

CRUDE OIL MARKET OUTLOOK 2008-2017



Mexico, 2008

Ministry of Energy

Georgina Kessel Martínez
Minister of Energy

Jordy Herrera Flores
Undersecretary of Energy Planning and Technological Development

Mario Gabriel Budebo
Undersecretary of Hydrocarbons

Benjamín Contreras Astiazarán
Undersecretary of Electricity

María de la Luz Ruiz Mariscal
General Administrator

Verónica Irastorza Trejo
General Director of Energy Planning

Héctor Escalante Lona
Press Unit General Director

Participants:

Verónica Irastorza Trejo
General Director of Energy Planning

Virginia Doniz González
National Energy Politics Integrating Director

Juan Ignacio Navarrete Barbosa
Fuels Politics Deputy Director

Luis Gerardo Guerrero Gutiérrez
Energy Politics Head of Department

We deeply appreciate the participation of the following organisms and areas for integrating this outlook:

Pemex Exploración y Producción
Pemex Corporativo
Pemex Refinación
General Direction of Hydrocarbons Exploration and Exploitation
Legal Affairs Unit from the Ministry of Energy

PRESENTATION

Nowadays, the most important challenges Mexico is facing in oil matters are: keeping our production levels; increase hydrocarbons reserves; and ensure fuels supply to our expanding domestic market and thus, guarantee energy security for our future generations.

In order to face these challenges, the Executive Branch presented on April 2008 diverse proposals for a reform which sought to invigorate Petróleos Mexicanos; after an earnest labor of debate and enrichment, in October 2008, the Legislative Branch (Union Congress) approved various modifications to oil-industry legislation. This was a historical moment, since it has been the most important shift in the energy sector of the past seventy years. Under this new legal frame, Pemex will use more flexible and efficient outlines for contracts, based upon public tenders as a general rule, and will allow it to contract high-advanced technologies for exploring and extracting hydrocarbons in complex oil reservoirs, like in Chicontepec and deepwater in the Gulf of Mexico.

It is worthwhile mentioning that the liberty Pemex will have for signing contracts for works and services will improve its activities without conceding or compromising, at any moment, hold over hydrocarbons, oil revenues or territorial exclusivity; thus, oil will still be Mexican property.

With the strategy for exploring and extracting hydrocarbons, we expect to increase its reserves, and gas and oil production on Mexico behalf; in addition, the proportion of light-crude oil in the production mix will grow significantly and, thus, its value will increase.

For guaranteeing our energy security it is necessary to raise the recovery rate in Cantarell and in mature oil fields, to continue exploration and exploitation of oil fields in shallow water and in-land - particularly in Chicontepec -, and begin activity in deepwater. In a few words, we ought to take full advantage of the energy potential of our country.

The Ministry of Energy presents the second edition of *Crude Oil Outlook 2008-2107* in order to offer a reliable information tool that will help to understand the energy environs, and show the worldwide scene as well as the historical and expected evolution of the national oil industry for the next ten years.

Georgina Kessel

Minister of Energy

INTRODUCTION

The *Oil Crude Market Outlook 2008-2017* displays a scenario of the Mexican oil sector framed in the worldwide context and its intended evolution for the next ten years.

The stage of easy-access discoveries is coming to an end. The industry shows decline perspectives which require taking the necessary actions to change this dynamic and will help facing the new challenges, letting thus that this sector remains as Mexico's development engine.

Indeed, an integral enhancement of Pemex is required to achieve the highest potential of Mexican oil industry; this will guarantee the trustable and well-timed supply of the domestic hydrocarbons demand at the mid and short term.

The first chapter reckons the historical evolution of the hydrocarbons national reserves and displays crude oil production during 1997-2007, detached into national level, regional level and by kind of crude. It also shows the destiny of production and gives details upon Pemex Exploración y Producción infrastructure, mentioning the number of wells, pipelines length, etc. Finally, it displays a national balance between supply and demand of oil within the period.

Chapter Two studies a production scenario, according to current regulatory frames, investment levels, technology access – amongst others –, and based on the objective variables which affect the industry in its extraction phase. This chapter shows the production, trade, investment levels, and the prospected balance for the scenario. It is worthwhile to mention that the impacts of the recently approved Energy Reform should still be deeply studied in order to quantify its effects.

EXECUTIVE SUMMARY

National Scene

The average production of crude oil obtained in 2007 was of 3,081.7 thousand of barrels per day (tbd), which represented a decrease of 5.3% in regard to 2006 average. This production drop is linked to a higher decline than the expected one, and to the advance of the oil-water contact in the Integrated Asset Cantarell, which gives a volume of nearly 50% of the crude-oil production of the country.

Pemex Exploración y Producción (PEP) is facing big challenges in exploring and exploiting hydrocarbons since most of the fields that have been exploited are in a decline stage, especially Cantarell, whose decline should be efficiently administrated in order to achieve its production target.

For January 1st, 2007, Mexico **total reserves** were of 44,482.7 million of barrels of oil equivalent (Mboe), being oil ones which have more share (70.2% of the total amount). During 2007, PEP was able to incorporate 1,053.3 Mboe in reserves 3P (possible reserves), the highest rate since 2000; nevertheless, these levels remain below the international average and the domestic goal of restituting each extracted barrel.

Prospected Scenario

The *Crude Oil Market Outlook 2008-2017* displays a scenario to analyze the expected production during this term; it presents a view of an invigorated oil industry that can reach higher production levels with an adequate regulatory frame. Furthermore, it studies variants which may allow to efficiently develop Pemex projects, such as the success of exploration activity – generally subjected to a high degree of uncertainty – or the availability of convenient resources (technical, financial and of execution). It is important clearing up that the scopes of the recently approved Reform are still on estimation.

This scenario expects a production growth of 0.7% (annual average) in-between 2008-2017, locating thus in 3,021 tbd at the end of the term. Albeit this scenario expects a steady crude-oil production, the growing domestic demand for oil (mainly given for the refining-capacity increase) will make exports to drop 5.3% annual average.

The National Refining System (SNR) will still be the main oil demander at a domestic level; in addition, the demand's forecast acknowledges the investment on new refining capacity towards the end of the planning term and, hence, a big rise in SNR's demand.

It is foreseen that the exploration activity will provide 1,049 Mboe at 2008 year end, slightly less than the 1,053 Mboe of 2007. As the prospected period moves forward, the to-incorporate new reserves will come from deepwater exploration of the Gulf of Mexico. In this way, the average incorporation of 3P reserves during 2008-2017 would be of 1,551 Mboe.

For the hereinbefore said, the path of reserves incorporation melts the objectives of the *Energy Sector Program 2007-2012*, and keeps steady the relation reserve-production towards the last years of the scenario. This implies an annual average investment of 208 billion pesos (MXN) during 2008-2017 in order to support this scenario, keep the current production platform and reach competitive price levels of discovery, development and production.

DOMESTIC CRUDE OIL MARKET 1997-2007

This chapter analyzes the current status of the country's petroleum industry and its behavior in the past 10 years. The analysis shows the situation of existing reserves, their evolution and volume in each classification, in order to illustrate the progress made in the incorporation of reserves and the country's oil potential.

It also includes the evolution of oil supply and demand in the country between 1997 and 2007; production volumes that represent domestic crude oil supply are detailed by region and type, while demand-related data show the main destinations for crude oil processing in the country.

The chapter ends with the description of crude oil foreign trade, detailing Mexican export volumes and their main destinations (markets). This section reveals detailed historic tendencies of this activity, by crude oil type and destination, during the last 10 years.

1.1 Evolution of crude oil reserves by January 1st, 1998-2008

Hydrocarbon reserves reported by Pemex Exploración y Producción (PEP) are updated on an annual basis using international definitions, namely those issued by the Society of Petroleum Engineers (SPE), the American Association of Petroleum Geologists (AAPG) and by the World Petroleum Council (WPC) for all classifications and, as of 2002 the definitions issued by the Securities and Exchange Commission (SEC), US organism that regulates securities and financial markets, for proved reserves. Since 2004, PEP has been certifying these reserves.

Reserve volumes do not remain static since they are directly related to production, discoveries, reclassification, revisions, etc.

1.1.1 Total reserves

By definition, total reserves are composed by the sum of proved, probable and possible reserves, as well as by existing oil, condensate, plant liquid and dry gas equivalent volumes. Chart 1 shows the integration of these reserves and their evolution since 1998.

Chart 1
Historical distribution of total hydrocarbon reserves by fluid type 1998-2008¹
(million barrels of crude oil equivalent)

Concept	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	aagr
Total	56,504.8	57,741.2	58,204.1	56,154.0	52,951.0	50,032.2	48,041.0	46,914.1	46,417.5	45,376.3	44,482.7	-2.4
Oil	39,840.5	41,064.0	41,495.3	39,917.9	38,286.1	36,265.9	34,388.9	33,312.2	33,093.0	31,908.8	31,211.6	-2.4
Condensate	1,194.0	1,230.1	1,198.7	1,194.5	1,136.7	884.2	791.7	835.3	863.0	941.2	879.0	-3.0
Plant liquids	4,771.8	4,644.6	4,837.6	4,379.3	3,790.0	3,499.8	3,437.4	3,412.6	3,479.4	3,417.5	3,574.7	-2.8
Dry gas equivalent	10,698.4	10,802.5	10,672.5	10,662.3	9,738.2	9,382.4	9,423.0	9,354.0	8,982.2	9,108.9	8,817.4	-1.9

¹ Figures by January 1st of each year.

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves*, several years.

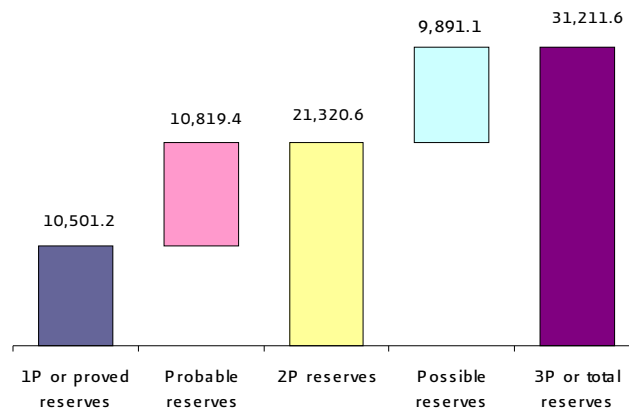
By January 1st, 2008, oil reserves contributed 70.2% to the total of 3P reserves; dry gas equivalent, 19.8%; plant liquids, 8.0%; and condensates for the remaining 2.0%.

The volume of total reserves has been reduced 21.3% compared to 1998, representing 12,022.1 million barrels of oil equivalent (Mboe). A decrease of oil volumes by 8,628.9 Mboe (71.8% of the total reduction) is explained by the high production ratio of this hydrocarbon with respect to others.

Between 2007 and 2008, total reserves showed a decreased 893.6 Mboe. It shall be stated though that, in production only, the 2007 reduction represented 1,603.2 Mboe. Another relevant point is that during 2007 PEP incorporated 1,053.2 Mboe in 3P reserves, the highest rate since 2000.

These incorporations are mainly concentrated in the Marine Regions that together contributed 67.7%, while the Southern and Northern Regions contributed 27.7 and 4.7%, respectively. From the total 2007 incorporations that, 76.8% corresponded to oil (808.8 Mboe) mainly in the Southeast Basin; 305.0 million barrels (Mb) of heavy crude oil were incorporated in the Northeastern Marine Region, and in the Southwestern Marine Region light and heavy crude oil reservoirs have been discovered, adding another 209.9 Mb. From the total crude oil reserves registered in the country by January 1st, 2008, 33.6% are proved, 34.7% are probable and 31.7% are possible (see graph 1).

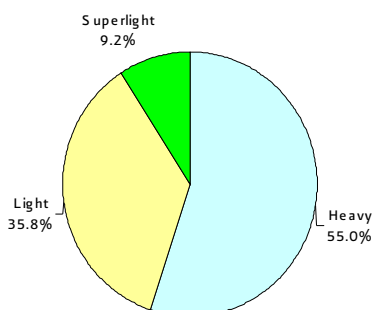
Graph 1
Mexico's total oil reserves by January 1st, 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*

The share of light and superlight crude oil has increased within the composition of total reserves. Heavy crude oil reserves decreased 543.7 Mb, reaching 17,175.7 Mb on January 1st 2008. Variations of light crude oil reserves represented 151.6 Mb, reaching 11,166.1 Mb, while superlight crude oil reserves had the smallest decrease, 10.7 Mb, reaching a total reserve volume of 2,869.9 Mb.

Graph 2
Percentage share of crude oil types in total reserves
by January 1st, 2008



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*

The reactivation of investments in exploration, which have experienced a noticeable increase since 2002 and reached its zenith in 2004, allowed for the increase of total discovered hydrocarbon reserves, reducing thereby their 3.6% decline observed between 1999 and 2004 to only 1.9% between 2004 and 2008. This represented an increase in the restitution rate of total reserves from 21.3% in 2000 to 65.7% in 2007. In fact, during the last year, due to new discoveries, total reserves reached 1,053.2 Mboe, exceeding 9.0% the volume of 966.1 Mboe registered in 2006 under the same concept.

1.1.2 Proved reserves

Within the classification of reserves, the volume of proved reserves possess a higher certainty. Reserves are considered to be proved if the reservoir's commercial productivity is supported by real production data or conclusive production tests; hence the term "proved reserve" refers to the recoverable amount of hydrocarbons and not to the reservoir's productivity. It is worth mentioning that, according to SEC parameters, an important requirement is to ensure the existence of facilities for its commercialization or to make sure they will be installed. Another relevant factor is that this classification includes reserves to be produced through secondary or improved recovery methods. These types of reserves contribute to production and sustain investment projects.

Chart 2
Historical distribution of proved hydrocarbon reserves by fluid type 1998-2008¹
(million barrels of oil equivalent)

Concept	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	aagr ² 2003-2008
Total	35,196.9	34,179.5	34,103.8	32,614.4	30,837.5	20,077.3	18,895.2	17,649.8	16,469.6	15,514.2	14,717.2	-6.0
Oil	25,199.7	24,700.1	24,631.3	23,660.4	22,419.0	15,123.6	14,119.6	12,882.2	11,813.8	11,047.6	10,501.2	-7.0
Condensate	899.7	796.5	752.4	723.9	695.0	550.5	476.9	518.7	537.9	608.3	559.6	0.3
Plant liquids	3,071.5	2,902.4	2,876.2	2,556.5	2,310.9	1,521.9	1,443.3	1,401.8	1,318.8	1,193.5	1,125.7	-5.9
Dry gas equivalent	6,026.0	5,780.5	5,843.8	5,673.5	5,412.6	2,881.3	2,855.4	2,847.1	2,799.0	2,664.8	2,530.7	-2.6

¹ Figures by January 1st of each year.

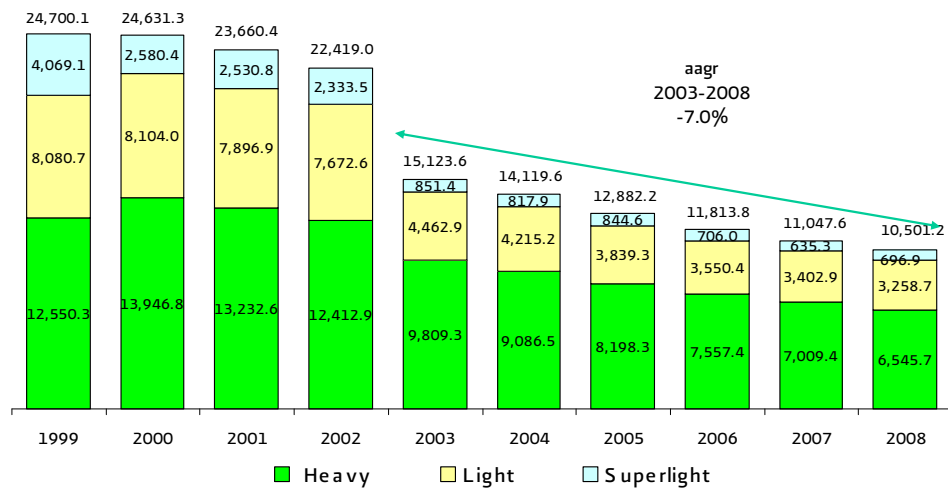
² To measure the evolution of proved reserves since the application of the new methodology, the annual average growth rate since 2003 has been considered.

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, several years*

The country's proved reserves by January 1st, 2008, are integrated by oil (71.4%), dry gas equivalent (17.2%), plant liquids (7.6%) and 3.8% of condensates (see chart 2).

Proved oil reserves are integrated as follows: 62.3% by heavy crude oil, 31.0% to light crude oil and the remaining volume is contributed by superlight crude oil (6.6%).

Graph 3
Proved reserve composition by crude oil type, 1999-2008¹
(million barrels)



¹ The reduction in proved reserve volumes between 2002 and 2003 was caused by Pemex adopting SEC criteria for the definition of proved reserves and relocating part of the proved reserves to probable and possible reserves without modifying the total reserve volume (3P).
 Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves*, several years

Upon analyzing the period after the application of the new definition of reserves, it becomes clear that the lowest reduction figures in reserve volumes were observed in 2008, with 546.4 million barrels (-4.9%), while the greatest reduction occurred between 2004 and 2005 when reserves decreased by 1,237.4 Mb. Heavy crude oil reserves decreased by 7.8% between 2003 and 2007, while light and superlight crude oil reserves decreased by 4.6 and 3.9%, respectively.

As shown in graph 3, proved heavy and light crude oil reserves decreased during the last year (6.6% and 4.2%), while superlight crude oil reserves increased 9.7%. The main reason for the reduction of proved reserves is the lack of balance between field appraising activities and the production platform. As of 2003, with the increase of investments in exploitation, there has been an effort to improve the restitution rate of proved reserves through the reclassification of probable reserves into proved reserves. The restitution rate, increased from 25.5% in 2003 to 50.3% in 2007, the highest rate since the adoption of the SEC criteria.

1.1.3 Probable reserves

The volume of probable reserves registered on January 1st, 2008, was 15,144 Mboe, which makes this reserve classification the largest. Its volume registered in 2008 represents a 0.7% reduction (113.3 Mboe) with respect to the previous year, being this the smallest reduction since the 2003 reclassification.

The hydrocarbon type with the highest decrease was crude oil, whose reserves diminished by 214.5 Mboe (-1.9%) when compared to 2007; followed by dry gas equivalent -0.8% (equal to 22.6 Mboe); condensates (-2.1%, 3.4 Mboe); while plant liquids have maintained an increasing tendency since 2004, from 1,071.0 Mboe to 1,198.4 Mboe, representing an increase of 11.9% between 2007 and 2008.

Regarding the contribution of these hydrocarbon types to probable reserves, crude oil represents 71.4% of the total; dry gas, 19.6%, plant liquids, 7.9%, while the remaining volume is contributed by condensates (see chart 3).

