



# RenovAr Programme Case Study

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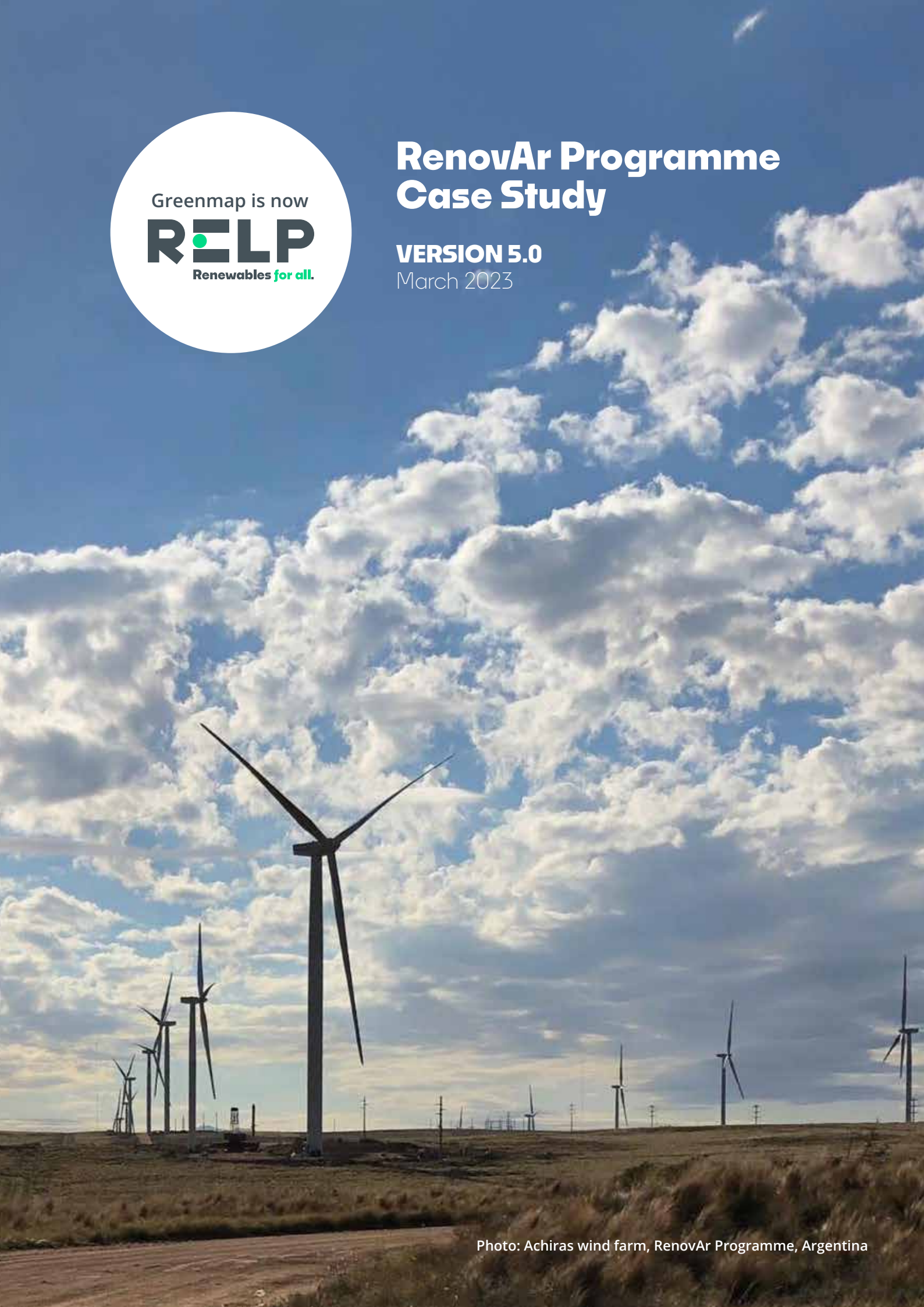


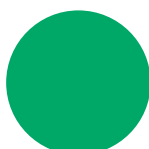
Photo: Achiras wind farm, RenovAr Programme, Argentina

## 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 helping governments 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 more than US\$7 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 [relp.ngo](https://relp.ngo) or write to us at [contact@relp.ngo](mailto:contact@relp.ngo)

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# 1. Introduction

This document aims to clearly and concisely summarise the context and background, main features, and results of the Argentinian renewable energy procurement programme called RenovAr, which served as inspiration for RELP (formerly GREENMAP). RenovAr was designed and implemented by RELP's core team working for the Government of Argentina (GoA) between 2016 and 2019. During that time, Argentina successfully attracted new direct investment into a previously weak renewable energy market. As of March 2023, 140 projects are already in operation and 14 are under construction. Total investment is nearly US\$7 billion totalling 5 GW of new-build capacity and creating more than 11,000 jobs in 30 months (see more details in section 4). The success of RenovAr is particularly important given the complex and uncertain context of the Argentine economic and political landscape in which the programme was developed and implemented.

In most developing countries like Argentina, the gap in capital-intensive infrastructure has been intrinsically related

to limited access to international capital markets, which is mainly due to the relatively higher actual and perceived risks to long-term capital investments. In the power sector, this gap is primarily reflected in choices to invest in fossil-fuelled options rather than clean electricity, insufficient power transmission infrastructure, and relatively higher prices and rates paid by consumers directly or 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 RenovAr programme proved 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 RenovAr can be scaled globally in order to accelerate investment in and deployment of renewable energy -and more broadly climate infrastructure investment- in the developing world.



Erecting locally manufactured wind turbines at PE Los Olivos (Argentina, late 2019). Photo courtesy of Central Puerto Renovables S.A.

