



**ASIAN INFRASTRUCTURE
INVESTMENT BANK**

PD000654-ARG
September 6, 2023

Sovereign-Backed Financing

Project Document

P000654 Argentina: Tierra del Fuego Energy Transition Support Project

Currency Equivalents
(As at date, August 23, 2023)

Currency Unit – Argentine Peso (ARS)
ARS1.00 = USD0.002857
USD1.00 =ARS350.02

Borrower's Fiscal year
January 1 – December 31

Abbreviations

AIIB	Asian Infrastructure Investment Bank
ARS	Argentinian Pesos
CAF	Development Bank of Latin America
CAMMESA	Argentine Wholesale Electricity Market Clearing Company (Compañía Administradora del Mercado Mayorista Eléctrico)
DA	Designated Account
EFF	Extended Fund Facility
EIA	Environment Impact Assessment
ES	Environmental and Social
ESDD	Environmental and Social Due Diligence
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
ESS	Environmental and Social Standard
ETAF	Energy Transition Accelerator Financing
FM	Financial Management
GHG	Greenhouse Gas
GoA	Government of Argentina
GRM	Grievance Redress Mechanism
IMF	International Monetary Fund
IUFR	Interim Unaudited Financial Report
MDB	Multilateral Development Bank
PDS	Project Delivery Strategy
PFS	Project Financial Statements
PIU	Project Implementation Unit
POM	Project Operations Manual
PPM	Project-affected People's Mechanism
RGEC	Rio Grande Electric Cooperative
SADI	Argentinian Interconnexion System (Sistema Argentino de Interconexión)
SEP	Stakeholder Engagement Plan
UEPEX	External Financing Information System (Unidades Ejecutoras de Proyectos con Financiamiento Externo)
USD	United States Dollar

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1. Summary Sheet

Project No.	P000654
Project Name	Tierra del Fuego Energy Transition Support Project
Asian Infrastructure Investment Bank (AIIB) Member	Republic of Argentina
Borrower	Tierra del Fuego Province
Guarantor	Republic of Argentina
Project Implementation Entity	Provincial Implementation Unit for External Loans
Sector	Energy
Subsector	Renewable energy generation-wind
Alignment with AIIB's thematic priorities	Green infrastructure
Project Objective	To establish wind power generation capacity in Tierra del Fuego Province.
Project Description	<p>The Province of Tierra del Fuego (“the Province”) is an insular territory located in the south of the country. The provincial network is isolated from the national electricity grid SADI (“Sistema Argentino de Interconexión”) and made up of city grids (Rio Grande and Ushuaia), which results in a fragile network requiring specific consideration for green transition. The current energy mix of the Province is made up of 100 percent fossil fuel, specifically natural gas, which is scarce and costly. The current stock of electricity generators in the province is generally obsolete and inefficient and has urgent needs for maintenance and rehabilitation.</p> <p>The Province has rich wind resources and therefore great potential for wind generation. However, to date, no wind energy project has been materialized. Given the disconnected status of local grids, wind farms need to be built together with modernized and more flexible thermal plants, so that both thermal and renewable generations can be duly integrated. By implementing such a plan, the Province can diversify its energy supply mix, improve energy efficiency, reduce gas consumption and achieve its goal of clean energy transition.</p> <p>AIIB will support the construction of a wind park located in Río Grande. The AIIB loan is expected to finance: (1) the procurement, transportation, and installation of eight wind power turbines, with an individual capacity of 4.2 MW for each turbine and a total installed capacity of 33.6MW; (2) the interconnection line to the 33Kv local electric power distribution system (including fiber-optic cable network); (3) project feasibility studies.</p>

Implementation Period	01/Jan/24 31/Dec/28
Expected Loan Closing Date	30/Jun/29
Proposed Amount of AIIB Financing (USDm)	USD65
Financing Plan	AIIB Loan: USD65m Tenor: 15 years Grace period: 5 years Government of Argentina (GoA): USD6.5m
ES Category	B
ES Category Comments	Based on the likely environmental impacts, the Project is assigned Category B, and this has been confirmed following field review.
Risk (Low/Medium/High)	High
Conditions of Effectiveness	<ul style="list-style-type: none"> • The Project Operations Manual (POM) has been finalized in form and substance satisfactory to the Bank; • Terms of reference for the consultants that will support the Project Implementation Unit (PIU) have been finalized in form and substance satisfactory to the Bank; • the Environmental Impact Assessment (EIA), the Environmental and Social Management Plan (ESMP), and the Stakeholders Engagement Plan (SEP) have been finalized in form and substance satisfactory to the Bank; and • The Grievance Redress Mechanism (GRM) for project-affected people has been established in form and substance satisfactory to the Bank and is operational.
Key Covenants	<ul style="list-style-type: none"> • No later than three (3) months after the effective date, hire the consultants to support the PIU. • Prepare and furnish to AIIB no later than 45 days after the end of each calendar quarter interim unaudited financial reports for the Project covering the preceding quarter. • Have its financial statements audited by independent auditors acceptable to AIIB. Each such audit shall cover one fiscal year of the Borrower and be submitted to AIIB no later than six months after the end of each fiscal year. • Prior to initiating the consultant selection process for the preliminary feasibility studies for the other projected wind parks, the Borrower will develop and finalize terms of reference in form and substance satisfactory to the Bank. The terms of reference will include the elaboration of appropriate gender baseline and environmental and social assessments for such project
Conditions for Disbursement	<ul style="list-style-type: none"> • No withdrawal shall be made under Component A until the lease agreement for the Project land has been executed.

