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Renewable energy in Latin America

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Renewable energy in Latin America

Latin America is undergoing a transition to renewable energy. The annual Global Trends in Renewable Energy Investment report from 2015 found that worldwide investment in the renewable energy sector between 2004 and 2014 amounted to more than US$2 trillion. In 2014 alone, global investment in renewable power and fuels totalled US$270 billion, with more than half of this occurring in emerging markets and a significant proportion directed to Latin America . This investment is expected to continue as an increasing number of Latin American countries set renewable energy goals and offer financial incentives for project deployment and manufacturing. Furthermore, the demand for electricity will continue to increase rapidly due to the ongoing demographic and socio-economic structural changes in many Latin American countries.

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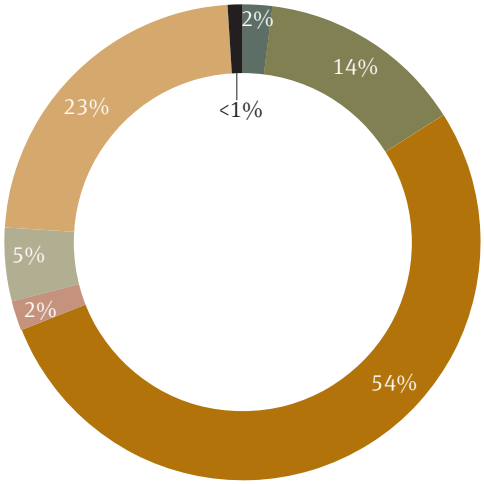
Argentina



Energy generation by type in Argentina

Coal Oil Gas Biofuels Waste Nuclear
Hydro Geothermal Solar PV Solar Thermal
Wind Tide Other sources

Source: International Energy Agency, 2015.

The opportunity

Argentina is the third largest power market in Latin America. The Argentinian power landscape is still dominated by fossil fuels, which represent 87 per cent of the total energy mix. Until 2010 Argentina was a power exporting country, however, increased consumption combined with a steady decline in developing new power projects and the decline in the extraction of natural gas forced Argentina to import power (and natural gas for thermal power plants) from neighbouring countries. Argentina is facing a significant power deficit which has triggered various ambitious government initiatives to install additional capacity at record speeds.

Law No. 27,191 identifies the development of electricity generation from renewable energy sources as an area of public interest and commits the state to increasing the share of renewable energies (including mini hydro under 30MW capacity) to 8 per cent of the national electricity mix by the end of 2017. With this law Argentina also set out a long term target of 20 per cent of power demand to be covered by renewable energy generation with 10,000MW of renewable power generation to be added to the grid by 2025.

Amongst the various initiatives to increase power generation the Argentinian government has launched the RenovAr Programme to develop Argentina's renewable energy sector. RenovAr started its first round with an auction to add 1,000MW of renewable energy to the grid (600MW of wind, 300MW of solar, 65MW of biomass, 20MW from small dams and 15MW from biogas). The projects will need to be built in no more than 24 months and investment between US$1.5 and US$2 billion is expected only for the first round.

The round of applicants for the first tender showed an impressive number of proposals, 123 projects in total with over 75 companies bidding for projects. Over 6,000MW in proposals were received with this tender, making the tender six times oversubscribed.

The awarded PPAs will have a duration of 20 years and will be denominated in Argentinian Pesos. The PPA issued with the tender process addresses convertibility issues and the guarantees in case of events that prohibit free currency conversion.

RenovAr's first round benefits from a World Bank guarantee for PPA termination payment (see diagram 1 below) sitting behind the newly created Renewable Energy Trust Fund (FODER) and the State, more details on the fund below. The fund also provides an PPA energy payment guarantee (see diagram 2 below) backing the payment obligations of CAMMESA (the national utility company) as the offtaker under the power purchase agreements (PPAs) to be awarded in the first tender.

Support regimes

In October 2015, Argentina issued Law No. 27,191 (an amendment to Law No. 26,190) which established the national regime for the promotion of renewable sources of energy for power generation. New projects will benefit from an anticipated VAT return for capital goods purchased, accelerated depreciation of applicable assets, tax certificates for projects with national components and extension to ten years of the period for income tax loss carry-forwards.

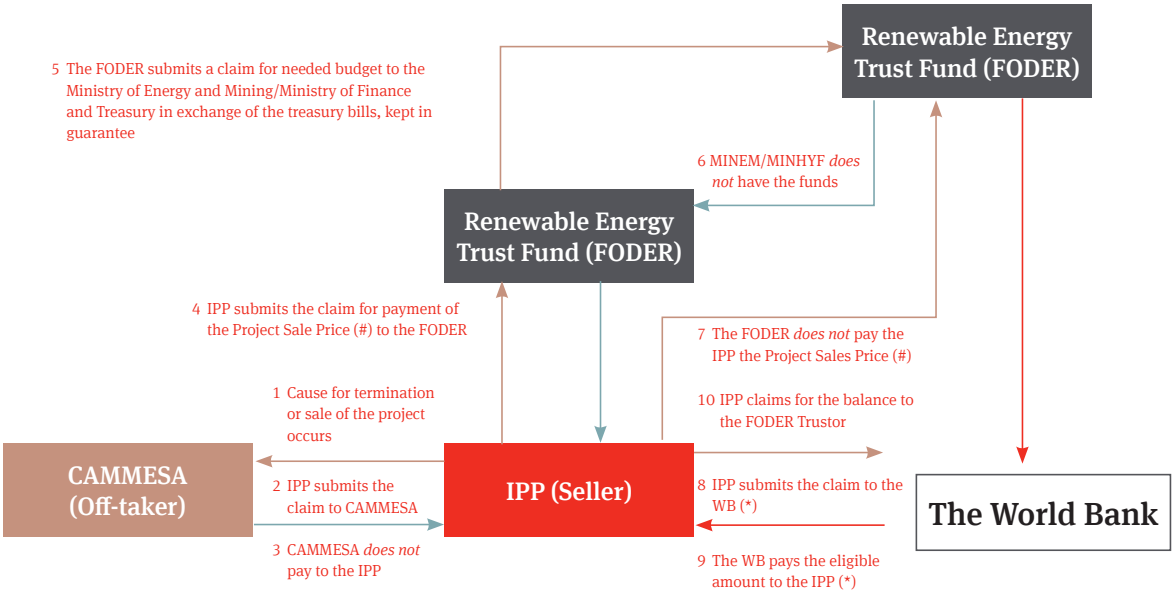
Law No. 27,191 established the basis for the creation of FODER, which will be mainly financed by the National Treasure, the fund will provide a subsidy with a feed-in tariff for facilities of up to 30MW of US$0.11/kWh for solar projects and US$0.005/kWh for wind, geothermal, biomass, biogas and hydro projects. The fund will also provide long term project loans, loan guarantees, interest rate subsidies and equity contributions. As previously mentioned, the fund will also serve as a payment guarantee for all tendered PPAs and termination payments.

In addition, the new renewables law establishes that the government will channel at least 50 per cent of savings from offset fossil fuel purchases to the fund, along with charges on power consumption, interests and profits from financed projects.

Potential

Argentina is ripe for exploitation of wind, solar and biomass with exceptional resources in relation to wind energy. Global experience indicates that with average winds of 5m/s or higher it is feasible to deliver good returns in wind power generation. About 70 per cent of Argentina's territory enjoys winds with an average speed of 6m/s or more, while in areas of Patagonia they can exceed 9m/s. Argentina has the foundation to become a regional leader in the use of this technology.

Diagram 1



(*) The FODER grants individuals and legal entities which have issued projects the irrevocable right to directly submit claims before the World Bank in certain cases and to receive payments from the World Bank.

Source: Undersecretariat of Renewable Energy, Ministry of Energy and Mining, Government of Argentina

According to Wind Energy Market Intelligence, Argentina had 22 operational wind farms spread across the country by September 2016. The total wind generation capacity installed in Argentina is only 279MW. However, out of the 6,000MW in proposals received during the first RenovAr tender, wind projects totalled an impressive amount of 3,468MW.

Argentina also has strong solar resources, especially in the north western region. This region was the proposed location for over 1,800MW of proposals during the first RenovAr tender.

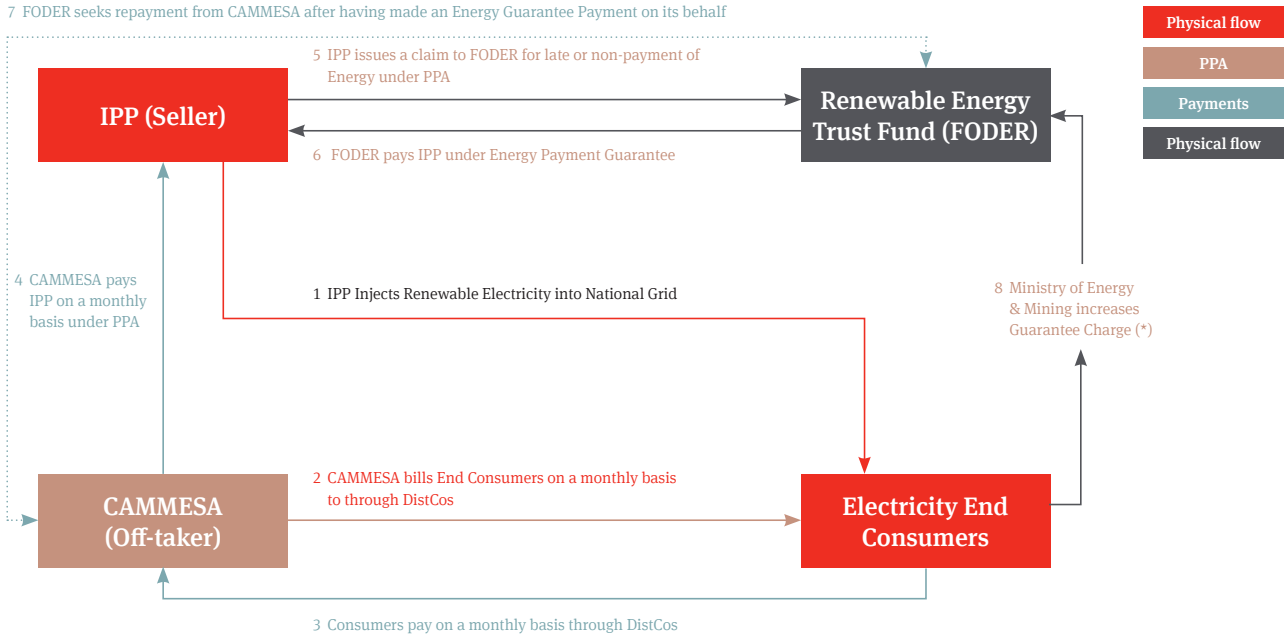
Biomass and waste-to-energy in Argentina have long been overlooked. Argentina's varied environmental ecosystems fuel the growth of diverse crops (including soy), which creates potential for biomass energy. Studies have shown much of the six million tonnes annual forestry waste in Argentina could be used to generate electricity. In 2013, the government created the 'PROBIOMASA' program, which aims to boost production, management and sustainable use of biomass for energy purposes. The PROBIOMASA program has targeted the generation of 400 thermal MW by 2016 and seeks to eventually convert 12 million metric tons of agriculture-related biomass annually. The PROBIOMASA program will need approximately US$750 million in funding.

