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RenovAr Programme

A Case Study on the RenovAr Auction Programme and the Renewable Corporate PPA Market in Argentina.

VERSION 8.0

December 2023

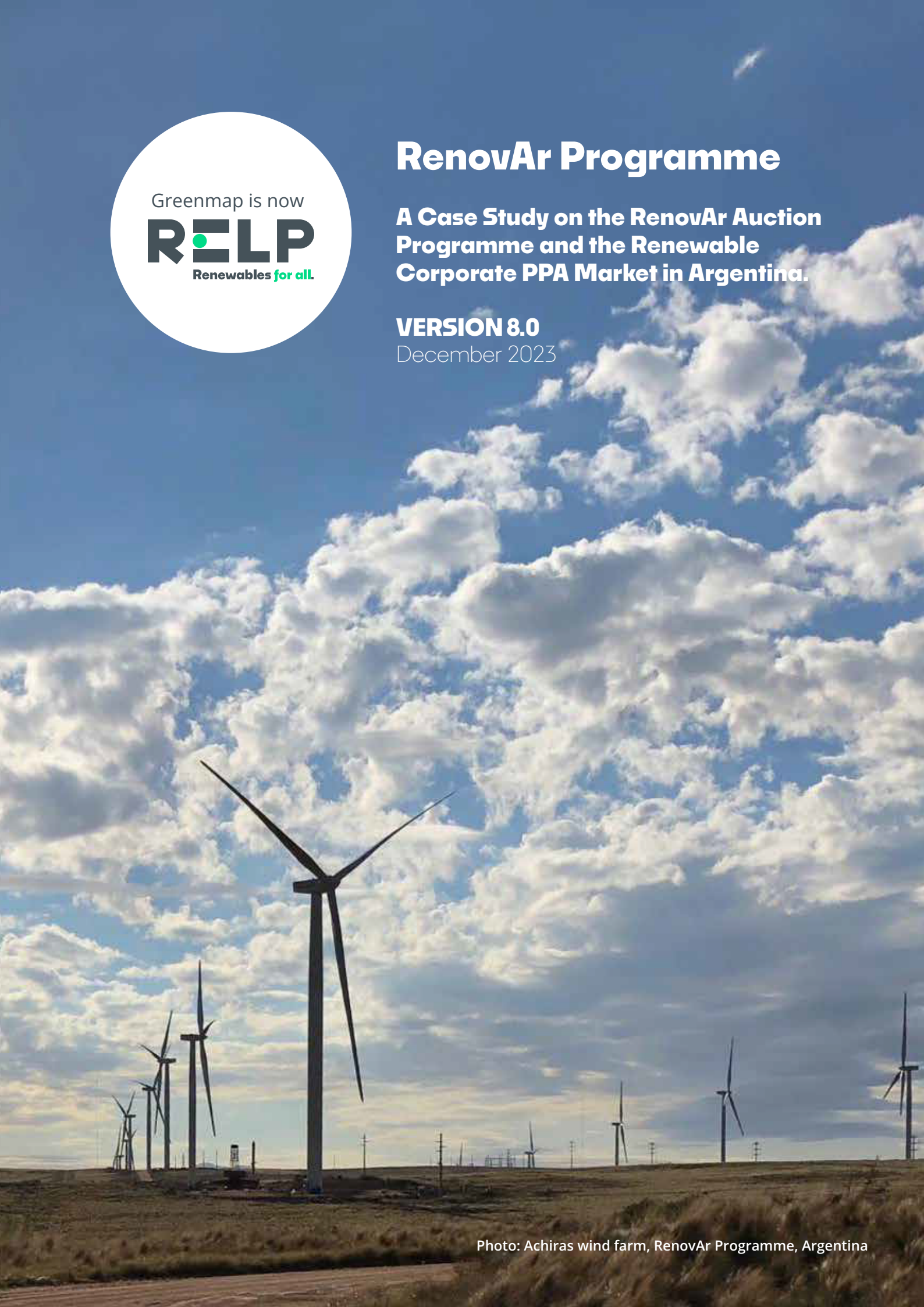


Photo: Achiras wind farm, RenovAr Programme, Argentina

About RELP

RELP (formerly GREENMAP) is an impact-driven non-profit organisation based in Brussels, Belgium, aimed at scaling up cheaper and faster renewable energy deployment at large scale in the developing world by supporting governments to implement the right policies and providing them with innovative credit-enhancement tools to attract investment, foster competition, and lower the cost of renewable energy generation while reducing GHG emissions.

RELP is inspired by the Renovar Programme: the successful case of Argentina that mobilised US$8 billion in private investments in the country's RE sector through an innovative regulatory and financial mechanism based on a multi-level guarantee scheme.

RELP is not a think tank but rather an organisation focused on the implementation and scaling of private investments to reduce CO2 emissions. Our main areas of expertise are the design and implementation of RE auctions and de-risking mechanisms. We aim to contribute to and synergise with the global efforts that many multilateral development banks (MDBs), development finance institutions (DFIs), and other institutions worldwide are undertaking to promote investment in climate infrastructure.

For more information, visit our website or contact us.

Table of Contents

1. Introduction 4
2. Understanding a Complex Starting Point 5
3. Designing the RenovAr Auction Programme 11
4. The Creation of a Corporate PPA Market for Renewables 16
5. Successful Implementation 17
6. RenovAr Under Stress 22
7. Conclusion 25

1. Introduction

This document summarises the context and background, main features, and results of the Argentine competitive renewable energy (RE) procurement programme called RenovAr, which served as inspiration for RELP (formerly GREENMAP). RenovAr was designed and implemented by RELP's team members working as officials of the Government of Argentina (GoA) between 2016 and 2019. Jointly with RenovAr, and as part of a broader legal framework aimed at supporting RE deployment, a corporate renewable PPA market (known as "MATER" for its Spanish acronym) was regulated into existence during the same period, turning Argentina into a dynamic and attractive renewable energy market for local and foreign investors, developing a momentum which has been maintained mainly by the corporate market in spite of growing regulatory and economic challenges.

As of December 2023, 152 renewable energy projects are already in operation and 38 are under construction resulting from RenovAr and MATER implementation, totalling US$8.3 billion in direct investment and 6.6 GW of new-build capacity. All of this with the added benefits of already having created over 17,123 direct and indirect jobs, avoiding 30.3 million tons of carbon emissions and saving over US$4.4 billion worth of burnt fossil fuels and variable system costs since 2016 (see more details in Section 6).

The success of the renewable energy programme implemented is particularly important given the complex and uncertain context of the Argentine economic and political landscape in which the policy for setting up a renewable energy market was developed and implemented. In most developing countries like Argentina, the lack of proper capital-intensive infrastructure has been intrinsically related to limited access to international capital markets which is mainly caused by the relatively high actual and perceived risks to long-term capital investments as a consequence of more challenging economic, political and regulatory environments. In the power sector, this gap is primarily reflected in the choice to invest in fossil-fuelled options rather than clean electricity, in addition to deficient power transmission infrastructure and relatively higher retail prices paid directly by consumers or indirectly by taxpayers through subsidies. This reality impairs economic growth and reduces living standards in the vast majority of the developing world. There is a clear need for change, and the measures implemented in Argentina prove it can be done.

At RELP we strongly believe that the concepts and tools used to effectively create a market for renewables in Argentina, through the RenovAr Auction Programme as the main policy approach, as well as with the introduction of a corporate PPA market for relatively more advanced markets, can be scaled up globally to accelerate investment in and deployment of renewable energy in the developing world.

2. Understanding a Complex Starting Point

Argentina is the third largest electricity power market in Latin America after Brazil and Mexico, with 139 TWh of power generation in 2022, and about 1% of cumulative annual growth in 2023. Households[1] consume about 47% of electricity while the industrial sector 26%, and the commercial sector 27%- and the installed generation capacity reached a new high of 43.5 GW[2], of which 58% was thermal (mostly natural gas), 25% large hydro, 4% nuclear, and 13% non-conventional renewables.

The power generation sector is mostly privately owned, with only 24% of the country's electricity generated by two binational-large-hydro, three nuclear plants and some thermal units under the control of state-owned entities. The energy sector is overseen and regulated by the Secretariat of Energy (SE), which is part of the executive branch[3] and the ENRE[4], the national regulator. A nationwide ISO (Compañía Administradora del Mercado Eléctrico Mayorista S.A. —CAMMESA) operates generation and transmission dispatch and manages economic transactions of the MEM (Spanish acronym for wholesale electricity market). CAMMESA is a corporation under private law, but it is owned in equal parts by the GoA (through the SE) and by four trade associations representing large users, generators, transmission companies, and distribution utilities. CAMMESA´s role and activities are highly regulated by law and by the SE. Even though it was not originally part of its scope of activities, CAMMESA plays the role of offtaker in several PPAs on behalf of large users and distribution utilities.

