

ENERGY TRANSITION LAW (ETL)

(MEXICO DECEMBER 2015)

Clean Energy Goals in the Electric Sector
Clean energy goals fulfillment scenario 2015 - 2050

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Article 1.- The Law of Energy Transition has as its object to regulate:

- **The sustainable use of energy.**
- **Obligations on clean energy.**
- **The reduction of emissions of pollutants from the electrical industry.**

Article 4.- The Energy Strategy should establish goals so that the consumption of electrical energy is satisfied through a portfolio of alternatives that include energy efficiency and an increasing proportion of generation with clean energy.

- **The Secretariat of Energy will promote the generation of electricity from clean energy sources, reaching the levels established in the General Law of Climate Change for the electricity industry.**

TRANSITION STRATEGY TO PROMOTE THE USE OF CLEANER TECHNOLOGIES AND FUELS (THE ENERGY STRATEGY).

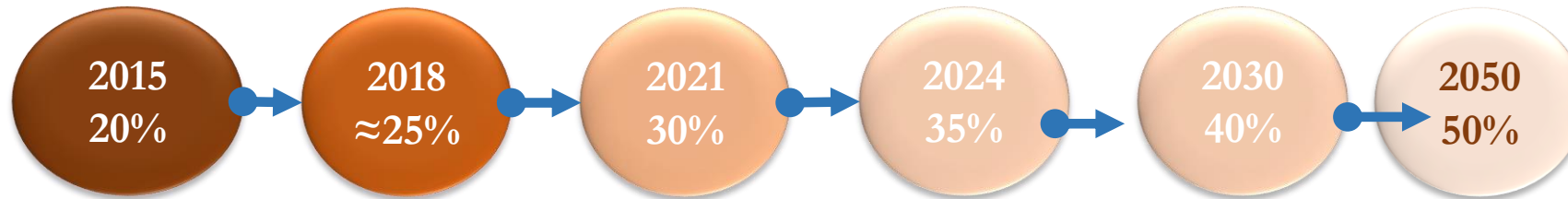
On December 2, 2016, the Mexican Federal Government published in the DOF the update of the first Energy Strategy, in which Mexico establishes the Vision 2050.

The Strategy has medium and long-term planning components, 15 and 30 years, respectively, consistent with international best practices. From a series of analyzes, studies and diagnoses and clean fuel power sector scenarios to 2050.

The Strategy constitutes a guiding instrument of national policy in the medium and long term in terms of clean energy obligations, sustainable use of energy and improvement in energy productivity of economically viable reduction of polluting emissions in the electricity industry.

CLEAN ENERGY GOALS TO MEET

Considering the prospective horizon of 15 and 30 years established in the Strategy, it is necessary to identify the technical and economic feasibility to have a generation matrix that allows achieving the clean energy goals adopted by the Government of Mexico.



