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USAID HELPS OPEN MEXICO'S ENERGY MARKET TO PRIVATE INVESTMENT AND COMPETITION



PHOTO: Alejandro/Stock.Adobe.com

EXECUTIVE SUMMARY

Mexico has had high energy costs for decades due to inefficient government monopolies in electricity, oil and gas. Petróleos Mexicanos (PEMEX) and the Comisión Federal de Electricidad (CFE), national oil and electricity companies, were restricted from working with private and international companies. This kept the country from taking advantage of rapidly evolving renewable energy technologies as they became more affordable. As a result, consumers and businesses alike faced high electricity costs.








An auction is a competitive procurement process that can scale up renewable energy and advance sustainability goals. Project developers openly bid for long-term contracts to supply energy (megawatt hours) or allocate capacity (megawatts) at the lowest price.

As part of its 2013 constitutional reform, Mexico created a new regulatory framework that ushered in free enterprise, competition, and direct private investment. Policymakers wanted to reduce energy costs, increase national energy security, attract investment to modernize the energy sector, and power economic growth. The country also wanted to cut greenhouse gas emissions, particularly in the energy sector. It pledged to increase the share of energy coming from renewable energy sources from 18 percent to 35 percent by 2024.

Mexico advanced these goals with renewable energy auctions. With the help of the U.S. Agency for International Development (USAID), the energy ministry hosted three auctions between 2016 and 2017 that achieved progressively lower prices.

FIGURE 1: Summary of auction results

	1 st AUCTION	2 nd AUCTION	3 rd AUCTION
	Companies 18 winning offers from 11 companies participating in 7 Mexican states	Companies 56 winning offers from 23 companies participating in 8 Mexican states	Companies 16 winning offers from 8 companies participating in 8 additional Mexican states
	Investment \$2.6 billion (in 3 years)	Investment \$4 billion (in 3 years)	Investment \$2.4 billion (in 3 years)
	Energy 2,085 MW of installed capacity awarded	Energy 2,871 MW of installed capacity awarded	Energy 2,180 MW of installed capacity awarded
	CELS 5.4 million clean energy certificates (CELS) awarded	CELS 9.3 million clean energy certificates (CELS) awarded	CELS 6.1 million clean energy certificates (CELS) awarded
	Power Not allocated	Power 1,187 MW per year	Power 550 MW per year
	March 31, 2016	September 23, 2016	November 22, 2017
	AVERAGE PRICE \$47.78	AVERAGE PRICE \$33.47	AVERAGE PRICE \$20.57

USAID mobilized resources and expertise to modernize the energy sector and lower energy costs for businesses and consumers, including assisting the design and development of Mexico’s auctions. This support featured study tours on auctions for government officials and technical assistance to the Auctions Working Group, which included the energy ministry (Secretaría de Energía), regulator (Comisión Reguladora de Energía), market and system operator (Centro Nacional de Control de Energía), and national utility (CFE).

FIGURE 2: USAID support for Mexico’s generation auctions

AUCTION 1 (MARCH 2016)	AUCTION 2 (SEPTEMBER 2016)	AUCTION 3 (NOVEMBER 2017)
<ul style="list-style-type: none"> • Supported Auctions Working Group on bidding rules • Helped develop and operate online auction bidding platform • Helped to develop bidder legal and financial prequalification requirements and evaluation criteria and to ensure bidder compliance 	<ul style="list-style-type: none"> • Supported Auctions Working Group to update bidding rules based on lessons learned • Updated and operated online auction bidding platform 	<ul style="list-style-type: none"> • Developed contracts and guarantees clearinghouse to enable multiple buyers and sellers to bid for the first time

USAID also supported the regulator to create an IT system that allocated clean energy certificates to clean energy generation and managed compliance with clean energy obligations. In addition, USAID developed an action plan to address social and environmental gaps in the development of renewable energy projects. Finally, USAID supported the development of a framework for private sector participation in transmission infrastructure.

The auctions resulted in renewable energy projects that diversified Mexico’s energy mix and increased private investment in the energy sector. Total investment in the three auctions was roughly \$9 billion, with investors from 12 countries, and more than \$1 billion in energy projects awarded to U.S. firms. By 2021, eight gigawatts of affordable renewable energy will be available to power homes and businesses.

