

The Energy Situation in Mexico

Mexico's total energy consumption in 2014 consisted mostly of :

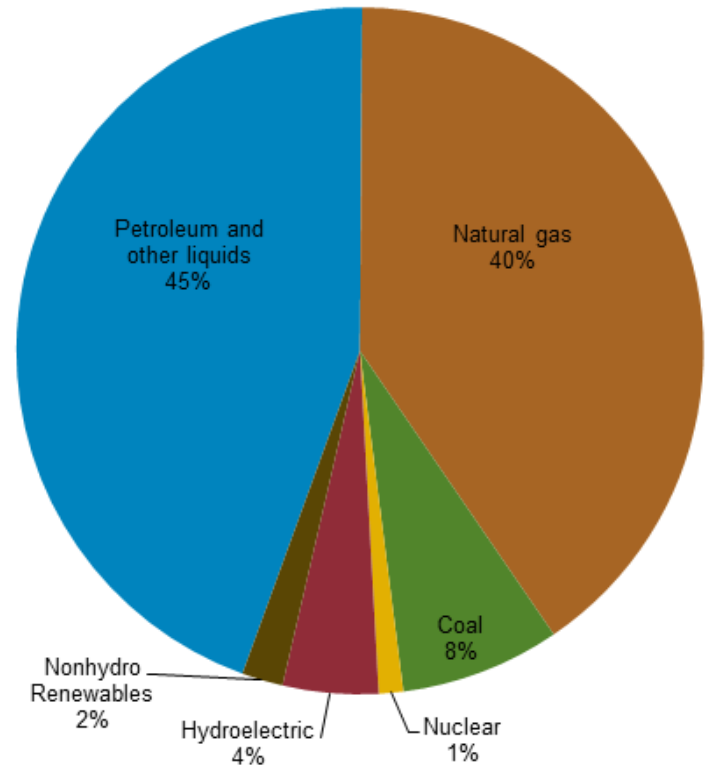
- petroleum (45%),
- natural gas (40%).

Natural gas is increasingly replacing oil in electric power generation. However, this decreases Mexico's energy security as the country is a net importer of natural gas.

All other fuel types contribute relatively small amounts to Mexico's overall energy mix.

The country also has growing geothermal and wind energy capacity for electricity generation.

Total energy consumption in Mexico by type, 2014



Source: U.S. Energy Information Administration, BP Statistical Review

- Mexico's oil production has declined in recent years
 - Mexico produced an average of 2.8 million barrels per day (b/d) of petroleum and other liquids during 2014.
 - Crude oil accounted for 2.4 million b/d, or 87% of total output.
 - Mexico's total oil production has declined 27% from its peak in 2004.
 - Notably, crude oil production in 2014 was at its lowest level since 1986 and has continued to decline thus far in 2015.
- Sector organization and reforms
 - Mexico nationalized its oil sector in 1938, and PEMEX was created as the sole oil operator in the country.
 - In December 2013, the Mexican government enacted constitutional reforms ending PEMEX's monopoly on the oil and natural gas sector and opening the industry to greater foreign investment.
 - In July 2015, the first auction phase of Round One offered 14 offshore blocks for exploration and production to private investors. Because of low crude oil prices and the terms of the contracts, only 2 of the 14 blocks received adequate bids to be awarded

- Refined petroleum product trade
 - Although Mexico is one of the world's largest crude oil exporter, Mexico is a net importer of refined petroleum products.
 - Mexico imported 641,000 b/d (barrels per day) of refined petroleum products in 2014, of which 58% was gasoline.
- Natural gas
 - Mexico is a net importer of natural gas, mostly via pipeline from the United States.
 - Its natural gas demand is rising because of expanding power generation capacity and domestic demand.
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- Electricity

- Mexico is investing in new power plants to increase electricity generation capacity and transition to natural gas as the main fuel source.
- Mexico had 54.4 gigawatts (GW) of effective generation capacity in 2014.
- The country generated an estimated 258 billion kilowatthours (kWh) of electric power in 2014, representing an increase of nearly 25% from a decade ago.
- Power plants using fossil fuels provide 78% of Mexico's electricity capacity and generation.
- The industrial sector accounts for 58% of Mexico's electricity sales
- The residential sector is responsible for slightly more than one quarter of electricity sales.
- Mexico has been a modest exporter of electricity to the United States since 2003.