Obstacles/challenges

Since the default of the Argentinian government in 2001 in relation to sovereign bonds, Argentina has found it difficult to attract international investment. However, China has emerged as a willing financer with the China Development Bank as an active player in renewable energy projects in Argentina. Whilst Chinese banks can offer competitive interest rates and willingness to finance projects in Argentina, the money typically also comes with conditions, such as the use of Chinese equipment and contractors.

According to the Argentine Chamber of Renewable Energy, one of the principal obstacles for profitable exploitation of renewable energy sources remains assured power prices over a suitable duration of the project and effective enforcement of tariffs awarded under the PPAs. Power prices have been significantly adjusted by the current administration of President Mauricio Macri in an effort to attract and offer comfort to foreign investors. Macri's administration's effort is complemented with the creation of FODER which provides an effective guarantee for the enforcement of tariffs awarded under the PPAs and more importantly, PPA termination payments.

Diagram 2



(*) To replenish FODER so that it always holds 12 months worth of eligible PPA payments as liquid reserve

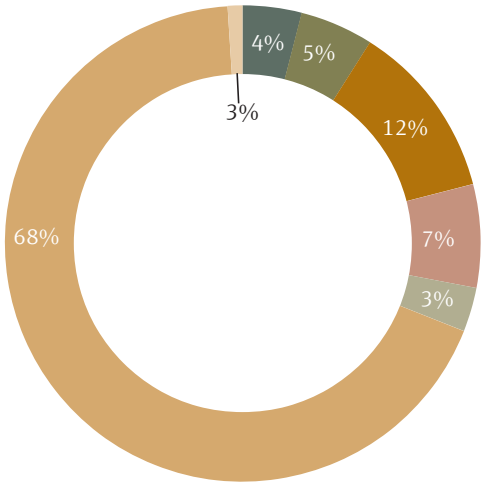
Source: Undersecretariat of Renewable Energy, Ministry of Energy and Mining, Government of Argentina

The future

The country's relatively high cost of debt, and low availability of local and foreign capital, make it difficult for project developers to secure financing. However, results on RenovAr's first tender were a pleasant surprise for many sceptical observers. According to many commentators, they expect the government to seize this momentum by increasing the offered MWs under the first tender or accelerate the second tender. However, future tenders under the RenovAr program will receive active participation only if the first round of projects progress satisfactorily and the tariffs obtain remain competitive for financiers.

Macri's administration has sought to set out a clear path to change foreign investors' views on Argentina. The government has initiated negotiations to improve the country's credit rating. S&P was one of the first agencies to react to Macri's policies by raising the country's rating from CCC+ to B-. In real terms Argentina is now (for the first time in over a decade) out of default and has lifted the currency control regime implemented by the previous administration. If the current policies are maintained and the government assures long term regulatory consistency, Argentina's renewable energy sector could become a top destination for foreign investment.

Brazil



Energy generation by type in Brazil

Coal Oil Gas Biofuels Waste Nuclear
Hydro Geothermal Solar PV Solar Thermal
Wind Tide Other sources

Source: International Energy Agency, 2015.

The opportunity

Brazil has a well-developed hydro and renewables sector that represent more than 39 per cent of the overall internal energy supply, and more than 78 per cent of the installed capacity. Nonetheless, there is unexploited potential in sectors such as wind, solar and floating solar PV. Indeed, Brazil is considered a very attractive market for low-carbon investments. The Bloomberg Climatescope report placed Brazil as the second most attractive market in the world and the EY Renewable Energy Country Attractiveness index ranked Brazil ninth out of 40 countries (best ranked in Latin America). The rising demand for energy is a key driver for development of renewable energy in the country.

Although there are no legislative targets for increasing alternative energy use, Brazil has recently committed to expand non-hydro renewables to 20 per cent of electricity supply by 2030. In 2013 the country launched the Ten Year for the Expansion of Energy 2023 where it set a target of increasing total installed capacity from 124GW to 195GW. The focus of this 71GW expansion is on hydro power (32GW) followed by wind (20GW), biomass (4GW), solar (3.5GW) and small hydro (2GW).

Between 2008 and 2012 new investment in renewable energy varied between US$7.2 billion and US$12.1 billion, falling to US$3.9 billion in 2013. The 2013 downward trend was caused by worries about policy support, reductions in technology costs, as well as a delay between auction rounds. In 2014 Brazil climbed back into the top ten countries for investment in renewables, and was the second of the developing economies. In 2014 approximately US$7.4 billion was invested in renewables – double the 2013 total. Wind attracted 84 per cent of the investment (US$6.2 billion), 117 per cent more than in 2013. A notable driver of renewable energy investment in Brazil is the government's online three stage reverse auction process where new power projects are introduced for private development three (A-3) to five years (A-5) in advance of delivery dates for the lowest possible cost.

Potential

The wind sector attracts most investor attention with an estimated current potential of an incredible 300GW. The wind power generation capacity grew 891 per cent between 2009 and 2014 and attracted 84 per cent of the investments destined for renewable energy in 2014. 2015 ended with 281 plants in operation with an installed capacity of approximately 7.1GW. Compared other BRIC countries India (20GW) and China (90GW), this leaves Brazil with considerable room to grow and significant unutilised potential.

Solar power is an unexplored energy source in Brazil despite its tremendous potential, particularly in the north east region where the solar radiation is of between 5.700–6.100 kWh/m² per day on average. The annual average solar radiation for the country is 1.200–2.400 kWh/m²/year. This is higher than Germany which is a well-established solar player with an annual average solar radiation of 900–1.250 kWh/m²/year. Despite the high initial costs, solar micro and mini generators could be an effective solution for the difficulties faced in north and north east regions in terms of energy access.

The hydro sector is likely to continue to attract investment due to its 260GW potential of which 40 per cent is located in the Amazon region.

Support regimes

Law 12.187/2009 established the National Policy on Climate Change (NPCC). The NPCC establishes the expansion of renewable and clean energy usage as a part of the national strategy for medium-long term.

The Incentive Programme for Alternative Electric Energy Source – PROINFA is also highlighted in the national plan. It was created in 2002 to encourage the development of wind energy, biomass and small hydro, which has been successfully implemented, particularly for wind power which

increased its installed capacity from 22MW in 2002 to the current 7.1GW.

Biofuel is the energy source with maximum tax incentives for importers and producers, offering significant deductions in two tax categories: theSocial Integration Program and the Contribution to the Social Security Fund.

In 2012 a new Electric Energy National Agency resolution (482/2012) came into force, to facilitate the connection of small renewable power generation plants to the distribution grid. The mini and micro generators can request the local distributor for grid connection.

The resolution also proposes the creation of an energy compensation system (net metering), whereby the owner of a small plant does not need to consume all the energy produced at the time of generation. Excess electricity can be fed into the grid giving the generator energy credit that can be used within 36 months.

One of the major challenges was transmission infrastructure, which created delays in grid connection for renewable energy developers. This was overcome through a new regulation. Developers who seek to build renewable energy projects firstly bid for the necessary interconnection to the mains and subsequently bid for the supply of power.

Obstacles/challenges

Unlike most other Latin American countries, Brazil has not yet implemented significant tax incentives for the development of the renewable energy sector, despite the provisions of the Ten Year Plan. The high costs of initial solar development is still rendering the energy source uncompetitive in Brazil in the absence of appropriate governmental incentives. This may well change.

The Brazilian Development Bank – BNDES – has a number of different financing programmes specifically aimed at renewable energy projects. It is the largest lender in Brazil for renewable energy financing across technologies. In 2014, Bloomberg's New Energy Finances league tables for participants in utility-scale asset finance transactions in clean energy showed Brazil's BNDES as the top lead arranger, with a credit of US$2.7 billion, up from US$1.5 billion in the preceding year. BNDES requires that at least 60 per cent of the equipment is locally produced in order to grant loans, which presents an additional barrier. However, there are signs that this requirement may be relaxed to approximately 20 per cent, which should kick start lending in the solar sector.

The future

There are 108 wind projects currently under construction (which will add a further 2.7GW to the grid in the near future) and 350 projects contracted (expected to add 8.3GW). There are also 46 hydro projects under construction (expected to add 15.7GW) and further 175 contracted hydro projects (expected to add a further 2.2GW).

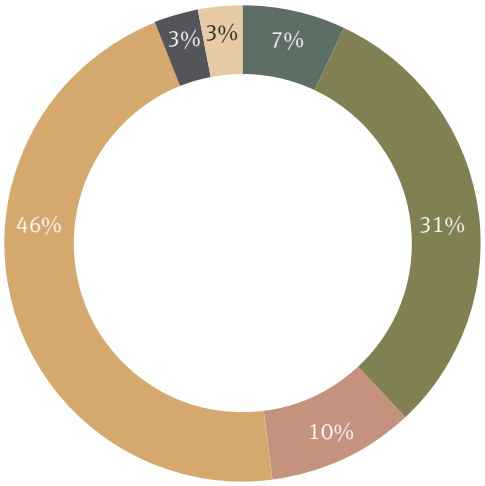
Due to initial high costs, renewables had been unsuccessfully competing with conventional energy projects for a few years. However, in August this year wind projects accounted for 80 per cent of the capacity in an A-3 tender in which 670MW have been contracted. Furthermore, also in August this year, the government held a solar only auction awarding 30 projects for the total generation of 834MW of power.

The government held a solar and wind energy auction in November this year, which had a total of 1,379 registered projects capable of adding 38,917MW to the grid. The government also announced that due to the success of the previous year solar energy auction, they plan to conduct solar energy auctions annually. In addition, due to the success of the last solar energy auction, the plan is to conduct solar energy auctions annually.

COP21

In relation to the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21), Brazil carried out a series of public consultations with different representatives of the civil society and environmental organisations. Among the government goals are the elimination of deforestation in the Amazon forest, the creation of strategies for a massive reforestation within the country and the establishing of means for monitoring all Brazilian biomass.

Central America



Energy generation by type in Central America (defined as Honduras, Guatemala, Nicaragua and Panama. No data available for Belize, Costa Rica or El Salvador)

Coal Oil Gas Biofuels Waste Nuclear
Hydro Geothermal Solar PV Solar Thermal
Wind Tide Other sources

Source: International Energy Agency, 2015.

Central America is rich in renewable energy resources and there exists tremendous opportunity to harness this potential. The region has a total installed generation capacity of 12GW. Guatemala and Costa Rica have the largest capacity, with approximately 3GW each, followed by Honduras and Panama, with just over 2GW each, and El Salvador and Nicaragua, with 1GW each. As a whole, Central American countries generated 43TWh in 2011.

Historically, Central America has been powered mostly by hydropower, but in the mid-1990s hydro's share dropped as it began to be replaced by fossil fuels. In the mid-2000s, increasing shares of renewables, such as wind in Costa Rica, Honduras, and Nicaragua, decreased the region's dependence on oil. Encouragingly, despite the range of fossil fuel options now available, the region is continuing to expand its use of renewable energy, a trend that is in the global interest as well as the economic, social, and environmental interest of Central American countries.

The opportunity

Today, the electricity matrix of the Central American region is divided mostly between hydropower (30 per cent large hydro, plus 12 per cent small hydro) and oil and diesel (38 per cent). However, concerns about dependence on oil, the environment and energy security have forced the region to develop other renewable resources.