Retroactive Financing (Loan % and dates)	Retroactive financing will be allowed up to 20 percent of the loan amount, for eligible costs. Eligible expenses are (i) eligible expenses in accordance with AIIB's policies, and (iii) incurred up to 12 months prior to loan signing.
Policy Waivers Requested	No
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that AIIB is in compliance with the policies applicable to the Project (granted on September 8, 2023).
Economic Capital (ECap) Consumption (USDm)	USD19.18

President	Liqun Jin
Vice President	Konstantin Limitovskiy
Acting Director General	Gregory Liu
Team Leader	Gabriel Giacobone, Infrastructure Sector Economist
Back-up Team Leader	Francisco Fortuny, Senior Investment Operations Specialist
Team Members	Natalia Sanz, Senior Investment Operations Specialist Bernardita Saez, Senior Counsel Rizal Rivai, OSD - Procurement Specialist Shodi Nazarov, OSD - Financial Management Specialist Pedro Ferraz, OSD - Environmental Specialist Marcin Sasin - Senior Economist

2. Project Description

A. Project Overview

1. **Project Objective.** To establish wind power generation capacity in Tierra del Fuego Province.
2. **Project Description.** The Province of Tierra del Fuego (“the Province”) is an insular territory located in the south of Argentina. Due to its geographical condition, the provincial network is isolated from the national electricity grid SADI and made up of three independent (disconnected) systems: the Northern System in the city of Rio Grande; the Central System in the city of Tolhuin; and the Southern System in the city of Ushuaia. The isolation and disconnection of local grids results in a fragile network requiring specific consideration for green transition.
3. The current energy mix of the Province is made up of 100 percent fossil fuel, specifically natural gas, which is scarce and costly.
4. Over the last decade, the Province has experienced significant economic growth, mainly due to the industrial activity in the city of Rio Grande and to tourism in Ushuaia, resulting in an increased demand for energy. In 2021, energy demand in Rio Grande reached 370GWh, with a 5-year average growth rate of 4.1 percent (Table 1). Around 60 percent of energy demand is from the industry sector¹. Demand for energy in Rio Grande is near the capacity limit, and it is therefore a bottleneck for economic growth. Therefore, the Rio Grande Electric Cooperative (RGEC), the entity in charge of the energy provision, has restricted energy supply to new users above 100kW. There are currently several industrial projects that have been halted due to energy capacity constraints.

Table 1. Energy Demand in Rio Grande and Ushuaia, GWh

GWh	2016	2017	2018	2019	2020	2021
Rio Grande	303.2	301.0	316.8	332.0	324.0	370.1
Ushuaia	231.2	228.8	235.1	228.8	191.1	213.4

Source: Provincial Statistical Institute

5. The current stock of electricity generators in the Province is generally obsolete and inefficient and has urgent needs for maintenance and rehabilitation. Peak demand must be covered with inefficient cold standby reserve units, causing more consumption of gas, and reducing system reliability. In the case of Rio Grande, the current generation capacity is 80.6MW and it is composed of 4 generation units, two of which are used for base demand and two for peak demand. When the peak demand units are used, gas consumption rises significantly due to their low efficiency.

¹ In order to develop manufacturing, Tierra del Fuego is excluded from VAT and federal income taxes, and it is subject to a special regime. As a result, several companies, particularly those involving electronic products, have opened factories in this city.

Table 2. Energy Generation Units in Rio Grande

Unit Name	Fiat TG16	Fiat TG16	GE LM2500 B	GE LM2500 P
Year of manufacture	1970	1970	2015	2010
Year of installation	1984	1984	2018	2021
Generation capacity, MW	15.5	15.5	19.5	28.8
Energy consumption, Kcal/Kwh	4.94	4.94	2.63	2.64

Source: Rio Grande Electrical Cooperative

6. The Province has rich wind resources and therefore great potential for wind generation. However, to date, no wind energy project has been materialized. Given the disconnected status of local grids, wind farms need to be built together with modernized and more flexible thermal plants, so that both thermal and renewable generations can be duly integrated. Therefore, the Province has made its energy plan for its two major cities, including: (1) modernizing the thermal power plants in Rio Grande and Ushuaia, (2) building a wind farm in the city of Rio Grande², (3) expanding and improving the reliability of the local 33kV distribution network.
7. AIIB will support the construction of a wind farm located in Río Grande. The AIIB loan is expected to finance: (1) the procurement, transportation, and installation of 8 wind power turbines, with an individual capacity of 4.2 MW for each turbine and a total installed capacity of 33.6MW; (2) the interconnection line to the 33Kv local electric power distribution system (including fiber-optic cable network); (3) project feasibility studies (expected to be retroactively financed).
8. **CAF Program.** Under a separate Project (CAF-supported Project), CAF plans to support the modernization of the Ushuaia Thermal Plant and the construction of the Rio Grande Thermal Plant. In the case of Rio Grande, it will consist of 3 generating units with a net generation capacity of between 28 MW and 32 MW. The CAF-supported Project is expected to further stabilize and improve the efficiency of the energy system in the Province, thereby reducing energy consumption and greenhouse gas (GHG) emissions. However, each Project would stand on its own with or without the other. The CAF-supported Project was approved in December 2022.
9. In view of the ongoing collaboration between CAF and AIIB in the preparation of their respective projects under the Province's energy program, both institutions participated in joint missions during May 2022 and October 2022. It is anticipated that this collaboration will continue during the Project implementation phase.

