. Some ports take part in reforestation programs and own ecologic reservoirs that involve participation of the entire port community.

### **3.1 Long term**

#### Veracruz

This is the oldest and traditional port in the country. Located in the Gulf of Mexico, the port of Veracruz, was once the main center for maritime commerce due to its connection to the Atlantic ocean, however nowadays it is operating at the top of its capacity and lacks of space to expand.

North Zone Development. This project responds to maritime transport demand related to external trade in the central region of the country; this development adds 450 hectares of land filling works in the ocean and 500 hectares for sailing water. The development includes dredging works, breakwaters and 35 berths. The project expands the Port capacity in 95 million tons. It will cost 4,500 million dollars and will be financed with public and private funds.

#### Guaymas

Located in the northwest of the country, the port of Guaymas owns a long term development project that includes: 32.2 millions of cubic meters of dredging works to build an interior basin of 650 meters of diameter and an interior navigation channel of 250 meters long; the construction of a containers terminal of 82,480 square meters, with a 750 meters long dock, the construction of multipurpose terminal with a 500 meters dock and yards with a surface of 38,000 square meters; the construction of an storage park for bulk in 692 hectares; the construction of a mega bulk terminal with two docks and four berths. Estimate investment for maritime works: 625 million dollars.

The Container terminal will move around 5000 vehicles annually and the Multipurpose terminal will manage one million TEUs per year.

#### Container Hub

The ports of Manzanillo and Lázaro Cárdenas, both located in the Pacific ocean, have maintained a constant growing rate of 22.7% during the last 25 years, thus they are expected to mobilize 3.26 million TEUS in 2012. The dynamic behavior described above called for a development consisting in four container terminals, two in each port, that will be built in various stages. The terminals will increase port's capacity according to market demand and will promote competition amongst port operators.

In the port of Manzanillo the company SSA Mexico currently operates a container terminal with four berths. The second container terminal is being developed by

International Container Terminal Services. The first stage of the project consists of two berths and will begin operations in 2013. Later on, another berth will be built.

In the port of Lázaro Cárdenas the terminal of Hutchison Port Holdings (HPH) is being constructed. The terminal currently operates three berths (development of the stages 1 and 2 of the project). Coming after, there will be another 555 meters of dock. Additionally, the company APM Terminals, filial company of Maersk, will built a container terminal with the same dimensions as the HPH terminal, with 1,568 meters of docks and 103 hectares of yards.

### 3.2 Midterm projects

#### Projects in the Pacific Ocean

Port/Project	Investment Millions USD <sup>5</sup>	Description	Funding source
Guaymas			
Urbanization and Logistic Activities Zone	9.3	Offers specialized facilities for the reception, handling and storage of diverse cargo. It also includes the urbanization of 5 hectares for the center for transport care.	Public
Topolobampo			
New terminals and facilities	Not available	With new land areas build from filling works, these projects will guarantee storage yards for mineral bulk and yards for logistic activities.	Private
Mazatlán			
Multipurpose Terminal	27.0	Upgrades the current terminal by adding a specialized container area and new equipment. This project is part of a new transport corridor related to the construction of the Durango-Mazatlán highway, which will reduce transportation time between the Pacific coast and the Northeast.	Private
Manzanillo			
Development of the Northern Area	166.0	Basic port infrastructure for the development of the Second Specialized Container Terminal. Includes dredging works, fillings, and hydraulic works connecting the Las Garzas Lagoon.	Public
Second Specialized Container	314	Project's first stage includes 380 meters of docks and 38.74 hectares of	Private