## 2. Understanding a Complex Starting Point

Argentina is the third largest electricity power market in Latin America after Brazil and Mexico. In 2022, the annual total electricity demand was 139 TWh, with households consuming 45% of electricity (98% of citizens have access to electricity), the industrial sector 27%, and the commercial sector 28%. Argentina's installed generation capacity topped 42.9 GW as of end-2022, of which 59% is thermal (mostly natural gas), 25% large hydro, 4% nuclear, and 12% non-conventional renewables. The power generation sector is mostly privately owned, with about 24% of the country's electricity generated by state-owned entities in two large binational hydro and three nuclear plants. The balance is produced by private companies under PPAs or merchant schemes.

The energy sector is overseen and regulated by the Secretariat of Energy (SE), which is part of the executive branch<sup>1</sup>. A national 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 national 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.

### A Brief History of the Argentine Power Sector

The Argentine economy collapsed in the late 1980s under hyperinflation and power blackouts. At that time the power sector was 100% state-owned. In the early 1990s, Argentina successfully reformed its power sector, becoming a model for deregulation in other countries. Among the main changes introduced, the reform opened the sector to private investment across generation, transmission, and distribution. The reforms included the creation of CAMMESA as the national ISO and administrator of MEM, and the creation of ENRE (Ente Nacional Regulador de la Electricidad), a regulatory agency in charge of transmission and distribution oversight and rate-setting.

During that period, many transmission and distribution networks were privatised and regulated as regional monopolies overseen by ENRE. The generation segment

was opened to competition within a system of marginal cost pricing whereby each generation unit was dispatched based on daily bids of variable 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" (typically commercial and industrial users with demands above 1 MW), 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 clearer and stable rules, good availability of natural gas (the upstream was also reformed in this period), and 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 collapsed 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 massive devaluation of the Argentine peso forced the government to convert all US dollar rates for transmission, distribution, and power capacity to pesos. Even though most privatisation contracts and regulated concessions had indexation provisions, most were disabled, and real rates and prices deteriorated in US dollar terms, which discouraged private investment even as demand recovered from 2004 onward.

The political decision was to keep energy prices artificially low to incentivise economic activity. Subsidies on energy prices and on transmission and distribution rates (including segmentation by type of consumer and/or by volume or location) became the norm and 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.

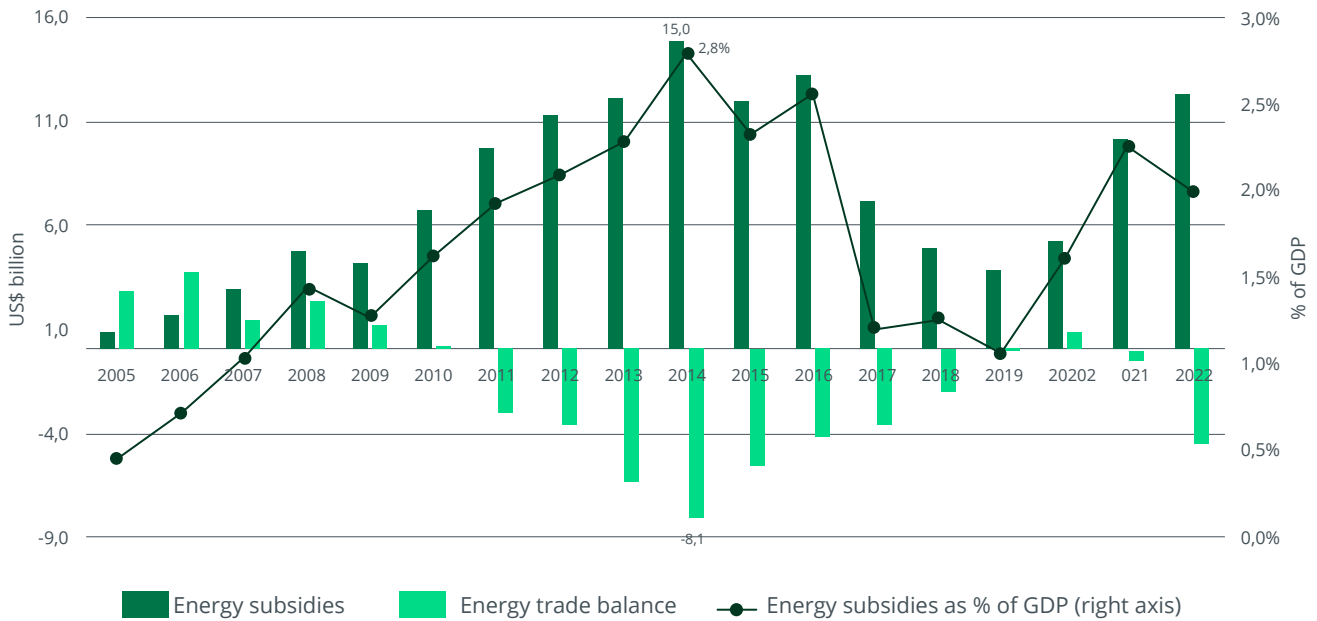
Starting in 2006, low retail power prices exacerbated demand in a recovering economy, worsening the problem as supply fell behind due to the lack of incentives for long-term investment in generation and elsewhere in the power sector. A similar dynamic played out in the upstream sector,

1. 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.

resulting in low drilling activity levels that at first led to a severe drop in natural gas exports, and then to a rise in natural gas, diesel, and residual fuel imports to balance growing domestic demand. Subsidies and imports came at

a very high cost to the economy. The country's trade balance went from a US\$3.8 billion surplus in 2006 to a US\$8.1 billion deficit in 2014.