² As part of the plan, a wind farm is expected to be built in Ushuaia in the future.

10. **Expected Results.** The Project is expected to deliver the following results:
 - (i) Renewable Energy capacity added to the network allowing to diversify the energy matrix mix.
 - (ii) GHG emission savings of about 50,856 tCO₂e per year.
 - (iii) Number of people with improved access to energy (gender-disaggregated).
11. A set of intermediate indicators will be used to track component level outputs and results. The Results Framework including monitoring indicators is presented in Annex 1.
12. **Expected Beneficiaries.** It is expected that approximately 98,000 people (48,000 women, 50,000 men) will be direct beneficiaries from the Project. In addition, both direct and indirect jobs are expected to be created during the implementation. The Project also reduces gas consumption, hence indirectly decreasing the need for gas imports³.

B. Rationale

13. **Strategic Fit for AIIB.** The Project is in line with AIIB's Energy Sector Strategy, and with the Guiding Principles of the Strategy, in particular Principles 1 (Promote energy access and security) and 2 (Support transition to a clean energy system). AIIB's support to transition to a clean energy system will help Argentina to achieve their long- term climate goals⁴ and net-zero/carbon neutrality commitments⁵, and therefore is fully aligned with AIIB's climate and Paris Alignment objectives. The Project would qualify as 100 percent climate finance, particularly under climate mitigation.
14. **Strategic Alignment with Non-Regional Members Strategy.** The proposed Project is eligible for Bank Financing under Principle ii (Global public goods) of the Strategy on Financing Operations in Non-Regional Members. Investments in renewable energy generation benefit Asia whether such investments are undertaken in a regional or non-regional Member. This Principle is aligned with the AIIB thematic priority of Green Infrastructure. Furthermore, investments in renewable energies are contained in the country's Nationally Determined Contributions (NDCs) as defined in the Paris Agreement⁶. The approval of this operation will not entail exceeding the ceiling on investments in non-regional members.
15. **Paris Alignment.** Based on the renewable nature of the Project, 100 percent of AIIB's financing is expected to be qualified as climate mitigation financing and

³ Argentina is a significant liquified natural gas (LNG) importer, with the US and Qatar as main suppliers. Natural gas is also imported from Bolivia.

⁴ In its Nationally Determined Contributions (NDCs), Argentina has set an unconditional target of not exceeding 359 MtCO₂e in 2030. This target covers all sectors and assumes a significant increase in the renewable energy share.

⁵ In November 2022, Argentina submitted a long-term strategy (LTS) to the UNFCCC that includes a target to reach GHG neutrality by 2050.

⁶<https://unfccc.int/sites/default/files/NDC/2022-05/Actualizacio%CC%81n%20meta%20de%20emisiones%202030.pdf>

universally aligned to BB1 – Paris Agreement for Mitigation under the relevant Joint MDB Methodology. Based on an emissions estimation report dated November 2, 2022, the Project will contribute to reduce 50,856 tons of tCO₂e per year⁷. The Project is also expected to be aligned to BB2 – Paris Agreement for Adaptation following the completion of the ESIA which will include climate vulnerability assessment and proposed adaptation resilience measures.

16. **Value Addition by AIIB.** Beyond the provision of financing, AIIB’s participation will strengthen the Project by supporting the Province in its first renewable energy project, initiating its energy transition. AIIB will provide the know-how, lessons learned, and best practice accumulated from similar renewable energy projects financed by the Bank, enhancing energy security, and facilitating the client’s energy transition. The implementation of AIIB’s Environmental and Social Standards (ESS) in the Project can help enhance the Project quality and make sure that ES risks are properly managed in line with high standards.
17. **Value Addition to AIIB.** This will be the first AIIB financing in Argentina, starting the relationship with one of the Bank’s latest members. The Project will also facilitate AIIB’s collaboration with CAF, a key partner for developing business in the region. On October 13, 2022, a Memorandum of Understanding was signed between AIIB and CAF. Pursuant to the Memorandum of Understanding, AIIB and CAF plan to jointly promote jointly measures for accelerating the energy transition in Latin America and the Caribbean, with an emphasis on climate change and renewable energy.
18. **Lessons Learned.** Being the fourth Project to be financed in Latin America, this operation will benefit from the lessons learned from the preparation of the precedent projects. The Project will allow AIIB to continue working in Latin America, thus offering a learning opportunity by exposing the institution to a new region.
19. Particularly, a key issue to address has been to raise awareness about AIIB as a new multilateral lender in the region, and to establish direct relations with all stakeholders during the project preparation stage.
20. Implementation support measures might be needed as part of the Project design and execution, including hiring local consultants to ensure successful execution and monitoring. Particular emphasis has been put on assessing the institutional capacity of the PIU and identifying the internal process required for signing and effectiveness.
21. Physical missions have been carried out in May 2022, October 2022, and August 2023 with participation from the government of Tierra del Fuego, GoA, and AIIB, as well as involvement on the part of CAF. Likewise, particular emphasis has

⁷ Ministerio de Produccion y Ambiente (Nov. 2, 2022), “Memoria de cálculo de la estimación de la reducción de emisiones en proyectos energéticos provinciales.”. The study is based on an installed capacity of 33MW, electricity output of 156 GWh/year, and a grid emission factor of 0.326 tCO₂/MWh, equivalent to gas-fired generation according on the best available technology.

been placed on identifying the institutional setting and the ability to successfully implement the Project.