A Brief History of the Argentine Power Sector

The Argentine economy collapsed in the late 1980s amid a hyperinflation crisis and power blackouts. At that time, the power sector was 100% state-owned. In the early 1990s and in the context of economic and state structural reforms, the power sector was successfully reshaped, becoming a model for deregulation in other countries. Among the main changes introduced, generation, transmission, and distribution activities were opened to private investment, and the aforementioned CAMMESA and ENRE -the regulator in charge of oversight transmission and distribution and rate-setting- were created.

During that period, many transmission and distribution networks were privatised through concessions in different areas of the country granted by the national government and regulated as regional monopolies overseen by ENRE. The generation sector was opened to competition within a system of marginal cost pricing whereby each generation unit was dispatched based on daily bids of variable operation costs. Initially, the high marginal costs of the system served as an effective mechanism to incentivise investment in new power plants. Indeed, installed capacity doubled over the 1990s, mainly with combined-cycle natural gas units. On the demand side, the regulation incorporated the figure of "large users" (there are several categories of commercial and industrial users with mean demands generally

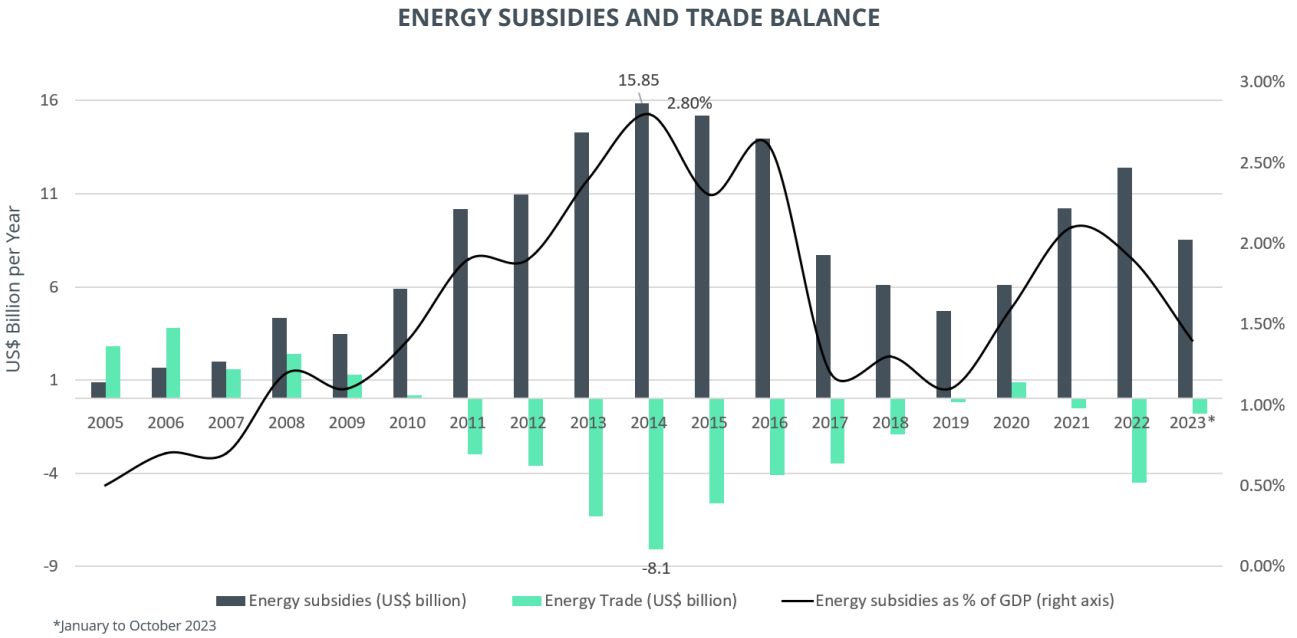
[1] 98% of citizens have access to electricity in Argentina.
[2] Almost 10 GW over July 2016, half of which is new renewable power and the rest is new gas combined-cycle thermal generation.
[3] Over time, successive administrations have changed the government structure and the SE has reported to different ministries. When the first two rounds of RenovAr were designed and implemented, there was a functioning Ministry of Energy and Mining (MINEM). Currently, the SE is part of the Ministry of Economy.
[4] The Ente Nacional Regulador de la Electricidad"ENRE" is the independent regulator. Since 2020, it has been under the intervention of the Executive Branch, with new authorities appointed directly by the President.

above 300 kW), which were allowed to purchase electricity under freely negotiated PPAs. During the 1990s, energy prices and rates were denominated and contracted in US dollars. Under clear and stable rules, good availability of natural gas (the oil and gas upstream sector was also reformed in this period), and proper incentives to compete, infrastructure investment increased considerably and power prices dropped.

Yet the Argentine economy started to slow down in 1996 and, after several years of recession and unsustainable foreign debt burden, it faced economic and political collapse again in December 2001. The financial and economic crisis that resulted from the country's default imposed several budget constraints on the GoA, with negative, deep, and long-lasting impacts on the power sector. The sharp devaluation of the Argentine peso forced the government to convert all US dollar rates for transmission, distribution, and power generation to Argentine pesos. Even though most privatisation contracts and regulated concessions had indexation provisions, most were disabled through enacting emergency laws, hence rates and prices deteriorated in real terms and against the US dollar, discouraging private investment even as demand recovered from 2004 onwards.

The political decision back then was to keep energy prices artificially low to incentivise economic activity. Subsidies on energy prices, transmission and distribution rates (including differentiated allowances by type of consumer and/or by level or consumption or location) became the norm. These policies had a long-lasting effect on the power sector and the whole economy: the share of energy subsidies in total government spending rose from 0.5% in 2004 to 3% in 2014, making them the main component of the country's recurring fiscal deficit.

Starting in 2006, low retail power prices exacerbated demand in a recovering economy, worsening the problem as supply fell behind due to the lack of incentives for long-term investment in generation and elsewhere in the power sector. A similar dynamic played out in the oil and gas upstream sector, resulting in low drilling activity levels which, at first, led to a severe drop in natural gas exports, ending in increased natural gas, diesel, and fuel oil imports, to balance growing domestic demand, mainly for power generation. Subsidies and imports came at a very high cost to the economy. The country's energy trade balance went from a US$3.8 billion surplus in 2006 to a US$8.1 billion deficit in 2014, a pattern that has not been fully reversed even though a positive path started in 2015.



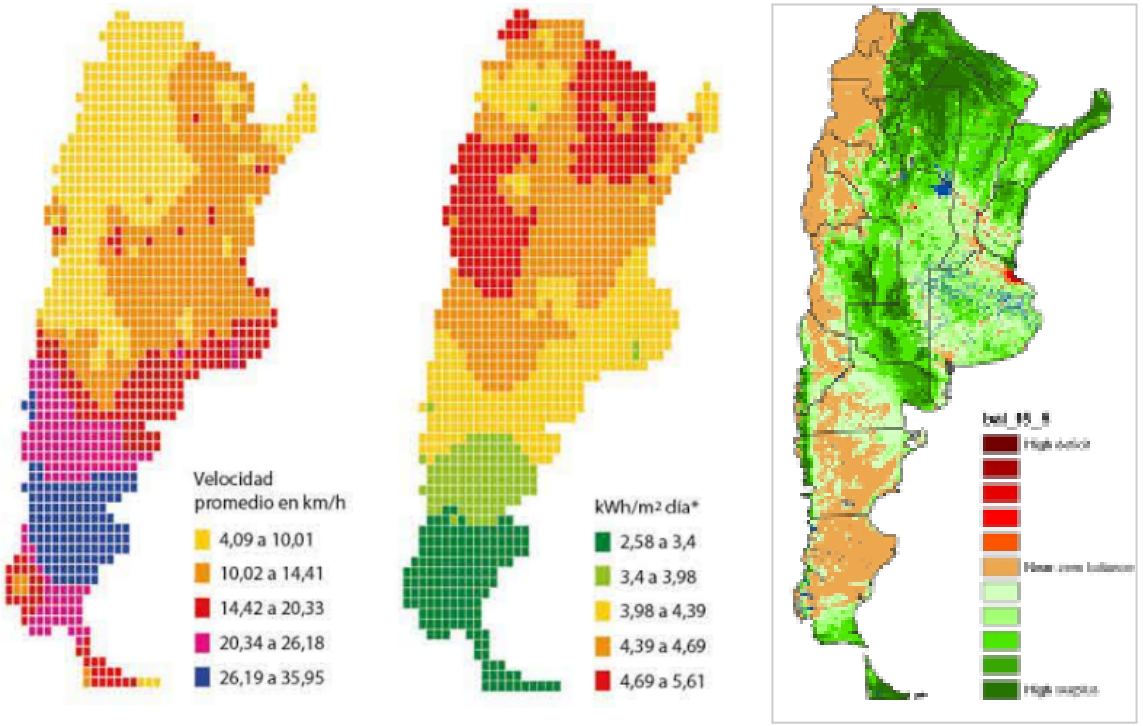
Source: RELP based on Instituto Nacional de Estadísticas y Censos (INDEC) and Oficina de Presupuesto del Congreso (OPC)

In late 2015, as a newly elected government was inaugurated after 12 consecutive years of Nestor and Cristina Kirchners' administrations, the energy scene was characterised by high energy subsidies and insufficient investment. In the financial arena, Argentina had not yet resolved a part of its foreign debt, in default since 2001, and had severe difficulties accessing international capital markets to finance public and private infrastructure projects.

