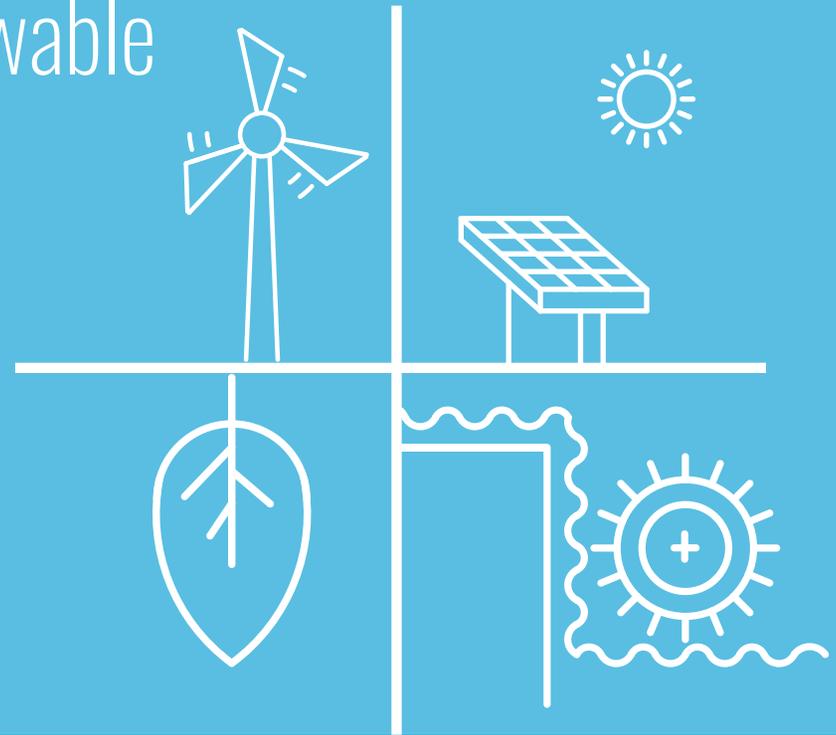


Present and future of renewable energies in Mexico:

A first look at the proposals of the presidential candidates

May, 2018



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 **MIREC WEEK**
21-24 MAY 2018 | WTC MEXICO CITY



Introduction

Mexico has begun a process of transforming its energy model after the approval of the energy reform in 2013, which sought to open up private investment and competition in the sector. In this context, renewable energies, particularly solar photovoltaic and wind, have had a boost in recent years and will see significant growth in the following, particularly from the implementation of clean energy auctions, included as part of the reform. Even with a clear pathway and a high growth potential in the near future, there is still a long way to go. Mexico has set important energy generation goals with clean sources by 2024 (35%), 2030 (37.7%) and 2050 (50%). The country's energy policy for the coming years should not only ensure compliance with these goals, but guarantee the legal, fiscal and regulatory framework in order to develop the renewable energy sector.

In this document, we briefly address the current state of renewables and take a first look at the proposals of the main presidential candidates heading for the election of July 1st, 2018

“Mexico has set important energy generation goals with clean sources by 2024 (35%), 2030 (37.7%) and 2050 (50%). The country's energy policy for the coming years should not only ensure the compliance with these goals, but guarantee the legal, fiscal and regulatory framework in order to develop the the renewable energy sector.”