22. The Bank has financed two utility-scale wind projects in Asia to date (P000515 Lao PDR: Monsoon 600MW Cross-border Wind Power Project, USD 150 million; and P000225 Kazakhstan: Zhanatas 100MW Wind Power Plant, USD 46.7 million), as well as 14 wind power sub-projects representing 884MW of installed capacity under its FI on-lending facilities (P000132 Türkiye: TSKB Sustainable Energy and Infrastructure On-lending Facility and P000141 Türkiye: TKYB Renewable Energy and Energy Efficiency On-Lending Facility). The Project Team has retrospectively reviewed these experiences and will use lessons from their implementation for the implementation of this Project.

C. Components

23. Component A. Civil Works. This Component involves the procurement and installation of wind turbines for the Wind Park in the city of Rio Grande, with an annual generation capacity of about 156GWh and a total installed capacity of 33.6MW, and the interconnection line to the 33Kv local electric power distribution system (including fiber-optic cable network).
24. Component B. Implementation support and feasibility studies. This Component includes institutional strengthening measures, such as the hiring of local consultants to support the PIU, consulting services for inspection and implementation support, and updated feasibility studies required for the Rio Grande wind park, as well as preliminary feasibility studies for other projected wind parks in the Province.
25. Component C. Project monitoring and external audit. This Component will finance local consultants to support the Project monitoring, and the Project external audit.

D. Cost and Financing Plan

26. **Project Cost.** The total cost is USD71.5 million, of which USD65m will be financed by AIIB. Meanwhile, the Government of Tierra del Fuego will provide USD6.5 million for the Project.
27. **Loan Size and Terms.** The proposed Loan size is USD65 million, with a door-to-door tenor of 15 years and a grace period of 5 years.

Table 3. Project Cost and Financing Structure

Item	Project Cost (USD m)	Financing (USD m)	
		AIIB	GoA
Component A - Civil works	60.3	60.3	
Component B – Implementation support and feasibility studies	10.9	4.4	6.5
Component C - Project monitoring and external audit	0.1	0.1	
Front-end Fee	0.2	0.2	

Grand Total	71.5	65	6.5
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28. **Retroactive Financing.** The loan includes the possibility of retroactive financing for planned services and works under Components 1 and 2. Retroactive financing will be allowed up to 20 percent of the loan amount, for eligible costs. Eligible expenses are (i) eligible expenses in accordance with AIIB's policies, and (iii) incurred up to 12 months prior to loan signing.

E. Implementation Arrangements

29. **Implementation Period.** The implementation period is 5 years.
30. **PIU.** The Province, through its Provincial Implementation Unit for External Loans will implement the Project. The Project Implementation Unit (PIU) was created by the Provincial Decree No. 1278/2022, which will report directly to the Governor of Tierra del Fuego. The PIU will be responsible for the planning, execution, monitoring and evaluation of the activities under the Project. In addition, the PIU will be responsible for the strategic evaluation of the Project in close coordination with the Ministry of Economy of Argentina through the Undersecretariat of International Financial Relations.
31. The PIU is headed by an Executive Director and staffed with key experts who will be responsible for the implementation of the Project, including preparing the tender documents for works, goods, and services, monitoring and supervision of Project activities, ensuring quality controls, approving payment certificates for works contracts, and implementing Environmental and Social Management Plans (ESMP). The mission, functions, and terms of reference for each position were duly established by the Provincial Decree. The Executive Director has already been appointed by Provincial Decree No. 1541/2022.
32. **PIU Staffing.** The PIU will be composed of key specialists in the following areas: (i) Finance, (ii) Procurement, (iii) Monitoring and Evaluation, (iv) ES, (v) Legal, and (vi) Planning and Operational Management. The key specialists are currently government personnel, and no additional expenses will be incurred by the provincial government. Given that PIU officers will not have full-time dedication, the PIU will be supported by full-time consultants in each of the areas to facilitate the Project execution.
33. **PIE Coordination.** One of the functions of the PIU is to coordinate the actions of the different actors involved in the implementation of the Project, namely:
- (i) Terra Ignis LLC. Provincial company created in 2022 with the purpose of developing the energy resources in Tierra del Fuego, including supporting energy transition to renewables. Terra Ignis will be in charge of operating the wind park once the construction works are finalized by the EPC contractor.
 - (ii) RGEN. Entity that has been granted the concession by agreement for unlimited time of the public electricity service of the city of Río Grande, managing the generation and distribution of electrical energy.