Chart 3
Historical distribution of probable hydrocarbon reserves by fluid type, 1998-2008¹
(million barrels of oil equivalent)

Concept	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	aagr ² 2003-2008
Total	10,608.4	12,104.5	12,140.8	12,196.2	11,862.5	16,965.0	16,005.1	15,836.1	15,788.5	15,257.4	15,144.4	-2.2
Oil	7,576.6	8,885.1	9,035.0	8,982.3	8,930.4	12,531.1	11,814.1	11,621.2	11,644.1	11,033.9	10,819.4	-2.9
Condensate	154.4	231.0	206.8	220.1	221.6	173.7	157.9	168.9	166.6	159.0	155.6	-2.2
Plant liquids	817.3	824.7	866.4	834.6	726.8	1,018.2	959.4	980.2	1,046.5	1,071.0	1,198.4	3.3
Dry gas equivalent	2,060.0	2,163.7	2,032.7	2,159.3	1,983.7	3,241.9	3,073.7	3,065.8	2,931.4	2,993.6	2,971.0	-1.7

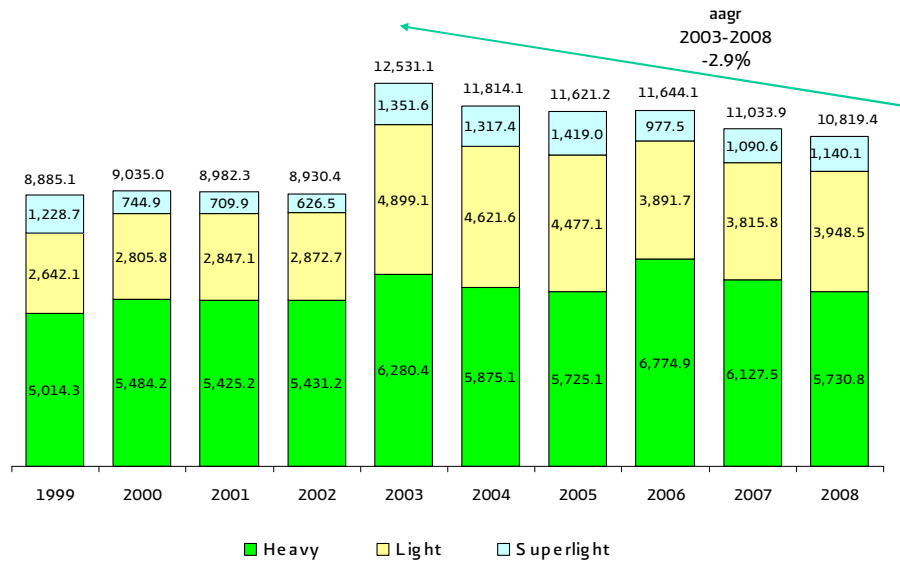
¹ Figures by January 1st of each year.

² To measure the evolution of proved reserves since the application of the new methodology, the annual average growth rate since 2003 has been considered.

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves*, several years.

As seen in graph 4, by crude oil quality, the highest volume of probable reserves belongs to heavy crude with 53.0%, followed by light crude with 36.5% and superlight crude with 10.5%. Since the reclassification of reserves, the three types have shown negative growth rates, heavy crude oil -1.8% between 2003 and 2008, light crude oil -4.2% and superlight -3.3%.

Graph 4
Probable reserve composition by crude oil type, 1999-2008¹
(million barrels)



¹ Increase in probable reserve volumes between 2002 and 2003 was caused by Pemex adopting SEC criteria for the definition of proved reserves and relocating part of the proved reserves to probable and possible reserves without modifying the total reserve volume (3P).
 Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves*, several years.

During the last year however, probable light and superlight crude oil reserves have increased from the previous year; the former by 3.5% and the latter by 4.5%, while heavy crude oil reserves have decreased by 6.5% (see graph 4).

1.1.4 Possible reserves

Possible reserves registered 14,621.2 Mb on January 1st, 2008, of which 67.6% is crude oil, followed by 22.7% of dry gas equivalent, 8.6% of plant liquids and 1.1% of condensates (see chart 4).

Chart 4
Historical distribution of possible hydrocarbon reserves by fluid type, 1998-2008¹
(million barrels of oil equivalent)

Concept	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	aagr ² 2003-2008
Total	10,699.4	11,457.2	11,959.5	11,343.4	10,251.0	12,990.0	13,140.7	13,428.2	14,159.4	14,604.7	14,621.2	2.4
Oil	7,064.2	7,478.7	7,829.1	7,275.2	6,936.6	8,611.2	8,455.2	8,808.9	9,635.0	9,827.3	9,891.1	2.8
Condensate	139.9	202.7	239.5	250.5	220.2	159.9	156.9	147.7	158.5	173.9	163.9	0.5
Plant liquids	883.0	917.5	1,095.0	988.2	752.3	959.6	1,034.7	1,030.6	1,114.1	1,153.0	1,250.5	5.4
Dry gas equivalent	2,612.4	2,858.3	2,795.9	2,829.4	2,341.9	3,259.2	3,493.9	3,441.1	3,251.8	3,450.4	3,315.8	0.3

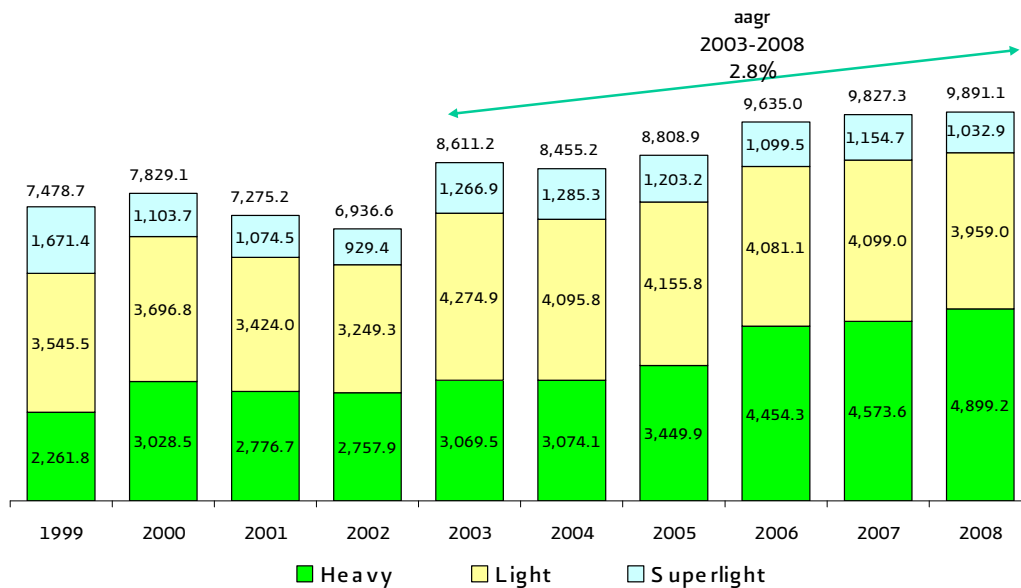
¹ Figures by January 1st of each year.

² To measure the evolution of proved reserves since the application of the new methodology, the annual average growth rate since 2003 has been considered.

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves*, several years.

Regarding the contribution of each crude oil type to this reserve classification, heavy crude oil has preserved its position as the highest contributor with 49.4%, followed by light crude oil with 40.0% and superlight with 10.5% (see graph 5).

Graph 5
Possible reserve composition by crude oil type, 1999-2008¹
(million barrels)



¹ Increase in possible reserve volumes between 2002 and 2003 was caused by Pemex adopting SEC criteria for the definition of proved reserves and relocating part of the proved reserves to probable and possible reserves without modifying the total reserve volume (3P).

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves*, several years.

During the last year, possible crude oil reserves continued the increasing tendency that they have shown since 2004. From 2007 to 2008 they a grow of 0.6% associated to increases in heavy crude oil reserves (325.6 Mb more than in 2007); on the contrary, between 2007 and 2008 light and superlight crude oil volumes decreased 3.4% and 10.5%, respectively.

1.1.5 Evolution of crude oil reserves by region

PEP's main activities are oil and natural gas exploration and exploitation, transportation, storage at terminals and first-hand commercialization. For the proper administration of these activities, the country divided in four geographic regions: Northeastern Marine Region, Southwestern Marine Region, Northern Region and Southern Region (see map 1).

Map 1
Location of exploration and exploitation regions



Source: SENER based on Pemex data.

1.1.5.1 Northeastern Marine Region

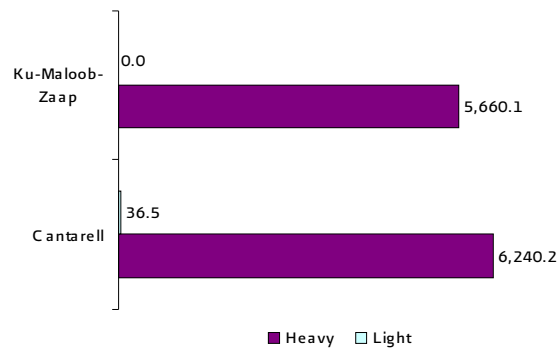
This region is located in the southeastern part of Mexico, on national territorial waters facing the coasts of Campeche, Yucatán and Quintana Roo. It includes part of the continental shelf and slope of the Gulf of Mexico, covering an area of 166,000 square kilometers, the region with the shortest extension. It manages 23 fields located in two integrated asset teams: Cantarell and Ku-Maloob-Zaap. The Cantarell Integrated asset Team has ten fields, eight out of which are producing fields; the Ku-Maloob-Zaap Integrated Asset has 13 fields, five out of which are producing fields.

Crude oil reserves

The Northeastern Marine Region is the second largest regarding total oil reserve volumes with 11,936.8 Mb, representing 38.2% of the total. Practically all these reserves are heavy crude oil reserves (99.7%), while the remaining volume is light crude oil.

As shown in graph 6, the region's total reserves are distributed as follows: 52.4% of the heavy crude oil is located in Cantarell, as is 100% of the light crude oil reserve; Ku-Maloob-Zaap complements the total heavy crude oil reserve volume. Note that there are no superlight crude oil reserves quantified in this region.

Graph 6
Total oil reserve composition by asset in the
Northeastern Marine Region by January 1st, 2008
(million barrels)

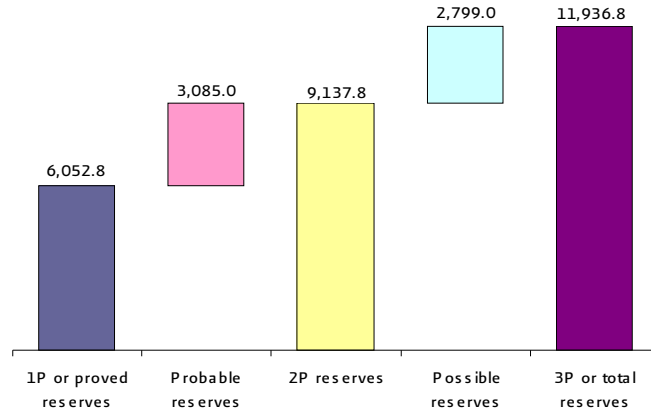


Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*

Proved oil reserves in the region represent a volume of 6,052.8 Mb, turning the region into the area with the highest volume of this reserve type in the country, concentrating 57.6% of the total. The Cantarell Integrated Asset possesses 59.5% of the reserves in the region, equal to 34.3% of the total domestic volume, while Ku-Maloob-Zaap possesses the remaining 40.5%, representing 23.3% of the domestic volume. Among the fields, the Akal field concentrates the highest volume of oil reserves. This is the only classification with light crude oil reserves, though its share is rather marginal with only 0.6% and is exclusively located in Cantarell.

Regarding the region's probable reserves, by January 1st of 2008 they increased to 3,085.0 Mb, equivalent to 28.5% of the total domestic volume within this classification. The Ku-Maloob-Zaap Integrated Asset possesses the highest volume of crude oil reserves in this category with 64.9%, while the Cantarell Integrated Asset possesses the remaining volume. All of the region's probable reserves are heavy crude oil, representing 53.8% of the type on national territory.

Graph 7
Oil reserves in the Northeastern Marine Region by January 1st, 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

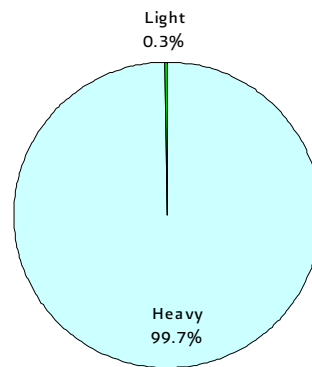
Possible oil reserves in the region amount to 2,799.0 Mb, making the region second in rank after the Northern Region. In this reserve classification, the share of the Cantarell Integrated Asset is once again the highest with 56.8%, while Ku-Maloob-Zaap contributes the remaining volume. Just like in the case of probable reserves, this classification does not account for light and superlight crude oil. Heavy crude oil reserve volume represents 57.1% of the total domestic volume.

Graph 8
Northeastern Marine Region
Crude oil reserves by January 1st 2008

Reserve volume by crude oil type
(million barrels)

3P reserves	11,900.3	36.5
Proved reserves	6,016.3	36.5
Probable reserves	3,085.0	0.0
Possible reserves	2,799.0	0.0

Share percentage by crude oil type in total reserves



Note: Totals may not match due to the rounding of figures.

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

Reserve – production ratio

The proved reserve – production ratio decreased, from 9 years in 2007 to 8.4 in 2008. For probable plus proved reserves (2P) the ratio is 12.4 years, compared to the 13 years registered in 2007; for total reserves it is 16.1 years. Production for 2008 was considered 831.7 Mboe¹, while in 2007 it was 883.5 Mboe.

As to the values of each asset in the region for this ratio: for the Cantarell Asset the proved reserve-production ratio is 6.8, for 2P reserves this ratio increases to 8.7 years and for total reserves it reaches 11.5 years.

The Ku-Maloob-Zaap Asset has a ratio of 13.3 for proved reserves, 23.4 years for 2P and 29.5 years for total reserves. The fact that the asset with the highest reserve volumes has the lowest ratio in any category is due to the considered production volumes, since Cantarell is the most important oil producer of the country with 1.5 tbd and the second most important natural gas producer with 944.9 million cubic feet per day (or 621.2 Mboe per year), while the production considered for Ku-Maloob-Zaap is 210.5 Mboe.

1.1.5.2 Southwestern Marine Region

It is located on waters that cover the continental shelf and slope of the Gulf of Mexico. It is limited in the south by Veracruz, Tabasco and Campeche, east by the Northeastern Marine Region and north and west by national territorial waters. With an area of 352,390 square kilometers it is the third largest region and the largest of the two marine regions.

The region manages 64 fields with remaining reserves, 19 out of which produce light and superlight crude oil, hence it has a great potential for field development. By the end of 2007, three new fields have been incorporated, one of them being a discovery at a depth of more than 800 meters. The fields are distributed among the integrated Asset of Abkatún-Pol-Chuc, Litoral de Tabasco and one Exploration Regional Asset.

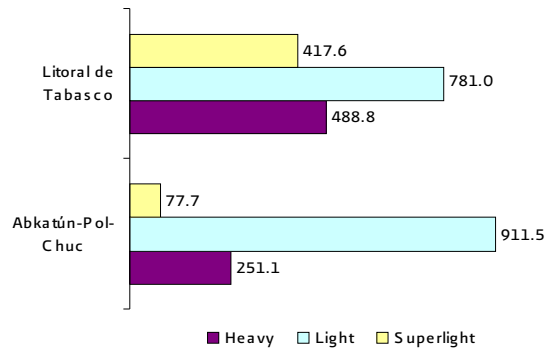
Crude oil reserves

Total reserves in the region amount to 2,927.8 Mb, the lowest volume among the four regions, representing 9.4% of the country's total oil reserves. Regarding its quality, the largest part is light crude oil with a contribution of 57.8%, followed by heavy crude oil with 25.3% and superlight crude oil with the remaining 16.9%.

The region's total reserves are distributed in two assets: Integral Litoral de Tabasco with 57.6% of the total oil reserves and Abkatún-Pol-Chuc with the rest, as shown in graph 9.

¹ The year used for the calculation of the ratio is the immediately previous year which, in this case, is average production in 2007.

Graph 9
Total oil reserve composition by asset in the
Southwestern Marine Region by January 1st 2008
(million barrels)

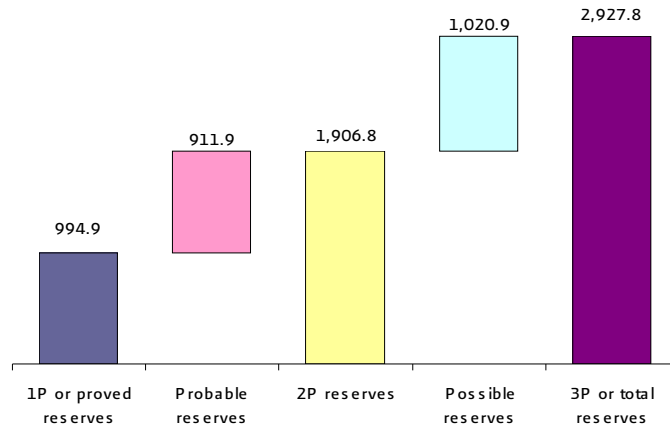


Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

The Southwestern Marine region is the third largest regarding proved reserves, which amount to 994.9 Mb, 9.5% of the total domestic volume. Litoral de Tabasco Integrated Asset Team had 50.7% (504.0 Mb); while the rest is in Abkatún-Pol-Chuc Integrated Asset. In this region, the highest volume of crude oil quality type in proved reserves is light crude oil, representing 67.3% of the total in this classification; followed by superlight crude oil with 20.6% and heavy crude oil with the remaining 12.1%.

The region's probable reserve volume is 911.9 Mb representing 8.4% of the total domestic volume. Light crude oil, representing 64.2% of the total, followed by heavy crude oil with 23.7% and superlight crude oil with 12.1%. This region presented an increase of 167.7 Mb in the probable reserves volume, due to the growth of the Abkatún-Pol-Chuc Integrated Asset by 194.8 Mb. The Litoral de Tabasco Integrated Asset experienced a 27.1 Mb decrease.

Graph 10
Oil reserves in the Southwestern Marine Region by January 1st 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

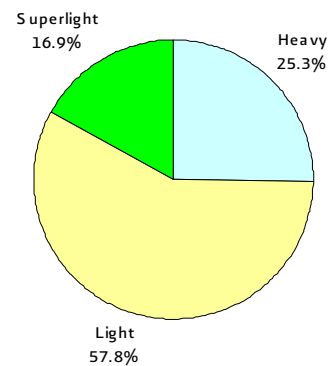
The region has a possible reserve volume of 1,020.9 mmb, that is, 10.3% of the total reserves on national territory (see graph 10). Out of this volume, 42.9% is light crude oil, 39.4% is heavy crude oil and 17.7% is superlight crude oil. The volume registered as of January 1st of 2008 is 97.9 Mb lower than in 2007, caused by the decrease registered at the Litoral de Tabasco Integrated Asset (119.2 Mb). The Abkatún-Pol-Chuc Integrated Asset is presenting a volume increase of 21.3 Mb.

Graph 11
Southwestern Marine Region
Crude oil reserves by January 1st 2008

Reserve volume by crude oil type (million barrels)

	740.0	1692.5	495.3
3P reserves			
Proved reserves	120.9	669.4	204.6
Probable reserves	216.3	585.5	110.1
Possible reserves	402.7	437.5	180.7

Share percentage by crude oil type in total reserves



Note: Totals may not match due to the rounding of figures.

Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

Reserve – production ratio

This region continues having the lowest proved reserve – production ratio on national territory with only 6.1 years, lower than in 2007 (7 years). This situation is in part explained by the decrease of proved reserves and the production considered in the calculation (268.1 Mboe per year in 2008 as opposed to 244.7 Mboe in 2007). For 2P reserves, the ratio increases to 11.3 years (in 2007 was 12.4 years), and for total reserves it is 17.8 years. The latter case shows an increase in view of the considerable growth of volumes, thus even though production augments, the parameter increases as well.

The Abkatún-Pol-Chuc Integrated Asset presented 4.6 years for proved reserves, 8.3 years for probable plus proved reserves and 10.7 years for total reserves.

The Litoral de Tabasco Integrated Asset shows higher values. In the first case, the ratio of the asset is 8.2 years; when 2P reserves are considered the ratio increases to 15.6 years and for 3P reserves it is 27.8 years.

1.1.5.3 Northern Region

It covers an area of two million square kilometers hence it is the largest region and it is located in the north of the country. It is limited by the United States of America in the north, by the 500-m isobath line² of the Gulf of Mexico in the east, by the Tesechoacán River to the south and by the Pacific to the west.

The Northern Region is the most relevant in terms of total reserves, since it includes the 29 fields that compose the Chicontepec Paleochannel, the area considered to have the highest potential for future development. This region comprises three integrated asset (Burgos, Poza Rica-Altamira and Veracruz), and one exploration asset.