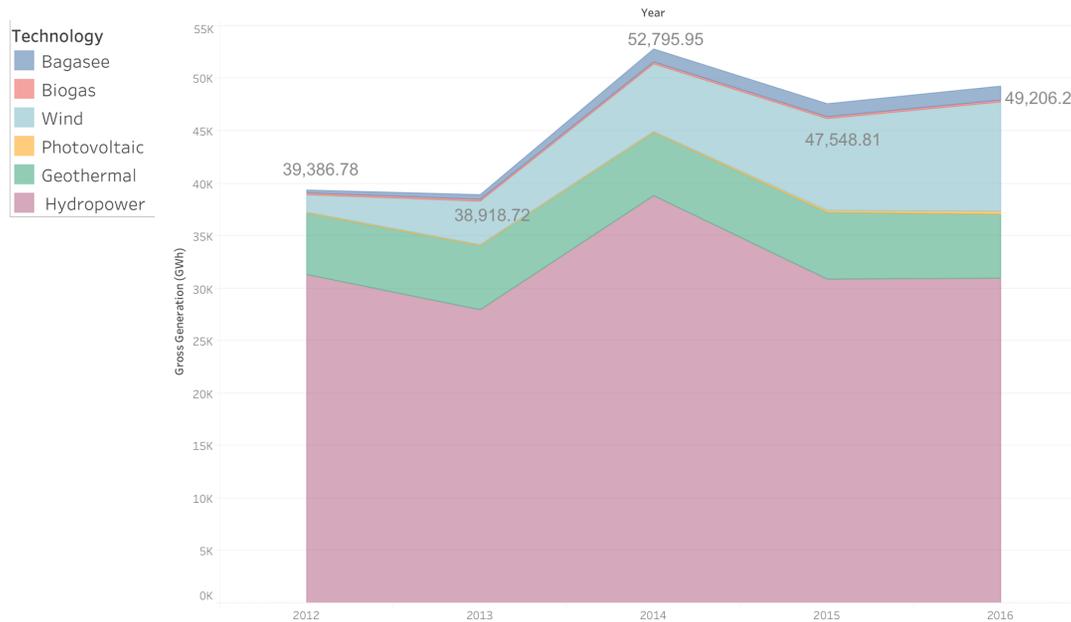




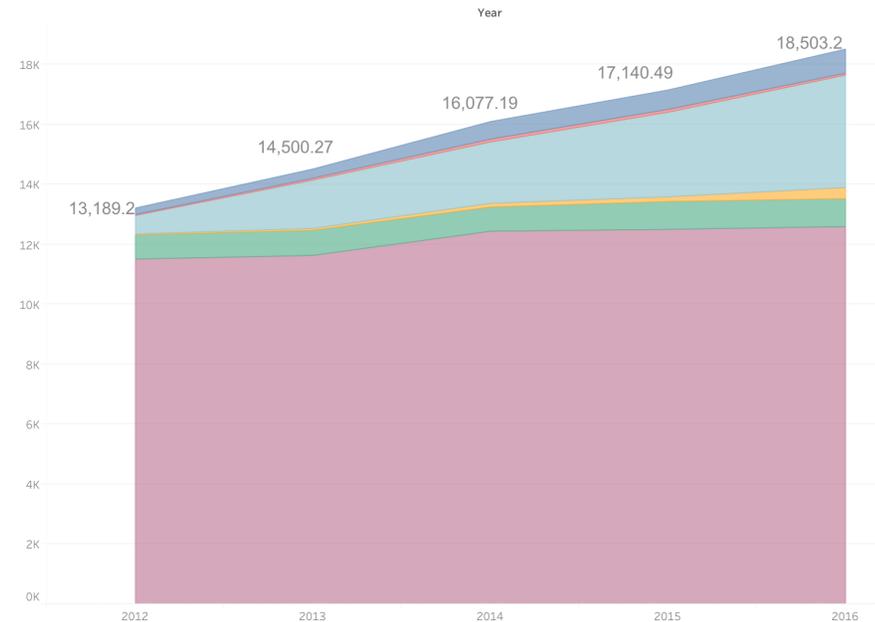
Renewable energy in Mexico: Where are we?

As of December 31, 2012, the effective capacity of renewable sources in the National Electric System (SEN) was 20.5% of the total installed power in the country, and the generation associated with these sources represented 14.9% of the total electric power in the year (Prospectiva del Sector Eléctrico 2012-2026, SENER 2013). By 2016, capacity increased 10% as compared to 2015, to reach 18,503 MW, while generation grew to 15.4%, reaching 49,206 GWh.

Behavior of renewable Energy generation, 2012-2016



Behavior of renewable Energy capacity, 2012-2016



Source: Own elaboration from data provided by SENER, 2017



Renewable energy in Mexico: Where are we?



The growth trend continued in 2017. Installed capacity of wind and solar energy increased 19% and 44% respectively during the first half of the year -compared to the same period of the previous year- making them the two types of energies that increased the most in the last year. On the other hand, hydroelectric power generation -clean energy with the greatest participation in the country's energy matrix- has significantly declined in the last two years due to climate effects such as drought. However, it remains one of the best alternatives for base load and represents 17.1% of the total generation.

Data from the first half of 2017 has shown that the installed capacity to generate renewable and clean energy reached 21,541 MW, 29.09% of the total capacity. On the other hand, generation with these sources reached 33,274 GWh, 20.8% of total electricity generation (Reporte de avance de energías limpias, primer semestre de 2017, SENER).