For the first time in the country’s history, government energy contracts were awarded through a competitive and transparent process. Instead of bilateral deals that may not serve the public interest, auctions require all potential electricity suppliers to publicly bid against one another, forcing energy prices down. These auctions achieved some of the world’s lowest renewable energy prices at the time, with long-term contracts lowered to almost a fifth of their original pre-auction value.

While auctions have advanced the constitutional reform goals, new priorities have emerged with the changes in elected officials. The current administration is shifting away from private sector participation, renewable energy, and sector reforms and has canceled the fourth auction.

On a regional level, auctions have caught fire across Latin America with Argentina, Brazil, Chile, Peru, and Colombia all holding auctions in recent years. Auctions are now the gold standard for procuring energy in Latin America and around the world.



THE START OF RENEWABLE ENERGY AUCTIONS

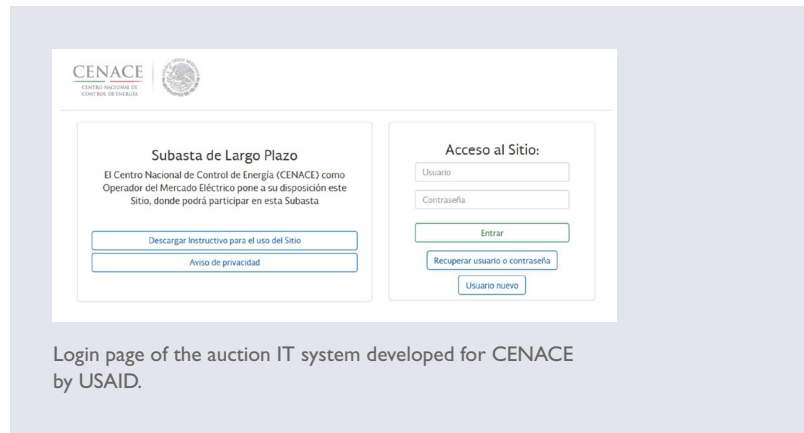
Starting in 2012, USAID supported Mexico's 2013 constitutional reforms with technical assistance and study tours for government officials to learn about energy reform models that could be applied in Mexico. This partnership grew and led the Secretaría de Energía to request that USAID support Mexico's first energy, capacity and clean energy certificates auction.

Mexico's Centro Nacional de Control de Energía (CENACE), the national market and system operator for public transmission and distribution of electricity, held its first two auctions in 2016 and its third in 2017. USAID supported the Auctions Working Group, which included government and regulatory bodies, the national electric utility company, and private sector stakeholders.



A TRANSPARENT, COMPETITIVE TENDER PROCESS

For the first auction, USAID worked with the Auctions Working Group and led the development of the bidding rules that set the rights and obligations of all participants. USAID also led the development and operation of an online auction platform that ensured the tender process was transparent and competitive. The online platform meant the bidding could be completely electronic. However, the bids were certified by independent evaluators (after USAID provided verification services during the pre-qualification phase). USAID updated and continued to help operate the online platform for the second auction.



Login page of the auction IT system developed for CENACE by USAID.



Mexican Energy Secretary, Under-Secretary and CENACE Director watching the auction results coming in.

For the third auction, USAID developed a contracts and guarantees clearinghouse and its operational guide. The clearinghouse acted as an intermediate single buyer and seller mechanism: all buyers and sellers matched through the auction signed a single contract and guarantee with the clearinghouse, rather than individual contracts with each other. This streamlined the process and reduced the risk of administrative or legal problems for both the buyers and sellers. USAID also helped the regulator create an IT system that allocated clean energy certificates to clean energy generation and managed compliance with clean energy obligations.

FIGURE 3: Auction products and incentives

\$/MW 15-YEAR CONTRACTS	Capacity: Firm capacity from any type of generation source, with ability to generate during the system's 100 most critical hours. Bids presented in \$/MW for 15-year contracts.
\$/MWh 15-YEAR CONTRACTS	Energy: Average annual clean energy, including renewable, nuclear, and efficient cogeneration. Bids presented in \$/MWh for 15-year contracts.
\$/CEL 20-YEAR CONTRACTS	Clean Energy Certificates (Certificados de Energia Limpia, or CEL): A certificate for compliance with clean energy obligations, presented at a ratio of 1 CEL per MWh of clean energy generated. Bids in \$/CEL for 20-year contracts.
\$ BID PRICES	Regional Nodal Adjustment Factors: Because transmission reinforcements may be needed to develop projects in specific areas, an adjustment factor was created to reflect the added cost when considering which projects to contract. This adjustment only affected project value for selection purposes; awarded projects were paid at the prices that were bid.