Untapped renewable potential

Argentina is home to the Western Hemisphere's best wind resource and some of the world's finest solar resources. In addition, its agricultural sector fits well with bioenergy applications. In general, the best resources are located in areas with low population density and comparatively low social and environmental impact, far away from the largest cities and industrial centres, which are located in the central part of the country and the capital city of Buenos Aires and its extensive suburbs.

ARGENTINA'S RENEWABLE RESOURCES ASSESSMENT MAPS



Wind Solar Biomass

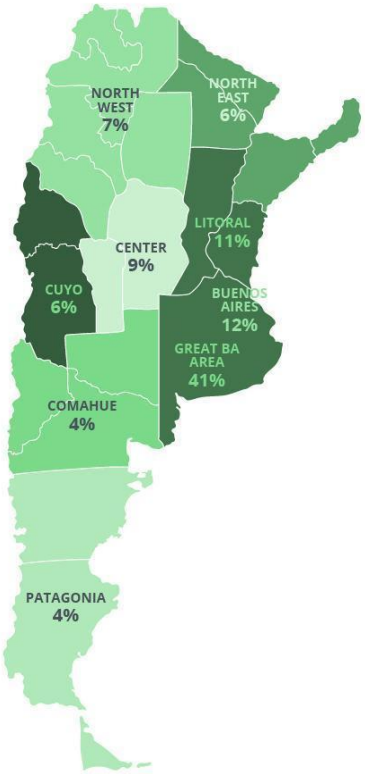
Note: Darker blue/purple and red tones indicate better wind and solar resources, while darker green indicates better biomass resources. Source: IAPG based on MINEM

The distance from the best wind sites to the main demand centres can vary from 500 to 2,500 km, while in the case of solar the distance may be in the 700 to 2,000 km range. Fortunately for the development of renewables, Argentina has an extensive high and extra-high voltage transmission network in place. According to technical studies carried out by CAMMESA in early 2016, some 5,000 MW could be safely accommodated into the then-existing grid to be dispatched, albeit with certain limitations for each relevant transformation node and/or transmission line corridor.

In spite of strong electricity demand, available transmission capacity, and extraordinary resources, very little renewable capacity had come online by late 2015. In fact, out of a 1,000 MW tender carried out in 2011, not more than 270 MW had been built by that time due to the severe financing access constraints, even though PPA prices were well above the

average at the time[5]. It is worth mentioning that the rest of the country´s renewable capacity consisted at that point of small mini-hydropower plants ranging from 10 to 100 years of age.

ARGENTINA'S ELECTRICITY CONSUMPTION BY REGION



Source: RELP based on CAMMESA

Winds of Change

The renewable energy outlook in Argentina started to change for the better in late 2015 when Law 27,191 for the Promotion of Renewable Electricity Sources (the RE Law) was passed. The RE Law had been in the making since 2013 and had been subject to great scrutiny, both from the public and private sectors. Senator Marcelo Guinle, a member of the governing party and representative of the province of Chubut -one of the windiest in the country- sponsored the law. At that time, Sebastián Kind (RELP's founder and chairman) was an advisor to the Senator and was instrumental in the legislative process together with other team members who are now part of RELP.

[5] Average awarded PPA prices were 127 US$/MWh for wind, 572 US$/MWh for solar, 85 US$/MWh for biomass, and 130 US$/MWh for landfill biogas. The worldwide average for announced wind and solar PV auction prices was about 165 US$/MWh for solar and 90 US$/MWh for wind in 2012 (IEA, 2017).

The RE Law, which was approved with almost unanimous support in the Senate and the Lower Chamber of Congress, set a mandatory target to supply 20% of the country's electricity demand by 2025 with unconventional renewables including wind, solar, bioenergy, small hydro, and other technologies. It also created a dedicated public trust fund (the FODER, for its acronym in Spanish) to provide financing and/or guarantees to renewable generation projects as well as a defined package of valuable fiscal benefits.

The shift in the renewable sector continued to gain momentum after Mauricio Macri was elected President in November 2015 and took office in early December. The new administration created the Ministry of Energy and Mining (MINEM, for its acronym in Spanish) which, for the first time, included an undersecretariat dedicated to renewable energy. Sebastián Kind was appointed Undersecretary for Renewable Energy with the mandate to implement the RE Law. Mauro Soares (RELP's co-founder and COO) then joined him as National Director for Renewables, together with Fernando Lagarde and Ramiro Gomez Barinaga (also part of the RELP team) as senior legal advisors.

According to initial estimates in early 2016, to fulfil the renewable energy mandate, Argentina needed to install more than 10 GW of renewable generation capacity which would require mobilising about US$15 billion of greenfield investment by 2025. This ambitious goal required new policy instruments and new ways to attract long-term capital in a sustainable and cost-effective manner. An overhaul of the existing regime was imperative. A new policy approach that set clear and transparent rules and strong guarantee mechanisms was necessary to attract long-term investment. The RenovAr Programme was designed on that premise.

The team at the newly formed Undersecretariat for Renewable Energy started to work right away on the implementation decree for the RE Law (Decree 531/2016), which was published in record time in March 2016. In parallel, work began on other regulations relating to fiscal benefits, project eligibility, guarantees[6], and procurement processes, which were instrumental to RenovAr. Moreover, there were some other key policies also important to set the stage for RenovAr. One example was the decree declaring a state of emergency for the oil and gas and power sectors, which contributed greatly to fast-tracking tenders for new generation capacity. Several other macroeconomic and fiscal measures (including the lifting of international capital controls) were taken during the first quarter of 2016, which helped the country return to international capital markets and recover investor confidence and attractiveness.

[6]The guarantees designed and implemented in the RenovAr Programme were foreseen and enabled by Decree 882/2016, also drafted by the team of the Undersecretariat for Renewable Energy.

3. Designing the RenovAr Auction Programme

The first auction round of the RenovAr Programme was officially launched on May 17, 2016, with the publication of a first draft of the Request for Proposal (RfP) documents for public consultation. The entire programme had been designed from scratch starting in mid-March.

RenovAr had many different and complementary goals including (i) building new renewable generation capacity at competitive costs, (ii) providing balanced opportunities for project location in all regions of the country, (iii) incorporating a diversified base of technologies, (iv) minimising curtailment and grid integration issues, and (v) incentivising the use of locally manufactured materials and equipment. To achieve its goals, it was key to mitigate political and economic risks affecting long-term investment in renewable energy projects in Argentina.

RenovAr was designed around three main elements working together to provide the complete framework necessary to facilitate the full process, from project selection to financing to construction:

- (1) A clear, transparent, and effective set of tender rules,
- (2) A specially crafted bankable Power Purchase Agreement, or PPA, and
- (3) A strong and credible guarantee scheme[7] aimed at reducing political and economic risks.

The tender design process contemplated clear rules for bidders and project selection. These included certain financial capability requirements for bidders and bid bonds as financial guarantees with their offers, to be replaced by performance bonds at the execution of the PPAs in case of being awarded. On the project side, the tender rules included certain technical requirements and information disclosure to be included with the offers, as well as social and environmental permitting prerequisites. Moreover, different minimum and maximum capacity thresholds were included in the auction rounds, ranging from 0.5 MW to up to 100 MW depending on the technology of the project and round (e.g. in Round 3 capacity threshold ranged from 0.5 to 10 MW). Clear criteria for the assessment of offers and award of the winning bids were also detailed.