**FIGURE 1 - Energy subsidies and trade balance**



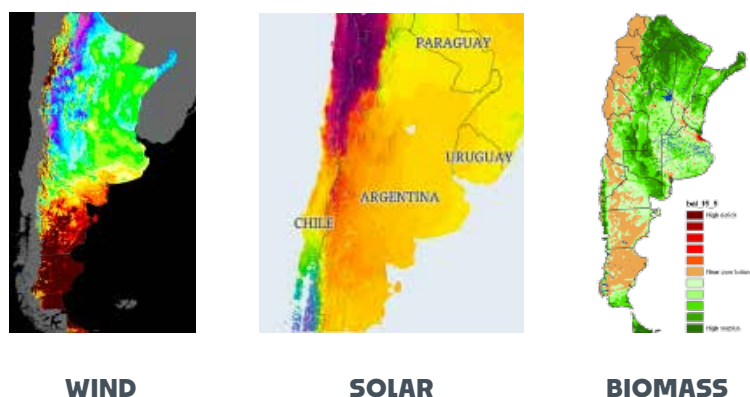
Source: RELP based on INDEC and the Ministry of Economy of Argentina.

In late 2015, as a newly elected government was inaugurated after 12 consecutive years of Nestor and Cristina Kirchners' administrations, the energy scene was featured 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 the country had severe difficulties accessing international capital markets to finance both public and private infrastructure projects.

**Untapped renewable potential**

Argentina is home to the Western Hemisphere's best wind resources and some of the world's finest solar resources, and 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. The best wind and solar

**FIGURE 2 - Argentina's Renewable Resources Assessment Maps**



Note: Darker red tones indicate better wind and solar resources, while darker green indicates better biomass resources.

Source: Ministry of Energy and Mining.

sites are found relatively far away from the largest cities and industrial centres, which are located in the central part of the country and in the capital city of Buenos Aires and its extensive suburbs.

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 a strong 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 dispatched, albeit with certain limitations for each relevant transformation node and/or transmission line corridor.

Despite 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 from 2011, not more than 200 MW had been built due to the severe constraints in obtaining financing, even though PPA prices were well above the region's average at the time<sup>2</sup>.

### Winds of change

But, 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 2012 and had been subject to great political and industry scrutiny. Senator 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, Sebastian Kind (REL P's founder and chairman) worked as an advisor to Senator Guinle, and he was instrumental in the legislative process together with other team members who are now part of the REL P.

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

The shift in the renewable sector continued to gain momentum after President Mauricio Macri was elected in October 2015 and took office in early December. Macri created the Ministry of Energy and Mining (MINEM) 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 (REL P's co-founder and

COO) then joined him as National Director for Renewables, and Fernando Lagarde and Ramiro Gomez Barinaga (also part of the REL P team) joined the implementation efforts as senior expert advisors.

According to initial estimates in early 2016, in order to reach the mandated target, Argentina needed to install more than 10 GW of renewable generation at a cost of approximately US\$15 billion 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 regime that set clear and transparent rules and strong guarantee mechanisms was necessary to attract long-term investment. The RenovAr Programme was founded 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 was published in record time in March 2016. In parallel, work began on other regulations relating to fiscal benefits, project eligibility, and procurement processes, which were foundational to RenovAr. Some other policies were important to set the stage for RenovAr. One example was the presidential decree declaring a state of emergency for the oil and gas and power sectors, which was instrumental to fast-track tenders for new generation capacity. Several other macroeconomic and fiscal measures (including the lifting of controls to international capital flows) were taken during the first quarter of 2016. These helped the country return to international capital markets and recover investor confidence and attractiveness.

RenovAr was officially launched on May 17, 2016, with the publication of a first draft of the Request for Proposal (RfP)

2. 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.

# 3. Designing the RenovAr Programme

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 integration 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<sup>3</sup> aimed at reducing political and economic risks.

The tender design process contemplated clear rules for bidders and project selection. These included minimum

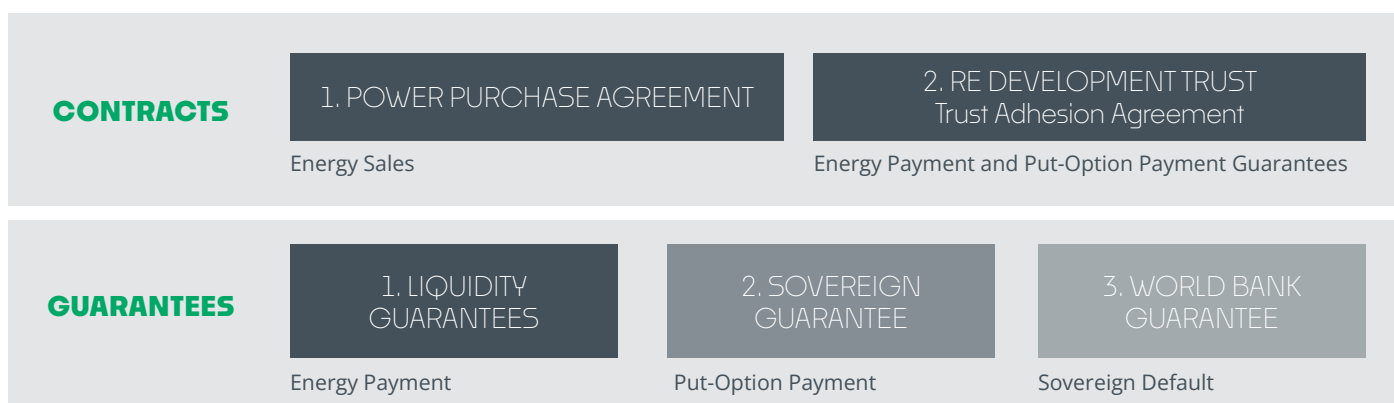
financial capability requirements for bidders as well as obligations to provide eligible bid bonds with their offers and to enter into the contracts and provide certain performance bonds in case of being awarded. On the project side, the tender rules included certain technical requirements and information disclosure to be included with the offers, as well as social and environmental permitting prerequisites. Clear criteria for offer assessment and the competitive award of the winning bid were also detailed.