- (iii) Ministry of Works and Public Services, Secretariat of Energy, in charge of the planning and regulation of the electrical sector in the province.
 - (iv) Ministry of Production and Environment, Secretariat of the Environment, in charge of issues relating to environmental, climatic, and social aspects of the projects.
 - (v) Ministry of Economy, in charge of the financial aspects of the loan.
34. **Financial Management.** The established PIU will be responsible for the overall Project financial management and disbursement work. The cash basis accounting system will be followed for Project accounting. The PIU will maintain Project accounts and have custody of supporting documents. The Project's financial progress will be reported quarterly through Interim Unaudited Financial Reports (IUFRs) to be submitted within 45 days from the end of each quarter. The PIU will present the Project's audited financial statements for each year of Project implementation within six months following the fiscal year-end.
35. **Monitoring and Evaluation.** For Project implementation monitoring, the PIU will be responsible for collecting the information from different sources (Provincial Energy Secretariat, Argentine Wholesale Electricity Market Clearing Company Compañía Administradora del Mercado Mayorista Eléctrico CAMMESA, Provincial Ministry of Environment and National Statistics Office INDEC). The Monitoring and Program Evaluation Executive Specialist will be responsible for the data collection and reporting. The progress will be reported on a semi-annual basis to AIIB and the Ministry of Economy.
36. **Open Information Strategy.** The Project Team and the PIU have had early-stage engagement with Open Contracting Partnership⁸ to discuss the publication and use of open, standardized, accessible, and timely information including data analysis based on open contracting indicators to help ensure efficiency, effectiveness, and integrity. This will also help keep stakeholders and the citizens informed about the Project implementation. Subject to the Borrower's consent, Open Contracting Partnership would provide strategic and technical support on open contracting principles and practices to the Project Team, the PIU, and the province/relevant implementers so that the project procurement and implementation processes are open and accountable.
37. **POM.** The PIU will elaborate a POM to specify the administrative, environmental and social organization and measures, financial, reporting and monitoring procedures applicable to the Project. The approval of the POM by AIIB will be a condition of effectiveness.
38. **AIIB's Implementation Support.** The Bank will conduct regular supervision missions, both physical and virtual. The frequency of such missions will depend

⁸ <https://www.open-contracting.org/>. OCP is a multi-stakeholder independent organization. It has received funding from several multilateral institutions and international organizations, such as CAF, EBRD, IDB, and UNODC.

on the implementation progress, but a minimum frequency of at least once a year is envisaged.

39. Given the limited experience by the province in dealing with IFI-funded projects, AIIB will provide continued support to the PIU during implementation, including (i) advising the PIU on staffing, project management, monitoring and evaluation of the Project, (ii) assisting the PIU in preparing tender documents and providing non-objection to the tender process, (iii) aligning local practices with international procurement, ES, and financial standards.

3. Project Assessment

A. Technical

40. **Project Design.** The Project will involve the procurement and installation of 8 wind turbines with an individual capacity of 4.2MW and a total installed capacity of 33.6MW. Due to the wind resource, the wind turbines should be Class I A according to norm IEC 61400-1. The feasibility studies demonstrated that the most viable route is that the equipment should be transported by sea to the port of Punta Arenas (Chile) and from there by land to Cape of Santo Domingo. A medium-voltage transmission line is located close to the project site, which will allow to transmit the energy generated by the wind park to the electrical central station. The Project is expected to build a 33Kv transmission line to increase the current transmission capacity and accommodate for a future increase in generation capacity of the wind park. Annex 2 provides detailed information about the Project design and technical features.
41. **Operational Sustainability.** The Province, through a public company named Terra Ignis LLC (created in July 2022), will be in charge of the operation of the Wind Park. The generated energy will be subsequently purchased by the RGEC, which will be in charge of the distribution to final users.
42. **Financial Sustainability.** Energy is heavily subsidized in Argentina, with cost recovery levels for the energy sector have been typically around 20-30 percent. In the case of Rio Grande, tariffs for residential users and for industries are composed of a fixed rate per month and a variable charge per KWh/month. As part of the agreement reached between Argentina and the IMF, steps have been taken to implement an energy subsidy segmentation scheme, which will drive the reduction in subsidy spending in 2023 by raising cost recovery rates to about 60 percent by end-2023. As of September 1, this is reflected in higher tariffs for both residential and industrial users (see Table 4 below).

Table 4. Tariff Scheme for Rio Grande

In USD	From July 1 to August 31	From September 1
<u>Residential Users</u>		
Fixed Charge	1.53	2.30
Variable Charge (average), Kwh/month	0.04	0.08
<u>Industries</u>		
Fixed Charge	22.20	25.75
Variable Charge (average), Kwh/month	0.06	0.07

Source: Provincial Decree 1383/23.

B. Economic and Financial Analysis

43. **Economic Analysis.** A cost-benefit analysis was carried out by considering the without-Project and with-Project scenarios. The without-Project scenario assumes that the energy supply from pre-existing energy systems is solely

coming from conventional fossil energy resources. In comparison, the with-Project scenario is based around the introduction of a renewable energy source along with a stable source of thermal power, which will provide increased capacity and reliability to cope with the existing and future demand.