Crude oil reserves

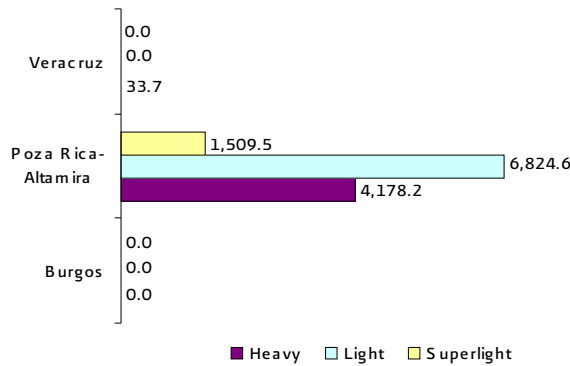
The Northern Region concentrates total oil reserves of 12,546.0 Mb representing 40.2% of the domestic total volume in this category. Out of these, the greatest part belongs to light crude oil with 54.4%, heavy crude oil with 33.6% and superlight with 12.0%. This region concentrates the largest part of total light and superlight crude oil reserves, representing 61.1% of the total domestic volume in the case of light crude oil, and 52.6% in the case of superlight crude oil reserves.

Total oil reserves in the region are located in the Poza Rica-Altamira asset that practically concentrates the total of light and superlight crude oil reserves and 99.2% of heavy crude oil reserves (see graph 12). The rest is in the Veracruz asset; while Burgos does not possess oil reserves in any of the classifications. The total volume of crude oil reserves in the Poza Rica-Altamira integrated Asset is contributed mainly by the fields of the Chicontepec Paleochannel, concentrating 93.4% of the Asset's reserves.

² Curve that cartographically represents points of equal depth in oceans and seas.



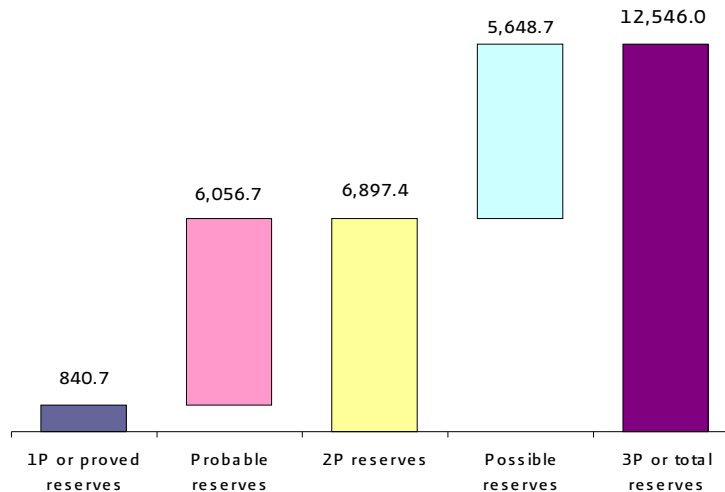
Graph 12
Total oil reserve composition by asset in the
Northern Region by January 1st 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

The Northern Region has the lowest share of proved oil reserves in the country, with a volume of 840.7 Mb, that is, 8.0% of the total domestic volume. The largest part (56.4%) is light crude oil; heavy crude oil contributes 42.5% and superlight crude oil, only 1.1%. At a regional level, 97.9 % of proved oil reserves are located in the Poza Rica-Altamira Integrated Asset, while the remaining volume is found in the Veracruz Integrated Asset.

Graph 13
Oil reserves in the Northern Region by January 1st 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

Probable reserves in the region represent 6,056.7 Mb, being this region the one that contributes most to the reserves within this classification on national territory with 56.0%. By crude oil type: heavy crude oil represents 38.0%, light crude oil represents 49.9% and superlight, 12.2%. In the region, the Poza Rica-Altamira Integrated Asset contains practically all oil reserves in this classification with 99.9%, while the rest is contributed by the Veracruz Integrated Asset.

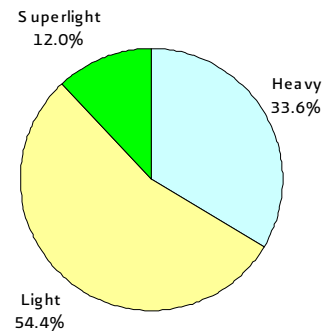
The region’s possible oil reserves amount to 5,648.7 Mb making it - once again - the region with the highest volume, 57.1%, of the total domestic volume. The highest ratio corresponds to light crude oil with 59.0% of the total, 27.5% corresponds to heavy crude oil and 13.5% to superlight crude oil. Regarding regional contribution by asset, practically 100% of possible reserves is located in the Poza Rica-Altamira Integrated Asset, while the Veracruz Integrated Asset possesses possible heavy crude oil reserves of 15.6 Mb equivalent to 0.3% of possible oil reserves in the region.

Graph 14
Northern Region
Crude oil reserves by January 1st 2008

**Reserve volume by crude oil type
(million barrels)**

	Heavy	Light	Superlight
3P reserves	4, 211. 9	6, 824. 6	1, 509. 5
Proved reserves	357. 6	473. 9	9. 2
Probable reserves	2, 299. 5	3, 020. 0	737. 2
Possible reserves	1, 554. 9	3, 330. 7	763. 2

**Share percentage by crude oil type
in total reserves**



Note: Totals may not match due to the rounding of figures.
 Source: Pemex Exploración y Producción, *Mexico’s hydrocarbon reserves, 2008*.

Reserve – production ratio

The reserve – production ratio for the Northern Region is 7.9 years for proved reserves, which represents a decrease of 2.1 years compared with the previous year. This situation is explained by the production used in the calculation, which increased by 12.4% up to 216.6 Mboe. The 2P reserve – production ratio increased to 50.6 years and for total reserves to 90.3 years. These two data represent the highest national ratios, and are closely related to the data on probable and possible reserves of the fields in the Chicontepec Paleochannel, presenting the highest values in the country for these categories.

If only the region’s oil reserves are considered, the ratio is as follows: for proved reserves, 25.6 years; for 2P reserves, 217.4 years and for 3P reserves, 395.5 years.

1.1.5.4 Southern Region

The Southern Region covers an area of 390 thousand square kilometers and is integrated by Chiapas, Tabasco, Campeche, Yucatán and Quintana Roo states, as well as by portions of Guerrero, Oaxaca and Veracruz states.

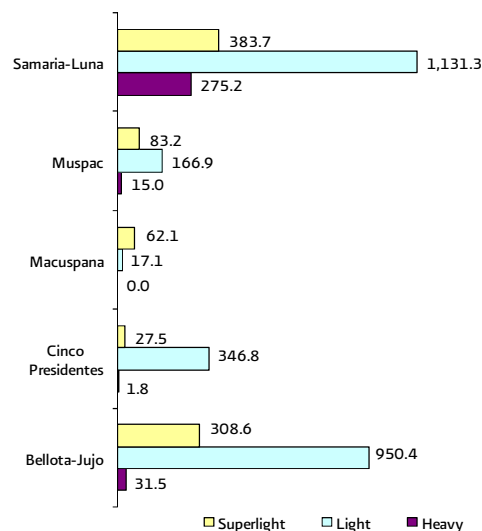
The region manages 154 fields distributed in five integrated asset: Bellota-Jujo, Cinco Presidentes, Macuspana, Muspac and Samaria Luna, in addition to a Regional Exploration Asset. Out of these, the Cinco Presidentes Integrated Asset possesses the highest number of fields, 42, and Samaria Luna the lowest, 17.

Crude oil reserves

The region's total oil reserve volume amounts to 3,801 Mb, equal to 12.2% of the total domestic volume. The largest part of oil reserves corresponds to light crude oil with 68.7%, representing 23.4% at national level. Superlight crude oil ranks second with a contribution of 22.8% in the region, representing 30.1% of the domestic total volume. Heavy crude oil has the lowest contribution with 8.5% of the total in the region, representing 1.9% of the total domestic volume of heavy crude oil reserves.

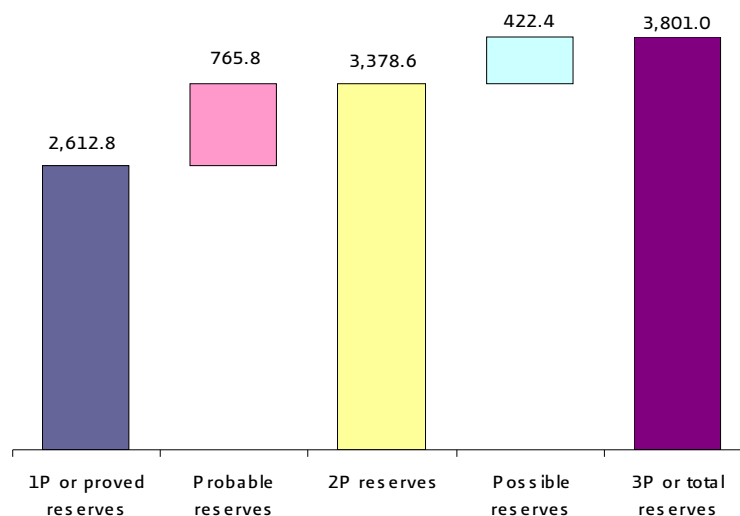
According to graph 15, most of the region's oil reserves are located in the Samaria-Luna Integrated Asset with 1,790.2 Mb, equal to 47.1%; composed by light crude oil with 43.3% of the total of this quality in the region. Superlight crude oil reserves reach 44.4% and heavy crude oil, 85.1%. The second most important asset regarding reserve volumes is Bellota-Jujo, possessing 34.0% of the region's reserves; by oil quality, the asset concentrates 36.4% of 3P light crude oil reserves, 35.7% of superlight and 9.7% of heavy crude oil. The share of the remaining assets in the region's total reserves is as follows: Cinco Presidentes 9.9%; Muspac 7.0% and Macuspana 2.1%.

Graph 15
Total oil reserve composition by asset in the
Southern Region by January 1st 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

Graph 16
Oil reserves in the Southern Region by January 1st 2008
(million barrels)



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

This region ranks second in proved reserves (2,612.8 mmb), equivalent to 24.9% of the total domestic volume in this category, and the only region with an increase in the volume of these reserves when compared to 2007, considering production. The Southern region mainly possesses light crude oil reserves in volumes of 2,078.8 Mb, that is, 79.6% of these reserves, being Jujo-Tecominoacán, Samaria and Iride the main fields where this crude oil type is located. Superlight crude oil contributed 18.5% of proved reserves and heavy crude oil contributed the rest (see graph 17).

In the case of probable oil reserves, just like in the case of possible reserves, this region contributes only 7.1% to the total domestic volume, equivalent to 765.8 Mb. Regarding crude oil quality, light crude oil contributes 44.8%, followed by superlight with 38.2% and heavy with 17.0%. The largest volumes of these reserves are located in the Bellota-Jujo and Samaria-Luna Assets, in the Tajón and Paché and Samaria and Conduacán fields.

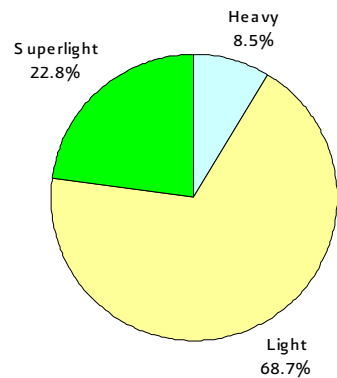
Possible oil reserves reach a volume of 422.4 Mb representing 4.3% of the total domestic volume; the largest part thereof is light crude oil (45.2%), followed by heavy crude oil with 33.8% and superlight with a contribution of 21%. 67.8% of possible reserves are located in the fields of Magallanes-Tucán-Pajonal, Iride, Carrizo, Sitio Grande, Samaria, Cactus and Sen.

Graph 17
Southern Region
Crude oil reserves by January 1st 2008

Reserve volume by crude oil type
(million barrels)

	Heavy	Light	Superlight
3P reserves	323.5	2,612.5	865.0
Proved reserves	50.9	2,078.8	483.1
Probable reserves	130.0	342.9	292.8
Possible reserves	142.6	190.8	89.1

Share percentage by crude oil type
in total reserves



Source: Pemex Exploración y Producción, *Mexico's hydrocarbon reserves, 2008*.

Reserve – production ratio

The Southern Region presented an increase in the ratios for the three reserve types due to two factors: on the one hand, reserve volumes have increased in all classifications, and on the other, production considered for the calculation was reduced by 10.5 Mboe, reaching 286.8 Mboe. With this, the ratio became 15.1 years for proved reserves, 19.4 years for 2P and 21.7 years for total reserves. The Samaria-Luna and Bellota-Jujo Asset possess the highest proved reserve – production ratio with 17.1 years.

In the case of oil reserves, employing a production figure of 169.8 Mb, the proved reserve – production ratio is 15.4 years; for 2P reserves, the ratio is 19.9; and for total reserves, it is 22.4. Considering only oil, the asset with the highest proved reserve – production ratio is Samaria-Luna with 18.7 years.

1.2 Domestic production, 1997-2007

The average crude oil production for 2007 was 3,081.7 thousand barrels per day (tbd), 5.3% below to the 2006 average and 8.9% below the maximum production achieved in 2004. This decrease is closely related to a higher-than-foreseen decline rate and to the progress of water-oil contact in the Cantarell Integrated Asset that lead to the decrease of heavy crude oil production by almost 200 tbd. This low production is not compensated by the production increase in the Ku-Maloob-Zaap Integrated Asset. In addition, other factors have influenced oil production, such as the shut-in of wells due to adverse climatic conditions (hurricane Dean in August 2007) and the execution of works on the Akal C7 and C8 rigs.

Chart 5
Crude oil production 1997-2007
(thousand barrels per day)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	aagr
Total	3,022.2	3,070.5	2,906.0	3,012.0	3,127.0	3,177.1	3,370.9	3,382.9	3,333.3	3,255.6	3,081.7	0.2
Heavy crude oil	1,567.1	1,658.9	1,563.5	1,774.3	1,997.0	2,173.7	2,425.4	2,458.0	2,387.0	2,243.8	837.7	-6.1
Light crude oil	881.5	848.5	806.1	733.1	658.7	846.6	810.7	789.6	802.3	831.5	2,045.4	8.8
Superlight crude oil	573.7	563.1	536.4	504.6	471.4	156.9	134.8	135.3	144.1	180.4	198.6	-10.1

Note: Increases and decreases in 2002 are due to the reclassification of light and superlight crude oils.

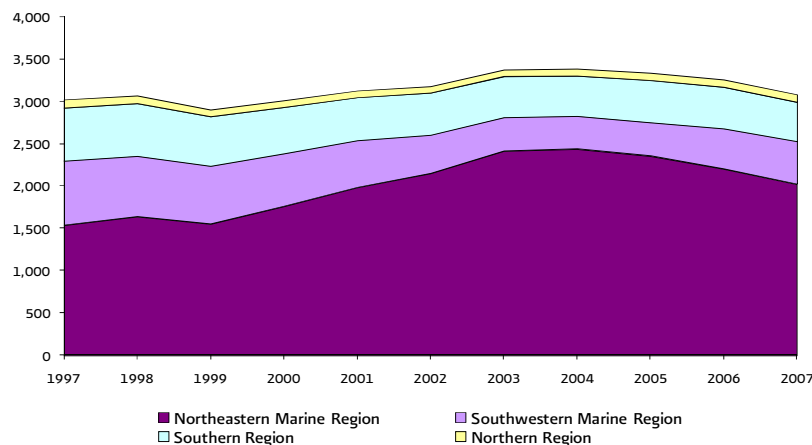
Source: SIE, Sener, Pemex, *Statistical Yearbook 2006*.

Regarding production by crude oil quality, 66.4% of the total domestic volume in 2007 corresponded to heavy crude. This crude oil type experienced a production decrease by 8.8% between 2006 and 2007, being the type with the largest production volumes in the Cantarell Integrated Asset. Light crude oil contributed 27.2% to domestic production and its production increased by 0.7% compared with the previous year. Finally, superlight crude oil production represented 6.4% of the total domestic volume and experienced an increase by 18.2% compared with 2006.

1.2.1 Production evolution by region

Regarding volumes produced in each region and their contribution to total domestic production, the two marine regions produce the highest volume of oil in country. The Northeastern Marine Region is still the main producer with 65.7% of the total domestic volume; and the region’s heavy crude oil production during 2007 represented 96.9% of the total of this quality in the country. The Southwestern Marine Region increased its production levels displacing the Southern Region both in total production and in light crude oil production. Its contribution to domestic production is 16.4% and, regarding light crude oil volumes, it produces 48.8% of the country’s volume. It is worth mentioning that there is practically no heavy crude oil production in this region.

Graph 18
Crude oil production by region, 1997-2007
(thousand barrels per day)



Source: Pemex, *Statistical Yearbook*, several years, and SIE.

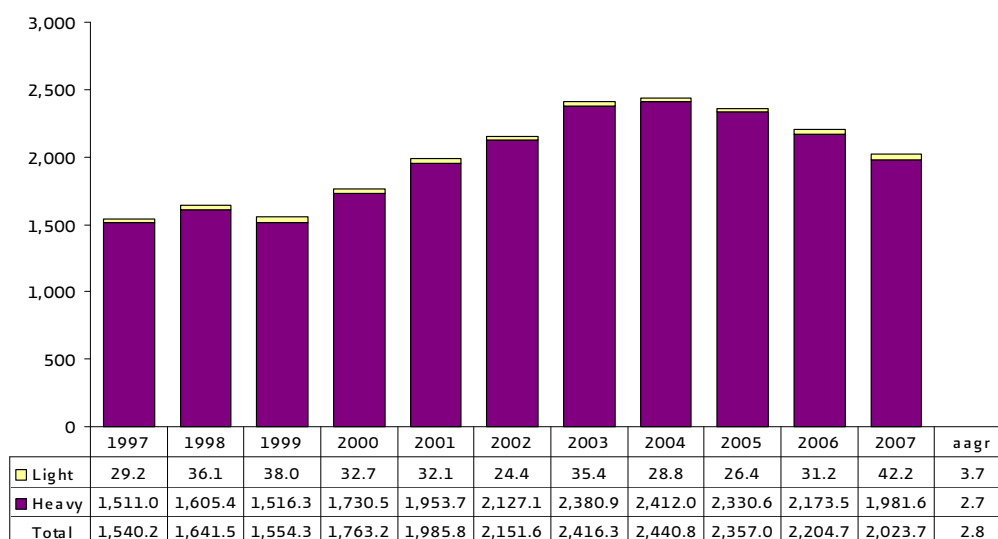
As seen on graph 18, the third place is occupied by the Southern Region, whose production represented 15.1% of the total in 2007. The Southern and the Southwestern Marine Regions concentrate light and superlight crude oil production. In 2007, the latter produced 42% of the total volume of light crude oil and 51.7% of superlight. Finally, the Northern Region merely contributed 2.8%.

1.2.1.1 Production in the Northeastern Marine Region

This region has been the country's main crude oil producer, reaching its zenith in 2004. During 2007, it registered the lowest production level since 2001, around 8.2% less than in 2006 (see graph 19).

The Cantarell Integrated Asset is located in this region, with a production of 1,496.5 tbd in 2007, which figure represented a decrease by 16.9% with respect to the production of the asset in 2006 (304.4 tbd less). In view of the decline in Cantarell, even with the 30.6% increase registered in the Ku-Maloob-Zaap Integrated Asset (equivalent to 123.4 tbd), the region's production had a downward tendency.