<sup>5</sup> 1 peso= 0.077 USD / Exchange rate from: 06/08/12

Terminal		yards. The entire project will increase Port's container capacity in two million TEUs. Currently, Manzanillo is the first container port in the Country.	
Lázaro Cárdenas			
Second Container Specialized Terminal	652	Project's first stage includes 600 meters of dock and 28.5 hectares of yards. The entire project will increase containers capacity to 3.37 million TEUs.	Private
Specialized Automobile Terminal	37.4	Project's first stage includes one dock for New Generation Car Carrier ships. Includes storage areas and other facilities.	Private
Salina Cruz			
Enlargement of the harbor mouth form 80 to 120 meters	19.3	Enables two more berths. The port will be able to receive vessels with 30 feet draft. The port will receive night departures and arrivals, reducing time and costs for shipping companies, covering more cargo options and new markets.	Public
Multipurpose dock	13.2	Construction of a 275 meter dock that added to the existing one will totalize 550 meters of dock.	Public

### Projects in the Gulf of Mexico

Port/Project	Investment Millions USD <sup>6</sup>	Description	Funding source
Altamira			
Multipurpose Terminal for Mineral Bulk or General Conventional Cargo	12.1	Construction of yards, warehouses and facilities in 16.2 hectares. Additionally, includes 300 meters of dock and port equipment.	Private
Tuxpan			
Facilities for General Cargo and Containers	22.1	Construction of one dock and yards for general cargo (including car carriers) and containers. This terminal is part of a major transport infrastructure project: the Mexico-Tuxpan highway, which will make of Tuxpan the closest port to Mexico city	Private

<sup>6</sup> 1 peso= 0.077 USD Exchange rate from: 06/08/12

Coatzacoalcos			
Development of port infrastructure in Pajaritos Lagoon	77.3	<p>First public dock in the area. It is capable of receiving vessels with 39 feet draft.</p> <p>The development is nearby to petrochemical complexes and it is surrounded by industries. Private investors are building a terminal for fluids and mineral bulk.</p>	Public
Dos Bocas			
Industrial Park Development	17.1	Consists of 70 hectares of land for an ongoing logistic project oriented to integral services for the oil industry and other related activities.	Public

## 8 Assessment methodology

Public entities must present to the Ministry of Treasury, *Secretaría de Hacienda y Crédito Público*, a cost-benefit study of investment programs, in order to demonstrate that those projects offer social benefits under reasonable postulations.

Types of assessment:

- Financial assessment: determines whether or not a project will generate positive cash flows to cover debts and obligations with sustainable revenues. This evaluation covers all private cost and benefits, including capital cost, tax payments and subsidies. It is based on market prices.
- Socioeconomic assessment: identifies the effects of the project on the population. Includes direct and indirect project deliverables and stakeholders. It matches the benefits obtained with goods and services produced by the project.
- Calculation of profitability indicators: obtained from net cash flow through the project evaluation. It identifies net benefits and evaluates the convenience of carrying out the project. Includes: Net Present Value and Internal Rate Return.

Cost and benefit analysis for infrastructure projects require public funds or federal port administration resource. The analysis is contains the following variables:

1. Executive Summary
2. Situation without the project and possible solutions.
  - a. Current situation diagnose
  - b. Description of the current situation optimized
  - c. Supply and demand assessment without the project
  - d. Solutions
3. Project description
  - a. Objective
  - b. Purpose
  - c. Project components: works, building, assets, machinery, equipment, patents, etc.
  - d. Schedule
  - e. Project type
  - f. Location and zone of influence



- g. Project lifespan and valuation horizon
  - h. Installed capacity
  - i. Annual and total goals
  - j. Annual and total benefits
  - k. Technical, legal and environmental evaluation
  - l. Previous proceedings:
    - rights of way
    - environmental impact manifest
    - land use
  - m. Project total cost
    - Execution stage: annual investment allocation and schedule
    - Operation stage: expenditure distribution
  - n. Funding sources, schedule and public and private funds allocation.
  - o. Technical and socio-economic premises
  - p. Existing infrastructure and ongoing projects that could be affected by the project.
4. Project situation
  5. Project evaluation:
    - Financial assessment
    - Socioeconomic assessment
    - Calculation of profitability indicators
  6. Risk analysis
  7. Conclusions