ROBUST RISK MANAGEMENT FOR STAKEHOLDERS

The auction design reduced common risks of participating in such auctions. For example, it addressed the thorny issue of foreign exchange risk by allowing bidders to index their offers in either U.S. dollars or Mexican pesos. Most bidders chose to bid in U.S. dollars even though there was a slight penalty. This was key to attracting diverse international players such as project developers, private equity funds, and turbine manufacturers. It made it easier to obtain funding and increase project bankability compared to more restrictive local financing options.

USAID worked with the market and system operator to review more than a thousand pages of documents from proposals submitted by nearly 500 renewable energy developers to confirm that they met technical and financial qualifications. This pre-qualification service ensured that participants were capable of completing energy projects on time and up to quality standards, saving time and money later.



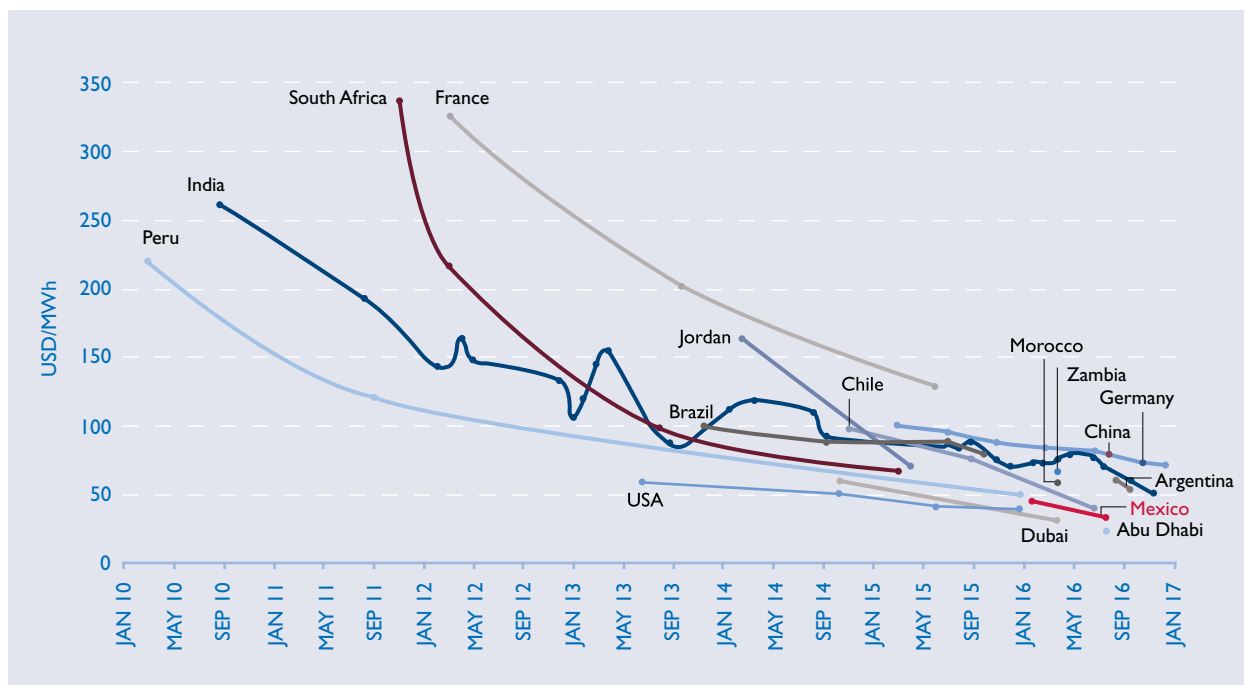
AUCTION RESULTS

The three auctions resulted in progressively lower prices. The first averaged \$47.78 per megawatt hour (MWh), the second \$33.47 per MWh, and the third \$20.57 per MWh. At the time, these were some of the lowest prices for renewable energy bids in Latin America and the world; before the auctions, the average price for long-term contracts in the country was around \$90.00 per MWh.