Graph 19
Production by crude oil type in the Northeastern Marine Region, 1997-2007
(thousand barrels per day)



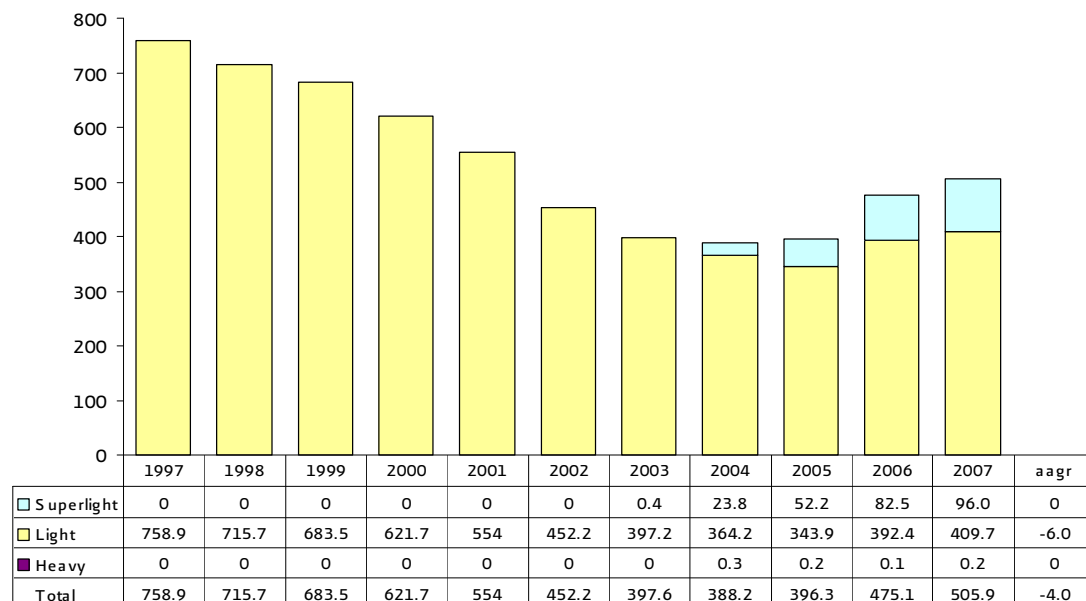
Source: Pemex, *Statistical Yearbook*, several years, and SIE.

During 2007, heavy crude oil production ratio represented almost the entire production of this region reaching a share of 97.9%, while the rest was light crude oil production.

1.2.1.2 Production in the Southwestern Marine Region

The Southwestern Marine Region has been fluctuating between the second and third position in domestic oil production. During 2007, the region's production increased 6.5% from 2006, that is, 30.8 tbd. Out of these, 17.3 tbd corresponded to the increase in light crude oil, with a contribution of 81.0% to the region's total; superlight crude oil increased 13.5 tbd with a share of 19.0%. The region's heavy crude oil production is rather marginal, but it increased slightly from 0.1 tbd to 0.2 tbd. The Ixtal and Sinán fields shall receive special attention since in 2007 they presented production increases of 44.5% and 25.3%, respectively.

Graph 20
Production by crude oil type in the Southwestern Marine Region, 1997-2007
(thousand barrels per day)



Source: Pemex, *Statistical Yearbook*, several years, and SIE.

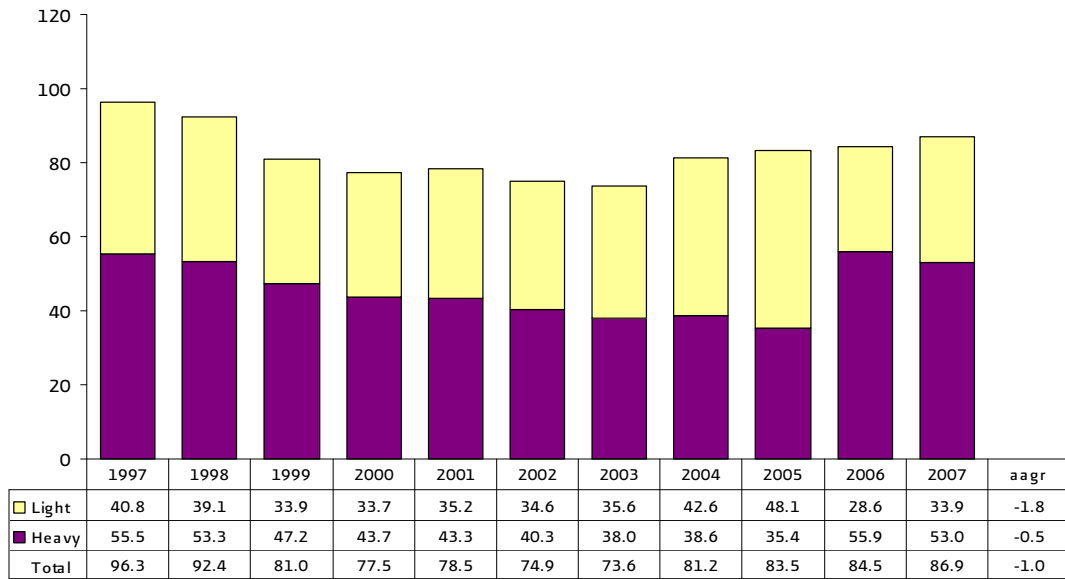
As seen in graph 20, the region's production levels still show an increasing tendency, even if they have not yet reached the levels they had at the beginning of the period. Average production in the region between 1997 and 2007 was 540.8 tbd.

1.2.1.3 Production in the Northern Region

This region remained the one with the lowest share on national oil production during 2007; however, it is the second most important region in heavy crude oil production, contributing 2.6% of the total.

Though its production volume in 2007 varied only slightly compared with 2006, an additional 2.8%, it has been showing an upward tendency since 2004, after having registered its lowest share in 2003 (see graph 21). Production increase is due exclusively to light crude oil with 18.5% more when compared to 2006, increasing thereby its share in total production from 33.8% in 2006 to 39.0% in 2007. Heavy crude oil production decreased 5.2% from 2007, representing a drop in its share within the region's production. The region's average production for 1997-2007 was 82.8 tbd.

Graph 21
Production by crude oil type in the Northern Region, 1997-2007
(thousand barrels per day)



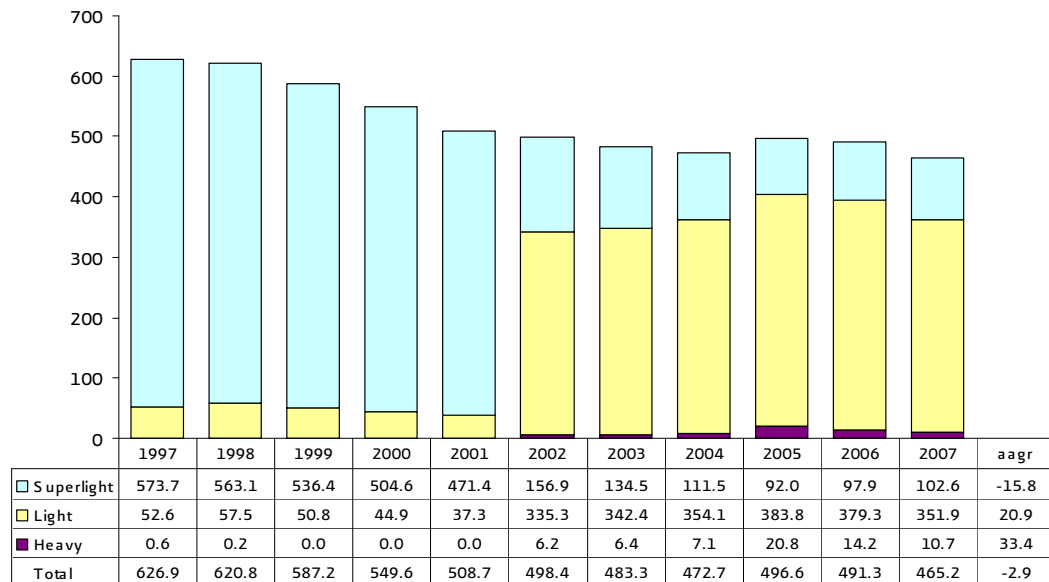
Source: Pemex, *Statistical Yearbook*, several years, and SIE.

1.2.1.4 Production in the Southern Region

The Southern Region is an important light and superlight crude oil producer. Its light crude oil production represented 42.0% of domestic production, while superlight crude oil production increased to 51.7%. Of the region's oil production, 42% is concentrated in the Samaria, Jujo, Iride and Puerto Ceiba fields.

Production in the region decreased by 5.3% with respect to 2006, mainly due to the 7.2% decrease of light crude oil. Heavy crude oil also suffered a decrease of 3.5 tbd, making its share 2.3%. Finally, superlight crude oil production increased by 4.7 tbd, contributing with 22.1% to regional production.

Graph 22
Production by crude oil type in the Southern Region, 1997-2007
(thousand barrels per day)



Source: Pemex, *Statistical Yearbook*, several years, and SIE.

The region's production profile clearly shows the effect of the reclassification undertaken by PEP between 2001 and 2002, when crude oil characteristics started to be measured at the wellhead, leading to the reclassification of part of the superlight crude oil production as light crude oil (see graph 22).

1.3 Investments in Pemex Exploración y Producción, 1997-2007

During 2007, PEP remained the subsidiary with the largest proportion of investments made by Pemex with 87.4%, 14.4% higher than in 2006, representing an increase of 18,690 million Mexican pesos (see chart 6).

PEP has the highest operating costs, which have increased in recent years as a consequence of high worldwide oil prices, increased material costs (steel, etc.), as well as higher reservoir exploitation costs, among other. Increases in the leasing or purchase of equipment used for exploration and exploitation and longer delivery times also make operating costs skyrocket.

Chart 6
Capital investment in Pemex^a
(million pesos of 2007)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	aagr
Pemex Total	65,670	84,117	75,573	93,907	78,416	95,251	128,256	132,400	131,597	150,398	170,111	10.0
Non-PIDIREGAS* investment	56,250	51,337	36,217	37,993	33,041	27,060	21,449	13,193	22,214	20,131	17,573	-11.0
PIDIREGAS investment	9,420	32,781	39,356	55,914	45,375	68,191	106,806	119,207	109,383	130,267	152,538	32.1
PEMEX Exploración y Producción	47,219	63,350	59,267	58,839	66,208	74,305	99,706	122,129	116,959	130,071	148,764	12.2
Non-PIDIREGAS investment	37,799	32,066	20,853	22,951	21,680	15,855	10,091	3,981	11,441	8,142	6,992	-15.5
PIDIREGAS investment	9,420	31,284	38,414	35,888	44,528	58,450	89,614	118,148	105,519	121,929	141,769	31.1

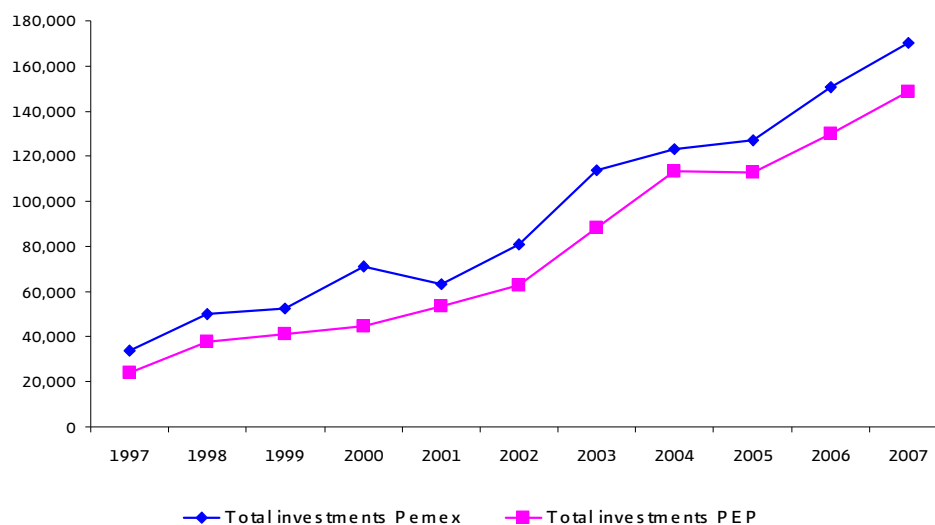
^a Cash flow.

* Non-Pidiregas investment only considers physical investment.

Source: Pemex, Corporate Finance Directorate.

Another factor that caused the investment increase is that fields being exploited also represent increasing costs. For example, Cantarell requires assisted recovery systems to prevent production from dropping abruptly, which means more resources even if production is declining. On the other hand, exploration costs are also higher since the fields to be explored are in areas with increasingly difficult access, raising the need of specialized equipment, thus higher costs. Therefore, in order to maintain the production platform at near-current levels and a satisfactory reserve restitution rate, it will be necessary to increase investments in PEP as well as its execution capacity.

Graph 23
Investment expenses in current pesos, 1997-2007
(million pesos)

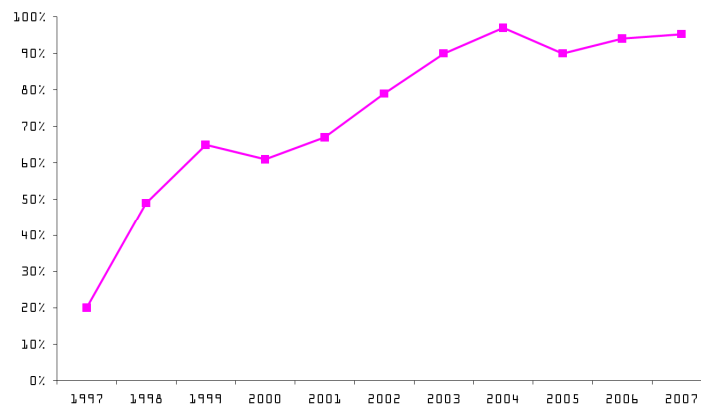


Source: Sener con base en Pemex, Corporate Finance Directorate.

Regarding the origin of resources, in 2007, investments registered under the Pidiregas concept (Infrastructure projects with differed expenditure impact, also known as Long-term productive infrastructure projects) have increased their share during the studied period, and maintained it through 2007. Investments under such concept represented 95.3% of PEP's total disbursements, being this the second highest Pidiregas investment percentage between 1997 and 2007, exceeded only in 2004, when this percentage was 96.7%.

It is important to mention that investment amounts not associated to Pidiregas registered a 14.1% decrease with respect to the previous year, thus not only did their share in total investment decrease but they also suffered a real decrease.

Graph 24
Pidiregas investment share percentage in total investments, 1997-2007



Source: Sener based on Pemex data, Corporate Finance Directorate.

1.4 Exploration activity and infrastructure at PEP

Infrastructure development in PEP activities has different stages: directed exploration activity, reservoir potential assessment, exploration and development well drilling, all of them allowing for the incorporation of reserves and production. Oil and gas pipelines between fields and processing plants and export terminals must also be constructed and connected.

Today, PEP is facing enormous challenges in hydrocarbon exploration and exploitation, since some of the currently-exploited fields are already in their decline phase, such as the fields of Cantarell, that contribute almost 50% of the country's crude oil production. To reach production goals, Cantarell's decline must be efficiently managed, increasing the degree of certainty in the prediction of the reservoir's future behavior, and developing infrastructure in other regions to achieve the highest possible recovery factors.

Regarding the Cantarell project, the Nohoch dehydration plant started operations in 2007, incorporating the first wells with high water content. In addition, unconventional wells have been drilled to prolong their productive life and improve the distribution of fluid drainage within the reservoir.

Important investments have been made in Ku-Maloob-Zaap to achieve crude oil production of around 800 tbd by the end of 2008, one and a half times higher than production in 2007, and 22% of the total production platform of this

hydrocarbon. The development of Chicontepec has also continued; this project represents a challenge of huge magnitudes since it is not one reservoir like Cantarell, and it requires the drilling of a large number of wells in small reservoirs that, when added up, contribute relevant volumes of crude oil.

Exploration and well drilling

As of 2007, in order to track results and to assess the progress made in exploration, a process-oriented structure has been adopted for potential assessment, reserve incorporation and reservoir appraisal, detailing relevant aspects in basins and projects.

Oil potential assessment

Oil potential is assessed in the Basin of the Deep Gulf of Mexico, in the projects known as Golfo de México B and Golfo de México Sur; as well as in the basins of the Southeast in the Coatzacoalcos, Cuichapa and Reforma projects. The following are the main results of these activities:

The Lalail-1 well was drilled and completed in deepwater of the Coatzacoalcos Profundo area, in a water depth of 805 meters, with a total depth of 3,825 meters, in a complex area considered due to the presence of salt. Two intervals have been tested; the first is producing 18.14 Mcfd of gas and the second, 3.2Mcfd.

There was a progress of 9,412 square kilometers in 3D seismology, 8,936 square kilometers more than last year. In the Temoa study of the Golfo de México B Project, there was a progress of 7,052 square kilometers; and in the onshore portion of the Basins of the Southeast, in the Reforma Project, data on 574 square kilometers has been acquired due to the extension of the Herradura Norte seismic cube, in order to identify a greater number of exploration opportunities.

Drilling in the Chelem-1 localization started in November with a water depth of 810 metros, off the coast of Coatzacoalcos. By the end of the fiscal year, drilling has reached a depth of 2,744 meters.

The creation of the Holok-Temoa Integrated Asset was approved in 2007; it will attend to operations in the deep waters of Coatzacoalcos, consisting in the strategic areas of Anegada Labay, Holok, Temoa and Yoka, covering an area of 29,910 square kilometers.

Reserve incorporation

Activities related to the reserve incorporation process are developed in the Burgos, Sabinas and Veracruz basins and in the basins of the Southeast, specifically in the following projects: Integral Burgos, Integral Veracruz, Comalcalco, Julivá, Reforma, Simojovel, Campeche Oriente, Campeche Poniente and Litoral de Tabasco Marino.

During 2007, progress made in 2D seismic data acquisition represented 1,121 kilometers; in the Almagres 2D project, block Chalca, data on an additional 802 kilometers has been acquired. In addition, data on 315 kilometers has been acquired in the Coyula Humapa Cacahuatengo project to determine the extension of fields in the southern area of Chicontepec, and the study known as Siberia-Relámpago-Rodrigueño of the Burgos Integrated Asset was initiated in December 2007.

3D seismic data acquisition in reserve incorporation registered a progress of 2,437 square kilometers, is 8% more than the previous year. In the Sabinas Basin, the Ulúa-Gato study progressed 902 square kilometers, and in Olmos Sur seismic data on 247 square kilometers has been acquired, achieved due to the anticipated availability of equipment and permits. 243 square kilometers of data have been acquired in the Burgos Basin in the Pandura Sur study performed under the Financed Public Work Contracts (COPF in spanish) scheme. 45 exploration wells have been completed within the reserve incorporation program.

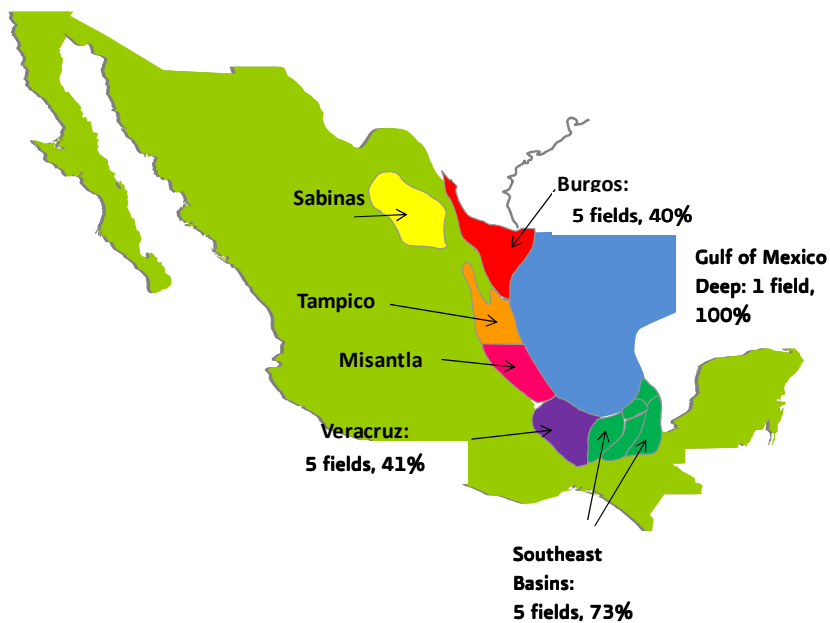
Reservoir appraisal

Activities that form part of the reservoir appraisal process consider the basins of the southeast in the Campeche Oriente and Litoral de Tabasco Marino projects. As of 2007, exploration strategies have returned to appraisal activities for the reclassification of reserves allowing to reduce discovery and development costs, and to decrease uncertainties in the field development phase.

The most relevant result in 2007 was the completion of the Maloob DL 3 well, with a production of 4,752 barrels per day (bd) of heavy crude oil (13.5° API). This result contributed greatly to the reclassification of a volume of 93.9 Mboe of proved reserves.