44. The economic benefits of the Project were calculated by considering the economic value of incremental energy and the value of the avoided GHG emissions. Benefits related to reliability, although significant, might not be quantifiable.
45. The Project exhibits an Internal Rate of Return (EIRR) of 13.4 percent, above the cutoff rate of 12 percent, and an Economic Net Present Value of USD7.6m.
46. **Financial Analysis.** The investment will be financed directly by the government of Tierra del Fuego. However, the assessment of cost recovery ratios is relevant to the financial analysis, as it provides information about the financial sustainability of the Project, as well as potential opportunities for privatization in the future.
47. A financial model was developed to assess whether the Project generated positive cash flows and if it was capable of repaying the investment costs. The Project exhibits a Financial Rate of Return of 14.3 percent, with a payback period of 7.8 years.
48. The Project exhibits robust results, as demonstrated by the sensitivity analysis. More information about Economic and Financial Analysis is provided in Annex 3.
49. Created in 1990, Tierra del Fuego is the youngest and least populated Province in Argentina. With a population of around 190,000, which equals around 0.4 percent of the national population, it contributes to around 1-1.2 percent of the country's GDP. Although there are no recent estimations, per capita GDP is around USD25,000 (in current values), 2.5x higher than the national average. With a Human Development Index of 0.856, the Province is among the most developed regions in Argentina⁹.
50. The economy of the Province is well diversified. The key sectors are manufacturing (52.1 percent of provincial GDP), oil and gas (17.2), public administration (11.1), and tourism (7.8). Fishing activity is also relevant, as the Ushuaia port is fifth in terms of importance in the country.
51. The Province presented in recent years a primary budget surplus (see Table 5 below). Although the indebtedness is low and the part in foreign currency is guaranteed with royalties, it is important that budget surplus increases are able to allocate resources for investments. The Province is rated BBB by Moody's (Local), above the sovereign, and Ca by Moody's (International)¹⁰. Sub-national

⁹ UNDP, 2021. <https://www.undp.org/es/argentina/publicaciones/el-mapa-del-desarrollo-humano-en-argentina>.

¹⁰ Following Moody's International rating methodology for regional and local governments (RLGs), an RLG unlikely to be rated above the sovereign's rating.

public debt has been assessed as sustainable¹¹ as hydrocarbons royalties provide a natural hedge against the significant share of debt denominated in foreign currency (73 percent). The remaining portion of debt is mostly owned by the national government and denominated in Argentinian pesos (ARS). The multilateral debt tranche covers only USD25 million, corresponding to a project financed by the Inter-American Development Bank.

Table 5. Province of Tierra del Fuego, Selected Financial Indicators, in USDm

	2018	2019	2020	2021
Total Revenues	1,774.9	1,473.1	1,084.1	1,245.1
Total Expenditures	1,822.8	1,521.9	1,101.6	1,265.3
Primary Balance	29.9	12.8	17.5	10.6
Overall Balance	(51.9)	(49.3)	(18.7)	(21.0)
Debt Stock	781.3	588.2	427.3	315.9

Source: Ministry of Economy of Tierra del Fuego.

52. While Argentina has gone through a sovereign debt restructuring process in 2020, Tierra del Fuego is one of the jurisdictions in Argentina where subnational debt has been performing without having gone through any debt restructuring operation. One of the key reasons is the existence of hydrocarbons royalties, which results in stable USD-denominated revenues that help achieve good debt coverage ratios for the USD-denominated Bond Fuego 2027. Interest payments have also shown a downward trend in recent years as a result of an increase in revenues and deleveraging due to the amortization payments of the Fuego 2027 Bond.
53. Given the debt amortization profile, the Province will face a more challenging financial outlook until 2027, as the USD-denominated bond Fuego 2027 will reach its maturity date. For this reason, a 5-year grace period has been requested by the government of Tierra del Fuego.

C. Fiduciary and Governance

54. **Procurement.** AIIB's Procurement Policy (Rev November 2022) and its associated Interim Operational Directive on Procurement Instructions for Recipients (PIR, June 2, 2016) are applicable to this Project. The Bank Standard Procurement Documents for Large Works and Consulting Services will be used. The Project Delivery Strategy (PDS) and Project Procurement Plan are agreed, and will be updated, as necessary, during project implementation.
55. The procurement will consist of the following:
- (i) Civil Works: The procurement and installation of wind turbines for the Wind Park in the city of Rio Grande and the Construction for the interconnection line to the 33Kv local electric power distribution system.

¹¹ Moody's Argentina Credit Risk Report, December 2022. [Link](#).

The procurement of both packages will follow International Open Competitive Tender (IOCT) procedures.

- (ii) Consulting Services.
 - (iii) Construction Supervision Consultants, following Quality Cost Based Selection (QCBS).
 - (iv) Hiring of Project Implementation Support following QCBS
 - (v) Other Project Feasibility Studies
56. The procurement will be done by PIU, with the support of procurement consultant¹². Although this is a new interaction for the PIU with the Bank, some of the PIU staff have experience in working with other development partners. This procurement organizational arrangement is considered adequate in implementing the Project and minimizing procurement risk.
57. **Financial Management.** The Financial Management (FM) assessment was conducted during the Appraisal stage, and the review covered the system of accounting, budgeting, the flow of funds, financial reporting, auditing, and internal controls at the PIU. Based on the results of the FM assessment, the residual FM risk is Medium and the following measures have been agreed: (i) the PIU will develop FM chapters of POM for the proposed Project; and (ii) the PIU's finance consultants will agree the final draft of the first IUFRR and the Statement of Expenditure from the first replenishment application with the Bank's financial management specialist before obtaining approvals from the PIU management.
58. The PIU will be staffed with an executive technician in administration and finance and two finance staff who will work part-time but will be supported by two full-time finance consultants for maintaining acceptable project financial management arrangements. Two finance consultants have been already recruited and the review of their CVs confirmed that they are qualified and experienced to support the Project.
59. Budget execution in the Province is recorded in the provincial government's budget system which is called GEN Budget system and is subject to control over the budgetary execution process. A separate budgetary line in the PIU annual budget will be required to allocate budgetary resources and keep track of project implementation, specifying the sources of funds. This distribution will be made according to the programmatic categories of the Project indicating the budgetary appropriation for the current year. Approved provincial budget (budget appropriation) is granted by the Provincial Budget Law and distributed by the Administrative Decision of the Chief of the Cabinet of Ministers.
60. A POM comprising a financial management section with administrative procedures and processes for project implementation, including definitions of