Central America has the largest share of renewables (56 per cent) and the most diverse mixture of renewable generation, composed of biomass, geothermal, wind, and hydro. Costa Rica, El Salvador, Honduras, and Nicaragua have developed some geothermal resources. Costa Rica, Honduras, and Nicaragua have about 350MW in wind farms, and Panama has 158MW of wind energy in the pipeline.

Potential

The falling prices of renewables, their abundance in the region, and fit with a hydro-dependent electricity matrix indicates that the development of renewable energy is an attractive option for meeting growing regional energy demand and for providing energy security at a competitive cost.

Moreover, the declining costs of wind and solar equipment have made those technologies cost competitive in several markets in the region; this is especially true of those countries which depend on imported fossil fuels for power or have high electricity tariffs, like Nicaragua and Honduras.

In view of the increasingly favourable policies, incentives, and political support that have been introduced in the last five years, Central America has the potential to meet 100 per cent of its electricity needs with renewable energy.

The region's estimated geothermal power potential is more than 20 times the current installed capacity, and geothermal power alone could satisfy nearly twice the region's predicted electricity demand through 2020.

Existing regional wind power installations currently use less than one per cent of the available resource potential, even according to conservative estimates, and most Central American countries boast two to three times the annual solar radiation of world solar energy leaders such as Germany and Italy.

Geothermal

Most of the geothermal potential in Central America has not been exploited. Studies vary widely in estimates of regional geothermal resources and range from 2,700–13,000MW across about 50 different sites.

Wind

In Central America, wind has been harnessed to produce energy at utility scale. The total installed capacity of wind power in the region reached 298MW in 2011 and slightly more than 38 per cent of the wind power capacity was installed in 2010 alone. In 2011 Central America produced 738GW/h of electricity from wind, representing 1.7 per cent of generation in the region.

However, these trends do not reflect the entire region. Only three Central American countries (Costa Rica, Honduras and Nicaragua) currently have large-scale wind farms.

The regional interest in wind energy is expanding rapidly. The three countries mentioned above are currently installing and operating new plants. Panama, an ambitious newcomer, has licensed more than 950MW of wind capacity, which amount to a staggering 39 per cent of the installed generation capacity in 2012.

Solar

Solar energy in the region is in early stages, especially when it comes to market development. The first mid-scale photovoltaic power plant (by regional standards) is in Costa Rica, which has a 1MW plant that began operations in November 2012. In turn, a solar power plant of 1.2MW was installed in Nicaragua in February 2013. Each facility will produce enough energy to provide electricity to over 1,000 households.

Support regimes

Central American governments are aware of the importance of renewable energy as a means to reduce their dependence on large hydropower and imported fossil fuels, as well as to meet the region's growing energy demand and provide energy access to currently underserved communities.

Countries in the region have issued ambitious policy statements that show a political will for the further advancement of renewables. There are a variety of regulatory measures in place to ensure that renewable energy continues to grow. For example, five of the seven Central American countries have established tendering procedures and three have adopted clean energy policies.

All countries except Nicaragua have adopted a biofuel mandate and Guatemala and Nicaragua have begun to experiment with feed-in tariffs. Most countries in the region have concrete policy mechanisms in place for advancing renewables. Tax incentives (to reduce costs, stimulate investment and increase the competitive advantage of renewable energy sources) are the most common, but the region also has positive experience in tendering for renewable energy projects.

Newer mechanisms, such as net metering, feed-in tariffs[1], and renewable energy production laws are just getting off the ground in Costa Rica, Guatemala, and Panama.

Governmental structure

The structure of Central American energy institutions has changed dramatically since reforms in the 1990s created new independent regulatory agencies, unbundled and privatised large state-owned utilities, and established competitive electricity markets in most countries (with the exception of Costa Rica and Honduras). Although new agencies initially faced obstacles connected with their lack of maturity, countries have developed stronger, more independent institutions over the years.

Transmission

The Central American Electrical Interconnection System (SIEPAC) is the regional grid system, with 1,800 kilometres of transmission lines that connect 35 million electricity consumers from Guatemala to Panama.

The current SIEPAC phase cost an estimated US$494 million, and a second stage of development, which will require up to US$157 million in investment, is expected to double the system's overall capacity from 300MW to 600MW. Official estimates are for the expansion to be completed by the end of 2015, although most experts in the region say that this timeline is unlikely.

Central America's Regional Electricity Market (MER) was established as a supranational electricity trade regulator with its own set of rules for regional power transactions over SIEPAC lines.

1 Feed-in tariffs (FITs) and net metering are both methods designed to accelerate investments in renewable energy technologies by allowing energy producers to be compensated for the energy they feed back into the grid.

Current efforts to strengthen electricity integration in Central America through SIEPAC and to streamline regional electricity regulation through the MER can benefit from international best practices for scaling up renewable energy through regional interconnection.

Obstacles/challenges

The region's dependence on hydropower has led to concerns about energy security, especially given recent, extremely dry weather that has resulted in electricity shortages. In response, the Central American countries commissioned the creation of a regional grid (SIEPAC) that would enable international power exchanges. They also established a regional electricity market and a regulatory commission. To reinforce this interconnection and to enable access to North American and South American markets, a Mexico-Guatemala interconnection was completed and a Colombia-Panama interconnection is under construction.

The biggest challenge facing SIEPAC has been the creation of a regulatory framework for trade, given the region's different power market structures. Central America experienced a wave of market liberalisation reforms in the 1990s, during which El Salvador, Guatemala, Nicaragua, and Panama liberalised their entire electricity markets, unbundled their vertically integrated utilities, and opened areas of generation, transmission, and distribution to private competition. Honduras and Costa Rica preserved their vertically integrated utilities, which are state-owned and operate as a single buyer. In both countries, additional generation is purchased from Independent Power Producers (IPPs).

Infrastructure challenges can present major concerns for developing any energy project in Central America, renewable or otherwise. Whether these challenges are perceived or real, they are often cited as particularly concerning for renewable energy deployment, increasing the risks and costs associated with renewable investments and, in extreme cases, preventing a prospective project from being developed. The distribution of renewables often means that existing grid networks must be extended to account for new factors, such as suitable project siting in resource-rich zones, and the need to manage intermittent generation.

Obtaining finance

The investment climate for renewables is influenced heavily by a country's overall financial reality. Across the region, the capacity of countries to finance new projects with local and international funds varies widely. Panama, for example, has both a very healthy internal savings rate and a high level of foreign direct investment (FDI), whereas El Salvador has the weakest performance in both areas. This is consistent with the performance of investments in the power sectors of these countries. Nicaragua has negative internal savings, but a very high rate of FDI, while Guatemala and Honduras have modest but positive rates in both areas.

The major obstacle to integrating sustainability policies into the operations of financial institutions remains the lack of understanding of the risks and opportunities of renewable energy and a failure to address these with the right financial products.

Having said that, the ability and willingness of commercial banks to fund renewable energy projects has increased significantly in recent years. The Central American Bank for Economic Integration (BCIE) and BAC-San José (a private bank) signed a technical cooperation agreement within the framework of BCIE's Green Initiative to create a green credit product to support renewable energy and energy efficiency investments. Loans cover up to 90 per cent of project costs, with costs for audits built in, as well as an associated partial loan guarantee programme for energy equipment which can enable larger-scale project financing.

In the past decade, Central America has improved development policies and regulatory frameworks to promote renewable energy, despite challenges in some countries in relation to the overall investment climate.

Community resistance

Potential social barriers to renewable energy development can be summarised as a lack of awareness of the opportunities for their deployment by the wider public and/or key stakeholders. Three prominent examples are general scepticism towards the feasibility and/or the economics of renewable energy, vested interests in the status quo, and not-in-my-backyard (NIMBY) resistance at the project development level.

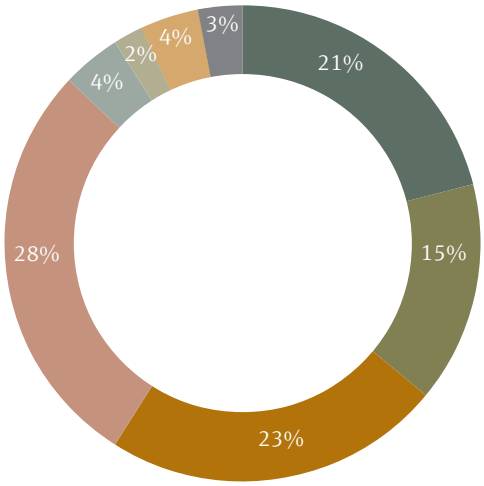
The future

Renewable energy development is essential to address the region's key energy challenges, by providing universal access to energy, meeting future demand, transforming the electricity system, and mitigating the effects of climate change.

We can see that increasing policy support, such as the use of energy auctions, has already led to growth in renewable energy capacity in Costa Rica, Guatemala and Panama.

A further development may be solar energy: although wind and small hydropower have received the largest share of investments to date, solar energy is poised for growth in Central America. There are enormous opportunities for future renewable energy development in the region, and domestic and international investors will be increasingly willing to harvest these opportunities if the remaining technical, market, finance, and social barriers can be removed. However, to achieve their full clean energy potential, Central American countries will have to assess and document their renewables endowment, communicate broadly the potential of these assets, and create the necessary financial and political mechanisms for supporting them.

Chile



Energy generation by type in Chile

Coal | Crude Oil | Natural Gas | Hydro
Solar | Biofuels | Wind | Mini Hydro

Source: Ministry of Energy, Government of Chile.

The opportunity

The Chilean renewables market has been the focus of much interest in recent years, as the industry reacts to the potential for growth and the offer of economic and political stability. As of December 2013, installed renewable capacity represented 6.3 per cent of the energy mix in Chile. By June 2016, this amount doubled, reaching 12.65 per cent of total electrical capacity (20,151 MW). The renewable energy market in Chile is ready to make the leap towards greater development. This was evident in 2015, when the country attracted more than 50 per cent of total investment in the renewable market for Latin America and the Caribbean.

Figures released in July 2016 by the Centre for Innovation and Development of Sustainable Energy in Chile have exceeded all expectations, with an encouraging pipeline of 47 renewable energy projects declared under construction. By August 2018, these projects are expected to inject a total of 2,336 MW to the grid. Moreover, 91 renewable energy projects were under environmental evaluation as of June 2016. Once operating, these projects will inject more than 8,815 MW to the matrix, which will represent US$25,677 million investment to the Chilean energy matrix.

The attractiveness of the renewable market has made the energy sector the economic sector with the highest investment rate in Chile for the last two years.

The progressive annual renewable quota first introduced by Law 20,257 in 2008 was increased in 2013 by Law 20,701, which mandated a 20 per cent market share by 2025. The quota has been spectacularly fulfilled. Between June 2015 and June 2016, generation through renewable energy grew by 7.9%, almost doubling the obligatory renewable amount. In December 2015, the government released the 2050 Energy Agenda establishing the pillars of a more sustainable energy market, and a new target quota of 70% by 2050. Therefore, renewables are expected to take a more prominent role in the energy mix profile in Chile.

Its political and economic stability have made Chile one of the fastest growing economies in Latin America over the past decade. Moreover, a growth rate of 2.1 percent is forecast for 2017. As the country's economy expands, Chile's energy requirement for 2015-2030 is forecast to grow in parallel at a rate of 72.98% in the Central Interconnected System (SIC) and by 93.76% in the Northern Interconnected System (SING) system.