The first and second long-term auctions committed investments of 6,600 million USD. These investments will be used to construct 52 new power plants, which will double solar and wind infrastructure, adding nearly 5,000 MW of clean energy generation capacity in the country. As for the third auction, investments close to 2,400 million USD are expected with 15 new clean energy power plants in 8 states, adding to the SEN 2,562 MW of electricity generation capacity (Prospectiva de Energías Renovables, 2017-2031, SENER).

“In 2017 installed capacity of wind and solar energy increased 19% and 44% respectively during the first half of the year ”



Where are we going? A first look at the presidential candidates' proposals in the field of renewable energy.

It is expected that by 2031, the two fastest growing technologies, wind and solar, will reach an installed capacity of 17,233 MW and 7,830 MW respectively. Likewise, in the course of the coming years, wind energy will increase its stake within the country's energy matrix, from 368 GWh in 2017 to approximately 13,396 GWh in 2031. Photovoltaic generation, on the other side, will increase 3,534%, going from 368 GWh in 2017 to 13,396 GWh in 2031. Hydroelectric generation is expected to increase from 31,930 GWh in 2017 to 38,865 GWh by 2031, an approximate growth of 21.6%, reaching an installed capacity of 14,270 MW (Prospectiva de Energías Renovables, 2017-2031, SENER). In general, it is foreseen that between 2017 and 2031, renewable energies will grow at an annual average rate of 7.4%, reaching 135,027 GWh at the end of the period.

It is important to analyse the proposals of the main presidential candidates in relation to renewable energy, which will be key to achieving the country's potential in the coming years. This is due to the current political situation, and the consequences in the present and future of the country's energy policy, whose transformation has been based on the approval and implementation of the energy reform. This report seeks to give a first glance of these proposals and present a comparative table of the different candidates policies.

“In a scenario of political change in the country, it is relevant to know the proposals of the candidates in the field of renewable energies”





Ricardo Anaya Cortés, Coalition Por México al Frente (PAN, PRD, MC)

Mr. Anaya's platform message mentions enhancing development and incorporation of clean and renewable energies in the energy matrix as one of the measures of his economic growth strategy. On the other hand, presidential candidate Anaya, through section "Medio ambiente y desarrollo sostenible" of its platform proposes to incorporate alternative, clean and renewable sources into the energy matrix, making important efforts to develop technologies. However, he does not go into full technical nor policy detail to achieve these proposals.

Nevertheless, the candidate has come out in support of clean and renewable energy generation on various occasions, recognizing its potential, both in economic and environmental matters. In this respect, Mr. Anaya has also proposed to grant adequate incentives to develop this type of energy. Recently, he introduced 4 general proposals to foster the development of renewable and clean energy. He stated that by 2024 these energies will represent 40% of the total power generation in the country. These proposals include: the implementation of solar panels on homes; the promotion of clean and environmentally sustainable businesses; boosting non-motorised mobility; and providing incentives so that a third of small and medium-sized enterprises (SMBs) can access clean energy through favourable financing arrangements.

"...the candidate assured that Mexico should and can be a leading country in terms of clean energy transition."



In the presentation of his proposals, the candidate has reaffirmed that Mexico should and can be a leading country in terms of clean energy transition. Mr. Anaya also mentioned that Mexico could serve as an example for other countries in attracting investments to the generation of solar, wind and geothermal energy. However, he has not gone into detail on how to do it.

Additionally, during the meeting with Al Gore, former Vice President of the United States in the administration of Bill Clinton, Mr. Anaya spoke in favour of the use of renewable generation as a measure to combat climate change. Other proposals of the candidate to address the problem include the establishment of a carbon price and its market, as well as channelling part of the proceeds collected to mitigation projects and development of climate financing strategies.

On the other hand, during the 81° Convención Bancaria Meeting, Mr. Anaya reaffirmed his positions on this issue, arguing that it is through the use of new technologies that a change in the energy matrix can be achieved. He also highlighted the employment-creation potential among renewable energy options, but didn't mention any estimated figure.





Andrés Manuel López Obrador, Coalición “Juntos Haremos Historia” (MORENA, PT, PES)

The candidate’s platform, known as Proyecto 18, -within its energy section- aims to rescue the industry through the promotion of national production, the generation of renewable energy, and financial strengthening and operation of Pemex and CFE. He emphasizes the idea of reducing energy dependence, so that “the sector becomes one of the development levers of Mexico.”