In 2007, the total results of exploration and well drilling activities lead to the completion of 659 wells, three more than in the previous year, out of which 610 were development wells (550 onshore and 60 offshore wells), and 49 were exploration wells. With these works, a production increase of 146.3 tbd of crude oil and 285 Mcfd of gas has been achieved; 16 fields were discovered, four of them were crude oil, and 12 were gas and condensates.

**Map 2
Fields discovered and commercial success in 2007**



Source: Work memory 2007, Pemex.

The completion of exploration wells resulted in 24 producing wells, nine of crude oil, 13 of dry gas, and two of gas and condensates, with a success of 49%, 2.6 percentage points more than in 2006. Success percentage corresponds only to wells that incorporated proved reserves, according to SEC guidelines.

Depending on their objectives or functions, wells may be classified into exploration wells (including wells for stratigraphic sounding) and development wells (including injection wells). Depending on their degree of completion, wells may be drilled or completed.

Drilled wells are wells whose drilling with the drill bit has been concluded and possess cemented casing, but have not yet been subjected to operations allowing for hydrocarbon production. Out of the wells drilled in 2007, 49 were exploration wells and 566 were development wells.

Completed drilled wells are those in which, as their name indicates, completion activities have been performed, such as: tubing installation, shot in casing for fastening and communication between the well and the reservoir rock, as well as well cleaning and stimulation. By 2007, 49 exploration wells and 610 development wells have been completed (see chart 7).

Chart 7
Well drilling by region, 1997-2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Drilled exploration wells	15	19	28	49	45	58	96	105	73	58	49
Northeastern Marine Region	2	1	-	-	-	-	4	9	5	3	2
Southwestern Marine Region	3	3	2	2	3	11	23	20	9	5	4
Southern Region	4	4	-	5	5	7	9	9	5	6	7
Northern Region	6	11	26	42	37	40	60	67	54	44	36
Drilled development wells	115	205	202	234	404	389	557	628	686	614	566
Northeastern Marine Region	22	38	34	23	13	7	19	31	31	39	44
Southwestern Marine Region	4	5	1	2	-	-	3	16	16	9	8
Southern Region	28	25	7	11	19	21	33	65	78	45	69
Northern Region	61	137	160	198	372	361	502	516	561	521	445
Completed exploration wells	10	21	22	37	53	55	88	103	74	69	49
Northeastern Marine Region	-	3	-	-	-	-	3	7	7	3	2
Southwestern Marine Region	3	4	2	1	4	7	25	21	6	8	5
Southern Region	3	4	1	2	8	5	11	6	5	5	6
Northern Region	4	10	19	34	41	43	49	69	56	53	36
Completed development wells	111	182	212	212	406	404	505	624	668	587	610
Northeastern Marine Region	21	32	29	12	28	14	22	28	28	38	48
Southwestern Marine Region	5	6	1	2	-	-	2	7	16	19	6
Southern Region	30	26	7	12	15	21	30	60	84	45	66
Northern Region	55	118	175	186	363	369	451	529	540	485	490

Source: *Statistical Yearbook 2007*, Pemex.

Development wells in turn had a success rate of 94%, 1.8 percentage points more than the previous year, with 267 crude oil and associated gas wells, 302 gas and condensate wells, and two completed injection wells as well as three wells corresponding to special projects. 2,357 well interventions have been undertaken in 2007, 14.8% more than the previous year. With these works, production increased by an average daily value of 223.9 tbd of crude oil and 378 Mcfd of natural gas.

Regarding well completion by region, the Northern Region contributed with 73.5% of the total of exploration and 80.3% of development, especially in the Burgos asset where 21 exploration wells and 304 development wells have

been completed, and in Poza Rica-Altamira, with 168 development wells. In the Southern Region six exploration and 66 development wells have been completed; special mention to the Cinco Presidentes asset with 28 wells, Samaria-Luna with 20 and Bellota-Jujo with nine. In the Southwestern Marine Region, five exploration and six development wells have been completed, while in the Northeastern Marine Region, two exploration and 48 development wells.

Finally, the annual average of operating wells in 2007 was 6,280, on 352 crude oil and natural gas fields, with an average depth of 2,744 meters per well, and 215 offshore rigs.

Chart 8
Well drilling and field exploitation, 1997-2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Drilled wells ^a	130	224	230	283	449	447	653	733	759	672	615
Completed wells	121	203	234	249	459	459	593	727	742	656	659
Exploration wells	10	21	22	37	53	55	88	103	74	69	49
Producing	7	13	9	21	28	27	53	42	39	32	24
Success %	70	62	41	57	53	49	60	41	53	46	49
Development wells	111	182	212	212	406	404	505	624	668	587	610
Producing	106	178	193	191	370	355	455	581	612	541	569
Success % ^b	96	98	91	95	91	88	90	94	92	92	94
Drilling rig ^c	48	60	42	43	50	70	101	132	116	103	116
In exploration	13	11	7	12	10	21	35	40	27	23	20
In development	36	49	35	31	40	50	66	92	88	80	96
Kilometers drilled	527	728	706	782	1,098	1,186	1,763	2,106	2,004	1,858	1,798
Average depth per well ^d (m)	3,507	3,907	3,062	2,838	2,359	2,478	2,904	2,692	2,828	2,771	2,744
Discovered fields ^e	-	6	5	6	15	16	33	24	16	13	14
Oil	-	2	-	1	-	2	11	8	3	2	4
Gas	-	4	5	5	15	14	22	16	13	11	10
Producing fields	339	324	313	299	301	309	340	355	357	364	352
Operating wells ^f	4,663	4,551	4,269	4,184	4,435	4,590	4,941	5,286	5,682	6,080	6,280

^a Wells drilled until the target.

^b Excluding injection wells.

^c Average equipment number.

^d Refers to the average depth of wells drilled until the target.

^e Includes only fields that incorporate proved reserves. In 2007, the Kibo-1 and Lalail-1 fields were excluded, because there were producing but did not incorporate proved reserves.

^f As of 2000 it is annual average.

Source: Statistical Yearbook 2007, Pemex.

Pipelines

By the end of 2007, PEP possessed a network of 4,246 km of oil pipelines for the transportation of crude oil to separation batteries, refineries and export terminals; and a 7,500 km network of gas pipelines for the transportation of injected dry gas to PGPB pipelines, as well as of sour and sweet wet gas to gas processing plants.

During 2007, Pemex Exploración y Producción performed diverse activities for the commercialization and incorporation of sweet wet gas coming from the Nejo field of the Burgos Integrated Asset into the National Gas Pipeline System (SNG for its Spanish acronym). In December, PEP incorporated the natural gas production of the Tinta field into aforementioned system through the execution of a transportation service agreement with Pemex Gas y Petroquímica Básica, allowing for the handling of this hydrocarbon under conditions that differ from those provided for in the General Conditions for Transport of SNG.

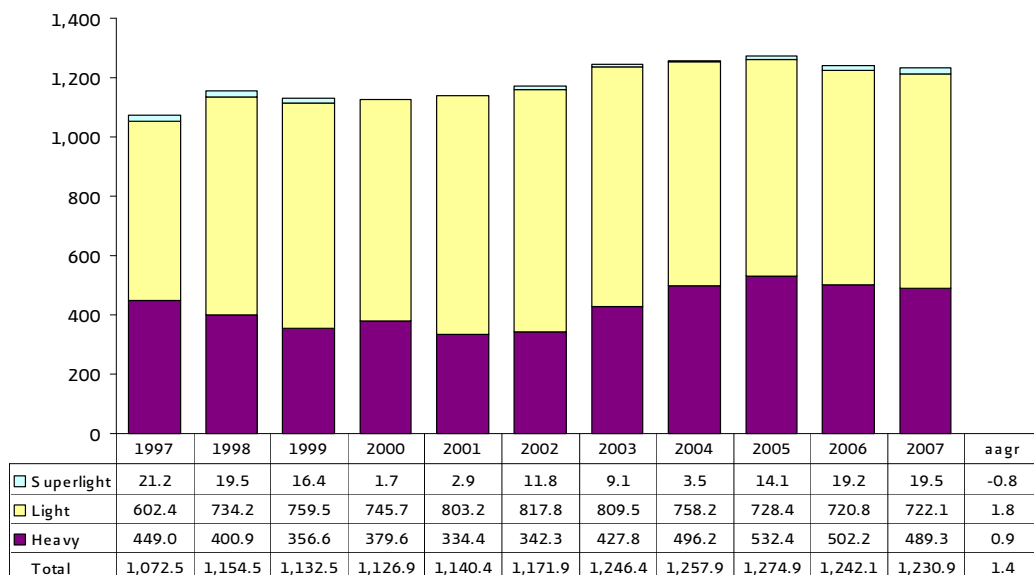
To guarantee the commercialization of natural gas production obtained from the development of fields located in the Burgos and Veracruz integrated assets, Pemex Exploración y Producción executed the corresponding negotiations with Pemex Gas y Petroquímica Básica to create the interconnections to SNG at Nejo, Tinta, Papán and Mareógrafo.

1.5 Domestic consumption, 1997-2007

Crude oil consumed on national territory has two main destinations: the first and most important is consumption by refineries that use oil to produce gasoline, diesel and jet fuel, among others. This destination accounted for 90.7% of domestic crude oil demand, equal to an increase of 4.8 percentage points compared to the previous year, even when real oil consumption by the National Refining System (SNR) experienced a reduction of 11.1 tbd in average when compared to 2006, representing a 0.9% contraction (see graph 25). This situation is explained by two reasons: the reduction of the volume of crude oil available for distribution on the one hand, and the elimination of the *maquila* concept due to the conclusion of the contract with the Deer Park refinery in Texas in 2007 on the other.

As seen in graph 25, light crude oil still has the largest demand among the different crude oil types. This is related to the fact that up to this date, only two of the refineries that compose SNR (Madero and Cadereyta) include deep conversion processes -processes that generate a larger proportion of light and medium distillates from currents on the bottom of the barrel (heavy distillate currents). This allows them to process larger volumes of heavy crude oil in the load introduced into these refineries (of up to 50%). The other four refineries of SNR need a larger proportion of light crude oil in the blend (of up to 85%) to obtain similar yields.

Graph 25
SNR demand by crude oil type, 1997-2007
(thousand barrels per day)



Source: Pemex, Corporate Finance Directorate.

Despite the reduction of total crude oil demand by SNR, light crude oil registered an increase compared with 2006, with a volume of 722.1 tbd, 0.2% higher than the previous year, reaching a share of 58.7%. Heavy crude oil has the second largest demand with 39.8% of the total, although it has been reduced by 2.6% when compared to 2006. Superlight crude oil has the lowest demand by SNR, representing 1.6%.

The second destination in domestic demand is the use of crude oil as raw material for chemical industries, such as petrochemistry, 125.5 tbd are destined to La Cangrejera Petrochemical Complex, which captures 9.3% of the total. This demand increased 2.6% with respect to 2006; however, it is still far from the maximum demand registered in 2003, when crude oil volumes under this concept reached 150.4 tbd.

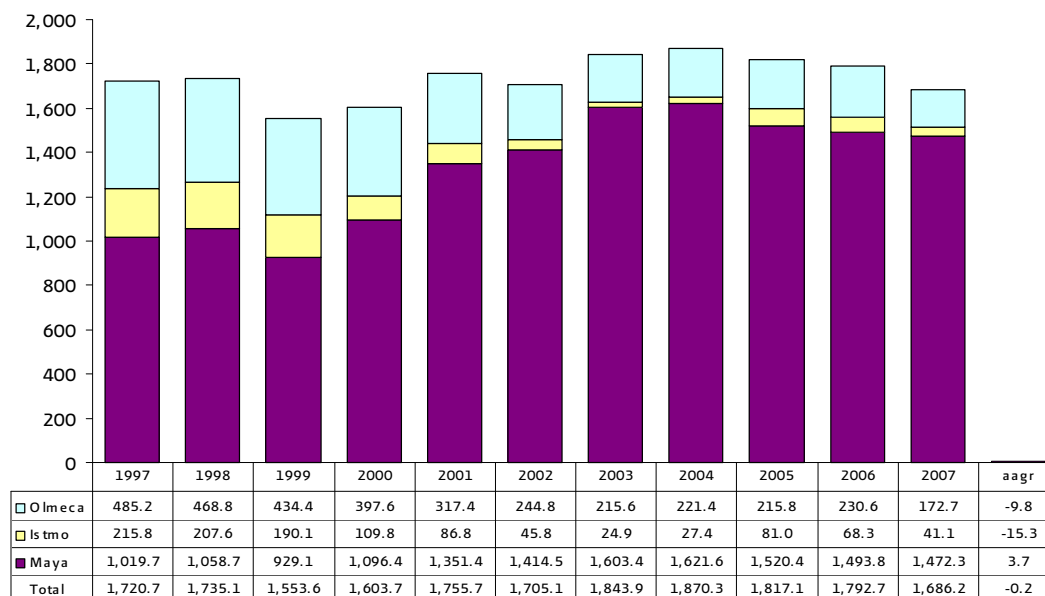
The largest part of crude oil sent to this complex is light. During 2007, its volume reached 78.8 tbd, representing a 20.1% reduction when compared to the previous year. Superlight crude oil, for which this complex did not have any demand last year, this year ranked second, registering an average of 30.7 tbd that is, covering 24.5% of the demand. Heavy crude oil stood as the one with the lowest demand with an average shipped volume of 16.1 tbd, 12.8% of the complex's total demand, decreasing 32.2% from 2006 and 89.3% when compared to the maximum demand in 2003.

1.6 Foreign trade, 1997-2007

Exports registered in 2007 decreased 5.9% compared to the previous year; this reduction is similar to the oil production decrease in the country (5.6%). It is due to the fact that, even if the main destination of domestic production is to cover domestic crude oil demand, in 2007 the country's requirements decreased and the *maquila* contract with the Deer Park refinery ended. These factors allowed the country to export part of the production, thus the impact of the decrease was not as relevant. However, average export volume in 2007 (1,686.2 tbd) was the lowest since 2000 and the third lowest in the period.

Regarding export volumes by crude oil type in 2007, Maya (heavy crude oil) still represents the largest portion of exports. Its share in the total volume was 87.3%, even if its volume decreased by 1.4% compared to 2006. This reduction in export volumes is a tendency seen for the fourth consecutive year, and directly related to the decrease in production of this oil type on national territory. The average volume exported during the period was 1,325.6 tbd.

Graph 26
Mexican exports by crude oil type, 1997-2007
(thousand barrels per day)



Source: *Statistical Yearbook*, several years, Pemex, Energy Integration System.

The volume of superlight crude oil or Olmeca is the second largest in exports, experiencing a 25.1% reduction with respect to 2006 (57.9 tbd less), which in turn translates into a reduction of its share from 12.3% to 10.2%. This volume is the lowest registered in the period between 1997 and 2007, explained by a higher demand of this crude oil type on national territory in 2007, mainly by La Cangrejera Petrochemical Complex. What is more, not the entire superlight crude oil production is commercialized, since part of it is destined for the production of blends –usually with heavy crude oils- to comply with the quality required by SNR or due to the requirements of export destination markets.

Finally, light (Istmo) crude oil export volumes have also been reduced, registering the highest fall among the three oil qualities, 39.8% less than in 2006, representing 27.2 tbd less. In this case, just like in the case of superlight crude oil, domestic production increased, total availability however decreased mainly due to the production of blends. Domestic demand also increased, resulting in a smaller volume of light crude oil available for export.

1.6.1 Export destinations by region and country

During 2007, export volumes to the American region decreased 6.4%. Despite this fact, this region prevails as the largest crude oil consumer of Mexican oil, accounting for 88.2% of total crude oil exports.

Maya crude oil exports to that region amounted to 1,279.9 tbd³, 86.0% of the total exports to the region, and 86.9% of the exported volume of this crude oil type. Olmeca crude oil ranks second with 172.7 tbd, so to say that the region captures the total Olmeca crude oil volume destined for export. The last place is for the Istmo crude oil with 35.0 tbd, representing 2.7% of the total of crude oil exported to the region and 85.2% of the total volume of Istmo crude oil exported by the country. All crude oil qualities experienced a decrease in their volume with respect to the previous year: heavy crude oil by 16.7 tbd (1.3%), light crude oil by 27.7 tbd (44.1%) and superlight crude oil by 57.9 tbd (25.1%).

The second most important region receiving Mexican crude oil is Europe. In 2007 it received 9.7% of the total, registering a 4.4% decrease compared to 2006. Volumes exported to this region during 2007 were the lowest registered in the period (see chart 9). Maya crude oil had the largest demand from Europe with 157.2 tbd, representing 96.3% of the exports to this region; the rest accounts to the Istmo crude oil. The reduction of export volumes between 2006 and 2007 was due exclusively to heavy crude oil whose volume decreased by 7.4 tbd (-4.5%); the Istmo crude oil in turn increased by 0.5 tbd (an additional 9.6%).

The third most important region to which Mexican crude oil is exported is the Far East and Africa, even though India is the only country to which crude oil is being exported since 2006, hence it is the country that has been receiving the total volume of exports to the region for two consecutive years. Another point is that India only receives heavy crude oil (Maya). In the years when crude oil was exported to Japan, it was mainly light and superlight. It is also relevant that even though exports are relatively low when compared to other regions, volumes grew 10% with respect to 2006.

Chart 9
Mexican crude oil export destinations by region, 1997-2007
(thousand barrels per day)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	aagr
Total	1,720.7	1,735.1	1,553.6	1,603.7	1,755.7	1,705.1	1,843.9	1,870.3	1,817.1	1,792.7	1,686.2	-0.2
America	1,469.5	1,500.5	1,330.0	1,378.7	1,527.9	1,477.5	1,603.8	1,655.6	1,589.1	1,589.9	1,487.6	0.1
Europe	175.9	190.3	176.5	185.5	183.9	181.0	175.7	178.4	193.9	170.8	163.3	-0.7
Far East and Africa	75.3	44.3	47.0	39.5	43.9	46.7	64.4	36.3	34.2	32.0	35.2	-7.3

Source: Pemex, Corporate Finance Directorate, Energy Integration System.

Regarding shares in crude oil exports by country, USA is the main destination of Mexican crude oil (see chart 10), mainly due to its geographic proximity, high petroleum demand and to the fact that it is the country with the greatest conversion capacity worldwide⁴ – which translates into Maya crude oil being sold at better prices through its exploitation to obtain products with a higher value-. This explains why refining companies in this country are willing to pay higher prices for this crude oil type than companies in other regions.

USA absorbed 80.2% of total exports; 80.4% (1,183.8 tbd) of the total exports of Maya crude oil representing 79.6% of Mexican crude oil exports to that country. Olmeca crude oil exported to the USA represented 92.7% of Mexican exports of this crude oil type, equivalent to 160.1 tbd (the remaining percentage is divided among the

³ Including 12.7 mbd of Altamira crude oil.

⁴ Refining process through which oil-derived products with higher value added can be obtained from heavier crude oils.

Dominican Republic with 6.4% and Jamaica with 1.6%). The Istmo crude oil had the lowest demand with 7.6 tbd, representing 18.5% of Mexican exports of this crude oil type and 0.6% of Mexican crude oil exported to the USA.

The second country that received Mexican crude oil during 2007 was Spain, capturing 7.4% of total exports, a volume 13.3% lower than the previous year. The largest share of exports corresponded to heavy crude oil (Maya) with 121.0 tbd (96.7% of the total of crude oil exported to this country), while the remaining volume of 4.1 tbd was Istmo.