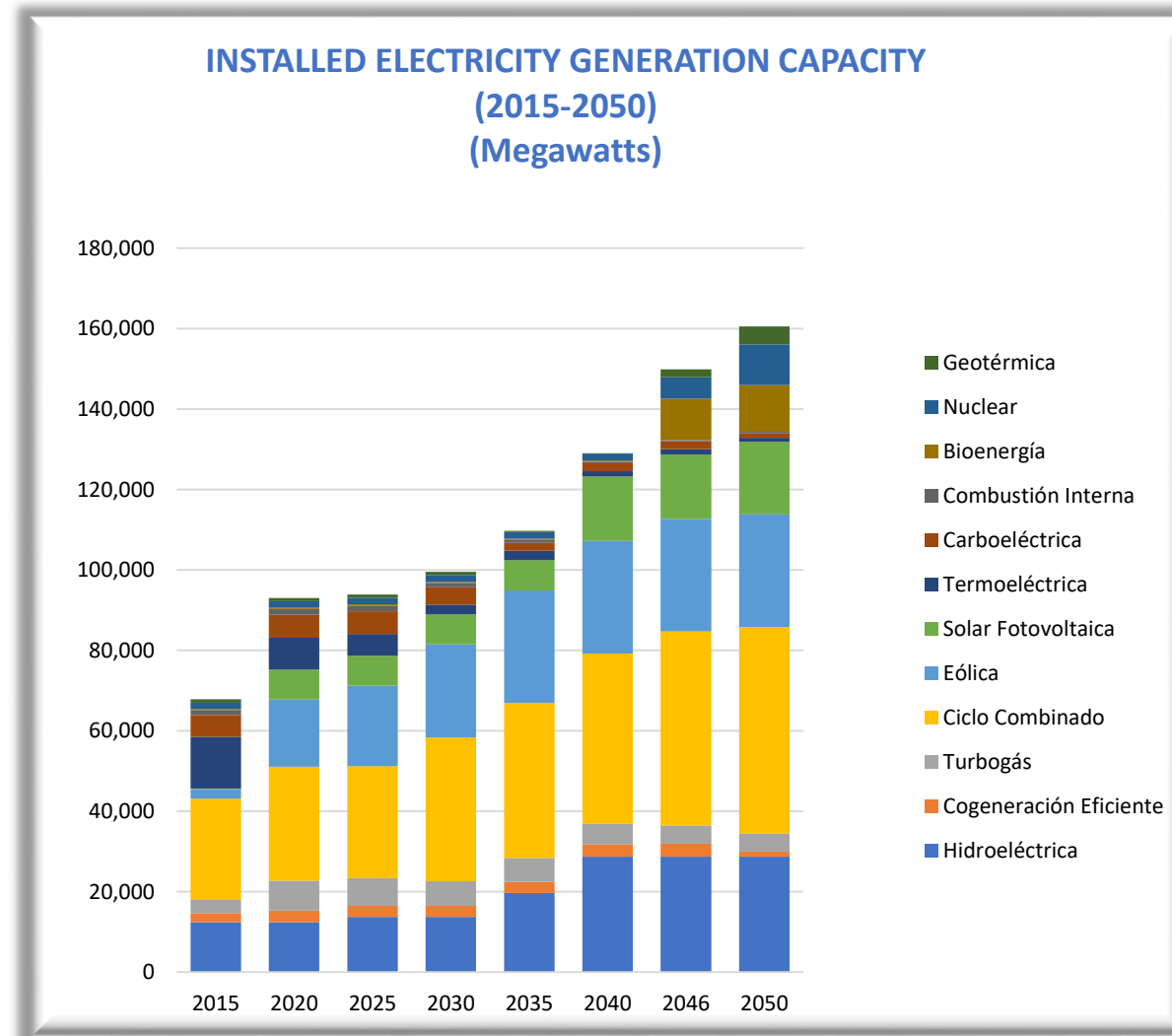
The clean generation includes the following technologies:

- Any generation based on fossil fuels that has carbon capture and sequestration technology.
- Hydro
- Nuclear.
- Any renewable energy source (wind, solar, bioenergy, among others).
- Efficient cogeneration (term applied to cogeneration plants that meet the criteria of the Energy Regulatory Commission).

THE ENERGY STRATEGY INCLUDES LONG-TERM ENERGY SCENARIOS FOR THE FULFILLMENT OF CLEAN ENERGY GOALS IN THE GENERATION OF ELECTRICITY.

The model optimises the generation per plant, taking into account the available transmission capacity.