Moreover, the third auction set a new world record for low-cost wind power generation at \$17.70 per MWh.

Developers from 12 countries invested roughly \$9 billion through the Mexican auctions. U.S. renewable energy developers, financiers, and renewable energy technology providers won awards for six projects worth more than \$1 billion; four are already operational and two are under construction.

FIGURE 4: Mexico fetches historically low prices



The auctions were highlighted by international energy media and helped popularize the concept of renewable energy auctions and establish them as best practice for power procurement around the world. Colombia followed suit after the Paris Accord of 2015 and announced its renewable energy auction program in 2018. Argentina, Brazil, Chile, and Peru have also held successful auctions in recent years.



EXTENDING TRANSMISSION LINES

The popularity of the auction showed that without action, the transmission system would soon find itself congested as new projects came online. While new transmission plans were in the pipeline, the legal framework limited private participation. Transmission was operated solely by the national electricity utility and debt could not expand beyond what the treasury allowed by law.

USAID analyzed the local procurement framework and came up with a public-private partnership approach that redirected the proceeds from the transmission charges to the private sector without going through the utility. This allowed the utility to build new transmission lines even if it exceeded its debt cap with the treasury. No transmission auctions have yet been held.



ADDRESSING ENVIRONMENTAL AND SOCIAL IMPACTS

In Mexico and across the region, the significant increase in renewable energy capacity has put pressure on local communities—particularly indigenous communities. Social issues have slowed and sometimes prevented the development, construction, and operation of energy projects. USAID partnered with the Secretaría de Energía to create an action plan to address these social and environmental gaps. The action plan aimed to help Mexico avert harms ranging from displacement of communities to destruction of natural resources and sacred sites.

Lessons learned from the first auction identified social and environmental impacts as a major risk for project development. For the second and third auction, the prequalification process required environmental and social impact assessments, which evaluate energy projects' potential impact before an auction. However, prior consultations, a process that sought the local community's participation and consent on specific renewable energy projects, were not standardized and required strengthening.

In 2018, the Secretaría de Energía used many recommendations from the action plan in its social impact evaluation to help ensure that communities' rights and environmental concerns would be respected while lowering the developers' risk of projects stalling later in the process. USAID subsequently partnered with Iniciativa Climática de México (ICM) to implement the Communities and Renewable Energy project, which developed and promoted policy recommendations to the government and build capacity to further strengthen the enhancement of local communities in development of large-scale renewable energy projects. Given the current national context, there are still many challenges to implementing policy recommendations.

CONCLUSION

Mexico's auctions facilitated a competitive, transparent process that helped Mexico meet its energy goals and attract private investment, accelerating the country on its journey to self-reliance. It also enabled U.S. companies to compete in Mexico's domestic energy market freely and fairly.

The growth of foreign and private investment in the electricity market resulted in 57 renewable energy and thermal projects being awarded through the three auctions. As of 2020, 34 projects are operational, 18 are under construction, and the remaining five are in development. According to the Mexican Association of Wind Energy and the Mexican Association of Solar Energy, these projects are creating local jobs and expanding socioeconomic opportunities for Mexicans, including people and youth in nearby communities.

Some of these workers have even found jobs in other Latin American countries. Employment from these projects has diverted people from falling into illegal activities and brings major social benefits.

By 2021, eight gigawatts of renewable energy will be available to power homes and businesses. Consumers and the government will directly benefit from reduced electricity costs. Large consumers, such as commercial and industrial (C&I) firms that can participate in the market or purchase directly from unregulated suppliers, will save the most money directly. Smaller C&I firms or residential consumers will see lower tariffs, as generation costs are reflected in the tariff calculations. Finally, although low-income residential consumers with subsidized tariffs will be unlikely to see lower electric bills, the government will spend less in subsidies, opening up more funding for other programs.

For more information on USAID's support to Mexico's auctions, visit [usaid.gov/energy/auctions-mexico](https://www.usaid.gov/energy/auctions-mexico).

FIGURE 5: Implementation status of auctioned projects