To accommodate typical project finance structures, each awarded project under RenovAr needs to be structured under a special purpose entity (SPE) in order to enter into a contract for the sale of its produced electricity over a 20-year term. This feature is also helpful for the government to audit tax benefits applicable to the project and for FODER to audit and enforce provisions related to the implied guarantees of the programme.

The following diagram depicts the fundamental elements of 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 three levels of guarantees provided through and by FODER and the GoA to enhance political and economic risk profiles and facilitate efficient long-term financing.

Under the PPA, CAMMESA acts as an offtake aggregator on behalf of distribution utilities and wholesale market large

**FIGURE 3 - RenovAr Contractual Framework - Two Contracts & Three Levels of Guarantees**



3. 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.



users. In this way, the price paid for the electricity generated and delivered by the project 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.

The electricity generated by all renewable power plants has first priority of dispatch and is paid for at the awarded price, which is denominated in US dollars and is subject to preset annual adjustments. CAMMESA purchases and pays for 100% of the production up to the contracted capacity, and the project is required to provide a minimum amount of electricity on an annual basis with deficiencies subject to make-up periods and/or penalty, as the case may be. Typical provisions necessary for non-recourse project finance have been built into the model PPA from its inception, including the application of private law, US dollar-denominated payment, lenders' step-in rights, and a dispute resolution mechanism based on international arbitration.

Embedded as a fundamental part of RenovAr is an effective guarantee scheme that enhances the bankability of the contracts and protects the SPEs against the following risks:

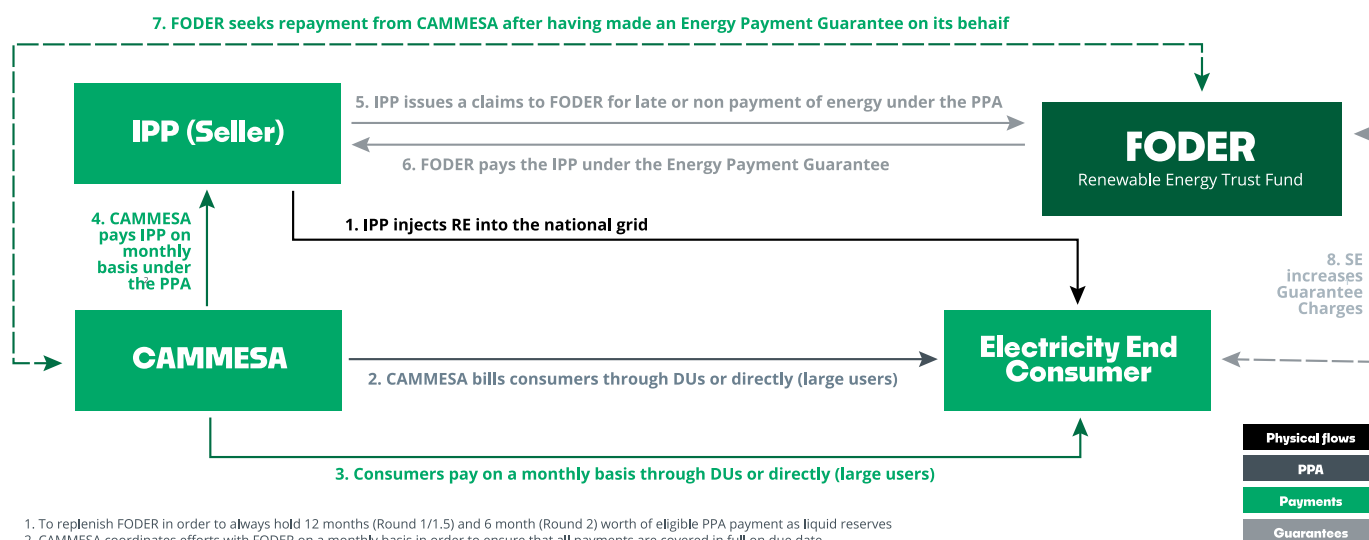
- (1) Non-payment and/or delayed payment for the produced and delivered electricity;
- (2) Early termination of the contracts through compensation implemented via a put option for the sale of the project's assets to FODER under certain circumstances); and
- (3) Non-payment of any sovereign obligation under the

contracts up to the amounts guaranteed by the World Bank, when applicable.

To provide these guarantees, the project companies enter into the so-called FODER Trust Adhesion Agreement, under which each SPE becomes a "beneficiary" of the FODER trust fund, the cornerstone of RenovAr. FODER is a public trust fund, created by the RE Law and implemented with the 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. FODER was originally funded by the National Treasury prior to the first round of RenovAr, and subsequently prior to each of the other rounds held. Per the RE Law and the trust contract in place, 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 own financial investments and/or the issuing of securities, and (iii) annual federal budget appropriations (including a mandatory annual appropriation equivalent to 50% of the savings generated by the reduced use of fossil fuels resulting from RenovAr operating projects).