¹² The Procurement Consultant is part of the Project Implementation Consultant.

responsibilities for annual and interim financial reporting and management of funds, will be prepared for the proposed Project.

61. The External Financing Information System (*Unidades Ejecutoras de Proyectos con Financiamiento Externo* [UEPEX]) is used to maintain the project accounting records in donor-funded projects. The PIU will also use the UEPEX system for the proposed Project. The Ministry of Economy will provide access to the UEPEX to the Project finance staff once the Project is approved. Accounting records will be kept in the Province and will be stored for at least 10 years as per the local documentation retention policy. The Project's Chart of Accounts will reflect disbursement categories, project components, and sources of financing.
62. The government entities at national level in Argentina are subject to an internal audit by the General Syndicate of the Nation (Sindicatura General de la Nación [SIGEN]), the Federal Government's internal audit agency under the jurisdiction of the executive branch. This practice is not applicable to the projects implemented by the PIU. The Province has established its own internal audit agency (Tribunal de Cuentas de la Provincia). The proposed Project will be subject to the internal audit review by it as part of the regular internal audit of the Minister of Economy of the Province.
63. The PIU will use the UEPEX system to produce the financial reports following public sector accounting standards in Argentina. These are comprehensive and consistent with international public sector accounting standards, particularly with the International Public Sector Accounting Standards #1 Presentation of Financial Statements. Such standards are set by the Accountant General Office (Contaduría General de la Nación). The UEPEX does not support generation of Project specific financial report like IUFR and Project Financial Statements (PFS) to be presented to AIIB and the external auditors. Therefore, the PIU will use the information from the UEPEX's generated reports and fill out the Excel version of IUFR and annual PFS which shall be presented in the English language.
64. For Project purposes, an independent auditor will conduct the external audit of the PFS under ToR acceptable to AIIB and following International Standards on Auditing (ISAs). The PIU will furnish audited financial statements (and any accompanying Management Letter) to AIIB no later than six months after the end of each fiscal year.
65. **Disbursements.** AIIB will handle all project disbursements according to its disbursement procedures. Disbursements will follow the transaction-based method, including the following procedures: Advance procedure (through advances to the Designated Account (DA), Direct Payment procedure, and Reimbursement procedure with full documentation, including reimbursements under the Retroactive Financing procedure. Further details will be described in the Disbursement Letter.
66. The PIU will operate a separate DA in USD to facilitate project implementation in the Tierra del Fuego Bank. As per Argentina's standard procedure, the AIIB funds will be transferred to the Central Bank of Argentina and subsequently to the DA. The PIU will manage the DA and will also be responsible for preparing

the bank account reconciliation on a monthly basis. Withdrawals from the DA will be solely made for payments of eligible expenditures. As eligible expenditures arise, funds will be converted to local currency and deposited into a dedicated Operating Account to be opened in any local financial institution in ARS, from which payments will be made for goods and services contracts, including vendors and consultants, as incurred.

67. **Financial Crime and Integrity and Counterparty Due Diligence/Know Your Counterparty.** Following AIIB's applicable policies and guidelines, Know Your Counterparty/ Financial Crime and Integrity Due Diligence has been conducted to assess Financial Crime risks, including Money Laundering and Financing of Terrorism risks, sanction risk, and risk deriving from integrity unsoundness when dealing with its Counterparties and Connected Parties in the financing.
68. **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in the projects it finances. AIIB places the highest priority on ensuring that the projects that AIIB finances are implemented in compliance with AIIB's Policy on Prohibited Practices (2016). Implementation will be monitored regularly by AIIB staff. AIIB reserves the right to investigate, directly or indirectly through its agents, any alleged Prohibited Practice relating to the project will require the borrower to take necessary measures to mitigate the risk of such practices and address any issues in a timely manner, as appropriate. AIIB will monitor the work related to tender document preparation and tender/proposal evaluation under AIIB financing.