Chart 10
Mexican crude oil export destinations by country, 1997-2007
(thousand barrels per day)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	aagr
Total ^a	1,720.7	1,735.1	1,553.6	1,603.7	1,755.7	1,705.1	1,843.9	1,870.3	1,817.1	1,792.7	1,686.2	-0.2
United States	1334.9	1335.3	1172.8	1203.4	1321.7	1,338.6	1,437.5	1,482.0	1,424.7	1,441.9	1,351.5	0.1
Spain	122.8	134.8	121.9	140.1	147	140.8	143.4	149.5	160.8	144.3	125.1	0.2
Dutch Antilles	58.2	86.5	101.5	107	133.9	91.8	104.9	116.5	95.8	75.0	70.0	1.9
India	0	0	0	4.9	20.8	36.7	52.5	36.3	32.8	32.0	35.2	-
San José Convention	42.3	45.4	32.8	41.6	44.6	27.2	32.1	29.0	30.5	36.7	35.5	-1.7
Canada	30.4	32.6	22.9	26.7	27.6	19.9	29.3	28.1	38.2	36.3	30.6	0.1
Portugal	15.5	20.7	20.4	17.5	15.2	15.4	15.0	12.5	17.7	12.5	10.0	-4.3
Great Britain	9.2	11.4	16.7	17.8	14.6	15.7	12.5	12.2	10.9	7.8	10.1	1.0
Israel	5.1	3.5	4.6	4.8	3.6	4.8	4.8	3.6	4.4	3.6	3.6	-3.4
The Netherlands	17.9	18.3	11.4	1.4	0	2.7	0.0	0.0	0.0	1.9	14.4	-2.2
Japan	62.6	31.5	42.1	34.6	16.7	9.9	10.7	0.0	0.0	0.0	0.0	-
South Africa	12.7	12.8	4.9	0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	-
Others	9.2	2.3	1.5	3.9	8.2	1.5	1.2	0.7	1.4	0.6	0.0	-

^a In December 2006 and January 2007, some shipments were postponed due to adverse climatic conditions.

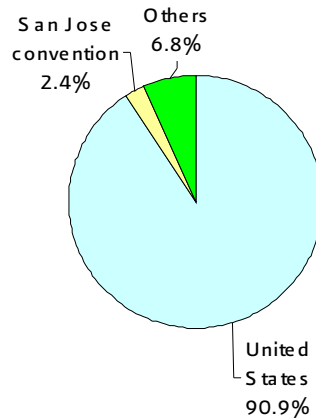
Source: Pemex, Corporate Finance Directorate.

The Dutch Antilles rank third in the list of Mexican crude oil importers. Like in the case of exports to the USA and to Spain, volumes exported to this country have also decreased, in this case by 6.7% in 2007. Exports to this country consisted exclusively of Maya crude oil.

Among the signatories of the San José Convention⁵ (Barbados, Belize, Costa Rica, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama and the Dominican Republic), three received Mexican crude oil exports during 2007. Nicaragua received 18.8 tbd, out of which 17.7 tbd were Maya and the rest Olmeca; the Dominican Republic received 15.8 tbd, out of which 11 tbd were Olmeca, 3.3 tbd were Maya and the rest was Istmo crude oil; and Jamaica only received 1 tbd (0.6 tbd of Olmeca and 0.4 tbd of Maya). The total volume destined to countries of the Convention during 2007 amounted to 35.5 tbd, representing 2.1% of Mexican exports and a reduction by 3.3% with respect to 2006.

⁵ In August 2005, Mexico and Venezuela renewed the agreement establishing a joint supply of 160 thousand barrels of crude oil and/or derivatives to Central American countries and to the Caribbean.

Graph 27
Crude oil export percentage distribution in America, 2007



Source: Sener, based on Pemex data, Corporate Finance Directorate.

1.7 Domestic balance, 1997-2007

Even though domestic oil production decreased in 2007 compared to 2006, Mexico is still one of the main oil producers in the world. These production levels have allowed the country to export parts of its production, generating important revenues for the country.

Within the events to be considered, there has been an important reduction in the Cantarell Asset, the main producer of the country that concentrates nearly all of the heavy crude oil production. Given the nature of the reservoir, it will continue decreasing with time, although efforts are being made to obtain the highest possible production. This fact shows the importance of finding fields in other areas of the country to help compensate for production losses.

Chart 11
Domestic crude oil balance, 1997-2007
(thousand barrels per day)

Concept	1996	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	aagr
Availability	2,833.5	3,063.3	2,893.7	2,994.9	3,113.2	3,170.6	3,363.1	3,365.4	3,324.9	3,241.0	3,072.7	0.7
Light	1,013.9	1,001.8	947.1	900.2	915.5	864.1	835.1	790.5	832.0	914.5	849.2	-1.6
Heavy	1,299.1	1,568.7	1,487.4	1,667.8	1,864.5	2,024.0	2,293.9	2,346.5	2,257.8	2,077.6	1,998.2	4.0
Superlight	520.5	492.8	459.3	426.9	333.2	282.6	234.1	228.3	235.1	248.9	225.3	-7.3
Production	2,858.3	3,070.5	2,906.0	3,012.0	3,127.0	3,177.1	3,370.9	3,382.9	3,333.3	3,255.6	3,081.7	0.7
Light*	910.1	848.5	806.1	733.1	658.7	846.6	810.7	789.6	802.3	831.5	837.7	-0.8
Heavy*	1,370.6	1,658.9	1,563.5	1,774.3	1,997.0	2,173.7	2,425.4	2,458.0	2,387.0	2,243.8	2,045.4	3.7
Superlight*	577.7	563.1	536.4	504.6	471.4	156.9	134.8	135.3	144.1	180.4	198.6	-9.2
Condensates incorporated into crude oil	0.3	0.4	0.2	0.1	0.3	1.1	1.3	0.3	0.7	1.4	1.0	10.6
Gasolines and naphthas incorporated into crude oil	2.3	2.1	2.4	2.9	2.9	1.8	2.4	1.9	0.9	1.4	1.0	-7.3
Injection and transfer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-15.1
Shrinkage due to vaporization	17.3	17.0	15.2	14.6	14.0	13.8	13.6	13.4	13.9	13.8	13.5	-2.2
Spill and other concepts	-0.5	-0.2	0.0	0.0	0.0	-1.3	0.0	0.0	0.1	0.1	-1.1	-
Net package of products	1.0	0.4	0.5	0.0	0.4	0.1	0.1	0.3	-0.6	0.6	0.3	-10.9
Inventory variation (in domes)	9.2	-8.2	-0.4	4.4	3.9	-5.2	-3.3	6.4	-3.7	2.7	-2.4	-188.3
Inventory variation (in fields)	-0.5	0.3	-0.3	1.1	-1.3	-0.6	0.9	-0.5	0.3	0.3	-1.3	-
Distribution	2,828.6	3,055.8	2,889.9	2,986.4	3,105.6	3,163.1	3,357.6	3,362.7	3,319.9	3,233.7	3,057.8	0.7
Light	1,015.3	1,002.8	948.1	898.0	914.2	864.0	834.9	786.1	812.5	884.9	841.5	-1.7
Heavy	1,298.6	1,564.1	1,487.0	1,664.9	1,861.5	2,020.4	2,291.4	2,345.7	2,267.7	2,094.8	1,992.3	4.0
Superlight	514.7	488.9	454.8	423.5	330.0	278.8	231.2	230.8	239.6	254.0	224.0	-7.3
Crude oil delivery at plants and maquila	1,276.3	1,317.9	1,338.7	1,366.6	1,349.0	1,446.9	1,509.3	1,489.1	1,487.3	1,444.6	1,356.5	0.6
At refineries	1,068.9	1,154.5	1,132.5	1,126.9	1,140.4	1,171.9	1,246.4	1,257.9	1,274.9	1,242.1	1,230.9	1.3
Light	616.3	734.2	759.5	745.7	803.2	817.8	809.5	758.2	728.4	720.8	722.1	1.5
Heavy	432.6	400.9	356.6	379.6	334.4	342.3	427.8	496.2	532.4	502.2	489.3	1.1
Superlight	19.9	19.5	16.4	1.7	2.9	11.8	9.1	3.5	14.1	19.2	19.5	-0.2
To Maquila	0.0	0.0	56.7	103.7	62.3	130.4	112.5	97.4	81.4	80.2	0.0	-
Superlight	0.0	0.0	3.4	22.4	8.9	22.2	4.7	6.5	6.5	5.0	0.0	-
Heavy	0.0	0.0	53.2	81.3	53.5	108.2	107.8	90.9	74.9	75.2	0.0	-
At La Cangrejera	207.2	163.2	149.6	136.0	146.2	144.5	150.4	133.8	131.0	122.3	125.5	-4.5
Light	207.2	63.9	0.0	39.7	26.8	0.0	0.0	0.0	0.0	98.7	78.8	-8.4
Heavy	0.0	99.2	149.6	96.4	119.4	144.5	150.4	133.8	130.1	23.7	16.1	-
Superlight	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	30.7	-
At U.P. La Venta	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
At export terminals (1)	1,552.3	1,738.0	1,551.2	1,619.8	1,756.6	1,716.2	1,848.3	1,873.6	1,832.6	1,789.1	1,701.3	0.8
Reception												
Istmo	191.6	204.5	188.6	112.6	84.1	46.1	25.4	27.9	84.1	65.5	40.6	-13.2
Maya and others	866.0	1,064.0	927.6	1,107.7	1,354.3	1,425.3	1,605.5	1,624.8	1,530.3	1,493.8	1,487.0	5.0
Olmeca	494.8	469.4	435.0	399.4	318.2	244.8	217.4	220.8	218.1	229.8	173.8	-9.1
Load to export	1,547.5	1,741.0	1,557.3	1,612.6	1,762.6	1,714.0	1,847.2	1,877.0	1,826.4	1,796.9	1,692.3	0.8
Istmo	189.8	208.8	190.4	110.2	87.2	46.0	25.0	27.5	81.3	68.5	41.3	-12.9
Maya	865.6	1,061.1	931.3	1,102.9	1,357.4	1,422.3	1,605.7	1,626.6	1,527.1	1,498.6	1,477.1	5.0
Olmeca	492.1	471.1	435.6	399.6	318.1	245.8	216.5	223.0	218.0	229.7	173.9	-9.0
Inventory movement	4.8	-3.2	-6.1	7.3	-6.0	2.2	1.0	-3.5	6.2	-7.8	9.0	-
Istmo	1.8	-4.3	-1.8	2.5	-3.0	0.2	0.4	0.5	2.8	-3.1	-0.7	-
Maya	0.4	2.9	-3.7	5.0	-3.1	3.1	-0.4	-1.8	3.2	-4.8	9.9	-
Olmeca	2.7	-1.7	-0.6	-0.2	0.1	-1.1	0.9	-2.2	0.2	0.1	-0.1	-
Differences (calc)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	0.0	0.0	-
Differences, total	4.8	7.5	3.8	8.5	7.6	7.5	5.5	2.7	-13.7	7.3	14.9	-
Difference, sum	-4.8	-7.5	-3.8	-8.5	-7.6	-7.5	-5.5	-2.7	32.0	-7.3	-14.9	-
Light	-1.4	-1.0	-1.1	2.2	1.3	0.1	0.2	4.4	12.8	29.6	7.7	-
Heavy	0.4	4.6	0.4	2.9	3.0	3.6	2.5	0.8	-16.8	-17.2	5.9	-
Superlight	5.8	3.9	4.4	3.4	3.3	3.8	2.9	-2.5	-9.3	-5.1	1.3	-

(1) To obtain the volume at 60 °F, multiply by 0.9966

* Volumes measured at 20°C

** As of 2004, crude oil type is classified at the well.

Source: Pemex, Corporate Finance Directorate.

EVOLUTION OF THE CRUDE OIL DOMESTIC MARKET 2008-2017

On October 28, 2008 an earnest process of analysis and debate was over when the Union Congress finally approved the Energy Reform. With this, Pemex invigorates its capacities for exploring and extracting oil and natural gas but also restates that the company is, and will still be, just for Mexicans.

Due to its recent approval, the Reform scopes are still under analysis; hence, this outlook studies a scenario which incorporates the to-day estimated benefits: a national oil industry with a bigger execution capacity. Suchlike benefits may be reflected towards the middle of the prospected term 2008-2017 and will be kept on evaluation in accordance to the provided information.

On behalf of the country, there are important challenges for increasing hydrocarbons reserves as well as the production of oil and gas. Therefore, not only a better development in those hard-to-access zones is expected (like in the paleochannel of Chicontepec or in Gulf of Mexico deepwater), but also to have a better administration of Cantarell, already in decline.

2.1 Scenario of the Production Planning

This scenario opens with an expectation of 2,830 tbd for the year end 2008, in order to keep an average of 2,909 tbd in-between 2008 and 2017. It is worthwhile mentioning that these production levels depend on diverse factors like:

- The success on exploratory activity, generally subjected to a high degree of uncertainty;
- Availability and well-timed execution of the assigned economic and technical resources;
- Pemex execution capacity, and;
- Availability of equipment, supplies, materials and services for the oil industry, in accordance to the execution needs of Pemex projects.

In an effort for fully display projects and their estimated trends of production; the scenario is outlined under the following terms:

- By kind of activity (exploration and exploitation);
- By sort of project;
- By region; and,
- By oil quality.

The issues supporting the formulation of this crude oil scenario are:

- In the estimating of exploration projects, it is foreseen a production that acknowledges the risks and uncertainties related to the location of each project, and from which the average reserves to be incorporated during 2007-2017 would be of 1,551 million barrels of oil equivalent (Mboe). Therefore, the incorporation of reserves from terrestrial basins and shallow water will be kept, and also those which may come from deepwater.
- Intensification of exploratory activity and its future development in deepwater, beginning gas production from 2013 on, mainly with Lakach Project, and producing oil in 2015 with the Golfo de Mexico B⁶ project. The latter project's production will be subjected to the discovery of oil reserves before 2010.
- Continue on exploring the basins of Burgos, Veracruz, Tampico-Misantla and Southeastern ones. In the latter, efforts will be focused towards the production of non-associated gas in the province of Macuspana.
- Updating of the development strategy in Cantarell through its exploitation within the oil window; this will imply additional drilling of new oil wells.
- Execution capacity in the Aceite Terciario del Golfo Project (Chicontepepec) will be enhanced by installing more drilling equipments and increasing availability of "macroperas" (horizontal directional drilling)⁷.
- Projects from the South and Southwestern regions will keep their production steady, thanks to an exploitation strategy which considers the drilling of development wells, major repairs and the setting on stream of new discoveries.
- The annual average investment supporting the scenario is of 208 billion pesos for 2008-2017, and will be assigned to improve exploration results, recovering thus a production platform above 3,000 tbd and reaching competitive prices of discovery, development and production.

The scenario displayed in this *Outlook for Crude Oil Market* was updated – in regard to last year's – due to modifications derived from the context shift. Whether this considers an adequate availability of equipment, feedstock and services related to activities of exploration, conditioning and distribution of hydrocarbons, it also takes into account the substantial rise in prices of drilling equipment and its related services during the last year.

This edition took a 47.80USD/bbl average price for evaluating projects; nonetheless, this price fits the kind of crude expected for each project. Thus, the considered prices by kind of crude were as follows: Istmo, 51.1USD/bbl; Olmeca, 53.7USD/bbl; and Maya, 44.4USD/bbl.

The investment increase considered here in regard to 2007 is mainly due to the increasing costs on drilling, construction works of platforms and pipelines and, at a lower scale, to a larger seismic acquisition activity, especially on projects located in the Southeastern and Gulf of Mexico deep basins. Besides, it is foreseen a rise over the unit cost per well towards 2009, derived from the cost increase on hiring additional drilling equipment.

⁶ Located in the Gulf of Mexico in front of the coasts of Veracruz, Tabasco and Campeche in water depths over 500m; it comprises 326,890km²

⁷ Location in where oil wells are drilled.

By Activity

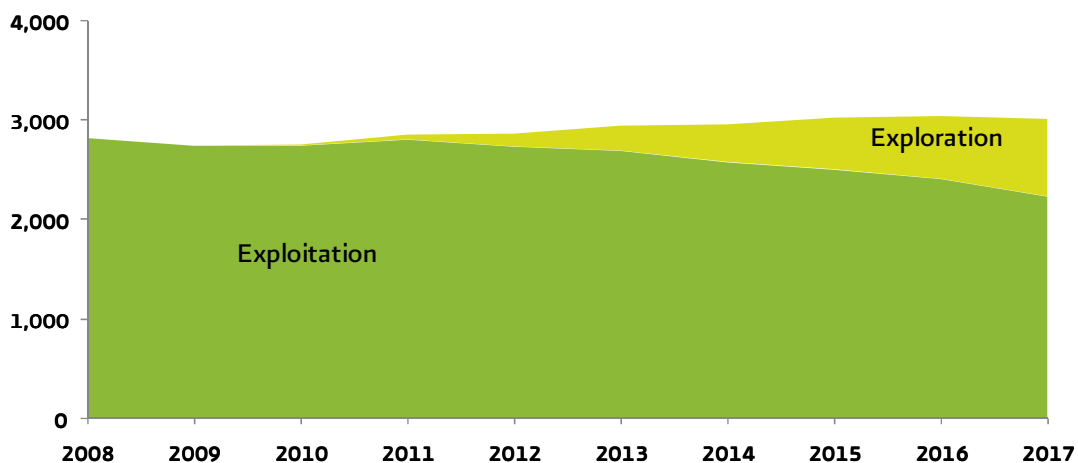
The prospected scenario for production by activity explains the development of the already-existing producing fields and of those to be incorporated at mid-term during the period. Crude-oil exploitation activities depends on an effective administration of base production coming from currently exploited wells and fields, and on how those would respond to diverse factors taking advantage of the knowledge and characterization of the fields. For the best performance of exploitation activities, new performance schemes will be made for improving the recovering factor and develop mature and marginal fields in a profitable way.

The expected production has two main origins; the first one is focused towards development projects that have reached a mature stage and need to administrate their production declining. Within this kind of investment projects we shall mention Cantarell, Antonio J. Bermudez, Jujo-Tecominoacan, Delta del Grijalva, Chuc, Caan y Arenque, amongst others.

The other production will come from projects that have not reached its maximum production and whereas a larger number of reserves can be incorporated through exploration activities. Projects like Ku-Maloob-Zaap, Crudo Ligero Marino, Burgos, El Golpe-Puerto Ceiba, Chicontepec and Veracruz Basin stand out here.

In the planning scenario, the exploitation activity would support the total crude oil production until 2009, with an average of 2,750 tbd and, from 2010 on, it would add the production derived from exploratory activity with an initial volume of 12 tbd. By the end of the analyzed term, the share over exploitation activity would be of 74% of the domestic production. It is worthwhile mentioning that, within exploitation activities, the fast decline of Cantarell will be substituted during the first years by the production rise of other exploitation projects, such as Ku-Maloo-Zaap and Aceite Terciario del Golfo (Chicontepec).

Graph 28
Crude-Oil Production by Kind of Activity, 2008-2017
(thousand barrels per day)



Source: Pemex Exploration and Production.

We shall emphasize that a big deal of PEP production comes from mature fields and naturally fractured oil fields which generates a higher degree of uncertainty derived from factors such as rates of decline, movements of water-oil and oil-water contact and productivity by well.

In this sense, Ongarrio field is the first exploration project on an abandoned – or in-abandonment process – field, that might be reactivated and with which the PEP’s project portfolio is strengthened and completes the production’s origin diversity. This, assuming the availability of investment for increasing activity in this sort of fields and that the additional production will come from those fields.

The scenario’s exploration activity would be developed after an evaluation process of the potential, reserves incorporation, and oil-fields delimitation. Consequently, it is expected the incorporation of these projects production in a gradual way by 2010 and until 2017, reaching a volume of 786 tbd of crude oil. The exploratory opportunities would be developed on terrestrial basins, shallow water and deepwater.

The production from exploratory activity acknowledges the risk and the uncertainty related to the features of each location. In addition, the scenario includes deepwater production derived from the enhancement of exploratory activity, and the development of the Golfo de México B project, with an incorporation expectancy of 13 tbd of oil from 2015 on (see map 3).

Map 3 Location of the Golfo de México B Project



Source: Pemex Exploration and Production.