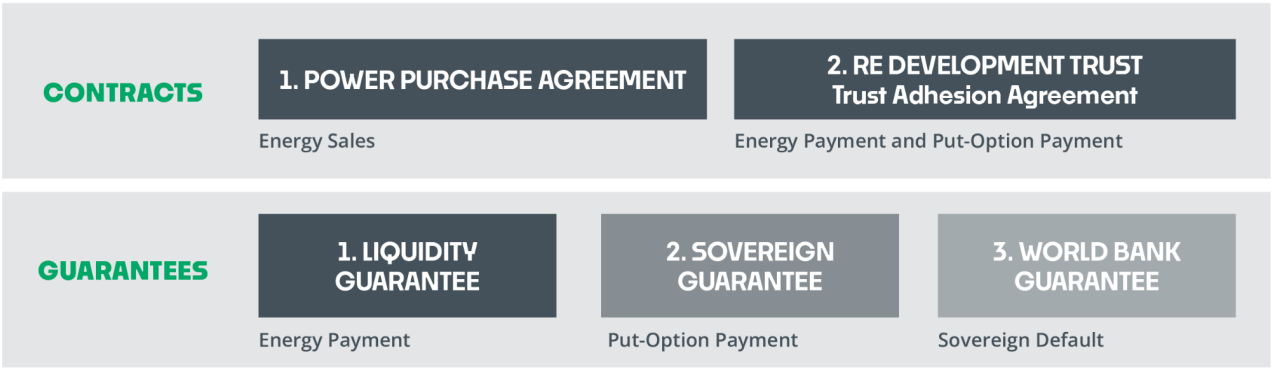
To accommodate typical project finance structures, each awarded project under RenovAr needed to be structured under a special purpose entity (SPE) to enter into the 20-year PPA term. This feature was also helpful for the government to audit fiscal benefits applicable to the project and for the FODER to audit and enforce provisions related to the programme guarantees.

The following diagram depicts the fundamental elements of the RenovAr contractual framework, which consists of two contracts working in tandem to define the offtaker's, FODER's, and the SPE's rights and obligations. This is complemented by a three-level guarantee provided through and by the FODER, the

[7] This guarantee scheme was implemented via FODER (Spanish acronym for Fondo para el Desarrollo de las Energías Renovables), a public trust fund created by the RE Law. A special trust agreement was executed by the GoA (acting through the Ministry of Energy and Mining) as trustor and Banco de Inversión y Comercio Exterior (BICE, a government-owned promotional bank) as trustee. The same team at the Undersecretariat for Renewable Energy crafted all contracts and implementation documents in collaboration with BICE and the Ministry of Finance.

GoA and the World Bank to enhance political and economic risk profiles, facilitating efficient long-term financing in the process.

RENOVAR CONTRACTUAL FRAMEWORK - TWO CONTRACTS AND A THREE-LEVEL-GUARANTEE



Under the PPA, CAMMESA acts as an offtake aggregator on behalf of distribution utilities and wholesale market large users (i.e. the whole of the grid-connected demand). As a result, the price for the electricity generated and delivered by a project under RenovAr is paid monthly by CAMMESA, and the associated cost is passed on to final users on a pro-rata basis. Also, under the PPA, the SPE assumes the obligation to finance and construct the project at its own risk and to reach COD within a specified number of days from the date of contract execution, as provided for by each bidder in the tender offer, within a maximum term set forth in the RfP for all the projects.

The electricity generated by all renewable power plants has payment and dispatch priority and is paid at the awarded price, which is also annually adjusted to a preset factor. CAMMESA purchases and pays for the whole of the energy produced by the awarded power plant up to the maximum corresponding to the awarded capacity in any given hour. If a surplus generation is produced, it is also received by CAMMESA but at the regulated spot price for renewables[8]. Regarding power generation, the bidders -at the moment of submitting their bids- were required to provide a forecast of the minimum amount of electricity that their power plants were expected to generate on an annual basis, known as the Guaranteed Energy. For those awarded, any deficiencies in the actual generation in comparison to the Guaranteed Energy are subject to make-up periods and/or penalties for non-compliance with said levels, as the case may be, during the whole term of the PPA.

Concerning the typical provisions necessary for non-recourse project finance, RenovAr's non-negotiable[9] PPA model, published along with the RfP, included best international standards from its inception such as the application of private law, US dollar-denominated price, secured creditors rights, and a dispute resolution mechanism based on international arbitration.

[8]Heavily regulated and currently denominated in local currency.
[9] The PPA was not subject to any kind of post-award negotiations.

A fundamental part of RenovAr's key success was its embedded three-level guarantee scheme that enhanced the bankability of the contracts and protected the SPEs against the following risks:

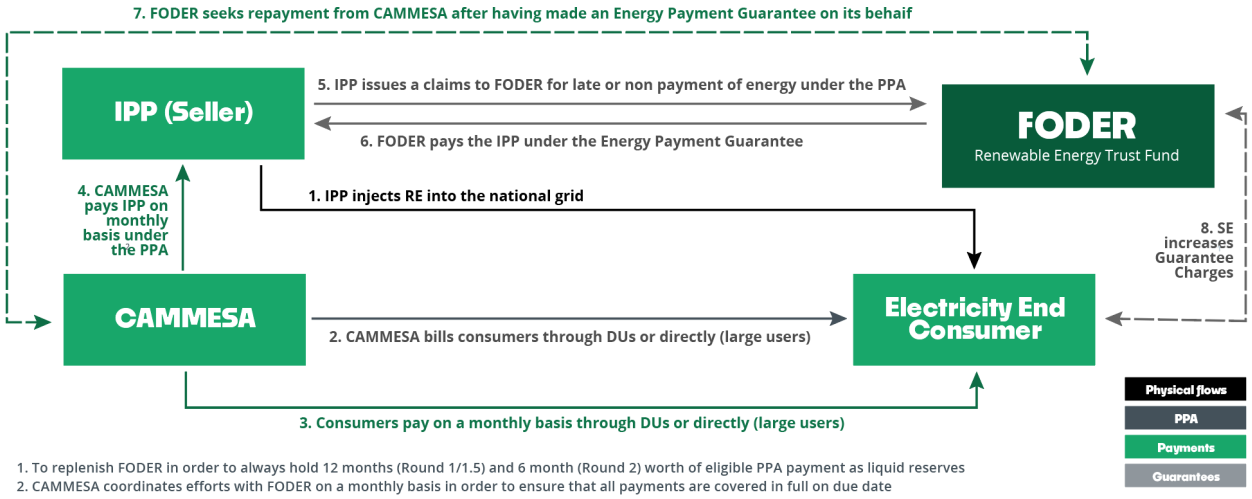
- (1) Non-payment and/or delayed payment for the produced and delivered electricity;
- (2) Early termination of the contracts through compensation implemented via a put option for the sale of the project's assets to FODER under certain circumstances; and
- (3) Non-payment of the put option under the contracts up to the amounts guaranteed by the World Bank, when applicable.

To be provided with these guarantees, the project companies entered into the so-called FODER Trust Adhesion Agreement, a complementary document to the PPA, under which each SPE becomes a beneficiary of the FODER trust fund, the cornerstone of RenovAr. As previously mentioned, the FODER is a public trust fund, created by the RE Law and implemented with the main objective of providing private investors with a set of guarantees necessary to improve the bankability of the long-term generation projects awarded under RenovAr auctions. It is worth mentioning that, prior to each of the RenovAr Rounds, the FODER had the necessary funds directly allocated by the National Treasury. Nonetheless, per the RE Law and the trust contract in place, the FODER may also be funded with (i) the proceeds from specific taxes and/or charges to end users, (ii) the rent and proceeds of its financial investments and/or the issuing of securities, and (iii) annual federal budget appropriations (including a mandatory equivalent to 50% of the savings generated by the reduced use of fossil fuels resulting from RenovAr operating projects - see Section 6).

The first level of guarantee (the Energy Payment Guarantee) is a revolving facility created to cover any delays and/or non-payment of the energy supplied under the PPA for a specified period of time, which was adjusted along the RenovAr auction rounds. It was designed to secure twelve months in Rounds 1 and 1.5, six months for Round 2 projects and three months for Round 3 projects. As a result, if CAMMESA is delayed in making the monthly payment to any IPP for the delivered electricity (totally or partially), the FODER automatically kicks in and covers the delayed payment, so the project receives the full invoiced amounts due on time, guaranteeing a steady cash flow. The revolving nature of this guarantee account implies that CAMMESA must repay FODER immediately when funds become available to replenish the energy payment fund[10]. The BICE, a public financial institution acting as the FODER's trustee, is obliged to monitor the effective level of coverage of the guarantees for each round and to request the trustor (currently the Ministry of Economy) to provide any amount required to meet the required level of funding. To provide better security for the projects, each RenovAr round was guaranteed via a separate and independent sub-account within the FODER. The diagram below shows the typical workflow applicable to this guarantee.