The first level of guarantee (the Energy Payment Guarantee) covers delays and/or non-payment of the energy supplied under the PPA for a specified period of time as follows: 12 months for Rounds 1 and 1.5 projects; six months for Round 2 projects; and three months for Round 3 projects. If CAMMESA delays making the monthly payment to the SPE for the produced electricity, FODER will automatically kick in and make the payment on time, guaranteeing a steady cash flow for the project. CAMMESA must repay FODER immediately when funds become available in order to replenish the energy payment fund, which cannot hold less than 65% of the committed guarantee amounts at any

**FIGURE 4 - Typical Schematic of RenovAr's Energy Payment Guarantee**



time. Banco de Inversión y Comercio Exterior (BICE), in its role as trustee of FODER, is obliged to monitor the level of coverage of the guaranteed amounts for each round and to request that the trustor (i.e., the GoA via the ministry or the Treasury) provide any deficit amounts. To provide better security for the projects, each RenovAr round is guaranteed via a separate and independent trust account within FODER. The diagram above shows the typical workflow applicable to this 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, for the FODER's non-payment of an early termination event. Such an event may occur under certain circumstances triggered under the PPA and/or at the macroeconomic or political level. 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. In this way, the project may continue to supply clean electricity to the national grid under the same PPA but 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<sup>4</sup>;
- (ii) Non-compliance by CAMMESA under any ruling of the arbitration tribunal;
- (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 unamortised<sup>5</sup> portion of the original capital investment in the project. Given that FODER does not have the funding or hold 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 are deposited in FODER's custody earmarked for each SPE. These treasury bills are issued before entering the contracts and are in fact separated into 20 bills, each representing 5% of the invested capital. As each year of the contract passes, one of the bills expires but the rest remain valid to cover FODER's contingent obligation to pay for the put option price. If the investor decides to exercise its put option, the Treasury must

pay the outstanding bills in US dollars in a local or foreign bank account, as designated by the beneficiary. In this case, FODER purchases and receives all of the assets of the project, which continues to operate, keeping the PPA in force. All liabilities of the SPE remain with it; only the project's assets are transferred to FODER. The SPE is required to keep these assets in good operating condition up to the time of transfer.

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

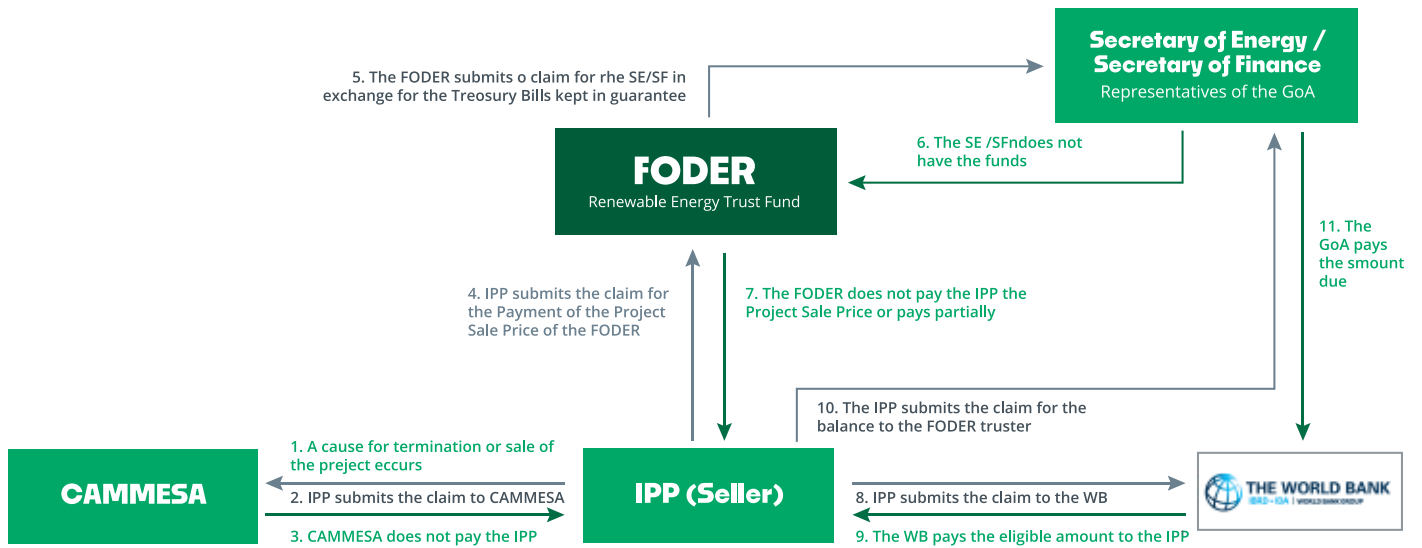
As mentioned, the World Bank Guarantee was offered as an optional feature to investors in Rounds 1, 1.5, and 2 of RenovAr. Given the limited envelope amount available to the country, it was allocated to eligible projects based on their bid price and other competitive variables as defined in the tender 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; in Round 2 it was US\$250 million. The optional nature of this guarantee was important to magnify the impact and effect on the programme. Even those who did not request the guarantee felt safer because the World Bank participated in overseeing the tenders and the design and functioning of the contracts and of FODER. Indeed, in Round 1 the offered capacity was oversubscribed by a factor of six, and that factor increased to eight in Round 2, reflecting the creditworthiness of the regulatory framework and the guarantee system. The diagram below shows the typical workflow of the termination provision and put option payment as well as the sovereign and World Bank guarantees.