By Rank of Project

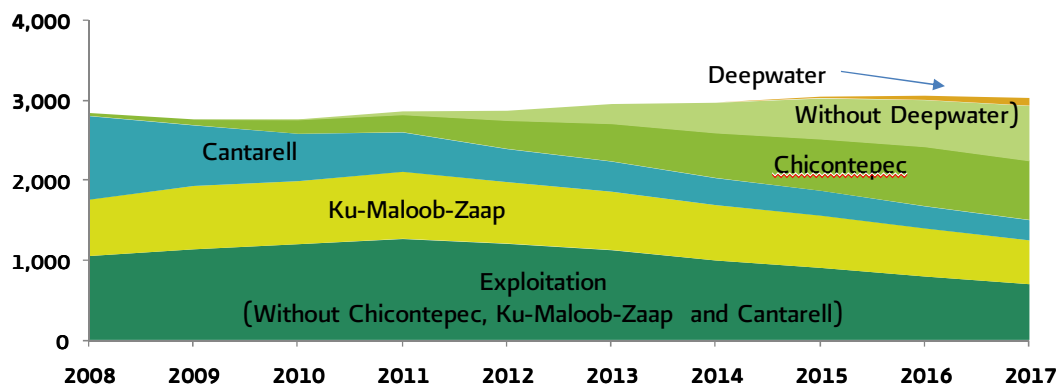
This section analyses the production of the most important crude oil projects in PEP’s portfolio according to:

- Exploitation (Without Chicontepec, Cantarell and Ku-Maloob-Zaap);
- Cantarell;

- Chicontepec;
- Ku-Maloob-Zaap;
- Exploration (without deepwater); and,
- Deepwater.

Cantarell project represents one of the most important challenges within PEP's projects portfolio, since its mature stage implies administrating the decline of the oil fields. This project will have a quick decline for the next decade; albeit its 2007 crude oil production was of 1,470 tbd, it is foreseen that at the year-end of 2008 it would be of 1,044 tbd, and of 255 tbd by 2017.

Graph 29
Crude Oil Production by Rank of Project, 2008-2017
(thousand barrels per day)



Source: Pemex Exploración y Producción.

Consequently, Cantarell project's objective is to keep the recovery factor and accelerate the obtaining of gas and oil reserves, as well as improving the operational flexibility of systems of production, transportation and distribution of gas and heavy-crude oil. In this sense some measures have been taken for reducing Cantarell's decline, like:

- Raise the final recovery by increasing the number of wells with non-conventional drilling. With this, it is expected to optimize oil production through horizontal drilling; produce reserves in reduced thickness of oil; and improve the control of water and associated gas.
- Develop other proved-reserves fields in order to compensate Cantarell production, such as Sihil and Ek-Balam.
- Include dehydrating and desalting activities for crude oil; this may imply reopening wells which were strangled by troubles on crude-oil quality and handling production with high content of water.

The accelerated decline in Cantarell will heighten the activity of Ku-Maloob-Zaap project, reaching its production maximum by 2011, with 839 tbd. A strategic objective for Ku-Maloo-Zaap is to increase the recovering factor through a pressure-maintenance system for nitrogen injection, along with developing infrastructure for heavy-crude oil.

Another project that would enhance exploitation activities is Aceite Terciario del Golfo (Chicontepec), which provided 23 tbd of oil during 2007 and it is foreseen it will provide 33 tbd in 2008. From 2009 on, it is intended to obtain 72 tbd, reaching a production of 737 tbd by 2017. The strategy for Chicontepec is to accelerate hydrocarbons reserves (2P) recovery, through drilling and completion of development wells, which will require the construction of new infrastructure for handling the incremental production. Likewise, the activity growth and the projects' location will need a bigger emphasis on industrial security and ecological protection.

This projects view consists on accelerating the exploitation of proved and probable reserves of gas and oil, which, at a domestic level, currently represent 29.4% and 37.1% each. This could be achieved by massive drilling of non-conventional wells that would consider multiple completions and hydraulic fracturing; the latter, through the construction of horizontal-directional drillings (macroperas) with a maximum capacity for drilling 19 wells, and the use of shared facilities which would concentrate the production of various oil fields. Hence, it will be necessary to construct more centrals of storage and bumping, centrals of process, battery separators, amongst others.

To this date, completed conventional wells show a significant decline production since the oil fields initial pressure is slightly over the saturation pressure and, hence, the well's flowing life is short. In order to solve this problem a mechanic and/or pneumatic bumping should be used in the early stages of their productive life; the massive use of bottom-choke valves could also be considered in order to give energy to the oil fields.

The planning scenario takes into consideration projects other than Cantarell, Ku-Maloob-Zaap and Chicontepec, whose aggregated production would reach its maximum by 2011. Within the projects with incremental production at a short-term are: the Integrate Crudo Ligerio Marino, El Golpe-Puerto Ceiba and the Integrate Ixtal-Manik, as well as some others which may remain still or decline as the project of Complejo Antonio J. Bermudez, the Integrate Campo Caan, Delta del Grijalva, Integrate Chuc and the Integrate Project Julio-Tecominoacán. Indeed, these projects would counteract the decline effect of Cantarell.

For the exploratory projects, there are great expectations on incorporating production from the project Golfo de Mexico B by 2015; this project would provide a volume of 13 tbd. This oil-crude production would become thus, the first one coming from deepwater in Mexico, and would reach – in an incremental way – up to 92 tbd of oil towards 2017. Deepwater represents a big challenge since it is intended a commercial production of hydrocarbons for Tertiary and Mesozoic sediments in water depths of more than 500 meters.

By Region

The oil production by region is the result of an advancement in prospected development projects planned for the scenario; it starts with the 2008 percentage-share structure, in which it is expected that the Northeast Marine Region will provide 62.9%; Southwest Marine, 17.5%; South, 16.3%, and the North one, 3.3%. By 2017, it is estimated that oil production would be provided by North Region, 30%; Northwest Marine Region, 29.9%; South Region, 20.3%; and the rest by South Marine Region.

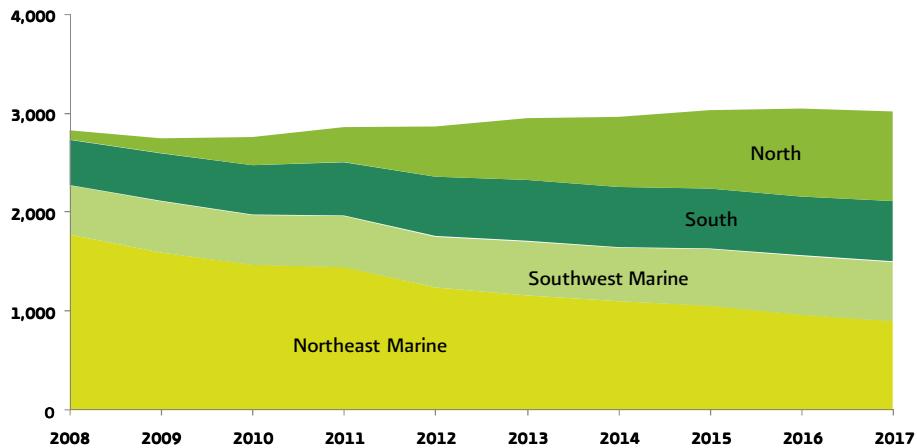
Within the studied term, it is expected a decrease on crude-oil production from the Northeast Marine Region (linked to Cantarell decline); on the contrary, there will be a significant increase on crude-oil extraction from the North Region.

Albeit it is foreseen a production decline on Northeast Marine Region, this would not be as fast as Cantarell's, due to the gradual incorporation of the production of Ku-Maloob-Zaap, a project located in the same region. In fact, another project within that same region – Ek-Balam – will contribute to the region's production.

On the other hand, it is expected that the North Region will develop its reserves and incorporate a significant crude-oil production volume by the term’s end. This region will raise its annual production 28.8% based mainly on the development of the Aceite Terciario del Golfo (Chicontepec) project.

The rest of the regions will slightly increase their production and share within the domestic total towards 2017. For that year, the South Region is expected to increase its current production in 153 tbd, whilst Southwestern Region will increase it in 103 tbd of crude oil.

Graph 30
Crude Oil Production by Region, 2008-2017
(thousand barrels per day)



Source: Pemex Exploration and Production.

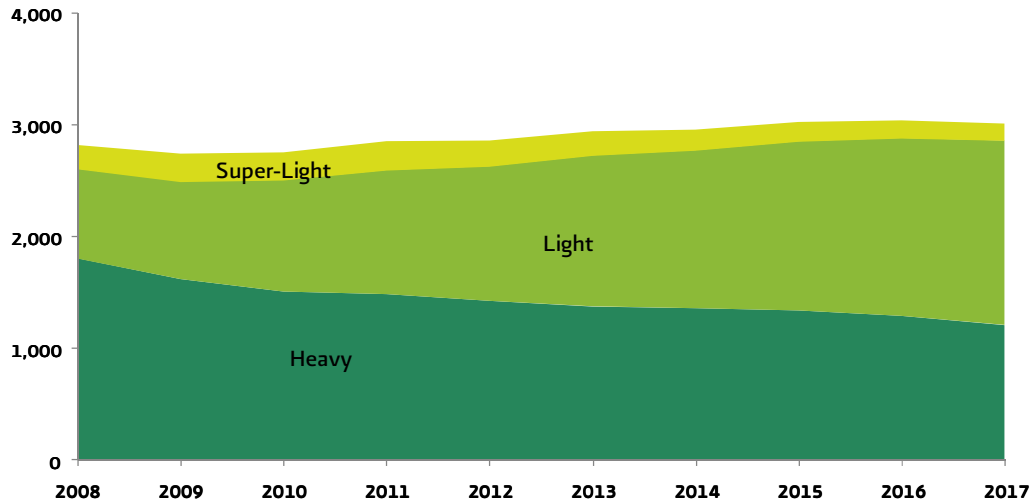
By Oil Quality

This scenario foresees light-crude oil will increase its share as the term goes on, substituting heavy-crude’s drop. In regard to low-density crudes, it is expected a production rise through the term at an annual rate of 8.3%, whilst super-light rate will be of 3.7%. Super-light crude increases are linked to the projects of Chicontepec and Crudo Ligerio Marino which will have an expected share of 28.6% and of 54.9% each for 2017. Other important projects contributing to this crude production are: Antonio J. Bermudez and Jujo-Tecominoacan.

It is expected that heavy-crude production decreases from 1,803 tbd to 1,208 tbd in-between 2008 and 2017, due mainly to an assets decline in the Northeast Marine Region (first, Cantarell decline, and then Ku-Maloob-Zaap’s). As a result, there will be an annual reduction of 4.4% in heavy-crude production until the term’s end, which represents just 40% of the domestic total, contrasted to 63.7% expected for 2008. This means that, since there will be a minor production of heavy-crude oil, Mexican mix will turn lighter.

It is important to mention that there still exist meaningful uncertainty about the kind of crude oil that could be discovered in deepwater; the current results indicate that the heavy-oil zone already identified in Ku-Maloob-Zaap is spread towards deepwater in that area.

Graph 31
Crude-Oil Production by Quality, 2008-2017
(thousand barrels per day)



Fuente: Pemex Exploración y Producción.

2.2 Domestic Consumption, 2008-2017

Mexican crude oil is marketed internally, as well as internationally. The one that remains within the country heads two destinies: the National Refining System (SNR) – which has been the main crude-oil receptor –, and the petrochemical complex La Cangrejera. The Outlook scenario contemplates the incorporation of new capacity in the SNR, associated with the construction of a new refinery whose location is still under examination; hence, crude-oil domestic demand will be increased and oil-derived products imports volume will decrease.

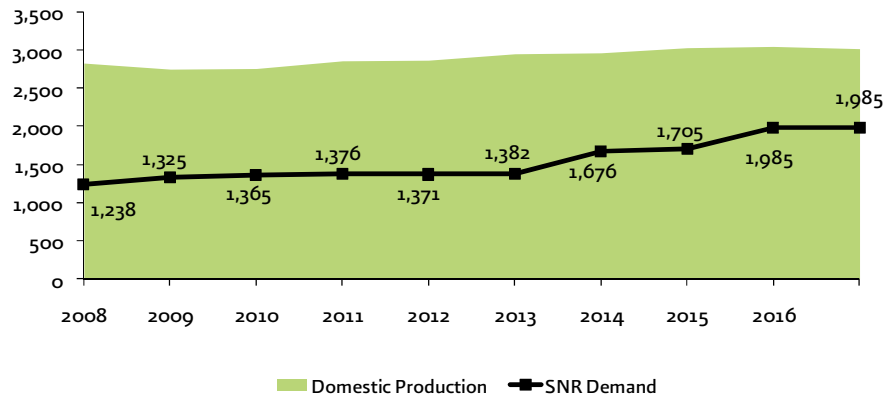
National Refining System (SNR)

This scenario considers SNR will still be the greatest demander of crude oil within the country through the term 2008-2017. Thereto, the going into effect of the new capacity along with upgrading and quality fuel projects, will increase crude oil demand, presenting their major varieties in-between 2014 and 2016. Consequently, the total proportion of available crude oil required by the SNR will pass from an estimate of 43.8% in 2008 to 65.7% in 2017.

It is foreseen that the domestic crude oil production will be enough for covering up the total domestic demand (including La Cangrejera). Indeed, the already planned upgrading as well as the going into effect of the new refining capacity - which counts on processes of deep conversion - will render an increase over the proportion of heavy crude that the system requires, since upgrading and new capacity looks forward to maximizing domestic-crude oil value through a bigger production of middle and light products from heavy fractions. Besides, it seeks to capture part of the

differential in-between the two different kinds of crude in order to enlarge revenues of these refineries and make them economically attractive.

Graph 32
SNR Demand vs. Crude-Oil Domestic Availability, 2008-2017
(thousand barrels per day)

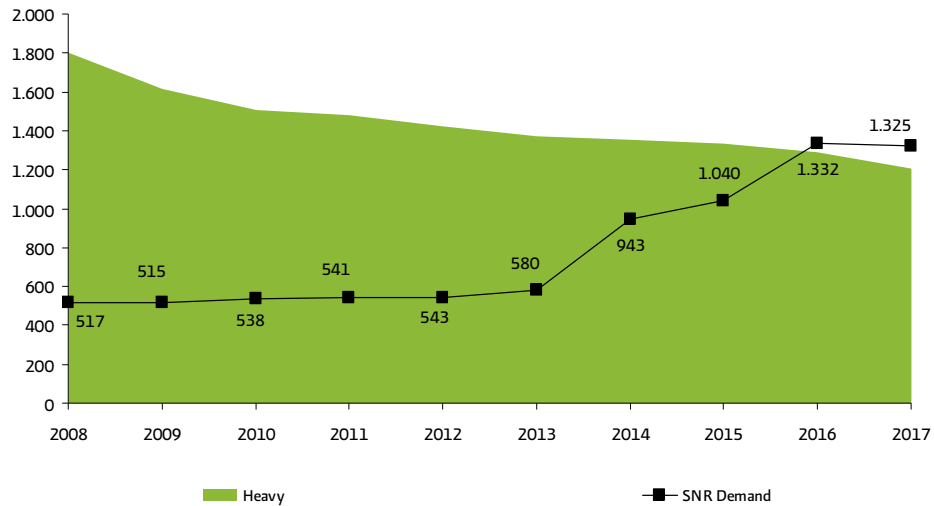


Fuente: Pemex Exploración y Producción.

As it is shown in graph 33, crude-oil demand increases as upgrading and other projects conclude. The going into effect of high-complexity new capacity will cause larger increases since its main feedstock will be heavy-crude oil. The share of this kind of crude in regard to the total system demand would rise from 41.8% in 2008, to 66.8% by the term's last year. This demand would hence represent 93.7% of the total heavy crude available for distribution in 2017, contrasting with 28.4% in 2008.

It is worthwhile mentioning that towards the end of the term, SNR heavy-crude demand will be higher than its total domestic production. Nonetheless, mixing can be used to adjust crude's quality; thus, an super light or light crude can be mixed with an extra heavy or heavy one for obtaining a larger amount of better-quality heavy-crude oil that the one directly obtained from the oil well.

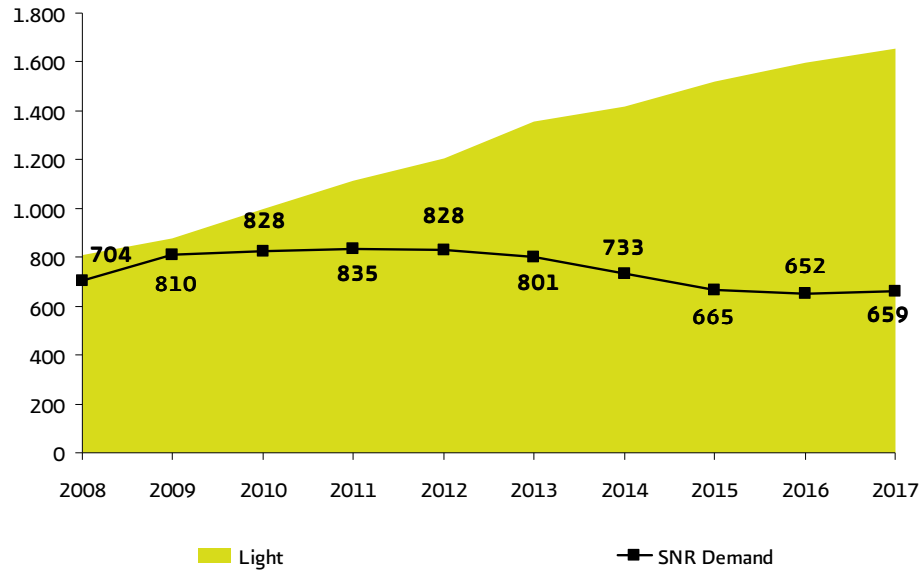
Graph 33
SNR Heavy-Crude Oil Demand vs. Domestic Availability, 2008-2017
(thousand barrels per day)



Source: Pemex Exploración y Producción.

After 2013, light crude oil demand will decrease, and with it, its share over the total; whilst the SNR demand for light crude is expected to be of 56.9% in 2008, as the term goes on, light crude oil may give in its place to heavy crude, and towards 2017 its demand would represent just 33.2% for SNR total. According to the production forecasts for this scenario, the share over light crude domestic demand – in regard to its total volume for distribution in 2008 – would be of 82.1% and it is estimated it will drop to 49.9% for 2017; this would allow assigning a bigger volume of this kind of crude for exports.

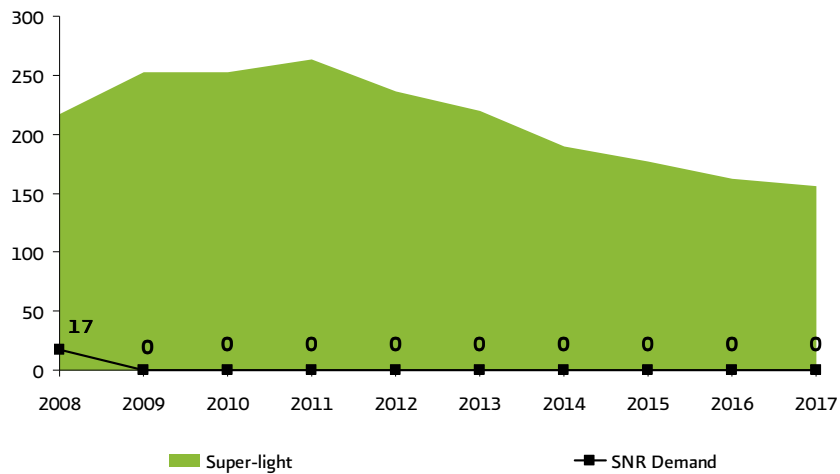
Graph 34
SNR Light-Crude Demand vs. National Availability, 2008-2017
(thousand barrels per day)



Source: Pemex Exploración y Producción.

In regard to super-light crude demand, estimated in 1.4% of SNR total demand for 2008, it will represent zero percent from 2009 on and for the rest of the term. Consequently, the total volume of super-light crude will be destined to exports. This, due to the refinery of Salamanca being the sole one from SNR which demands this quality of crude; hence, once its upgrading has concluded, it will not require this kind of crude, as it can be seen on graph 34.