According to the Energy Finance Climascope 2015 prepared jointly by Bloomberg New Energy Finance and the Inter-American Development Bank, Chile ranks third in the renewable energy investment attractiveness. Additionally, according to the World Bank's Doing Business Report 2017, Chile continuous to be a top performer in Latin America and the Caribbean and ranks in fifty-seventh position.

In particular, the Atacama Desert potential for solar energy has been very attractive to local and foreign investors. In 2016, Chile became the largest producer of solar energy in Latin America with over 160 solar developers. Chile hosts of some of the largest solar plants under construction in the world. The 196 MW Romero Solar project of Acciona will be the largest PV project in Latin America, with a total investment of US$343 million. Additionally, SolarReserve is developing a 743 MW project which will be one of the largest CSP projects worldwide, with an investment close to US$2 billion. Other international players already active in the renewable market are Actis, BP (Pan American Energy), ENEL, GDF Suez, Pacific Hydro, Pattern, RP Global, SunEdison and Mainstream Renewable Power.

The increasing participation of foreign companies in the Chilean renewable market would not have been possible without the stability of the legal framework and the support provided by the State of Chile. Although Chile has a privatised energy market, when projects are to be built on State -owned lands, the Ministry of Public Goods will intervene to grant a concession. In 2015 renewables benefited not only from the openness of the market and almost non-existent currency controls, but also from

57 concessions granted over State -owned lands for the development of renewable energy projects. It is worth noting that over 40 per cent of Chilean solar and wind projects are located in lands owned by the State.

Additionally, during 2016 the government assigned over US$9 million of public budget to promoting the development of non-conventional renewable energy projects. It should be noted that the amount of public resources allocated to the Ministry of Energy in 2016 was 9.6 per cent higher than the previous year.

Key drivers

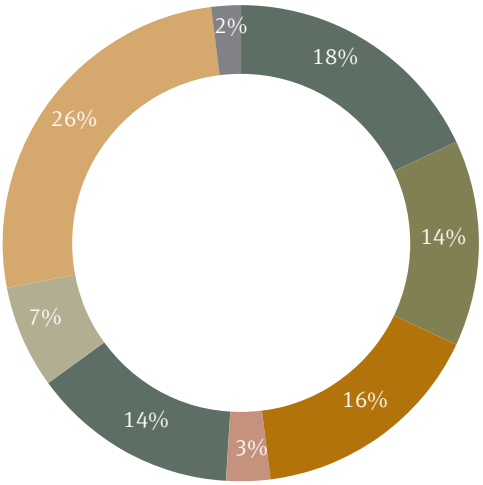
Privatised energy market

Chile was one of the first countries in the world to privatise its energy industry. Consequently, it has a tradition of a lightly regulated energy market where the government performs a role of regulation and supervision. Investors have guaranteed access to the Formal Exchange Market as well as freedom to repatriate capital and remit their profits.

Falling electricity prices

Although rich in other natural resources, Chile is poorly endowed with conventional energy sources. Its supply of gas, oil and coal heavily relies on imports; a situation that has traditionally threatened the country's energy security. As a result, the Chilean energy sector has traditionally been exposed to the volatility of external markets, which has implied high electricity prices in comparison to many other countries in the region. In July 2016, the average price of power traded on the spot market of the SING system was US$85.3/MWh, while the average price for the SIC system was US$102.9/MWh. Both systems registered higher prices than the previous year.

Law 20,018 of 2005 mandated distribution companies to run tender processes for securing energy supply to their regulated customers (those with an energy demand of up to 2 MW). These tender processes are public, non-discriminatory, and transparent. In addition, they allow the participation of every investor interested in exploring the market even if they are not incorporated in Chile. In 2015 by Law 20,805 the tender process was amended by the introduction of different sized hourly blocks of energy supply (day, peak, night, 24 hrs), and a longer supply period of 20-years. These amendments were meant to spur competition and their success was seen in the last tender process awarded in August 2016. Eighty-four investors of different technologies submitted offers, and renewable developers were awarded more than the half of energy bid. The graph below shows the composition of the energy Chile will have in 2021 once the awardees start their operations.



Chilean Electricity Matrix 2021

Coal | Wind | Gas | Mini Hydro
Deisel | Solar | Hydro | Biomass

Source: Ministry of Energy, Government of Chile.

The average price of energy awarded was of US$47.6/MWh, 63% lower than the average price offered in the tender process run by distribution companies in 2013. Renewables are expected to lower the energy prices between 20% to 25%, which would represent a US$ 1,863 billion saving for final consumers. Moreover, solar energy is now the cheapest energy in Chile as Solarpack Corp. was awarded with a 20 year PPA to sell at US$29.10MWh, which is also amongst the cheapest ever registered prices for solar energy around the world. Renewables are expected not only to lower the energy bill but also to provide more secure and sustainable energy for the country.

No more coal

Chile is on its way towards a more sustainable and independent energy mix. In September 2014, Chile enacted a carbon tax which imposes a levy of US$5 on each metric ton of carbon dioxide emitted by thermal power plants with a generation capacity of at least 50MW (except biomass). This measure reflects the commitment to Chile's target of cutting greenhouse gas emissions by 20 per cent from 2007 levels by 2020. Moreover, the 2016 distribution companies tender process showed that coal is less competitive than renewables, as the cheapest price offered for this technology was US$57 MWh, higher than solar (US$29) and wind energy (US$31).

Therefore, the authority has forecasted the displacement of coal from the matrix as a stronger participation of renewables is expected and desired. This was clearly reflected in the preliminary report for the expected short term node price

prepared by the National Energy Commission. This report is prepared every six months and covers a ten-year period. According to the report, of the 2,915 MW planned to start operations between January 2019 and January 2027, 65 per cent corresponds to solar energy, followed by 980 MW from wind farms, and 40 MW from mini hydro.

Hydroelectricity

Hydroelectricity is of particular importance in the Chilean electricity mix. Thanks to Chile's geography, hydroelectricity is the most used renewable resource accounting for more than 6,000 MW of installed capacity. In 2014, the government began promoting sustainable hydroelectricity projects. To this end, the Chilean government has worked on identifying water basins and determining their potential for electricity production. Ensuring that the development of hydro-electricity projects take into account environmental, social and cultural heritage factors has become a cornerstone for the government.

As of June 2016, there were almost 1,975 MW of hydroelectric projects under construction. However, small hydro -projects have been the preference of investors because of their lower impact on the environment and less opposition from the local communities. Although small hydro projects allow storage of water for shorter periods than hydro -dams do, they provide sufficient backup for the intermittency of other renewables such as solar and wind. Consequently, marginal costs experience greater stability, which boosts the confidence of investors.

Potential

The North of Chile is where most of the mining industry and the world's largest copper reserves are located. The mining industry is one of the largest energy off -takers in the market accounting for 33 per cent of the total energy consumption. Even though the mining industry has suffered from lower prices, the energy requirement from the mining sector is expected to increase by 53 per cent during the next years. Its operations require a continuous power supply, yet there is limited power in the North. Grid access and reliability of power supply are also problematic.

The North of Chile also hosts the Atacama Desert, which has one of the highest rates of solar radiation in the world. The potential for the development of solar technologies in the North is vast and represent a sensible alternative to overcome the barriers the mining industry face.

As a consequence, solar projects are being developed in close proximity to the mining sites, allowing easy grid access and overcoming grid capacity constraints. Finally, solar power can be produced at a competitive price in a country where power prices have been traditionally high, particularly by eliminating the risk and costs associated with bringing fuel supplies to remote mining sites. Some of the largest mining actors, like the Canadian Mandalay Resources and the Belgian Nyrstar, have signed PPAs with solar project companies and are already reaping the associated economic benefits.

Ring of fire

Chile is located in the Pacific ring of fire and its estimated geothermal potential is at least 3,350 MW and the legal and institutional framework has been in place since 2000. The regime sets up the social, environmental, technical and the economic requirements for geothermal projects. Despite the great untapped potential for geothermal development in the rest of the region, Chile is jumping ahead and will host the first project of this kind in Latin America. Enel Green Power is developing the 48 MW Cerro Pabellon project, operations are expected to start in 2017 and an expansion is already being discuss to take the project to 100 MW.

However, the costs involved in geothermal energy production are still discouraging for larger investments. With the support of the World Bank and the Inter-American Development Bank, Chile is studying the alternatives to lower geothermal development prices and encourage further competition in the sector. In the 2016 tender process the cheapest registered energy price for Geothermal projects was US$66 MWh.

Surfing the waves

A renewable resource not prepared to be thrown into the shade by solar is ocean energy. With its long coastline of over 4,000 Km, powerful waves and tidal currents, Chile has 164 MW of potential capacity available through marine energy resources, according to the Chilean government's assessment. According to a study by the British Embassy in Chile, Chile has the greatest potential in the world for the development of wave energy and will have a competitive marine energy market in coming years. As a consequence, the Chilean government created the national Marine Energy Centre, which was the first to be established in Latin America.

Merchant power and bankability

Even though the general rule is that renewable projects are financed on a contract basis, Chile already hosts renewable projects financed on a merchant basis. One of these projects is the SunEdison's 73 MW Maria Elena located in Antofagasta. The financing for the project of US$155 million was provided by the Inter-American Development Bank (IDB), the Overseas Private Investment Corporation, Corpbanca (Chile), and Clean Technology Fund (CTF) of the IDB. This project is one of the largest merchant solar power plants not only in Latin America, but worldwide. Another completed merchant project is the Total-SunPower 70MW

PV Salvador Solar Plant, which is expected to produce approximately 200GWh of solar electricity per year, enough to supply electricity to approximately 70,000 households in the country.

Such projects represent a welcome solution for developers who sometimes struggle to negotiate long-term PPAs. For these projects, the merchant risk is arguably limited, because plants in Chile are dispatched in order of their cost of generation to ensure that electricity is supplied at the lowest available cost. This system favours renewables with no fuel costs, such as wind and solar, which means that developers and financiers face reduced risk.

Favourable climate for investors

According to Transparency International's 2015 Corruption Perceptions Index, Chile, ranks at 23rd place and its corruption level is competitively low in Latin America. Chile has for a long time also been one of the most attractive countries for doing business in Latin America and is well-known for its openness to trade, capital flows, exchange of technology and ideas, labour movements and cultural integration. The county has been an OECD member since 2010 and ranks 57th in the World Bank Doing Business Report 2016.

Chile is well integrated into the global market, with 15 FTA, 26 double taxation avoidance agreements, and more than 40 treaties for the promotion and protection of investments. Thanks to all these characteristics, Chile accounted for US$23 billion of FDI in 2015. Its favourable reputation has led Chile to be ranked before any other Latin American country in the EY Globalisation Index (2012).

Support regimes

According to the International Renewable Energy Agency Report on renewables energy in Latin America 2015, apart from the renewable quota of 20 per cent by 2025, Chile is the only country in the region with a pure renewable energy certificate system. Under the current support regime, parties who are subject to the renewables obligation can comply by collecting green certificates, either issued to them or purchased from the market.

In addition, generation companies that do not comply with the renewable quota will be sanctioned with a fine of approximately US$27 for each deficient renewable MWh. This fine is increased by US$41, approximately, for each deficient MWh if the company persists in breaching the quota.

Through the Renewable Energies and Energetic Efficiency Program, the government of Chile supports the further integration of renewables. The program is backed by the German government and not only includes knowledge sharing, but also financing cooperation provided by the KFW bank.