In the three years since its creation, RenovAr has held

4. Total or partial payments by FODER on behalf of CAMMESA do not count for termination.

5. A linear amortisation method over the 20 years of the contract is used.

**FIGURE 4 - Typical Schematic of RenovAr’s Early Termination Payment Guarantee**



# 4. Successful Implementation

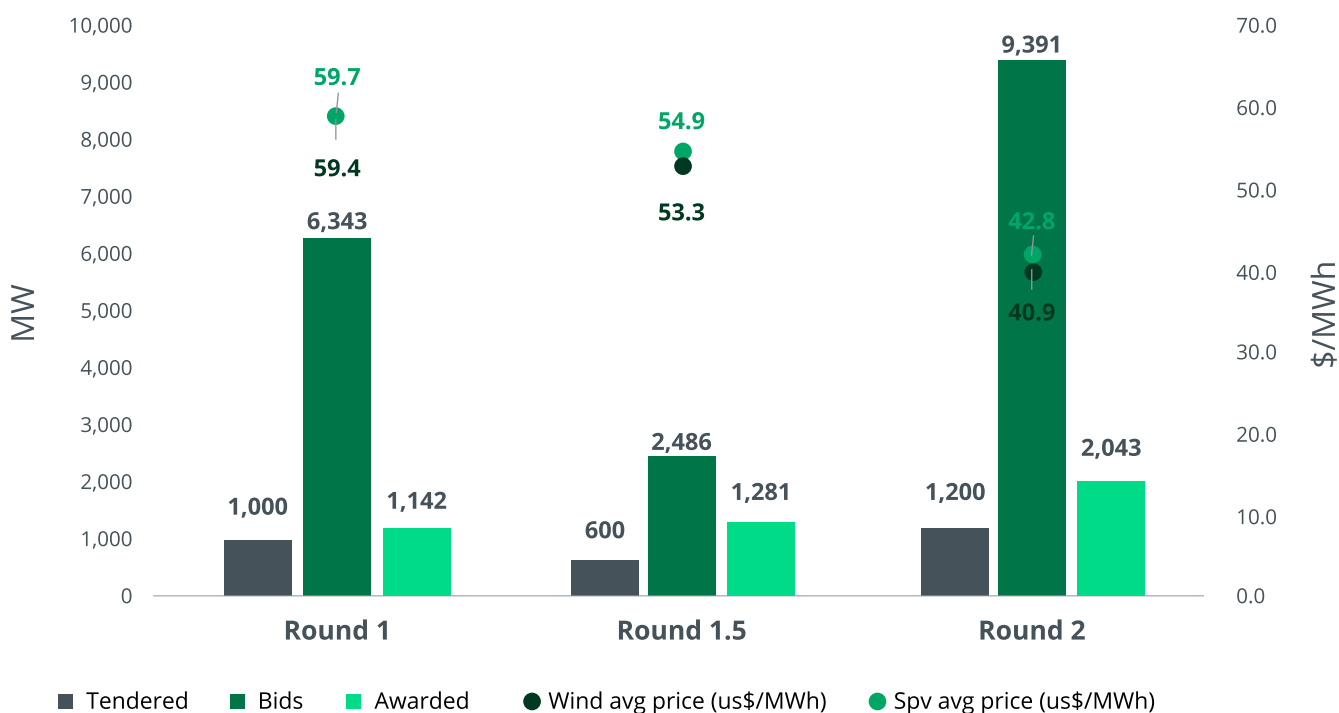
four successful and very competitive international public tenders. In parallel with the RenovAr tenders, the GoA also introduced complementary regulations for the creation of a private-to-private renewable electricity market for corporate commercial and industrial users. The new regulation became effective in August 2017 and spurred investment and PPAs immediately.

All in all, 258 wind, solar PV, bioenergy and small hydro projects with a combined capacity of 6.5 GW were awarded and/or enabled by the programme and the complementary

regulation for the C&I renewable PPA market.

As of March 2023, RenovAr has been the anchor to mobilise investments for US\$7 bn in 5.0 GW of new-build capacity in 154 projects currently in commercial operations (140) and under construction (14). These projects created 11,000 new jobs along the renewables supply chain including 9 local assembly and manufacturing plants.

**FIGURE 5 - Renewable Generation Capacity and Awarded Prices Under RenovAr**

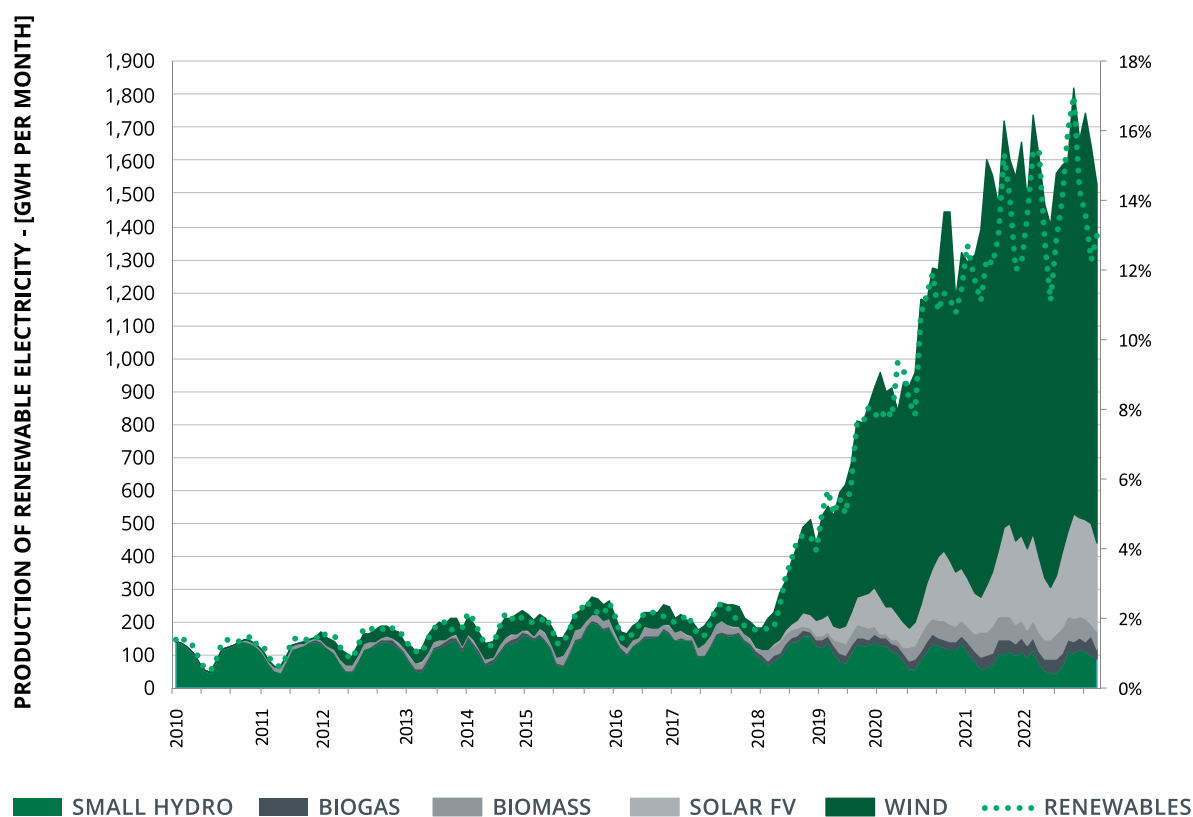


Source: RELP based on data from MINEM.