As regards the electric power field, the main goal of Obrador’s Project is to increase hydroelectric generation in order to reduce the use of natural gas. According to the candidate, this measure will lead to a “reduction in electricity rates of low-consumption domestic users and preferential areas, such as the Isthmus of Tehuantepec and northern border.”

The energy project of López Obrador includes four axes: oil, hydroelectric sector, thermoelectric sector and energy transition to renewable energies, as well as ten lines of action. The third line mentions clean energy transition through the use of geothermal, wind and solar sources and small hydroelectric generation. It also establishes the replacement of fossil fuels in electricity generation and the creation of compulsory fees of production and consumption quotas; as well as developing a long-term research and technological strategy.

“The axes on transition to renewable energies aims to achieve an additional 23% of clean generation by 2024”



When referring to refining processes, López Obrador’s project includes the development of biorefineries for biodiesel production. On the other hand, in terms of hydroelectric generation the candidate proposes an additional 12 TWh by 2024, through three strategies: 1) Increasing load factor of plants in operation; 2) construction of new sustainable plants; 3) development and construction of small and mini-plants fully-funded by the private sector. The proposal also includes the rehabilitation of 63 CFE plants in operation and the installation of 13 new big plants. According to the project, for each percentage point of generation based on natural gas that is replaced with hydroelectric or renewable generation, the country will save \$134 million USD.

The axes on transition to renewable energies aims to achieve an additional 23% of clean generation by 2024, and include among others, the following actions and programs:

- *Access to renewable energy for vulnerable and isolated communities (up to 300 inhabitants) that are not connected to the SEN.*





Andrés Manuel López Obrador, Coalición “Juntos Haremos Historia” (MORENA, PT, PES)

- Sustainable ejidos program, to ensure access on generation and consumption of renewables by self-supply, as well as the sale of energy surpluses to the SEN. This proposal seeks to reach 400 agrarian cores up to 400 ejidatarios, commoners and/or land owners, dedicated to agricultural activities;
- Creation of Technical Development Centers for Renewable Energies (CDTERs) in 500 educational institutions at medium and high level equipped with generation systems based on renewable energies.
- Building 1 million small capacity establishments for residential and service users with schemes to encourage investment, credit and fiscal stimulus.
- Building 1,000 service stations for electric cars powered by renewable generation systems (Solineras), as well as tax incentives to incorporate 100,000 vehicles into the market.
- Development of the national electrical industry of parts, supplies and devices for hydroelectric, photovoltaic, wind power plants, as well as for electric cars and their auto parts;
- Small, mini and micro wind energy program that will provide incentives for industrial corporations, commercial and service conglomerates.

In solar energy, the proposal seeks to reach 1 million families through roofs and solar farms with a new environmental culture on the use of renewable energies. However he does not goes into specific actions in this regard.

On the other hand, in its environmental axis, López Obrador platform proposes for the Isthmus of Tehuantepec “to change the paradigm and technology of wind generation in order not harm the

environment or affect the life of communities”, as well as the possibility of transmitting license of the parks to these communities and create a regional development plan.

“...in order to achieve all previous objectives, no modifications to the current legislation will be required.”

According to the project, the proposed actions and programs in renewable energy will have an impact on job creation, with at

least 350,000 new jobs along the industry’s value chain. On the other hand, the generation and efficient use of renewables could mean savings between 4% and 20% in the electricity bills of low-consumption residential users. The document states that, in order to achieve all previous objectives, no modifications to the current legislation will be required.

López Obrador has mentioned his commitment to the development of renewable energies and the fight against climate change in a public way, for example, during his meeting with Al Gore on March 22. However, beyond the provisions of his platform, López Obrador has not specifically mentioned whether he plans to continue or not with the clean energy auctions.





José Antonio Meade Kuribeña, Coalition “Todos por México” (PRI, PVEM, PANAL)

As part of his political platform, Meade Kuribeña proposes to expand the availability of energy by promoting clean sources. According to the document, “affordable and non-polluting energy is essential for building cities and sustainable communities.”

On the other hand, Meade’s platform –“Causa transversal 1: desarrollo sustentable y sostenible”- mentions the fight against climate change, the environmental consequences of fossil fuels and establishes the use of clean energies as a priority to generate electricity. The fifth line of this section aims to take advantage of solar, wind and hydroelectric potential. Specifically, it mentions creating incentives for the installation of “technologies that allow the use of solar radiation” in public and private infrastructure, as well as promoting the use of biofuels in productive processes and transportation. On the other hand, Meade proposes making more efficient the production of energy in the hydrocarbon sector, by promoting the recovery of natural gas in oil production. Another proposal focuses on the use and use of waste through biodigesters and thermovaluation for electricity generation.