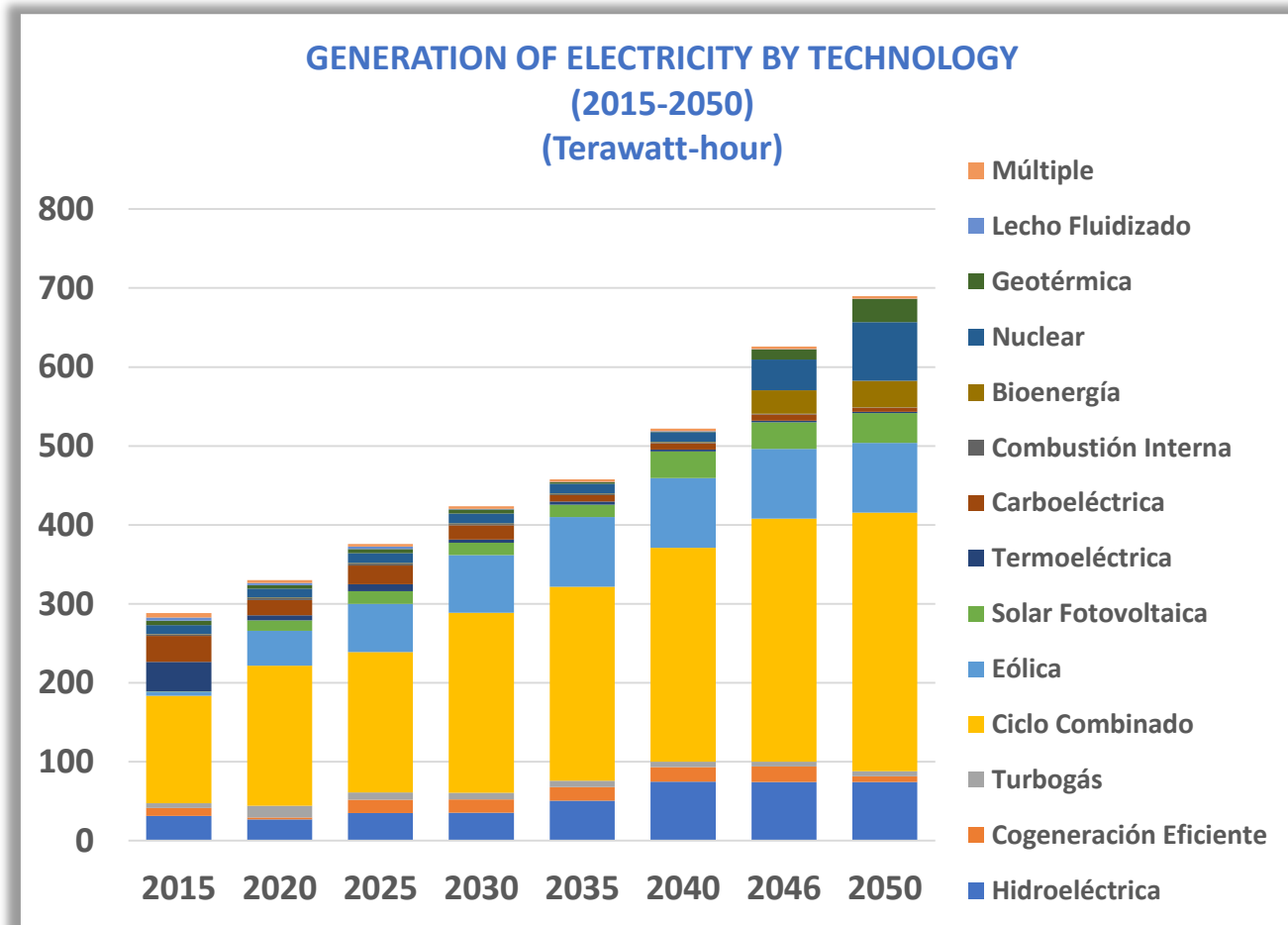
The model can invest in least-cost expansion of the system. It can simultaneously add both generation and transmission capacity. This is done based on a catalogue describing investment costs (and other key information) for the different possibilities.



The analyses performed indicate that wind and solar power, due to their expected decrease in costs, will become important generators in the Mexican power sector.

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The scenario of fulfillment of clean energy goals with the optimization model, shows that there is a growing tendency in the use of clean energies for the generation of electricity in the next decades.



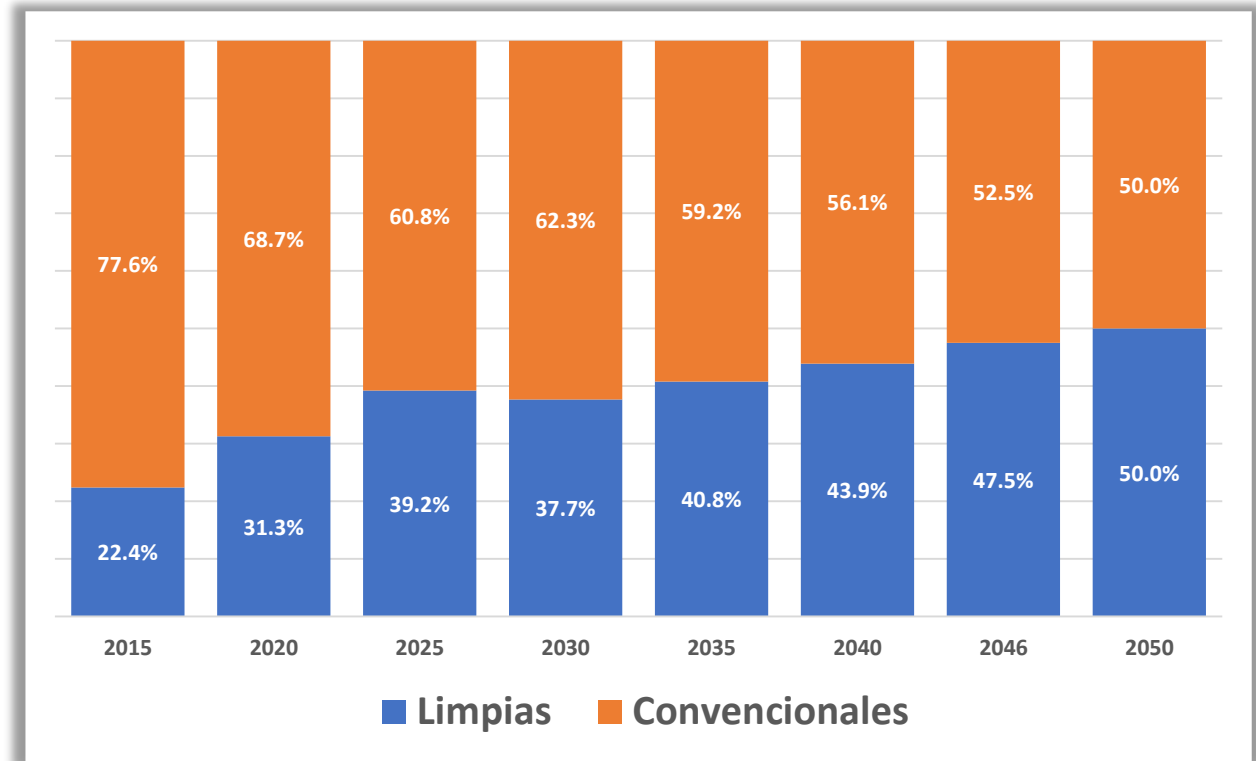
Wind and solar generation become economically attractive. This means that there is a socio-economic benefit in having large shares of clean energy in the Mexican electricity system.