RenovAr’s successful implementation by 2025 will contribute to meeting 20% of Argentina’s reduction commitments to the Paris Agreement and it will also help achieve the country’s UN Sustainable Development Goals. RenovAr will allow Argentina to cover 16% of the country’s power

demand by 2025 and save 193 million tons of CO2 over 20 years. Meanwhile, the programme has already contributed to making renewables the cheapest unsubsidised source of energy in the country.

**FIGURE 5 - Grid Connected Renewable Electricity Generation (January 2010 to February 2023)**



Source: RELP based on data from 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 to design a specific regulatory framework. 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 average local content 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)<sup>6</sup>, 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<sup>7</sup> of how Argentina created a successful renewable energy market with the RenovAr Programme.

6. EY’s RECAI reports are available for consultation and download at this [link](#).

7. The case study can be purchased from Harvard University under product number KS1288-PDF-ENG at this [link](#).

## 5. RenovAr Under Stress

For almost four and a half years, Argentina has been facing a crippling economic situation with high inflation and weak economic growth. Inflation rates hiked over 50% in 2019 and 2021, and reached 94.8% in 2022. 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 a strong recovery in 2021 and early 2022, rising inflationary pressures and continued strong local currency depreciation seriously affect the economic prospects. This situation is exacerbated by severe imports restriction and capital controls that deteriorate doing business and peril the investors' confidence in the country.

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 2% in 2020, finally recovering to pre-crisis level with a 5% growth in 2021 reaching 134 TWh.

At this moment, generators are facing delayed payments from CAMMESA (the national power market administrator and only authorised buyer of the energy for utilities) in the amount of roughly US\$3. billion. Generators operating within the spot market (which are responsible for 67% of the total installed capacity and 44% of the system generation costs) are expected to suffer cuts to their energy and capacity remuneration. Meanwhile, utilities owe over US\$3 billion to CAMMESA, even though the energy price they have assumed on average during 2022 was subsidised at a rate of 60% with respect to the effective generation costs.

This debt spiral portends serious consequences if it is not solved soon. On the technical side, the payment chain break threatens the reliability of the power system, as generators might decide to shut down their plants and new investments may be deterred indefinitely. It might also start a vicious circle in the economic arena, as the Treasury would have to cover the gap between utility rates and costs with more subsidies, which would result in money supply growth, resulting in higher inflation rates. In this regard, amid rapidly accelerating inflation, in late 2022 the GoA re-initiated a subsidy reduction policy.

In this scenario, it is worth asking what is happening with generators that have contracts with CAMMESA, which are

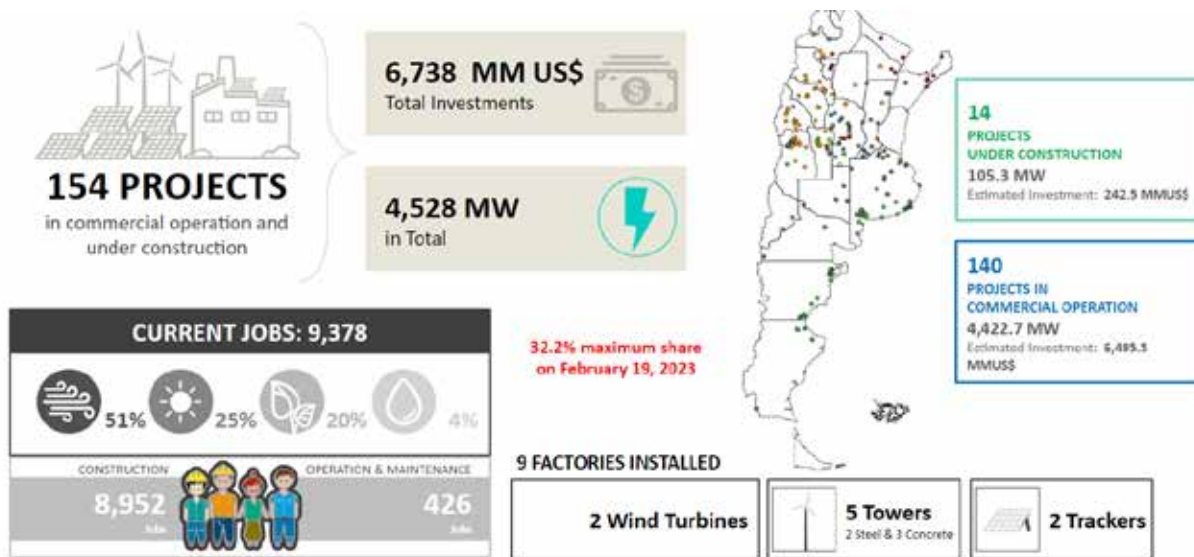
not exempted from risks either. This group accounts for 33% of the installed capacity and 56% of system costs. Indeed, all thermal projects awarded over the last three years, as well as nuclear power plants with regulated US dollar-denominated rates, are facing delays in their payments. The only exception is projects awarded under the RenovAr programme, which are backed up by the FODER trust and which have been receiving their revenues on time since they reached commercial operation status.