“Beyond his platform, the candidate has assured he will expand access to a clean energy matrix”



Beyond his platform, the candidate has assured the public that he will expand access to a clean energy matrix through the use of every industrial process that generates heat to turn it into electricity. On the other hand, Meade Kuribreña stated in front of businessmen in Sonora that it is possible to attract investments of 550,000 million MXN in renewable energies. He has also indicated that he will develop the potential of wind, solar and geothermal generation in order to continue efforts to balance the energy matrix and ensure the sector’s future in the country.

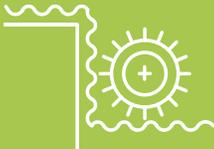


Comparative table: Proposals regarding renewable and clean energy of the main presidential candidates

	Ricardo Anaya Cortés	Andrés Manuel López Obrador	José Antonio Meade Kuribreña
Clean energy generation goal by 2024	40% of the total energy generation.	An additional 23%.	He doesn't set a target on this matter
General proposals	<ul style="list-style-type: none"> - Promote clean and environmentally sustainable businesses; - Providing incentives so that a third of small and medium-sized enterprises (SMBs) could have clean energy through favourable financing arrangements; - The establishment of a carbon price 	<ul style="list-style-type: none"> - Building 1 million small capacity establishments for residential and service users; - Access to renewable energy for vulnerable and isolated communities (up to 45,000 inhabits) that are not connected to the SEN; - Creation of Technical Development Centers for Renewable Energies (CDTERs) in 500 educational institutions with generation systems based on renewable energies; - Establishment of compulsory fees of production and consumption quotas; not specifying the use of CEL's; <ul style="list-style-type: none"> - 350,000 new jobs along the industry's value chain through the implementation of clean and renewable energy. - Development of the national electrical industry of parts, supplies and devices for hydroelectric, photovoltaic, wind power plants, as well as for electric cars and their auto parts; - Sustainable ejidos programs. 	<ul style="list-style-type: none"> - Expand the availability of energy by promoting clean sources; and the potential of solar, hydroelectric and wind energy - Expand the use of clean energy at mexican homes; - Attract investments close of 550 million MXN.
Solar energy  	<ul style="list-style-type: none"> - The implementation of solar panels at homes 	<ul style="list-style-type: none"> - Building 1,000 service stations for electric cars powered by renewable generation systems. - Roofs and solar farms with social impact on mexican families. 	<ul style="list-style-type: none"> - Incentive to the installation of residential panels and public and private infrastructure.



Comparative table: Proposals regarding renewable and clean energy of the main presidential candidates

	Ricardo Anaya Cortés	Andrés Manuel López Obrador	José Antonio Meade Kuribreña
<p>Wind energy</p> 	- Is not specified	<ul style="list-style-type: none"> - Small, mini and micro wind energy program that will provide incentives for industrial corporations, commercial and service conglomerates. - Explore the use of new technologies in the Isthmus of Tehuantepec such as microeolics and develop regional programs with the communities 	- Is not specified
<p>Hydroelectric energy</p> 	- Is not specified	- An additional 12 TWh by 2024 through the use of hydroelectric generation, rehabilitating 63 CFE plants in operation and the installation of 13 new big plants.	- Is not specified
<p>Others</p> 	- Boosting non-motorised mobility and the use of electric cars	<ul style="list-style-type: none"> - Fiscal incentives for investors and buyers of electric vehicles with the aim of adding 100 thousand units by 2024. - Promoting the production and use of biofuels. 	<ul style="list-style-type: none"> - Promoting the use of biofuels in productive processes and transportation - Converting garbage into energy through biodigestors.



Conclusion

All the candidates analyzed in this report recognize the importance of betting on renewable and clean energy as a lever for national energy development; The important question here is how to achieve it. There is still one month and a half left until the presidential election, so presidential candidates proposals in these matters require more detailed explanation. This detail is expected to be forthcoming at Mexico's leading clean energy congress, MIREC WEEK (www.mirecweek.com), taking place from 21-24 May. Representatives of the candidates will present their proposals to specialists, experts and decision makers of the sector during a keynote debate on Wednesday 23 May at 09:45. In any case, it would be desirable that whoever is elected on July 1 implements an energy policy that continues the progress that has been made and improves policies to develop potential renewable energy in the country, and creates a balanced energy matrix and a greener economy.

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