PERCENTAGE OF CLEAN AND CONVENTIONAL ENERGY IN THE TOTAL OF ELECTRICITY GENERATION (%)

Clean energy will become important fuel for the generation in the Mexican power sector.

Clean energy in 2030 is estimated to be 37.7% of total generation.

In 2040 to be 44% and in 2050 to be 50% of total generation.



USE OF LONG-TERM ENERGY SCENARIOS (LTES) FOR DECISION MAKING.

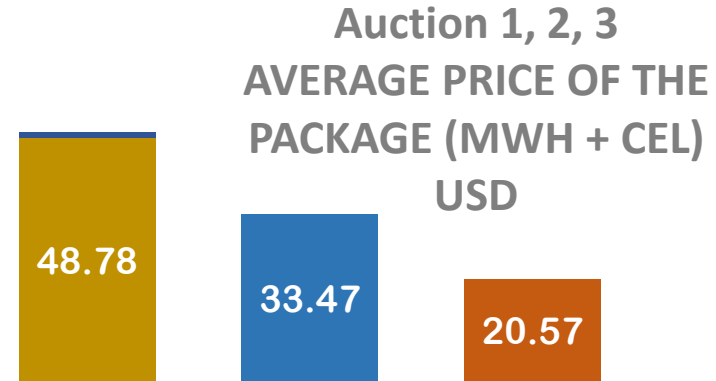
The elaboration of long-term clean energy scenarios by the Mexican government has been a useful instrument for the application of the energy transition policy.

- The simulation of long-term scenarios **helps to evaluate the feasibility of meeting the long-term goals**. It helps to identify different areas of opportunity for the development of the energy sector, as well as possible risks.
- It helps to fix the long-term expected trajectory in the behavior of clean and conventional energies, **establishing reference parameters for the application of the policy** and the necessary energy measures to get the goals.
- It gives a **parameter to evaluate the actual behavior observed and its deviation** from the results obtained in the estimated scenarios.
- The long-term scenarios in which the proposed goals are achievable **can generate an environment of greater certainty, which stimulates investment**.
- In the case of Mexico, the results of the long-term scenarios of the energy transition strategy show that **long-term goals are achievable, which has favored investment in clean energy**.

RESULT OF THE THREE AUCTIONS 2017 - 2018. HIGHLY COMPETITIVE PRICES

▼ **57%**

Reduction in
the price of
the package



WORLDWIDE DECREASE IN GENERATING COSTS WITH RENEWABLE ENERGIES

- **Technological innovation**
- **Competition in the markets**
- **Greater experience of the developers**

The incorporation of the downward trend in the costs of renewable technologies in long-term scenarios results in a **high penetration of renewable energies in the generation matrix for the following decades.**

THE LONG-TERM ELECTRIC AUCTIONS ARE THE MECHANISM TO PROMOTE THE CLEAN ELECTRICAL GENERATION

The auctions are a policy that gives the mechanisms to reach the goal that by 2024, 35% of electricity generation will be clean.

- 3** finished auctions
2017 - 2018
- 7** new capacity
thousand MW
- 65** New Plants
- 8.6** Investment billions
USD
- 17** States
new clean plants

 **6th most attractive economy
for renewables**



By 2020, Mexico will have 4 times the wind and solar capacity that It had at the beginning of the 2012 year.

THE HIGH INVESTMENT EXPECTED IN CLEAN ENERGY THAT IS PROMOTED IN MEXICO WILL TRANSFORM THE GENERATING CAPACITY FOR THE YEAR 2030