Despite the adverse economic context, the RenovAr scheme has proved effective so far in securing a steady cash flow for all guaranteed projects. The special guarantee scheme was created exactly for difficult situations of this type, which are commonly seen in emerging countries. The payment guarantee provided by FODER had been used since 2018 when utilities began to delay payments and accumulate debt with CAMMESA. Since then, FODER has been serving as a buffer for all RenovAr PPAs in operation.

Even considering the economic crisis and financial difficulties experienced since mid-2018, new contracts from projects awarded under Round 3 were signed in early 2020, before the pandemic took hold. Meanwhile, construction on many other projects previously awarded has continued despite certain interruptions at the beginning of the lockdown. It can be said that the RenovAr scheme has made renewable energy deployment possible, and its framework should be considered an enduring state policy.

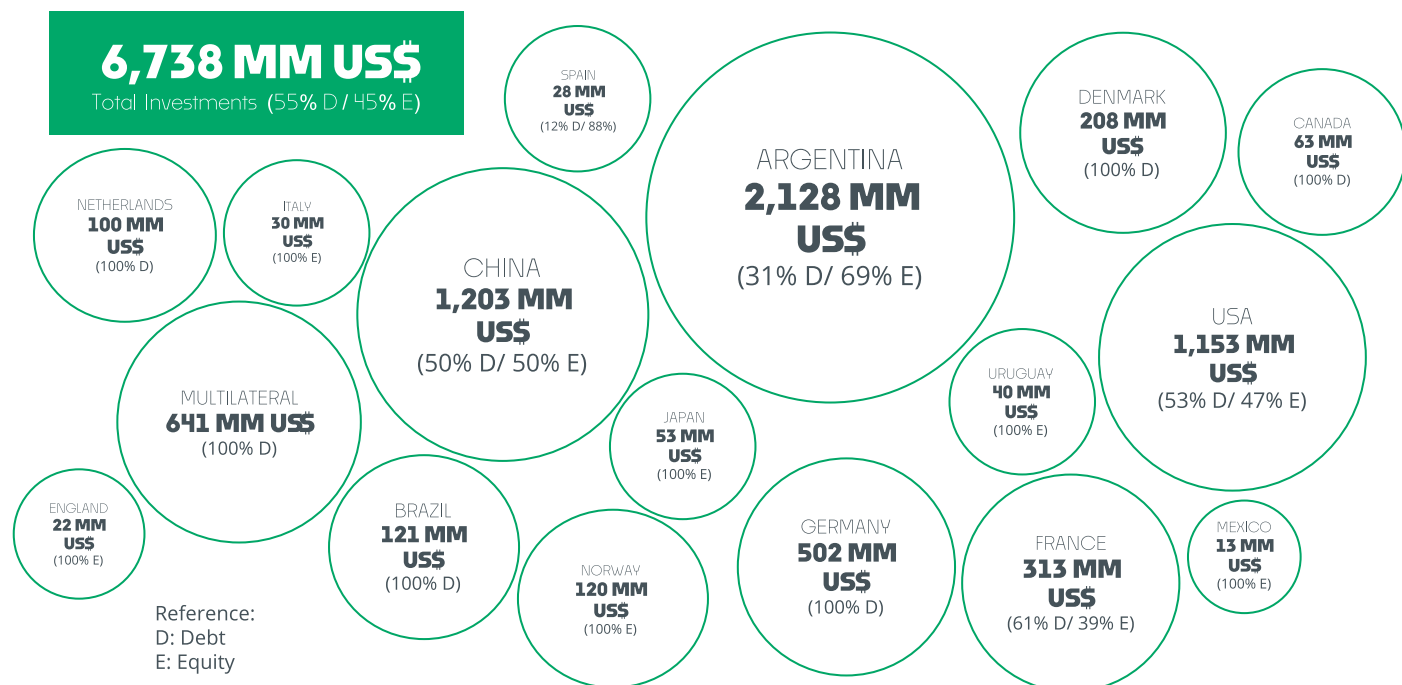
Out of the total 6.5 GW awarded, roughly 5 GW are already either in operation or under construction across 154 projects (most of the projects under construction show significant progress or are almost ready to be commissioned). Before the COVID-19 pandemic, projects were projected to come online in 2020 at an average rate of 3.5 per week. Up to March 2023, a total of 140 projects with a combined capacity of 4.4 GW had come into commercial operation. The total average renewable energy supply in 2022 was 14%, and a peak of 32.2% was reached at 10:20 a.m. on February 19, 2023.

**FIGURE 6 - The state of RenovAr as of March 2023**



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

**FIGURE 7 - RenovAr Financing**



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

# Conclusion

The RenovAr Programme has proved to be an effective de-risking mechanism with a long-lasting impact. It successfully spreads costs, enhances impact, and encourages programmatic, competitive tendering, leading to faster delivery and lower prices and truly creating a new renewable energy market.

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 from many others.
- 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 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

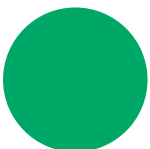
between tenders thanks to greater competition among stakeholders, learning curve effects, and a reduction in technology costs over time. In relation to technical aspects, the gradual integration of renewables preserves the reliability of power systems, without affecting energy demand coverage or the transmission grid.

- 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 affordable, reliable, and clean energy for people. Otherwise awarded prices would be higher than desirable and the size of the renewable market would 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.

The successful experience of RenovAr has motivated the team leading its design and implementation to replicate Argentina's experience on a global scale by creating RELP (formerly GREENMAP)<sup>8</sup>, 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.

8. 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.





For more information you can check RenovAr in the spotlight. Also you can write to us at [contact@relp.ngo](mailto:contact@relp.ngo) or visit our website [here](#).

Greenmap is now  
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