[10]According to the trust fund rules, at no time shall the FODER hold less than 65% of the committed guarantee amounts.

TYPICAL SCHEMATIC OF RENOVAR'S ENERGY PAYMENT GUARANTEE



The second level of guarantee (the Early Termination Payment Guarantee) covers the project's investors (i.e. its equity shareholders and/or financial lenders) in the event of the occurrence of certain political and macroeconomic country-level events, which are predefined in the PPA, as well as of the extended non-payment of the delivered energy. Given the nature of the PPA and CAMMESA's role and legal capacities, the national mandates to incorporate renewables, and the lack of a functioning spot market, the early termination provision was structured as a put option of the project's assets in favour of the SPE. Therefore, the project may continue to supply clean electricity to the national grid under the same PPA, but just with a different owner.

The put option may be triggered by the SPE upon the occurrence of certain trigger events, namely:

- (i) Non-payment by CAMMESA for four consecutive months or any six months within a rolling 12-month period;[11]
- (ii) Non-compliance by CAMMESA with any ruling by an arbitration tribunal resulting from a dispute with the project;
- (iii) Unilateral elimination of the FODER Guarantee structure by the GoA;
- (iv) Non- convertibility of Argentine pesos to US dollars to pay lenders or equity;
- (v) Non-transferability of funds out of the country.

The price of the put option is set to the nominal value of the undepreciated[12] portion of the original capital investment in the project. Given that the FODER does not have the funding nor holds the assets needed to enable the eventual payment of the put option amounts, this obligation is guaranteed by the GoA via the issue of treasury bills, which remain in the FODER's custody, earmarked for each awarded project. These treasury bills are issued before the PPAs are executed and are separated into 20 bills,

[11] Total or partial payments by FODER on behalf of CAMMESA do not count for early termination.
[12] A straight-line depreciation method over the 20 years of the PPA is used.

each representing 5% of the invested capital[13]. Each bill expires sequentially at every anniversary of the PPA´s COD, remaining active those needed to cover the FODER's contingent obligation to pay for the put option price. If the project decides to exercise its put option, the Treasury must pay the outstanding treasury bills, in US dollars, in a local or foreign bank account, as designated by the beneficiary. In this case, the FODER purchases all of the assets of the project, which continues to operate, keeping the PPA in force. It is worth noting that the SPE controlling the projects is required to keep all the project's assets in good condition up to the time of transferring them. Moreover, only the project's assets are transferred to the FODER while all liabilities remain within the SPE originally owning the project.

The third level of guarantee (the Sovereign Default Guarantee) was offered as part of RenovAr in Rounds 1, 1.5 and 2 as an optional feature. The so-called World Bank Guarantee was specially crafted for the programme to partially cover the GoA's obligation (via the FODER) to purchase and pay for the project´s assets upon the exercise of the put option. For this guarantee to be triggered, the sequential backstop of the put option obligations by the FODER, and the Treasury (payment of the treasury bills) would have needed to fail first. In these extreme circumstances, the World Bank would be called as the last-resource payer under the Guarantee Agreement executed with the FODER and the Indemnity Agreement executed with the GoA.

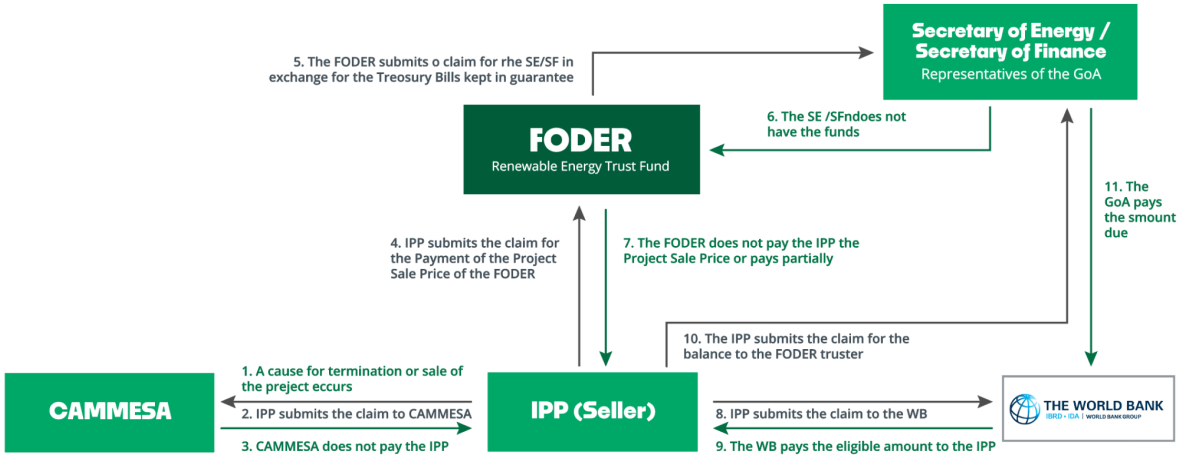
As mentioned, the World Bank Guarantee was offered as an optional feature to investors in Rounds 1, 1.5, and 2 of RenovAr. Given the limited envelope amount available to the country, it was allocated to eligible projects based on their bid price and other competitive variables as defined in the tender documents. Each project could request coverage of up to 500,000 US$/MW. In Rounds 1 and 1.5, the combined envelope was US$500 million, being lowered to US$250 million in Round 2. It is worth noting that despite being an optional guarantee, it has proven important to improve the attractiveness of the programme. There was a consensus among bidders that even those who did not request the guarantee felt safer because the World Bank had participated in overseeing the tender documents as well as the design of the FODER contracts.

A call option in favour of the GoA was also introduced as part of the design, in case of the occurrence of a SPE's termination event which is not timely cured by the company or its lenders. The exercise of the call option, designed to incentivise compliance with the PPA, leads to the purchase and transfer of the project's assets to a designated public entity at a pre-set price[14] payable by the FODER.

The diagram below shows the typical workflow of the termination provision and put option payment as well as the sovereign and World Bank guarantees.

[13] The amount covered by the treasury bills is equivalent to the lesser between (i) a preset reference value included in the RfP per MW, depending on each eligible technology and multiplied by the contracted capacity and (ii) the actual value of the invested capital in the projects, plus the amount equivalent to any unpaid invoices to the project for the delivered energy.
[14]The amount payable is equal to 75% of the value of the investment made by the project company as of COD, and depreciated at 5% annually plus any amounts due to unpaid invoices

TYPICAL SCHEMATIC OF RENOVAR'S EARLY TERMINATION PAYMENT GUARANTEE



4. The Creation of a Corporate PPA Market for Renewables

As part of the efforts to deploy renewable at a faster pace and jointly with auctions, Law 27,191 included renewable energy consumption targets for all users, which are individually mandatory for large electricity end-users[15] up to 20% by 2025. These targets can be achieved in three different ways: (i) indirectly through renewable electricity purchases made by CAMMESA as instructed by the government in the RenovAr auction rounds; or directly either by (ii) renewable self-generation; or (iii) purchases from renewable generators through corporate PPAs.

To make these options effectively available, the Team alongside other relevant stakeholders -including CAMMESA- set up the corporate PPA market "MATER" which was made effective in August 2017 through the introduction of Resolution 281/2017 by the Ministry of Energy and Mining. Under this and other complementary regulations, large users are allowed to negotiate PPAs with eligible renewable generation projects freely. Moreover, IPPs selling renewable electricity under this framework can access the fiscal benefits established in the Law for renewable capacity additions.

One of the most innovative aspects of this regulation was the introduction of a competitive dispatch priority assignment mechanism among renewable energy generation plants. Given that all renewable generators have dispatch priority and wheeling over non-renewable generation plants under the wholesale market rules, it was necessary to set a mechanism to manage possible congestion resulting from renewable supply in certain nodes and lines along the national grid. The projects aimed at selling the energy generated to large users under the MATER can secure dispatch priority over other renewable projects through a public and competitive procedure.