Finally, Chile's legal framework also incentivises the development of small distributed generation facilities (PMGD), by exempting them from toll payments; granting the possibility to opt between selling energy at spot market price, or at a stabilised price; and by allowing the self-dispatch of their production.

Obstacles/challenges

Mining Concessionaires

In Chile, the ownership of land is different from the ownership of their minerals. Consequently, a conflictive scenario may arise between electric and mining concessionaires. However, by Law 20,701 of 2013 and Law 20,897 of 2016, electric concessionaires and NCRE developers are entitled to avoid delays to the development of their projects by paying a bail in court, in order to guarantee the results of conflict.

Further investment in the transmission sector

There are concerns that the grid in Chile is ill-equipped to accommodate intermittent renewables generation. Furthermore, the two main transmission systems (SING and SIC) are disconnected and have limited capacity, causing sudden higher prices and congestion problems. Further investment in the transmission system is still required if Chile is to meet the growing energy demand.

As a part of the program to cope with this situation, the French Engie and the Spanish Red Electrica Internacional are already building the transmission line that will interconnect the SING and the SIC. Its operation is expected by the second half of 2017. The project will have a total cost US$860 million and will cross 600km of desert which currently divides these grids. The transmission line will operate under non-discriminatory technical and economic conditions as to further competition in the energy generation sector. Moreover, the interconnection will allow the country to take advantage of the diversity of its natural resources allowing cheaper energy prices to reach the majority of the Chilean population.

As to ensure adequate investments in the transmission sector, the National Coordinator annually offers in a public, non-discriminatory and economic based tender process the execution and exploitation of the transmission

works. Investors regardless their nationality or place of incorporation, are allowed to participate.

Alternatives to merchant power

The Chilean energy sector is lightly regulated and allows developers to freely set the regime to sell the electricity they produce. Energy developers are allowed to combine regimes and to sell 'blocks' of power to the spot and others under the contract model of their preference. The execution of PPAs reduces the exposure to the marginal costs of energy; however, it does not eliminate that risk. Consequently, the industry has adopted an alternative hedge mechanism with contracts for difference (CfD).

In a CfD, the parties agree on a strike price which is covered by the seller or the buyer benefited by the marginal cost of electricity. If the marginal cost of electricity is higher than the strike price the seller will reimburse the difference to the buyer. At the inverse, if the marginal cost of electricity is lower than the strike price, the buyer will pay the difference until the completion of the strike price. Since the Chilean marginal costs system is based on variable costs, renewables do not exert much influence on its determination. Therefore, renewables are ideal CfD candidates.

Corporation tax increase

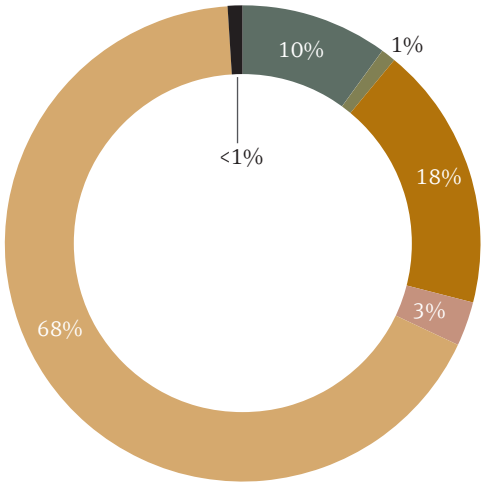
A bill was passed by the Chilean Congress in September 2014 with effect from 1st January 2017. Among other measures, the bill provides two new tax regimes: the attribution regime and the partially integrated regime. The amendment to the tax law increases corporate income tax from 20 per cent to 25 or 27 per cent by 2017 or 2018, depending on the regime adopted by the taxpayer.

The future

The increasing demand for power from the industry and the country's unparalleled natural renewable resources have made of the Chilean renewable market an attractive destination for international investors.

The increasing participation of renewables in the energy mix is a game changer. The country is succeeding in adding value to its primary energy sources and it is expected that Chile will become an exporter of electricity in the near future. Indeed, in February 2016, the country materialised its first transmission of electricity to Argentina. Additionally, by 2021 Chile expects to interconnect its National Transmission System with the Peru, Ecuador and Colombia. International interconnections will further promote competition by enabling transmission capacity for the participation of new actors in the energy sector.

Colombia



Energy generation by type in Colombia

Coal | Oil | Gas | Biofuels | Waste | Nuclear
Hydro | Geothermal | Solar PV | Solar Thermal
Wind | Tide | Other sources

2013 Energy Production in GWh.
Source: International Energy Agency, 2015.

The opportunity

Colombia has a rich endowment of energy sources and the country is heavily reliant on installed hydropower (65 per cent of annual consumption), which provides cost effective electricity. However, Colombia has strong potential for non-conventional sources of energy generation, particularly solar, wind and biomass. According to the UN Industrial Development Organization and the International Centre on Small Hydro Power, in 2010 Colombia saw its highest growth for renewable energy generation, totalling 2,543MW of added capacity. It is estimated that large scale onshore wind and large scale geothermal would be able to achieve the same cost/KW as that of current hydroelectric generation.

Colombia's electricity and energy sector is under the jurisdiction of the Ministry of Mines and Energy (MME). The MME has adopted an Indicative Action Plan and established a target of achieving 3.5 per cent of on-grid and 20 per cent of off-grid generation from renewable sources by 2015. This is to be increased to 6.5 per cent and 30 per cent respectively in 2020. However, there are no legislative targets associated with the accomplishment of these goals.

Potential

In terms of wind energy potential, different studies agree that the use of this resource alone would be sufficient to meet the country's current energy needs. The department of La Guajira stands out for its high natural resources in this area (estimated at 21GW of capacity). Winds in La Guajira have been classified as Class 7 (close to ten metres per second annual average), making it one of only two regions in Latin America to winds of this speed. The Jepirachi wind farm, the first operational wind farm in the country, is located in this area. There is also potential for large scale solar generation in the Orinoco and San Andrés areas in the northern part of the country.

Biomass energy also has a positive outlook due to the large quantities of agricultural and forestry waste produced in the country. Important sources of agricultural waste are from banana plantations, rice, coffee, and livestock. The most suitable places for generating this form of energy are the departments of Santander and Norte de Santander, Valle del Cauca, Llanos Orientales, and the Caribbean coast. There are some existing biomass projects, such as the Ingenio Mayagüez cogeneration plant, which became operational in 2011.

With regard to small-scale hydropower, there is an estimated 25GW of naturally occurring potential for electricity generation, mainly in the Andean region. However, concerns about the environmental impact of hydropower, and the fact that large-scale hydroelectric plants are already located in the best places, are likely to put a halt on further developments in this sector.

Support regimes

Law 1665 of 2013 (the New Renewable Energy Law (REL)) was adopted in April 2014. The REL approved the International Renewable Energy Agency Statute as an attempt to promote the adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar, and wind energy, in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth.

The Financial Support Fund for Energy Provision in Non-Interconnected Zones (FAER) was created in 2000 by Law 633 of 2000. This fund has proven to be an important tool for the financing of projects in areas not connected to the national grid. The fund focuses on energy expansion using both renewable and non-renewable energy sources, and has become an important instrument for financing projects in these regions. Another significant aspect of Law 633 is the creation of the Fund for Non-Conventional Energies

(FENOGE), which will help to finance initiatives in non-conventional energy with public and international resources.

Investors in renewable energy projects can obtain a 50 per cent annual deduction of taxable income for the first five years following an investment. Equipment and machinery are excluded from VAT and, if such equipment and machinery is imported, customs duties are exempt.

Finally, the government has regulated the self-generation of energy through Decree 2469 of 2014. Legal or natural persons will be considered self-generators if the energy they produce is for their own consumption and if they do not use national transmission or distributions systems. However, if there are surpluses, self-generators can deliver energy to the national network in accordance with the regulation established by the Energy and Gas Regulation Commission (CREG). Large-scale self-generators must be represented in the wholesale electric market by a distribution agent, who will market the surplus to the National Network. In addition, large-scale self-generators have to enter into a backup contract with the network operator which sets out the fees and charges for the energy distribution services performed by the operator.

It is important to mention that all self-generators will be considered as large scale producers until the CREG establishes criteria to determine which self-generators will be deemed large scale.

Obstacles/challenges

Colombia's abundant hydro resources, and the historic lack of recognition of the benefits of renewable energy generation, have limited the call for government incentives in sectors like wind, geothermal and solar. There is a widespread perception that additional hydro capacity is the best solution, with fossil fuel capacity laid by for dry years.

Wind and solar energy are not competitive when compared to other kinds of energy generation, due to their intermittent nature. Hydrocarbons, on the other hand, have the advantage of being easily transportable and relatively cheap. These characteristics still make hydrocarbons more attractive to consumers compared to wind and solar sources. It remains true that consumers tend to prefer the cheapest and most effective products.

In addition, there are very few companies with the financial and technical capabilities to assume the high initial costs of renewables projects. Moreover, uncertainty about the generation capacity and reliability of non-dispatchable energy increases the financial sector's perception of risk. This constitutes an economic barrier to any project and to any potential economies of scale which could lower the price of non-conventional energy. Higher costs create disincentives for companies to replace conventional sources of energy with non-conventional ones.

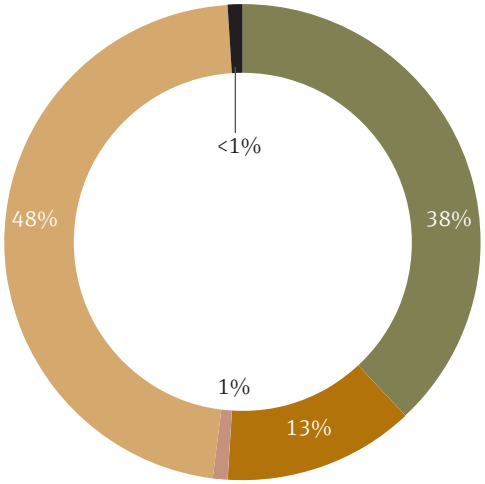
Another economic obstacle is the lack of public funds for the development of viable projects. If the use of renewable energy sources is to be accelerated, new and innovative mechanisms for financing will need to be implemented by both the government and private sector.

The future

There are several interesting projects in the pipeline. One of them, the Jouktai Wind Farm in the Cabo de la Vela District of the La Guajira department, is currently under construction and will soon initiate operation. Developed by ISAGEN, an estimated initial capacity of 31.5MW is expected, requiring the investment of approximately US$60 million. In addition, pre-feasibility studies have been concluded for two large-scale thermal projects near the Municipality of Villamaria, both developed by ISAGEN. The projects are still at an early stage, but progress in field and power plant development is expected in the next two years. Finally, the Ipapure Wind Farm project, with an estimated initial capacity of 200MW, is currently undergoing preliminary studies in the La Guajira department.

According to the Energy Productivity and Economic Prosperity Index of 2015, Colombia is currently the second country in Latin America to consume more units of energy than number of points of GDP. In fact, Colombia produces €330,000 million of GDP for every exajoule consumed, reflecting the considerable growth in Colombia's energy demand. Taking that into account, the Institute of Planning and Promotion of Energetic Solutions (IPSE) has subscribed to a memorandum of understanding with Kepco, an expert in the renewable energy field, to consult on the introduction of non-conventional energy sources into the Colombian grid. To accompany this initiative, the Unit of Mining and Energetic Planning (UPME) included in the National Energetic Plan for 2050 a goal to increase the contribution of non-conventional renewable energy sources (photovoltaic, wind and biomass power) to ten per cent of the country's total installed capacity by 2028.