- Electricity - production: 278.7 billion kWh (2012 est.)
country comparison to the world: 15
- Electricity - consumption: 234 billion kWh (2012 est.)
country comparison to the world: 15
- Electricity - exports: 1.288 billion kWh (2013 est.)
country comparison to the world: 51
- Electricity - imports: 607 million kWh (2013 est.)
country comparison to the world: 71
- Electricity - installed generating capacity: 62.29 million kW (2012 est.)
country comparison to the world: 17
- Electricity - from fossil fuels: 74.2% of total installed capacity (2012 est.)
country comparison to the world: 100
- Electricity - from nuclear fuels: 2.5% of total installed capacity (2012 est.)
country comparison to the world: 28
- Electricity - from hydroelectric plants: 18.7% of total installed capacity (2012 est.)
country comparison to the world: 97
- Electricity - from other renewable sources: 4.7% of total installed capacity (2012 est.)
country comparison to the world: 61

- Crude oil - production: 2.459 million bbl/day (2014 est.) country comparison to the world: 11
- Crude oil - exports: 1.22 million bbl/day (2013 est.) country comparison to the world: 13
- Crude oil - imports: 9,884 bbl/day (2013 est.) country comparison to the world: 76
- Crude oil - proved reserves: 9.812 billion bbl (1 January 2015 est.) country comparison to the world: 17
- Refined petroleum products - production: 1.438 million bbl/day (2013 est.) country comparison to the world: 14
- Refined petroleum products - consumption: 1.966 million bbl/day (2014 est.) country comparison to the world: 12
- Refined petroleum products - exports: 171,200 bbl/day (2013 est.) country comparison to the world: 37
- Refined petroleum products - imports: 563,300 bbl/day (2013 est.) country comparison to the world: 13

- Natural gas - production: 45.4 billion cu m (2014 est.) country comparison to the world: 19
- Natural gas - consumption: 73.26 billion cu m (2014 est.) country comparison to the world: 10
- Natural gas - exports: 172 million cu m (2014 est.) country comparison to the world: 44
- Natural gas - imports: 27.39 billion cu m (2014 est.) country comparison to the world: 13
- Natural gas - proved reserves: 483.5 billion cu m (1 January 2014 est.) country comparison to the world: 31
- Carbon dioxide emissions from consumption of energy: 453.8 million Mt (2012 est.) country comparison to the world: 16

Energy efficiency report

1.1. Policies: 2% energy savings for 2012

- In November 2009 the government adopted an energy savings program (PRONASE) for the period 2009-2012. It estimates the energy savings potential at 2 percent in 2012 and 18 percent in 2030, compared with a reference scenario. The plan identifies seven priorities: road transport vehicles, lighting, household appliances, cogeneration, electric motors, energy efficiency standards for new buildings and water distribution.
- The Electric Power Savings Trust Fund (FIDE) launched the Program for Financing of Electric Energy Saving (PFAEE). The Program finances the substitution of old, inefficient refrigerators and air-conditioners by modern and more efficient equipment. It also provides financial support for the thermal insulation of homes. The cost of more efficient lighting is also financed through a credit paid on electricity bills, which is largely recovered due to reduced electricity costs.
- The FIDE label is a voluntary label that identifies energy-efficient products on the Mexican market; it certifies that the product has met specified standards. By 2012, FIDE aims to cover 7,700 products across 85 companies.

Energy efficiency report

1.2. Energy consumption trends: rapid increase up to 2008

- **Mexico's primary energy consumption per capita is 1.6 toe, ie, 9 percent lower than the world average.**
- Total energy consumption grew at the steady pace of 1.5 percent per year between 1990 and 2002, and by 3.5 percent per year during 2002-2008. However, it fell by 2.5 percent in 2009 as a result of the global recession.
- The share of oil in the country's total consumption is 56 percent (2009); it has fallen to the benefit of gas (28 percent in 2009 compared with 19 percent in 1990). Coal, primary electricity (nuclear, hydro and wind) and biomass supply the rest of the market (approximately 5 percent each).
- Transport consumes 45 percent of final energy, industry 33 percent (8 percent of which for non-energy uses, mainly petro-chemicals) and the other sectors (households, services and agriculture) the remaining 22 percent.

Energy efficiency report

3. Industry

3.1. Policies: standards on electric motors

- The Programa Nacional para el Aprovechamiento Sustentable de la Energia 2009-2012 promotes the development of cogeneration and expects potential energy savings of 2.1 TWh by 2012. The actual cogeneration capacity of 3,300 MW (2,000 MW of which in facilities owned by the national oil company, Pemex, and 1,300 MW in the manufacturing industry) is expected to increase to 3,600 MW in 2012.
- The program also plans the implementation of standards for electric motors and subsidies to substitute inefficient electric motors. The energy consumption reduction potential of electric motors is estimated at 3.5 TWh by 2012.

3.2. Energy consumption trends: smaller contribution from energy-intensive industries

After a deep recession in 1992, which saw industrial energy consumption decrease by 14 percent in one year, consumption then increased by 1.8 percent per year until 2008. In 2009 industrial energy consumption dropped by 5.3 percent as a result of the economic crisis.

STEM

- 2011 curriculum does not include any STEM approach. Natural sciences are studied in grades 4-6. Biology, physics and chemistry in grades 7-12.
- Curricular reform for 2018 is currently in development.

Lesson Study for Cross Border

- Similarly as Japan and Malasia, Mexico could set a Lesson Study Program with middle schools in Latin America or any other country in English language.