[15] Users with more than 300 kW average annual consumption

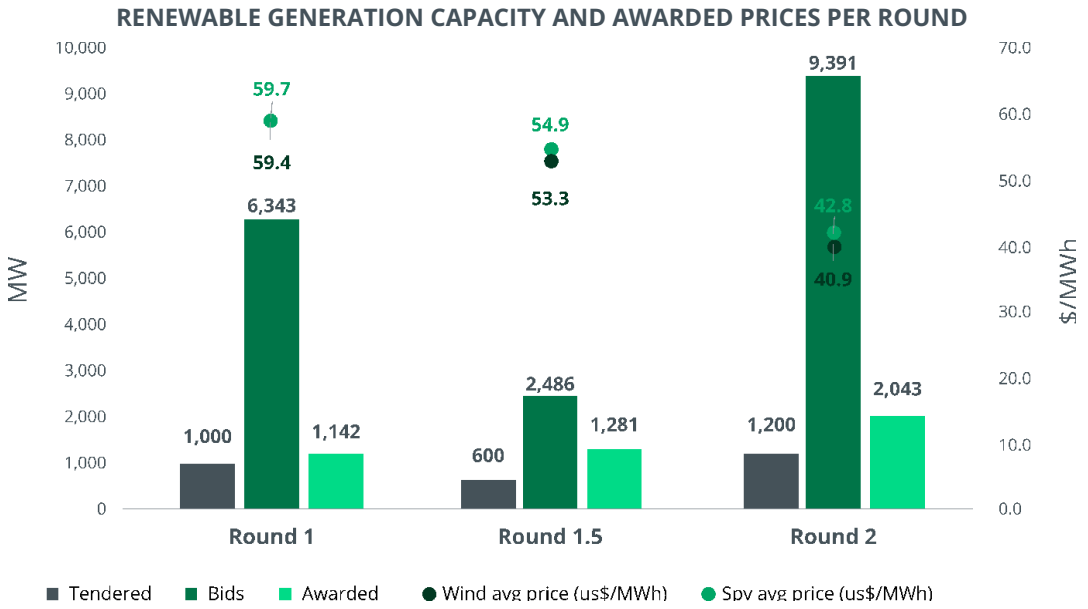
5. Successful Implementation

Since the launching of the RenovAr Programme and the implementation of the renewable corporate PPA market, a total of 270 wind, solar PV, bioenergy and small hydro projects with a combined capacity of 7.9 GW[16] were awarded within the auction rounds or enabled by the creation of the MATER corporate PPA market, changing completely the landscape of renewables in Argentina.

Specifically regarding the RenovAr Programme, both Round 1 and Round 2 were largely oversubscribed in terms of their target capacity by a factor of six and eight respectively, reflecting the creditworthiness of the newly introduced regulatory framework and the FODER's guarantee system. More importantly, this was also evidenced in the diversity of financing sources made available for RenovAr projects, in particular taking into account that Argentina was initiating a process or normalisation of its foreign debt and lifting of capital control after more than a decade, which made even more relevant the necessity of providing effective de-risking mechanisms.

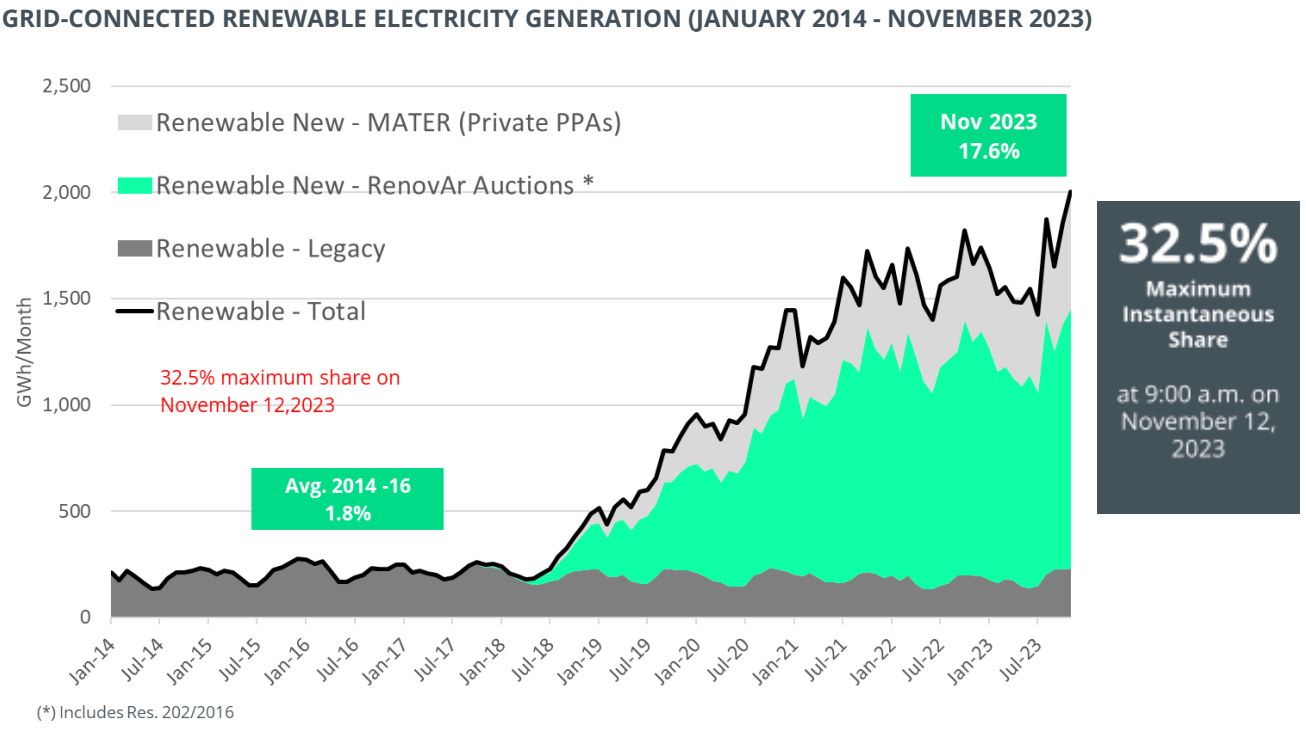
As of December 2023, 152 projects with a combined capacity of 4.5 GW are currently in commercial operation and 38 projects involving 2.0 GW are under construction, including 43 projects already commissioned and 25 under construction for the MATER. Both RenovAr and MATER comprise 6.6 GW of new capacity and US$8.3 billion in investment. These projects have so far created a cumulative of over 17,123 new direct and indirect jobs along the renewables supply chain, including construction works, operation & maintenance, local assembly and manufacturing plants, while projects currently under construction will demand about an extra 503 employees for permanent O&M tasks once they enter into commercial operation.

[16] Includes 10 projects with PPAs executed previous to the launching of the RenovAr Programme which had failed to achieve COD and were invited to subscribe new contracts under prices and terms adjusted to market conditions prevailing at the time of RenovAr Round 1, allowing a significant reduction of price and the revitalisation of 500 MW worth of projects.



Source: RELP based on data from MINEM.

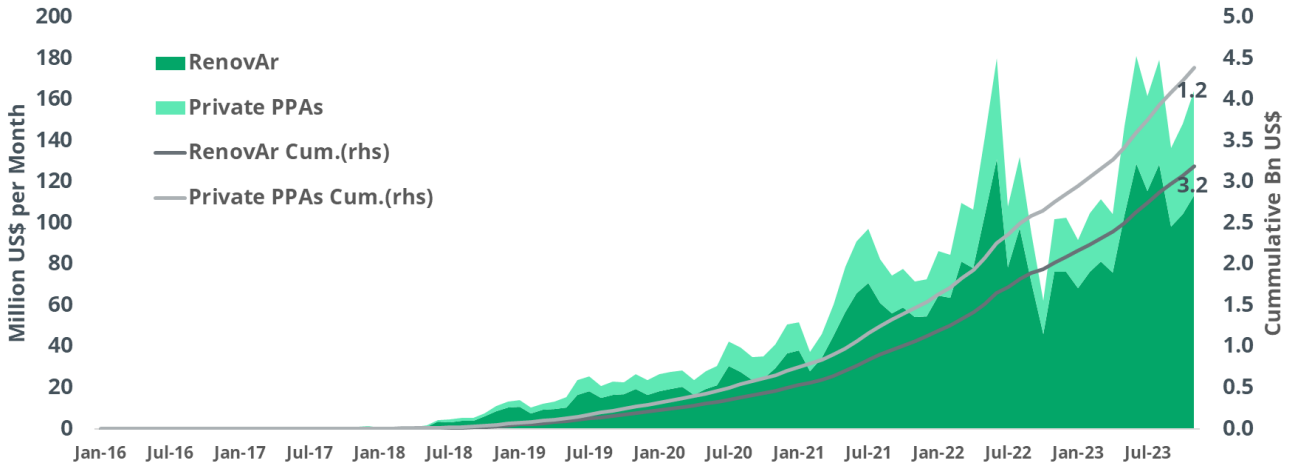
RenovAr's successful implementation by 2025 will contribute to meeting Argentina's updated emission reduction commitment target to the Paris Agreement and it will also help achieve the country's UN Sustainable Development Goals. Both the RenovAr Programme and the MATER will allow Argentina to cover 16% of the country's power demand by 2025 and avoid 212 million tons of CO2eq in 20 years.