Ecuador



Energy generation by type in Ecuador

Coal | Oil | Gas | Biofuels | Waste | Nuclear
Hydro | Geothermal | Solar PV | Solar Thermal
Wind | Tide | Other sources

Source: International Energy Agency, 2015.

The opportunity

Ecuador's Constitution of 2008 explicitly states that the government will promote the use of clean and alternative energy sources. This commitment sits alongside other pledges to promote energy efficiency, provide access to public services, preserve the environment and maintain food and water security, among others. In August 2015, the Ecuadorian government announced a US$7 billion program for the country's energy transformation. Government officials stated that by the end of 2015, 93 per cent of the country's electricity will be sourced from hydropower. The country is also investing in other forms of renewable energy, such as wind power through the 16.5MW wind farm in Villonaco and in solar energy projects in the Galapagos Islands.

Potential

The National Plan for Good Living 2013–2022 (PNBV-SENPLADES 2013-2017) sets a target of reaching 60 per cent of national capacity from renewable energy sources by 2017. Objective 11.1 of this National Plan lays special emphasis on hydropower and bioenergy. The Electrification Master Plan 2013–2022, approved by Resolution CONELEC 041/13, puts forward plans for 25 hydropower projects totalling 4.2GW of new capacity by 2022, as well as an additional 217MW of solar, wind and other non-conventional renewables. Previously, the National Plan for Good Living 2009–2013 had set out a target of six per cent of installed capacity being sourced from renewable energy (other than large hydro) by 2013.

Support regimes

The regulatory framework for electricity is the Electric Law of 2015, which explicitly states an objective of promoting renewable energy sources, including solid-waste biomass. This law establishes that the Ministry of Electricity and Renewable Energy (Ministerio de Electricidad y Energía Renovable – MEER) is the governmental entity in charge of the regulation and planning of the entire power sector of the country, and hence carries the responsibility of promoting renewable energy. The law sets out preferential regulations for renewable energy, which are still under development by the newly created electricity agency (ARCONEL) and are expected to be issued in the second half of 2015. Previously, the Electric Law of 1996 mandated the now disbanded National Electric Council (CONELEC) to promote renewable energy through special dispatch regulations.

From 2000–2015, Ecuador had a feed-in tariff system to support renewable electricity deployment. The feed-in tariff evolved over time in terms of duration, rates and technologies included. In 2013, Regulation CONELEC 001/13 removed solar PV from the feed-in tariff and set overall technology-specific capacity limits for wind, biomass and biogas, CSP, ocean energy and geothermal installations eligible for the tariff. In 2014, Resolution CONELEC 014/14 maintained the feed-in tariff only for biomass and biogas, with differentiated rates for the first time, and for hydropower smaller than 30MW.

Small-scale generators smaller than 1MW do not require a permit for operation (Decree 1581 of 1999). However, in order to benefit from the feed-in tariffs, they needed to be registered with the CONELEC. The procedures for registration of small projects were established in 2008 by Regulation CONELEC 009/08. In 2013, Regulation CONELEC 002/13 superseded the 2008 regulation, and introduced two payments: a registration guarantee of US$7,000 for projects smaller than 500kW and US$15,000 for projects larger than 500kW; and an execution guarantee of one per cent of the total project cost.

Transmission

Grid access was facilitated by the feed-in tariff regulations, which mandated preferential dispatch for renewables. In the 2004 and 2006 feed-in tariff regulations, preferential dispatch was mandated until renewable generation reached two per cent of the total electric system generation capacity, at which point new renewable energy generators would dispatch on an economic merit basis. In 2008, Regulation CONELEC 013/08 established preferential dispatch for renewable electricity, up to a maximum of six per cent of operative installed capacity. In 2012, Resolution CONELEC 102/12 exempted hydro, biomass and geothermal from the preferential dispatch limit.

When a project developer builds a transmission line to connect a renewable energy project to the grid, it can obtain compensations for its expenditure, the levels of which were established by the feed-in tariff regulations of 2002, 2004 and 2006 as an additional US$0.06 cents/kWh/Km, with a maximum cost of US$1.5 cents/kWh/Km. Since 2013 (Regulation CONELEC 001/13), connection to the grid requires the payment of a non-refundable fee (US$10,000 for projects larger than 1MW and US$5,000 for projects smaller than 1MW) to the transmission or distribution company for a connection feasibility study. Payment of the fee does not guarantee connection. Once a project is cleared for connection, a guarantee of 0.5 per cent of total investment is required, refundable when the project begins operation on the agreed timelines.

Incentives

Fiscal incentives were provided by the Electric Law of 1996, which provided import duty exemptions for solar, wind, geothermal and biomass equipment, as well as a five year income tax exemption for renewable energy developers. The 2015 Electric Law does not contain similar fiscal provisions. Since 2011 (CONELEC 004/11) renewable energy projects receiving the feed-in tariff must contribute an amount (per kWh generated) to social and community development projects (Estado del Buen Vivir). As of 2014 (CONELEC 014/14) the amount is as shown in the below table.

Technology	Contribution required (US$/MWh)
Biomass	23.8
Biogas	16.5
Hydropower (<30MW)	18.9
Wind	23.9
Solar PV	118.0
CSP	87.4
Ocean	127.7
Geothermal	33.6

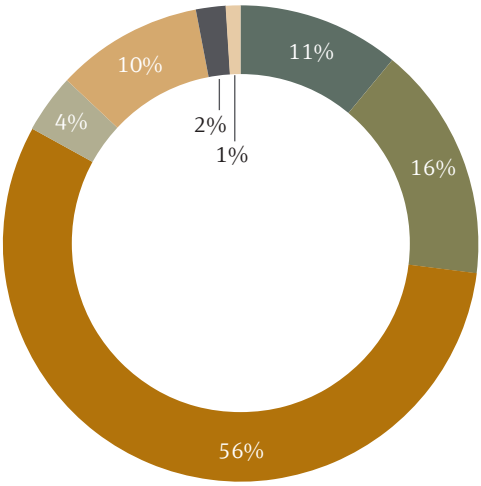
Obstacles/challenges

Subsidies for electricity and fuel are a major barriers to the promotion of energy efficiency programs and renewable energy use in the manufacturing, service, and residential sectors. Although subsidies and the total absorption of investments by the state may constitute a risk to the financial sustainability of long-term projects (due to the pressure exerted by these measures on the national economy), this risk can be mitigated with the appropriate security and investment protection measures. However, there may be other institutional barriers. There remains, for instance, the problem of coordinating efforts between various government and private institutions to reach all end users of energy.

The future

Renewable energy sources are expected to play a growing part in meeting future energy demands, and with the right government support will ideally one day end Ecuador's dependence on imported fossil fuels.

Mexico



Energy generation by type in Mexico

Coal Oil Gas Biofuels Waste Nuclear
Hydro Geothermal Solar PV Solar Thermal
Wind Tide Other sources

2013 Energy Production in GWh.
Source: International Energy Agency, 2015.

The opportunity

It is a promising time for Mexican renewables. After the energy sector was monopolised by the state electricity company CFE, limiting private participation for more than 75 years, a much awaited constitutional reform law was approved in December 2013 which will liberalise the sector for private investment and transform the power sector into a competitive wholesale market. A comprehensive package of 21 secondary laws were then enacted in August 2014. Accordingly, overall investment in the sector rose in 2014 to US$2.4 billion, as reported by the US International Trade Administration.

The main instrument governing the renewable energy sector in Mexico is the Law for the Development of Renewable Energy and Energy Transition Financing (LAERFTE), enacted in 2008. Under this law, Mexico implemented the Estrategia Nacional de Energía 2013–2027, which establishes that 35 per cent of energy should derive from renewable sources by 2024 (i.e. wind, solar, mini hydro, biomass, geothermal and wave power, large hydroelectric plants and, more controversially, nuclear energy).

According to the Mexico Energy & Sustainability Review 2014, Mexico accounts for 1.6 per cent of the total worldwide greenhouse emissions. This makes it the thirteenth largest emitter worldwide. Mexico's geography makes it vulnerable to certain effects of climate change, for example, droughts and decreasing precipitation rates. Facing this reality, the General Climate Change Law set a goal to reduce greenhouse gas emissions by 30 per cent by 2020 and 50 per cent by 2050. The US International Trade Administration ranks Mexico fifth on its list of top renewable energy export destinations for 2016, with opportunities projected in every subsector.

The government provides project finance for renewable projects through its development bank (Nacional Financiera), using financial resources contributed by IFI's (IDB, IFC – World Bank, German Development Bank etc). Local players, including financial institutions, utilities and corporations, put around US$915 million into Mexican clean energy assets in 2012.

Potential

Sun Belt

Mexico has rich solar resources and is located in the so-called Solar Belt. In the Baja California region, average solar irradiation is greater than 2,200 kWh/m² per year which, to put in perspective, is more than double the radiation in Germany. Across Mexico, daily radiation varies between 1,600–2,250 kWh/m² per year, which is comparable to some of the best locations in the world such as the MENA region and Chile. The first large (30MW) solar PV plant, Aura Solar I, started operations in 2013 in Baja California. In August 2015, the country's solar energy association, ANES, announced its target of 3GW total installed capacity by 2025.

Geothermal revival

Mexico has traditionally been one of the largest geothermal markets in the world, yet little development has occurred over the past decade. Recently, interest in the sector has revived with the development of two new 50MW projects. Geothermal research centre CEMIE-Geo opened in 2014 with an operating budget of US$75 million over the next four years to promote exploration and projects within the private sector. Geothermal has the advantage of providing baseload power, unlike the intermittent nature of solar and wind, which makes it attractive for developers and investors. In July 2015, the Ministry of Energy awarded five geothermal concessions and 13 permits for exploration to CFE, who will study geothermal resources for 448MW capacity across three states.

Currently, there are no private owners of geothermal power plants and the only plants in operation are owned by the CFE. However, Deputy Planning Minister Leonardo

Beltran stated in July 2015 that private investors will have the opportunity to develop some 5000MW of probable geothermal resource in the country. The Energy Ministry expects an additional 217MW of geothermal power by 2018. This number is modest compared to the estimates for wind and solar, but reflects the greater time and resources needed for geothermal projects — a typical project takes about seven years to complete. The secondary law, which is solely focused on geothermal energy, will prove key to giving this energy source the necessary boost by addressing the high risks and costs associated with geothermal exploration.

Advancing wind energy

At the end of 2015, the national installed capacity of wind energy was 3,037MW. The Mexican Wind Energy Association, AMDEE, has targets to generate 12GW of power by 2020. Construction has mainly been focused in Oaxaca, considered to be one of the best wind resources in the world, but investment has slowed down due to a mixture of social conflict with communities and a saturation of projects. Nevertheless, Enel Green Power is currently constructing an additional wind farm in Oaxaca having completed its Sureste I – Phase II farm in March 2015, and Iberdrola continues to construct its 102MW La Ventosa plant. Gamesa finalised an agreement with Banco Santander in 2014 for the joint development of wind farms in Baja California, with a total installed capacity of up to 500MW. In 2016, there is expected to be 805MW of new wind capacity added to the grid, rising to a total installed capacity of 9,500MW by 2018.