Graph 35
SNR Light-Crude Demand vs. National Availability, 2008-2017
(thousand barrels per day)

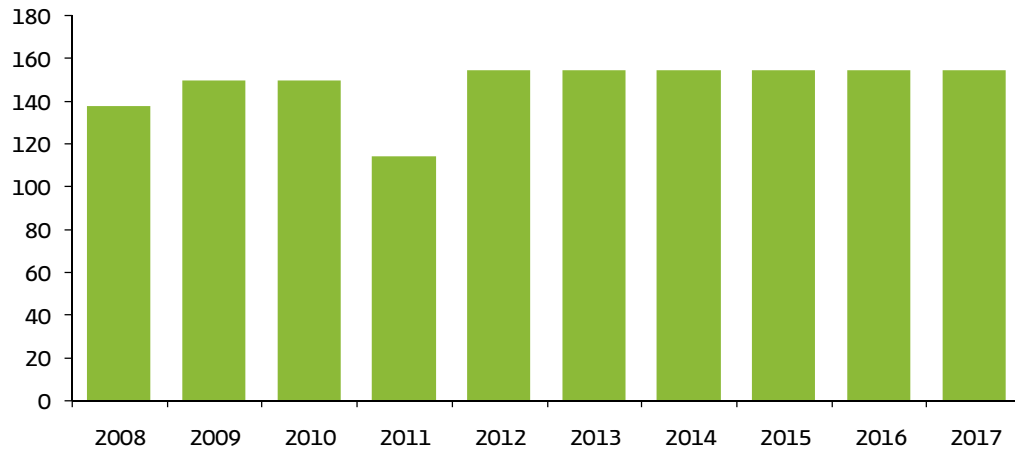


Source: Pemex Exploración y Producción.

Petrochemical Complex La Cangrejera

The petrochemical complex La Cangrejera is one of the most important destinations for domestic production of light crude (exclusively), and this is not expected to vary along the term. In fact, for 2008 it is intended that this complex demand will represent 10% of the national total, and by 2017, 7.2%. Graph 36 shows a decrease in year 2011, due to the integration of the modernization and enlargement projects for aromatic facilities in this complex by August-September of that same year. This will locate this complex with an average annual operation of 114 tbd. It is expected that during the prospected term, that demand will reach its maximum in 2012 and, from that year on, will remain unchangeably towards the end of the period.

Graph 36
Crude-Oil Demand for Petrochemical Complex La Cangrejera, 2008-2017
(thousand barrels per day)



Source: Pemex Exploración y Producción.

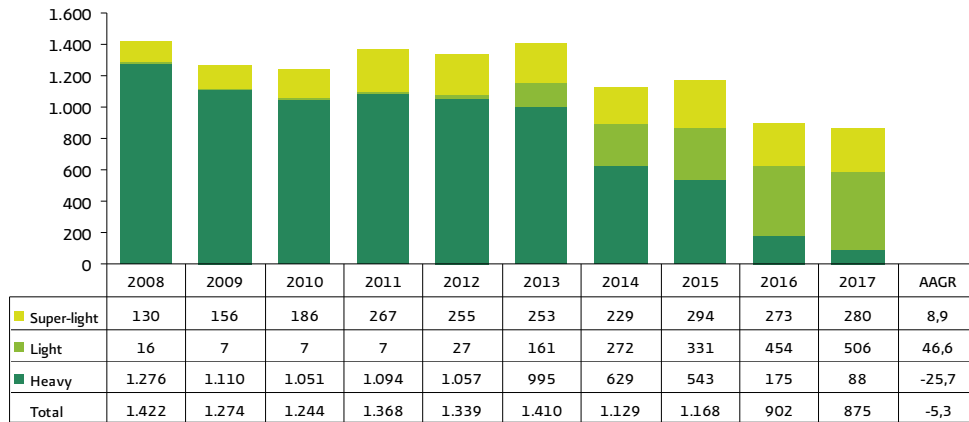
2.3 Foreign Trade, 2008-2017

Albeit crude-oil national production is expected to increase, the exports volume will decrease due to a rise on the oil domestic demand: from 1,422 tbd in 2008, to 875 tbd in 2017; this represents a drop of 93.1%. On the other hand, an increase over Mexican-mix price is expected as a consequence of two main factors:

- A larger production of light and super-light crude oils in national territory; and,
- Less consumption by national refineries since these will use a larger proportion of heavy crudes.

Therefore, heavy-crude production will be mainly appointed to national demand and the assigned volume for exports will reduce from 1,276 tbd in 2008, to 88 tbd in 2017. This will make the Mexican-crude export mix to have a higher trade in international markets and, moreover, to be easily positioned in the market since this kind of crude has a higher proportion of light crude available and does not need deep-conversion refineries (see graph 37).

Graph 37
Exports by Quality of Crude, 2008-2017
(thousand barrels per day)



Source: Pemex Exploración y Producción.

Light crude oil will present the highest increase on exports volume; thus, after having had the least share within exports, it will become the crude with the highest share in the total. It is important to mention that during the first years the recorded exports of this crude will be marginal, since during those years SNR demand will practically absorb all the light crude.

Superlight crude oil will also have an increase in its exports volume and will remain as the second one with the highest volume during the term.

2.4 Reserves Incorporation

As part of the planning process, PEP has designed the Strategic Program for the next years, which is focused toward specific objectives of production, reserves and costs. These objectives are expressed in the following production and reserves goals for the term 2008-2017:

- Keep oil and natural gas production at competitive levels.
- Improve exploratory results and reserves development in order to reach a 100% replacement rate of proved reserves by 2012, as well as recover, gradually, a reserve-production relation at least for ten years.
- Keep competitive levels in discovery and developmental costs, as well as in production's.
- Improve the relationship amongst the communities where PEP runs.

In order to achieve these goals, it will be necessary to enhance the exploratory activity in deepwater of the Gulf of Mexico and in the other basins of the country, as well as to invigorate the portfolio of exploratory opportunities, increasing thus the number and the average size of the facilities.

In terms of fields' development, two strategic proposals were set:

- Invigorate the execution of development projects in order to maximize the current reserves and produce new reserves efficiently.
- Execute the proposed strategy for handling and marketing extra-heavy crude.

The strategic proposals defined for the production stage are the following:

- Accomplish an operative transformation of the maintenance function; and,
- Elaborate new execution schemes for developing marginal and mature fields in a profitable way.

This will help on reaching the established goals at a lower risk. In terms of production, for the next five years the southeast basins will contribute with 87% of crude production. The Tampico-Misantla basin will come after in importance with 13% from the total, due to the incorporation of probable-reserves volumes from Chicontepec. In respect to gas production, Southeast basins will be the most important ones, with 51%; it is estimated that the non-associated gas projects of Burgos and Veracruz will provide 27% and 11% from the country's production, each.

In other respects, the contribution from the basin of Golfo de Mexico Profundo is set in two stages. The first one is related to the discovery of fields, whose estimated hydrocarbons volumes are expected to be of a bigger extent than those to be discovered in mature or explored basins. This will help to replace reserves to be exploited in a short term.

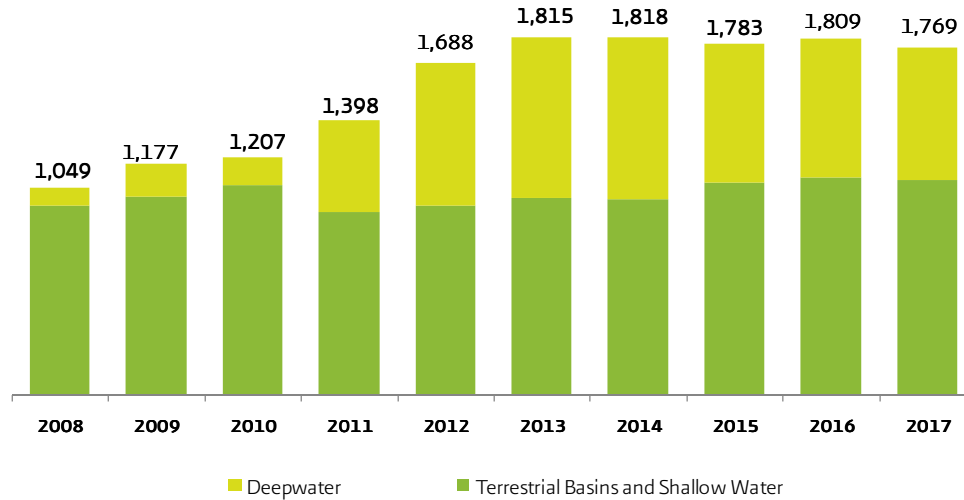
The second stage envisages that after 2012, the production proceeding from reserves in Southeast basins will be gradually completed with the production from the basin of Golfo de Mexico Profundo, which tends to gain importance in the near future.

Investing in these categories will increase the reclassification of probable and possible reserves into proved ones, as well as contribute to the discovery of total reserves. It is clear that the future viability of this objective will depend on reaching, at the less possible time, a 100% rate of return of proved reserves which will gradually lead to an increase of the proved reserve-production relation.⁸

It is foreseen that the exploratory activity will allow at the 2008 year end an incorporation of 1,049 Mboe (million of barrels oil equivalent) of 3P reserves, slightly lower than the 1,053 Mboe of incorporated discoveries during 2007. As the prospected term moves forward, the incorporated reserves will come increasingly from the exploration in deepwater of the Gulf of Mexico. In such a way, the estimated average of 3P reserves incorporation for the term 2008-2017 would be of 1,551 Mboe.

⁸ Source: *Las reservas de Hidrocarburos de México. (Hydrocarbon Reserves of Mexico)*. Evaluation been made up to January 1st, 2008. PEP.

Graph 38
3P Reserves to Be Incorporated to the Planning Scenario, 2008-2017
(million barrels of oil equivalent)



Source: Pemex Exploración y Producción.

2.5 Investment Program

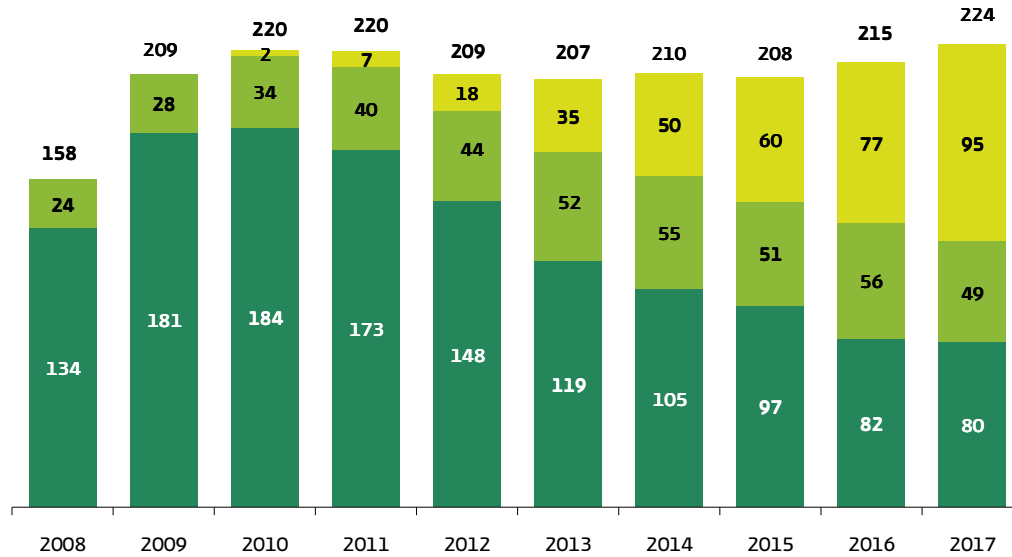
The investment associated to this production scenario is estimated in 208 billion pesos (MXN) as an annual average through the term. According to the planning of each project and its integration to national production, the total investment is divided into:

- Exploitation
- Exploration; and,
- Future developments

It is estimated that for 2008 year end, the investment exerted in PEP will reach 158 billion pesos (MXN) from which 85% will be assigned to exploitation activities and the rest to exploration ones. The most meaningful change in investment is expected towards 2009, when there are plans for activities requiring 209 billion pesos. This change is supported by a rise on production costs, due to an increase over services and drilling equipment prices, in addition to a rise on the number of drilled wells and the activity for reversing the production drop in the short and mid terms.

Within this context, the scenario considers a cost structure that reflects the trading conditions of the last quarter of 2007.

Graph 39
Total Investment in PEP, 2008-2017
(billion pesos of 2008)



Note: Totals may not meet due to the rounding process.
 Source: Pemex Exploración y Producción.

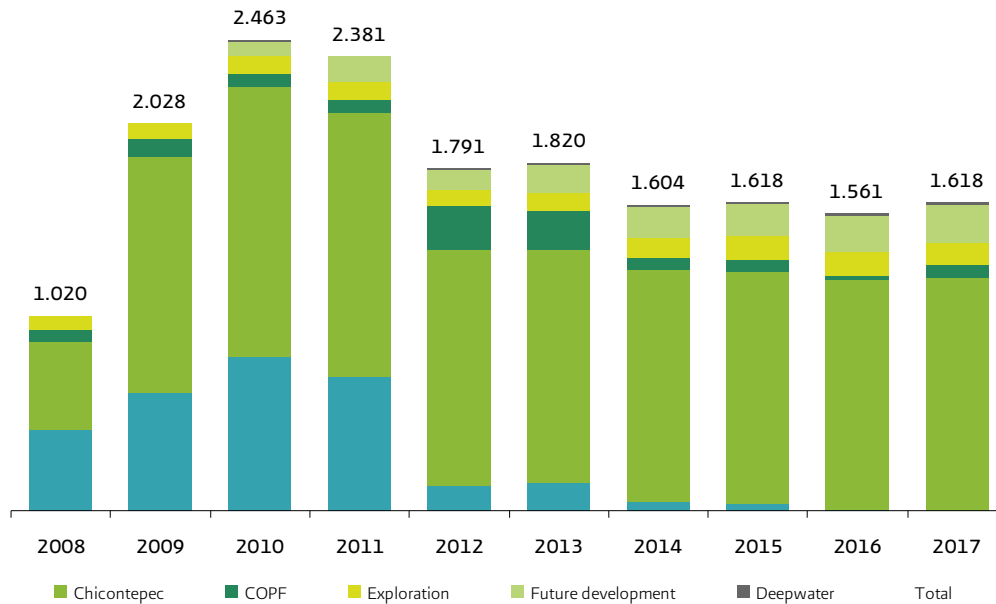
Even if the planning scenario acknowledges the necessity of reversing the crude production drop of the first years through investments that develop the required infrastructure and increase well's drilling, growing investment levels are also required for future developments; this, in order to keep the goal established by Prosenar of a 100% rate of return of 1P reserves by 2012.

From the average amount of investment 2008-2017, 62.6% is appointed to the exploitation of present-day fields, 20.8% for exploring new fields and incorporating reserves, and 16.6% to their future development. PEP's strategy is look after mature basins, developing the projects of Ku-Maloob-Zaap, Chicontepec, Burgos and Crudo Ligero Marino and exploring deepwater in the meantime.

In the latter case, the development of deepwater projects will be 17.9% of the total investment planned for 2017, though that year's production is expected to represent only 3% of the national total. The latter, since technology, equipment and required materials for exploration and exploitation in deepwater represent high acquisition and operative costs, besides of needing long maturing periods.

In the current outlook, the biggest investment is a result of an increase over the drilling costs, the development of already-considered infrastructure, cost increase of feedstock like steel and cement, as well as the associated maintenance of the existing infrastructure and the development of new one. Thus, investment amounts are a result of the activity in wells drilling, the development of infrastructure and complexity related to the 2008-2017 projects.

Graph 40
Drilling of Total Wells of the Scenario Planning
(number)



Source: Pemex Exploración y Producción.

The scenario intends a total of 1,020 wells by the end of 2008, a significant increase in regard to 2007, when just 659 wells were drilled. From 2009 on it is estimated that the drilled wells will have outnumbered two thousand in order to reach the 2,436 for 2010; the latter will help to recover a competitive production platform with levels over 3,000 tbd from 2015 on and, hence, the number of drilled wells will be of 17,905 (see graph 40).

For the first years of the term special attention will be paid to wells' drilling, since at the short term, drilling is heightened for exploitation projects, like Cantarell and Ku-Maloo-Zaap, which seek to reverse the production decline.

Furthermore, it considers a bigger drilling activity in the Aceite Terciario del Golfo (Chicontepec) project, for accelerating the reserves incorporation and increase production. According to the kind of oil reservoir, a massive drilling of non-conventional wells will be required (it is estimated there will be 1,411 wells by 2010, and it is intended to have over 1,200 drilled wells during the rest of the prospected term).

2.6 Domestic Balance, 2008-2017

The prospected domestic balance of crude oil displays information on how supply and demand are associated to the planning scenario of the next ten years, linking thus the distribution of the crude according to its quality.

The production by oil quality will shift with the Northeast Marine Region decline as a consequence of the production decrease, first, in Cantarell and then in Ku-Malooob-Zaap. This will have a serious effect over the amount of heavy crude

produced towards 2017, whilst the total domestic production will be compensated by obtaining light crude, mainly from projects like Chicontepec, Crudo Ligerero Marino, Antonio J. Bermudez and Jujo-Tecominoacan.

Thus, the crude oil production expected at 2008 year end, would reach a volume of 2,830 tbd, from which 63.7% would be heavy oil; 28.6%, light; and 7.7%, super light. The percentage share by 2017 would turn into 40%, heavy; 54.9%, light; and 52%, superlight.

This involves favoring the distribution of heavy-crude oil for SNR, looking forward to guarantee the provisioning of the upgrading projects, which will allow a bigger processing of heavy crude to be converted into light distillates- with a higher aggregated value, maximizing thus, the value of Pemex branches like PEP and PR.

It is worthwhile to say that the scenario suggests a higher designation of crude to be processed within Mexico, since it is planned the incorporation of new refining capacity in the SNR, aside of considering that La Cangrejera capacity will remain without changes.

Therein, the domestic demand, as well as the need of obtaining a lighter mix than the current one, will lead to a decrease of exportable oil volume and a shift in the sharing proportions of exported crudes. That will make that light crude will increase its share, trying to capture the best prices within the foreign market which favors this kind of crude.

Chart 12
Crude Oil Domestic Balance, Planning Scenario, 2008-2017
(thousand barrels per day)

Concept	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	AAGR 2008-2017
Availability	2,831	2,761	2,773	2,873	2,881	2,963	2,977	3,046	3,060	3,032	0.8
Crude-Oil Production	2,830	2,750	2,762	2,862	2,870	2,952	2,966	3,034	3,048	3,021	0.7
Heavy	1,803	1,619	1,508	1,485	1,425	1,374	1,357	1,338	1,289	1,208	-4.4
Light	809	878	1,001	1,113	1,208	1,358	1,419	1,519	1,597	1,658	8.3
Superlight	217	253	253	264	236	220	189	177	162	156	-3.6
Naphthas and Condensates	2	11	11	11	11	11	11	11	11	11	22.6
Distribution	2,798	2,748	2,759	2,858	2,865	2,946	2,961	3,028	3,042	3,015	0.8
To Process¹	1,376	1,475	1,515	1,490	1,526	1,537	1,831	1,860	2,140	2,140	5.0
Heavy	517	515	538	541	543	580	943	1,040	1,332	1,325	11.0
Light	842	960	978	949	983	956	888	820	807	814	-0.4
Superlight	17	-	-	-	-	-	-	-	-	-	N/A
Abroad²	1,422	1,274	1,244	1,368	1,339	1,410	1,129	1,168	902	875	-5.3
Heavy	1,276	1,110	1,051	1,094	1,057	995	629	543	175	88	-25.7
Light	16	7	7	7	27	161	272	331	454	506	46.6
Superlight	130	156	186	267	255	253	229	294	273	280	8.9
Variations³	33	13	14	15	15	16	16	17	17	18	N/A

¹ Includes crude oil destined to the SNR and La Cangrejera.

² Includes Altamira's crude oil.

³ Includes packing, inventory movements, injections, transfers, shrinkage and statistical differences.

Note 1: Totals may not meet due to the rounding process.

Note 2: Variations within the three kind of crudes and the availability of Mayan crudes (heavy), Istmo (light) and Olmeca (super light) is due to the mixing for suiting quality, thus, a portion of light-crude production is mixed with heavy and super-light crudes in order to obtain the corresponding physicochemical features.

Source: Pemex Exploración y Producción.