Source: RELP based on data from CAMMESA.

Moreover, considering the economic situation Argentina has faced in the last years -and especially the drainage of foreign reserves to afford energy imports- both the RenovAr and the MATER corporate market have allowed the country to save over US$4.4 billion worth of variable system and fossil fuels costs[17] since 2017, which helps to reduce the burden of the power market on the treasury and country's imports bill. It is worth noting that RenovAr's gross fuel savings were up to US$ 3.7 billion while Argentina has imported over US$ 50,2 billion in fossil fuels and derivatives since 2016. This effective new policy approach has turned renewables into a cost-effective alternative in the Argentine power market, which is clearly evidenced in the continued positive dynamics of the MATER corporate market.

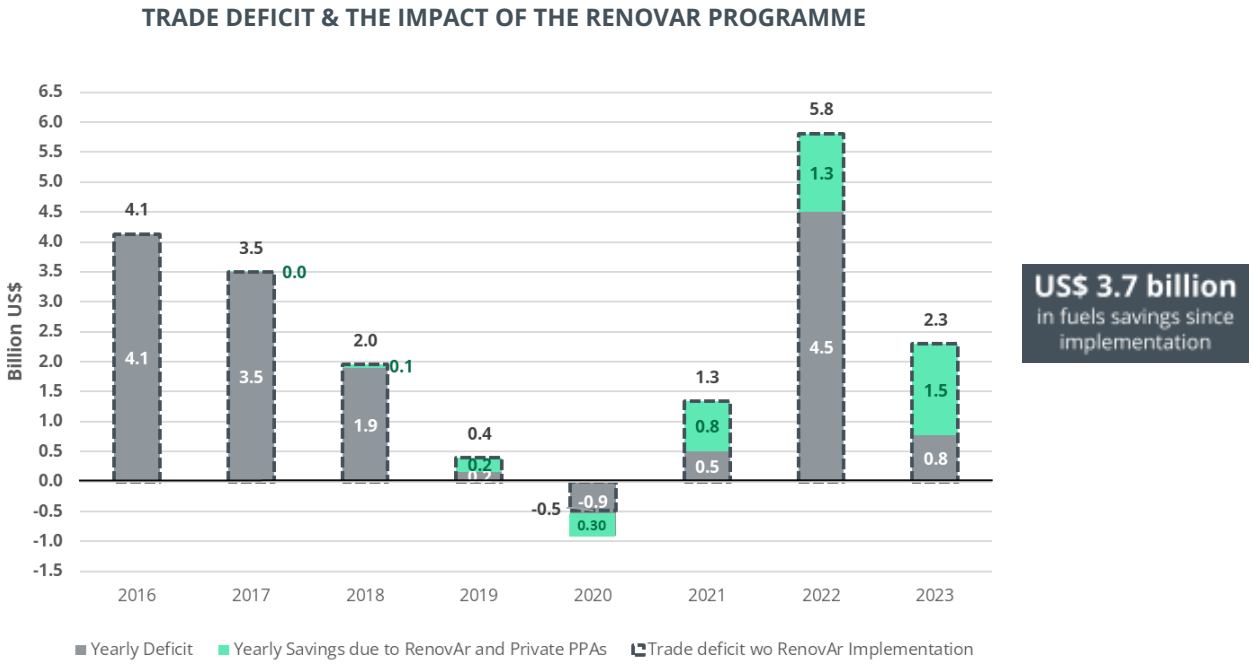
FOSSIL FUELS & VARIABLE COSTS SAVINGS DUE TO RENOVAR AND MATER



Note: Savings estimated using average Fossil Thermal heat rates and average fossil fuel reference prices published by CAMMESA

Source: RELP based on data from CAMMESA.

[17] Variable system cost savings result from thermal power plants not being dispatched.



Source: RELP based on data from INDEC and CAMMESA.

To fulfil RenovAr's goal related to the integration of locally manufactured materials and equipment, Sebastian Kind directed Florencia Agatiello (currently also part of the RELP team) to work together with the Ministry of Production and local industry stakeholders to design a non-mandatory specific regulatory framework that -leveraging on the fiscal benefits established in the RE Law- could provide incentives to local manufacturing yet not affecting the expected price outcomes.

As a result, nine manufacturing plants were set up in the country between 2018 and 2019, including two plants for the assembly of wind turbines (Vestas and Nordex Acciona), five for wind towers, and two for solar trackers. Notably, the development of the local value chain was made without affecting the decreasing trend of offered prices between tenders. Indeed, while the declared average local content of projects increased from 14% to 30% between Rounds 1 and 2 of the RenovAr Programme, awarded prices decreased by 30%.

RenovAr's impact and success have been acknowledged by the international business and academic community:

- In 2018, Argentina was the third most important global market for Vestas, the largest wind turbine manufacturer in the world.
- In March 2019, Sebastián Kind was awarded the 2019 LAC-CORE Clean Energy Award by the Latin American & Caribbean Council for his contribution to the development of the Argentine renewable energy market.

- In April of 2019 Argentina's position in the EY Renewable Energy Country Attractiveness Index (RECAI)[18], published regularly by Ernst & Young, shot up to number nine on a global scale and number one for Latin America, just two years after entering the ranking for the first time.
- In May 2019, Professor Henry Lee and Adjani Datla from Harvard Kennedy School of Government published "Integrating Renewables in Argentina", a complete case study of how Argentina created a successful renewable energy market with the RenovAr Programme. This first case study was then followed by "Untapped Potential: Renewable Energy in Argentina" in August 2019 and its sequel in October 2020[19].

[18] EY's RECAI reports are available for consultation and download at this link.

[19] The case studies can be purchased from Harvard University at Integrating Renewable Energy in Argentina (Product# KS1288-PDF-ENG), Untapped Potential: Renewable Energy in Argentina (Product# KS1293-PDF-ENG) and Untapped Potential: Renewable Energy in Argentina (Sequel) (Product# KS1335-PDF-ENG).

6. RenovAr Under Stress

Since late 2018, Argentina has been facing a crippling economic situation with high inflation and weak economic growth. By mid-2019, following the outcome of the presidential primary elections, Argentina´s main financial and economic indicators deteriorated at a faster pace. Amid this context, the launch of RenovAr's Round 4, which was expected to be celebrated by the end of 2019, was delayed due to growing market instability and new capital controls following the election as president of the candidate of the opposition party.

Inflation rates have been continuously growing since then with rates over 50% -except for a halt during 2020- hiking to 94.8% in 2022 and reaching an annualised inflation rate of 160.9% by November 2023. The GDP, on the other hand, dropped about 2% in 2019 and 9.9% in 2020 in the course of the Covid-19 pandemic and, despite showing positive figures since 2021, the rising inflationary pressures and strong local currency depreciation seriously affect the economic prospects. This situation is exacerbated by severe import restrictions and capital controls that deteriorate doing business and peril the investors' confidence.