According to AMDEE figures, investments in Mexican wind to date exceed US$6,000 million. This reflects the 37 wind farms of varying sizes now in operation in the country. Between 2016 and 2018, a further US$13,000 million of wind investment is expected.

Self-supply scheme

Mexico expects the largest chunk of new solar and wind capacity to be generated by businesses, which under the self-supply law allows companies to buy electricity directly from power plants. Walmart, for example, supplies its stores in Mexico from a 67MW wind farm in Oaxaca. In May 2014, a 252MW wind project was announced in the state of Nuevo Leon that will provide energy for a group of companies including FEMSA and cement giant Cemex.

Support regimes

Mexico has several schemes for development of renewable energy generation, including the small power producer, self- supply, co-generation and the IPP schemes. The aforementioned law reforms included the set-up of a clean energy certification scheme to serve as the primary mechanism for encouraging clean energy development. This certification scheme sets a target for all suppliers and qualified users of the grid to source five per cent of all energy generation from renewable sources.

Tax incentives are established under Article 40 of the Law of Corporate Income Tax, among others, which provides for accelerated depreciation of 100 per cent for investments in equipment and machinery for electricity generation through renewable sources. The condition is that the equipment/ machinery must remain in operation for at least five years following the tax deduction declaration. Further incentives include an exemption from import and export tax and a tax credit.

A funding mechanism was set up under the auspices of the Fund for the Energy Transition and Sustainable Electricity Use (LAERFTE). It invests in studies which further the objectives of LAERFTE. The fund is destined for research institutions and excludes private companies. It offers resources of US$538 million and is expected to be a fundamental player in helping Mexico reach its targets. Furthermore, the Mexican development bank, NAFINSA, is committed to supporting the government's renewable energy ambitions – it financed 50 per cent of the capital for Aura Solar I, the first large scale PV plant in Mexico.

Regulations allow for the excess energy produced from renewable sources to be stored (banked) by CFE, so that it can be later used or sold to the CFE at a discounted cost.

Obstacles/challenges

Transmission

Reliable transmission and distribution infrastructure is essential for most intermittent electricity generation projects. Frequently, substations located in areas which offer a high concentration of resources, such as the Tehuantepec and Isthmus regions, do not have capacity to handle proposed projects or there are no transmission lines available to transport electricity to consumption centres. Historically, the CFE was the sole entity authorised to construct and operate energy transmission and distribution infrastructure. There were many complaints about the slow speed at which it upgraded and expanded the grid. The energy reform law now allows private sector participation in the development and construction of transmission lines, with CFE remaining as the grid planner. The private sector might well become a key driver for the development of the network.

Obtaining finance

As in other Latin American countries, obtaining finance remains a challenge. In particular, financial institutions are hesitant to provide funding to companies lacking AAA credit ratings. To meet the renewables target, smaller offtakers need to be able to access the self-supply scheme (and this is a trend which has been successful in the US to some extent). One solution is pooling several small offtakers; this was successfully tried by Next Energy, which brought together seven municipalities to build a 22.5MW wind farm in Monterrey.

Community resistance

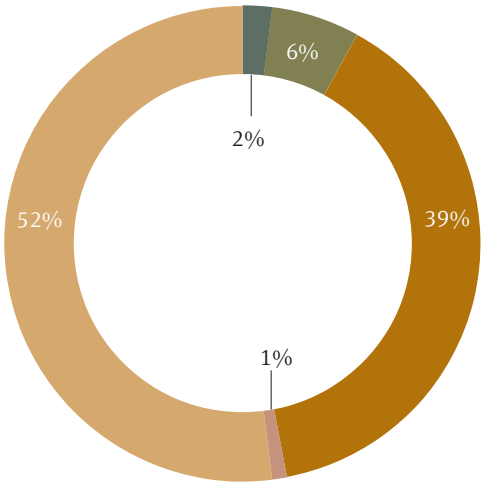
There is significant resistance from local communities to allowing land acquisition for renewable energy projects or transmission lines. Last year, riots occurred in Oaxaca, where indigenous communities challenged the development of the Mareña Renovables Wind Farm on their lands, because they signed a contract based on incomplete information. As a result, the project has been frozen for over two years. The government still has some work to do in developing community R&R and information sharing.

The future

According to the Mexico Energy & Sustainability Review 2014, investments in the renewables sector have grown over 92 per cent in the last five years and installed renewable capacity is likely to grow ten per cent annually in the upcoming years. SENER expects renewable energy capacity to be driven primarily by wind power, which it states could account for 60.3 per cent of the national energy mix by 2025. The next largest contributors are expected to be small hydropower with 24.3 per cent and solar energy with a 12 per cent contribution.

Multinational developers and equipment suppliers have flocked to Mexico due to its opportunities and reliability. Several domestic companies have also penetrated this market with diversification into small-scale projects and equipment manufacturing. This is also reflective of trends in South Africa and India, where local manufacturing is evolving hand in hand with renewable energy project development.

Peru



Energy generation by type in Peru

Coal | Oil | Gas | Biofuels | Waste | Nuclear
Hydro | Geothermal | Solar PV | Solar Thermal
Wind | Tide | Other sources

2013 Energy Production in GWh.
Source: International Energy Agency, 2015.

The opportunity

Peru's rising attractiveness for renewables investment is illustrated in the EY Renewable Energy Country Attractiveness Index. The country joined the index only very recently in May 2013, and by March 2015 was ranked 26th. It was also ranked 11th in the Climatescope 2014 Clean Energy Investment and Climate Financing league table, because of the impressive volume of financing received in 2013 in the small hydro and wind sectors. Several international players, including the IFC, BBVA, KfW, FMO, IDB and Corporación Andina de Fomento, have already entered the Peruvian renewables market, most notably through participation in hydropower projects.

According to the Ministry of Energy and Mines (MINEM), energy demand in Peru is projected to grow at ten per cent annually, propelled primarily by industrial growth. Accordingly, it is estimated that in 2017 total required energy capacity is expected to increase to almost 8GW, which would require significant investment in power generation. Depleting oil and gas resources are a major concern and have contributed to the growth of renewable energy investment.

The Law to Promote Investment in Electricity Generation with Renewable Resources (LRER) was approved in May 2008. It includes biomass, wind, geothermal, solar, tidal and hydropower in its ambit and promotes renewable energy as a national priority. The LRER also contained a non-binding target of up to five per cent of national electricity consumption to be met by renewable energy sources during the 2008–2013 period. This target was missed by a wide margin. Recently, the government has announced a renewable energy target of 60 per cent of national consumption to be met by renewable energy sources by 2025.

Potential

Peru is considered to have a 'high' potential for wind, solar, hydro and geothermal, a 'high-medium' potential for biomass, and an 'unknown' potential for ocean-based RETs. There is a significant gap between this potential and its realisation, and the 2014 statistics shown below illustrate that the country can do a lot more to harness alternative energy sources.

Recourse	Total power potential (MW)	Installed capacity (MW)
Hydroelectric	70,000	3,118
Wind	22,000	142
Solar		80
Biomass	450	27,4
Geothermal	3,000	0

In the near future, it is likely that the solar industry will provide the largest opportunity for energy export growth and rural-electrification, particularly for communities in the Amazon region. Consequently, several off-grid project tenders have also been floated.

In the wind sector, future investment depends on the success of several projects presently under construction. In April 2014, the first wind farm park in Peru, Marcona, became operational. It was developed by the Spanish concern Cobra Energía. The Talara and Cupisnique sites (110MW) are also scheduled to become operational this year, and their performance will have a positive impact on future support for such projects.

Decree No. 020-2013-EM, enacted in June 2013 under the umbrella of the LRER, deals specifically with the off-grid supply of electricity. Under this Decree, the government carried out an auction at the end of 2014, which resulted in the energy developer Ergon Power being awarded a contract for the construction of PV systems to supply 500,000 users in off-grid regions of the country.

The systems will be installed in the northern, central and southern regions of Peru and electricity services will be provided to homes, schools and health centres for a period of 15 years.

Support regimes

The LRER promotes the sale of renewable energy through public tenders. Its current applicable rules (RLRER) were approved through Supreme Decree No. 012-2011-EM in March 2011. This legislation establishes the regulation for the renewable energy tendering process and includes incentives such as priority for the dispatch of electricity and access to the transmission and distribution network, long term stable tariffs through bidding, and guaranteed purchase of the total electricity produced. In addition, Decree No. 1058 allows for the accelerated depreciation (for income tax purposes) of up to 20 per cent of the investments in machinery, equipment and civil construction for renewable energy generation.

Several projects (60 in total) have been funded through the United Nations' Clean Development Mechanism, including El Platanal Hydropower Plant, which is located near the country's capital Lima.

Obstacles/challenges

Low prices

The main obstacle is the government and private sector emphasis on developing natural gas resources rather than renewable energy. For example, tax incentives make gas-fuelled power more favourable to build than hydropower. Government subsidies for natural gas extracted from Block 88 of the famous Camisea project have created exaggeratedly low prices for natural gas, since pricing for the block does not include the exploration cost incurred. This creates market distortions which further set back profitability in renewable generation. When current resources are depleted (which is likely in the next 20–30 years), natural gas from other blocks will command a far higher price which may provide a fillip to installed renewable energy projects.

Approval of projects

The onerous environmental assessment requirements are a frequent source of delay and several prescribed procedures are suited to the oil and gas industry rather than renewable energy projects.

Transmission infrastructure

Whereas the potential for renewable energy development in the Amazon and Andes regions is high, these areas do not possess the concomitant transmission infrastructure to distribute electricity nationally. Investment in large-scale renewable energy projects may therefore involve significant investment in transmission infrastructure upfront.

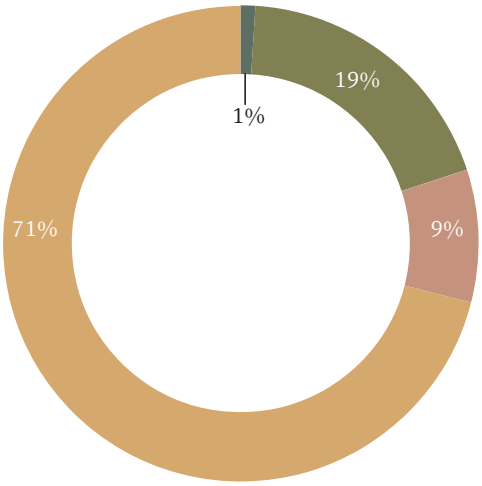
The future

In total, three public auctions have taken place, the latest being in August 2013. These tenders have been successfully implemented by MINEM with four local Peruvian banks providing funding. In 2014, 24 mini-hydro projects have been awarded a PPA for a total installed capacity of 180MW, along with four wind power projects and five solar power projects, for a total installed capacity of 232MW and 96MW respectively. Finally, four biomass PPAs were awarded for a total installed capacity of 29.4MW. The government is currently accepting offers for a public auction of PPAs of wind, solar PV, biomass and small hydro capacity.

COP21

Peru has been playing an important role in relation to the Conference of the Parties to the United Nations Framework Convention on Climate Change. In 2014, Peru was the host country of the COP 20, at which there was a shift in the UN's emphasis away from attempting to reach hard universal targets and towards a system under which individual nations would report their current status and make measurable national commitments, and the loss and damage element would be respected. Since the COP20 was held, the UN has worked on the improvement of the Peru draft treaty and in October 2015 it released a new draft which is a step forward for the talks, slimming down the text from more than 90 pages to just 20. The new draft will be subject to negotiation between the participant countries of the COP21.