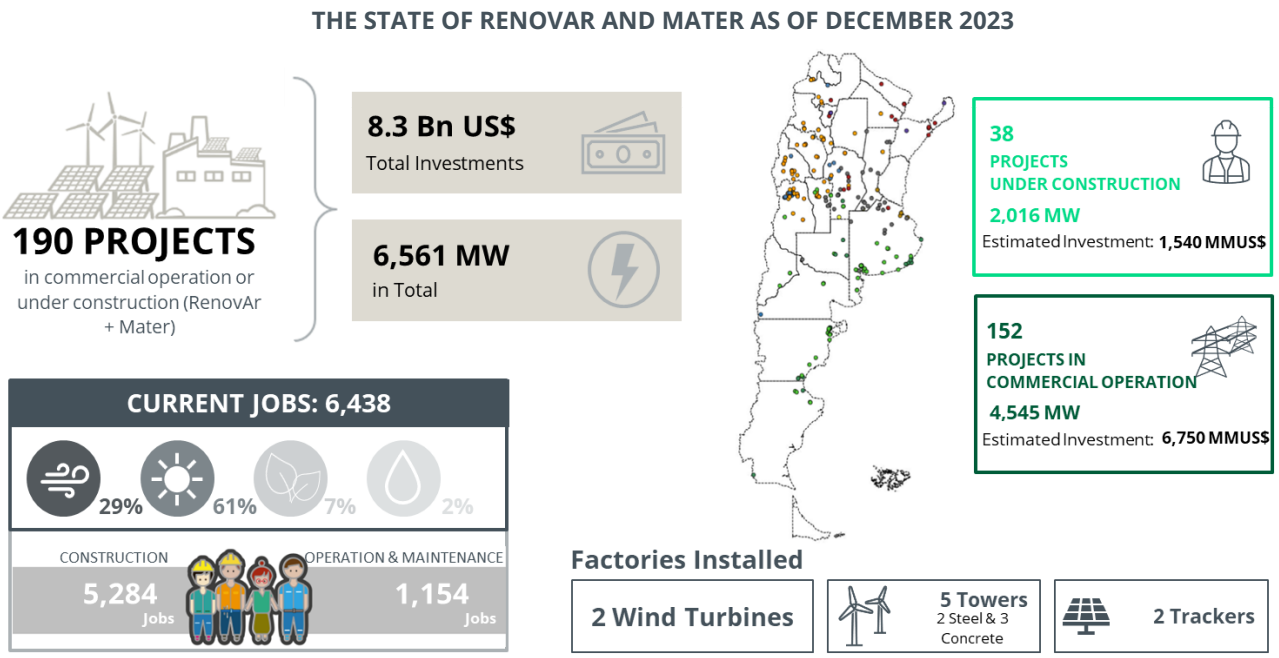
The new economic crisis is also reflected in the power sector. A significant slowdown of industrial and commercial activity has negatively affected energy demand, which dropped more than 3% in 2019 and following the Covid-19 crisis only recovered its pre-crisis level in 2021 reaching 138 TWh. Following the recovery trend, in 2022 the energy demand expanded by 1% and about 3% in 2023. During this period of crisis, a mounting debt and subsidies spiral was generated again in the power sector. On the one hand, generators faced delayed payments from CAMMESA, the only authorised buyer of energy for the utilities, resulting from vast unpaid bills by the distribution companies to CAMMESA, that peaked at over US$ 3 billion by the end of 2022. On the other hand, the GoA resumed its subsidy policy to keep tariffs artificially low for households and small industrial and commercial users, which peaked at about 60% of the effective generation costs in 2022, deeply impacting the growing Treasury deficit.

By the end of 2022, an agreement was reached between CAMMESA and the utilities for reducing the existing debt and normalising the energy delayed energy payments at the expense of the Treasury, which provided extensive financial facilities that allowed for such renegotiation. Furthermore, and amid the said accelerating inflation, the GoA initiated an energy subsidies reduction policy, after several politically failed attempts to introduce a change of course in the matter, through a tariff segmentation approach with different levels of subsidy cuts according to the type of users' category and/or the household income. Nevertheless, in the second half of 2023, the speed of the subsidy reduction policy was slowed in the context of a new presidential campaign.

During this period of extensive payment delays faced by the generators, only the renewable energy projects awarded under the RenovAr Programme have been able to collect their revenues on time since they reached commercial operation status. This was a result of both the payment priority granted to renewable energy generators as well as of the effectiveness of the FODER guarantee that covered the payment delays that otherwise the generator would have experienced. This tailored scheme was created

exactly for this type of difficult situation, a sadly common occurrence in emerging countries' power systems. The payment guarantee provided by the FODER has served as the intended buffer since 2018, when the utilities delay in payments to CAMMESA began to be so severe as to reach renewable PPAs.

Even considering the economic crisis and financial difficulties experienced since mid-2018, there were some renewable contracts awarded during 2019 under Round 3 that had not been signed previous to the inauguration of a new administration in late 2019 and were executed in early 2020, before the pandemic took hold. At the same time, the construction of projects continued on track despite certain disruptions generated by the introduction of a nationwide lockdown in March 2020. As a result, it can be said that the RenovAr scheme, in tandem with the enabling of the corporate PPA market, has made renewable energy deployment possible at scale, and the legal framework allowing for it should be considered an enduring state policy.



Source: RELP based on data from the Secretariat of Energy and CAMMESA.

RENEWABLES FINANCING IN ARGENTINA

D: Debt E: Equity
Investment includes built and under construction projects. Country breakdown figures refer to RenovAr auctions data.

Source: RELP based on data from the Secretariat of Energy

7. Conclusion

The introduction and implementation of the Renewable Energy Law 27,191 in Argentina is a successful example of a coordinated policy approach that allowed the creation of a dynamic renewable energy market in a developing country, even under challenging macroeconomic and political context.

The RenovAr Programme has proved, eight years after its inception, to be an effective de-risking mechanism with a long-lasting impact. It successfully spread costs among players and encouraged programmatic, competitive tendering, leading to faster energy delivery at lower prices and creating a new renewable energy market almost from scratch.

RenovAr's guarantee scheme design —and more importantly, its successful implementation— provides insights and key takeaways that are directly applicable to other countries interested in scaling up investments in renewable energy. In particular:

- Strong governmental commitment to setting and implementing credible regulatory frameworks, transparent contract award procedures, and de-risking mechanisms is a necessary condition in order to scale long-term investment in the renewable energy sector across the developing world.
- There is no "one-size-fits-all" approach to renewable energy deployment. Each country needs a customised solution taking into account its renewable energy resources and grid availability, its regulatory framework and goals, and the availability of financial resources, among other factors. Yet there is much to be learned and reutilised from the RenovAr case and many other international experiences.
- Availability of renewable energy resources is a necessary but insufficient condition to attract investment and develop the sector. The key is to mitigate economic and political risks affecting long-term investment through strong regulatory and contractual frameworks as well as credible guarantee mechanisms.
- A visibility pipeline is preferable to having a few large tenders. Planning growth of the renewable energy market by incentivising multi-year investments in project development and local capacity building allows the development of a strong pipeline of renewable projects. From the political perspective, setting a multi-year tender schedule reflects the true commitment of a country to achieving its renewable energy targets, whichever they may be (e.g., capacity additions, renewables power share) and increases investment attractiveness. In the economic arena, this strategy contributes to obtaining lower prices between tenders thanks to greater competition among stakeholders, learning curve effects, and a reduction in technology costs over time. In relation to technical aspects, the gradual integration of renewables preserves the reliability of power systems, without affecting energy demand coverage or the transmission grid. In this regard, Round 4 - planned to be held in late 2019- included a mechanism for transmission expansion works and had to be delayed in the aftermath of delicate macroeconomic conditions and

government transition. The new administration that took office in late 2019 halted new auction announcements until 2022.

- Massive deployment of renewable energy requires grid infrastructure availability given the location-specific properties of wind and solar resources.
- Promotion of local manufacturing of renewable energy equipment has to be consistent with the central objective of increasing access to reliable and clean energy at the least cost for end users. Otherwise awarded prices would be higher than desirable while the size of the market may be not enough to develop a local industrial supply chain.
- Multilateral DFIs play a critical role in supporting developing countries in the design and implementation of programmes aiming to expand infrastructure.
- The mere existence and effective implementation of an international investment-grade guarantee, such as the World Bank guarantee included in RenovAr, is instrumental in making the market more attractive by increasing system-wide credibility. This, in turn, enhances competition and adds value to the host country by lowering expected costs of equity and debt financing net of the cost of the (optional) guarantee.

In addition, the creation of the MATER -as a complementary tool towards the compliance of Law 27,191 mandate- reinforced the success of RenovAr auction rounds through the enabling of a dynamic private market which has gained volume and attracted the interest of several IPPs which were already operating in the market, owning primarily conventional power assets, as well as new players from other sectors, such as Oil & Gas, to diversify towards renewable investment. This market has proven solid even in the current context of a more challenging industry environment and deterioration of the Argentine economy, with the robust design of the introduced policy approach to support it.

The successful experience of the Argentinian market and, in particular, the crafting of the RenovAr Programme, has motivated the team leading its design and implementation to replicate Argentina's experience on a global scale by creating RELP[20] (formerly GREENMAP), an impact-focused non-profit organisation dedicated to helping emerging countries untap their renewable energy potential by implementing new and improved tools to de-risk projects and markets, foster transparency and competition, and reduce long-term costs of clean power for their residents.

[20] RELP is a non-profit association (association sans but lucratif) registered in Belgium under the name of Global Renewable Energy Mass Adoption Program ASBL with company number 743941993.

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Also, you can write to us at contact@relp.ngo or visit our website here.