Uruguay



Energy generation by type in Peru

Coal Oil Gas Biofuels Waste Nuclear
Hydro Geothermal Solar PV Solar Thermal
Wind Tide Other sources

2013 Energy Production in GWh.
Source: International Energy Agency, 2015.

The opportunity

As a consequence of high GDP growth and an increase in industrial consumption of power, Uruguay's energy demand is constantly on the rise. The country does not possess native fossil fuel resources and while it has a number of hydropower plants, these do no operate during dry periods, forcing the country to purchase electricity from Argentina at up to US$400/MWh.

In 2008, the Política Energética Uruguay 2030 was approved by the National Congress. It established a target of 15 per cent of electricity demand to be derived from renewable sources (wind, biomass and micro-hydro projects) by 2015. In 2013, this target was overhauled to an ambitious 90 per cent of total capacity being generated through renewables by the end of 2015. In June 2015, however, comments from Gonzalo Casaravilla, chairman of the state-owned electric utility UTE, indicated that this goalpost had been moved to the end of 2016.

Uruguay has vast wind resources and has been cited as the fastest-growing wind market in the world in 2014, according to the World Wind Energy Association. The country possesses 600MW of installed capacity and an additional 600MW under construction. Forecasts in the EY Renewable Energy Country Attractiveness Index indicate that Uruguay will be the global leader for wind energy as a proportion of the total energy mix, expected to reach 30 per cent by 2016, up from 13 per cent currently. UTE further announced a goal earlier this year to generate 38 per cent of its power from wind by the end of 2017.

Uruguay has brought in numerous overseas companies, such as Nordex and Gamesa, to develop wind through its auction process. Through the auctions, about 21 projects were awarded contracts in 2013 with guaranteed 20-year PPAs with state-owned electricity distribution companies. The approximate US$2 billion to be spent on wind farm installation is touted to be one of the largest investments in the country thus far. In March 2014 the financing for the 140MW Pampa wind farm was finalised, which is due to be operational in 2016 and will be the largest wind farm in Uruguay. Recently, in September 2015, Enel Green Power completed and commissioned the 50MW Melowind project, its first wind farm in Uruguay.

Biomass resources are currently the largest renewable source generating electricity, accounting for 13 per cent of generation in 2014. This source has further potential due to the strength of Uruguay's agricultural, livestock and forestry industry. In this light, an environmental subsidy is being considered by Uruguay for the construction of an urban waste bio¬mass plant. A limited feed-in tariff for biomass, introduced in 2010, is currently being revised due to mixed results.

Furthermore, the country has sufficient solar radiation to develop solar PV and STE projects. UTE, who developed the 'Plan Solar' framework for developing these technologies alongside the Uruguayan government, has reported that the country's PV generation increased from 362MWh in 2013 to 653MWh a year later.

Potential

Climatescope 2014 ranked Uruguay sixth on the Clean Energy Investment and Climate Financing scale, up from 11th in 2014. From 2006 to 2012, US$394 million of funds were invested in renewable energy projects, and this grew by 43 per cent in 2012. It is likely that investments will grow further in the coming years as more contracts awarded in recent auctions achieve financing. So far, mainly international institutions, including OPIC, IDB, IFC and MIF, have provided funding for renewables projects. The tide seems to be turning, however: in 2014 IDB approved US$65.9 million for the 64.8MW 'La Jacinta' solar farm, Uruguay's first utility scale project, and in May 2015 it announced significant financial support in the form of US$72 million in loans to the Colonia Arias and Valentines wind farms, both 70MW projects.

Support regimes

The regulatory framework governing renewable energy is extensive in comparison with other Latin American countries. In 2007, an investment promotion policy was approved, allowing companies to recover up to 100 per cent of an investment through a tax exemption conditional on factors like employment generation, decentralisation, increased exports, increased domestic value added, use of clean technologies, increased R&D and innovation and impact of the project on the economy. The new methodology for evaluating investment came into force in February 2012 under Decree 002/012. Further, Decree 354/0091, which favours certain activities related to the renewable energy industry, grants tax incentives, such as exemption from VAT, import taxes and fees.

Additionally, Law 18,585 on Solar Thermal Energy Promotion promotes the development of solar thermal energy through tax incentives and an obligation on hotels, sport clubs and hospitals to obtain 50 per cent of the energy required to heat the water from solar thermal energy. Finally, Decree Nº 173/010 authorizes subscribers connected to the low voltage distribution network to install renewable energy generation systems using sources such as wind, solar, biomass or micro hydro.

Obstacles/challenges

Several challenges exist, including the expansion of an appropriate transmission infrastructure network. The development of adequate financial structures for renewables projects is a precondition for continued success in the sector. Despite the incentives offered by the government and Uruguay's recovery from the 2002 financial crisis, caused by neighbouring Argentina's financial crisis, finding appropriate sources of funding remains an issue. Local banks do not have the capacity to fund the costs of large infrastructure projects, so the need for international financiers is paramount. Since Uruguay is a relatively small and untested market, many international financiers have bypassed it for larger and more established neighbours such as Brazil. Uruguay's relatively stable political system, strong support from state owned utilities such as UTE, and strong track record of servicing foreign debt should help overcome these issues. However, Uruguay still fares well in comparison with its peers, since it has one of the highest levels of electrification in South America.

The future

The Minister for Industry, Energy and Mines, Carolina Cosse, stated in May 2015 that installed capacity in 2016 would reach 1,538MW from hydropower, 1,400MW from solar and 1,500MW from wind. As at July 2015, there are over 20 operational wind projects with a total installed capacity of 600MW. A further 600–700MW is awaited and under construction. The Cámara Solar trade body aims for Uruguay to have one million square metres of solar panelling in place by 2020.

In 2006, Uruguay instituted an auction mechanism to guarantee stable demand and prices, with contracts awarded of up to 20 years, and the ability to trade surplus power in the spot market. Under this mechanism, UTE have auctioned several wind and solar projects. The country expects to secure investments of US$1.74 billion for renewable energy between 2015 and 2019 under PPAs, according to a plan announced by the government in July.

Our renewable power experience in Latin America

Argentina

Ming Yang on its proposed acquisition of two 50MW wind farm projects in Argentina.

CDB on the financing of a 100MW wind farm in Argentina using China Hydro turbines.

Brazil

A multilateral lender with the restructuring of a loan for construction of an 880MW hydroelectric plant in Santa Catarina, Brazil.

A bank that supports the financing of US goods and services in connection with the provision of a loan guarantee for the financing of a wind farm in Brazil.

China Development Bank with the project financing of a 34MW Brazilian wind farm.

China Development Bank with the proposed financing of a 125MW wind farm using Sinovel turbines in Brazil.

A private equity company in connection with its purchase of US$15 million in senior secured notes and warrants to the US parent of a sugar cane and bioethanol producer in Brazil.

Chile

Two multilateral lenders with respect to the project financing of a merchant solar PV plant in Chile. The project involves the expansion of an existing 1.5MW plant to a total capacity of 31.5MW.

Two multilateral lenders in connection with the financing of three photovoltaic solar power plants with a total nominal installed capacity of approximately 24.5MW in Chile, that are among the first large-scale solar energy projects in the region.

A multilateral lender in connection with its financing of a 46MW merchant wind farm in Chile with an emissions reduction purchase agreement selling carbon credits.

China Development Bank on the non-recourse financing of a 34MW merchant risk wind farm in Chile.

A multilateral lender in connection with the financing of a 44MWp solar PV power project, including a transmission line and civil works in Chile.

A multilateral lender with the financing of an approximately 53MW solar PV power project, including a transmission line, in Chile.

A multilateral lender in connection with the financing of a 20MW hydro electric power project in Chile.

A multilateral lender in post-closing matters related to the financing of three photovoltaic solar power plant in Tarapacá and Antofagasta, two regions of Chile.

A multilateral lender in connection with a 40MW solar photovoltaic (PV) project and transmission line in northern Chile, near the city of Arica, in the Atacama Desert.

Colombia

The project sponsor on attracting, contracting with and its ongoing relationship with a strategic investor having responsibility to obtain project financing for two solar power projects with a total of 50MW capacity in Colombia.

The investment arm of a power and automation technology company in connection with the sale of the direct and indirect interests in a power plant located in Colombia, with a capacity of 830MW.

Dominican Republic

A multilateral lender with the financing of a 30.6MW wind power project in the Dominican Republic.

A multilateral lender in with the financing of a 50MW wind power project in the Dominican Republic.

Ecuador

Hanergy on the development of project origination agreements in Ecuador for solar projects.

A multilateral lender in the construction of two solar power projects in Ecuador with 50MW of power capacity.

El Salvador

A multilateral lender in connection with the financing of eight solar photovoltaic (PV) power projects with an aggregate capacity of approximately 27.17MWp located across four different sites in El Salvador.

Guatemala

A multilateral lender with the secured financing of a 43MW hydroelectric power plant in Guatemala .

Honduras

Two multilateral financial institutions with their investment in a 38.5MW run-of-the-river hydroelectric power project located in Honduras.

A multilateral lender in connection with a 50MW solar photovoltaic (PV) project and transmission line in the city of Nacaome, Department of Valle in Southern Honduras.

Three multilateral lenders with the financing of a 50MW solar plant located in Honduras.

Mexico

A multilateral lender with the financing of the purchase of equity interests in a 74MW wind power project in the Isthmus of Tehuantepec, Oaxaca, Mexico.

An export credit agency in connection with the financing of solar equipment to be installed in a solar project in Mexico.

Panama

A group of multilateral and commercial lenders with the financing of two run-of-the-river hydroelectric power plants with an aggregate capacity of 85MW in Panama.

Representation of two European banks in connection with their loans to a Panamanian bank.

Representation of a multilateral lender in connection with its equity investment in a Panamanian insurance company.

Representing lenders on the financing of a luxury hotel in the Pearl Islands.

A loan to a regional microfinance fund for a bank that is a large source of development financing for Latin America and the Caribbean.

Microfinance loan transaction for a bank that is the largest source of development financing for Latin America and the Caribbean.

Representation of the senior lenders in connection with the secured financing of a hydroelectric power project in Panama.

Representation of multilateral lender with financing an underwater timber harvesting project from the two lakes next to the Panama Cana.

Representation of a multilateral lender in connection with an equity investment in a Panamanian financial institution.

Peru

A multilateral lender regarding a loan to invest in Peruvian solar projects.

A multilateral lender with the financing to a company of the purchase of equity interests in two solar plants in Peru and a transmission line in Brazil.

International power company in connection with two wind projects totalling 119MW.

Uruguay

Polesine S.A, a subsidiary of Akuo Energy, with the project financing of a 50MW wind farm in Uruguay, provided by PROPARCO, FMO and DEG .

China Development Bank on the financing of a 50MW wind farm in Uruguay that uses Gold Wind turbines.

A multilateral lender in connection with the financing of the construction, operation and maintenance of six solar power plants and its associated facilities, in the Rio Negro Department, Uruguay.

Multiple countries

Suez S.A. on its successful competing takeover offer for Econergy International, a London AIM stock exchange listed developer of renewable energy projects in Central and Latin America.

Multilateral lender in connection with its equity contribution in three solar plants in Peru and Brazil.

Norton Rose Fulbright in Latin America

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