D. Environmental and Social

69. **Environment and Social Policy and Categorization.** Environment and Social Policy and Categorization. AIIB's Environmental and Social Policy (ESP), including the ESSs and the Environmental and Social Exclusion List, apply to the Project. Only ESS 1 (Environmental and Social Assessment and Management) is triggered for the Project.
70. The Project consists of the construction of a 33.6 MW wind farm with 8 Wind turbine Generators located in Río Grande City and the interconnection line to the 33Kv local electric power distribution system (including fiber-optic cable network), including a single circuit 500kV that will be constructed in parallel of the current highway. The Project is assigned Category B based on its nature, location, sensitivity, and scale, and the significance of its potential adverse future environmental and social impacts.
71. **Instruments.** An Environmental and Social Management Plan (ESMP) and a Stakeholder Engagement Plan (SEP) have been prepared to manage ES risks and impacts. Based on the Argentinian regulation, a national environmental impact assessment is under preparation and its approval by the environmental agencies is a condition of effectiveness for the finance.
72. **Environmental Aspects.** The Project is expected to generate direct and indirect adverse impacts on biodiversity during construction, operation, maintenance, and decommissioning, manifested through dust emissions, habitat fragmentation,

noise, solid waste, wastewater, etc. The major impacts include bird and bat collision-related fatalities, noise, blade and ice throwing, and shadow flickering during the operational phase. In addition, the location of operational turbines may represent a barrier to migratory species. Adverse impacts can also result from other activities, particularly overhead transmission lines and access roads. All mitigation measures for these impacts are in the ESMP.

73. The spatial context around the project site was assessed to analyze the potential impacts on avifauna, including one Key Biodiversity Area, Reserva Costa Atlantica de Tierra del Fuego, within 10 km of the Rio Grande wind farm site and the Transmission Line, and a Biodiversity Risk Assessment will be prepared as part of the national EIA. In addition, the ESMP includes mitigation measures, such as the birds' adaptive management plan named Adaptation Resource Management Plan (ARM), whose intention is to provide a procedure that involves the collaboration and guidance of specialists to evaluate management measures and control to avoid and minimize avian mortality. The ARM will provide flexibility in the use of environmental management procedures over time to maximize the effectiveness and efficiency of the procedures that are adopted.
74. **Climate Change Risks and Opportunities.** The Project is considered Paris aligned for climate mitigation as it features in the joint MDB "aligned list" for renewable energy and substantially contributes to reducing GHG emissions. The Project requires further assessment to determine if it is Paris-aligned for climate adaptation, as it might be exposed to material physical climate risks. Climate vulnerability assessment will be conducted as part of the ESMP, and climate resilience considerations will be discussed for integration into the project design to mitigate climate risks. The Project qualifies as 100 percent climate finance.
75. **Cultural Resources.** The ESMP includes the screening and updates of the social baseline with relevant cultural resources coinciding in the Project areas, including the 'Chance of Findings Procedure' to establish appropriate management protocols in the unlikely event of uncovering any archaeological or cultural finds in consultation with the local communities, especially Indigenous Peoples, and the local authorities.
76. **Social Aspects.** The land where the Project will be developed is in an unpopulated area currently owned by the Salesian congregation, and negotiations have started for a lease of the land to the Province on a willing seller willing buyer basis. The construction of the Project will not lead to physical displacement. Economic displacement is also not expected.
77. **Indigenous Peoples.** The percentage of population self-recognized as indigenous¹³ at Tierra del Fuego, Antarctica and South Atlantic Islands is 2.8 percent, which amounts to 3,563 people out of a total of 127,205 inhabitants.

¹³ Official data and estimates from the 2010 National Population, Household and Housing Census, National Institute of Statistics. Information from the 2022 census is not yet published. Information from the 2022 census is not yet published. Official data from the 2010 National Population, Household and Housing Census/Indigenous Peoples, National Institute of Statistics. Information from the 2022 census is not yet published.

This percentage is slightly higher than the national average of 2.4 percent. However, only the Ona's (Selk'nam in their language) is native to the territory now occupied by the department of Río Grande, with a population of 294 people in the entire Isla Grande. There is no official Indigenous Peoples settlement or known territorial claim by Indigenous Peoples in the Project area. During the ESDD, it was confirmed that no Indigenous Peoples land or activities would be affected by the Project. However, some indigenous individuals live in Río Grande City, and specific consultations will be held to explain the Project's potential impacts.

78. **Stakeholder Engagement, Consultation, and Information Disclosure.** During the SEP preparation, meaningful consultations and stakeholder engagement were conducted with male and female members of the local communities. Public consultations, including specific consultations with vulnerable groups, are detailed as part of the SEP¹⁴. The draft version of the ES instruments (ESMP, SEP), non-technical summaries, and relevant translations in Spanish has been disclosed online on the Project's website¹⁵ and will be made available in the Project area. In addition, the documents were posted on the Bank's website¹⁶ on August 21, 2023. Proactive stakeholder engagement will continue for the duration of civil works.
79. **Community and Occupational Health and Safety, Labor and Employment Conditions.** As part of the ESMP, the mitigation of community health and safety risks will be defined in the Occupational Health and Safety Management Plan (OHSMP) to be prepared at the start of the construction and operational phases, covering Labor Working Conditions (LWC) issues for contractors, suppliers, and sub-contractors. Furthermore, the Project will develop a Worker Influx Management Plan to manage the potential risks associated with worker influx in the Project area. In addition, the EPC Contractor and O&M provider will prepare a Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) Prevention and Response Plan, Human Resources Policy (and related procedures), Retrenchment Plan, and Human Rights Policy.
80. **Project Grievance Redress Mechanism.** The PIU will establish and operate a project-level Grievance Redress Mechanism (GRM) for the local communities and a project-level GRM for Project workers. The public consultation and disclosure process should disseminate information about the project-level GRM and the Project-affected People's Mechanism ("PPM").
81. **AIIBs Accountability Mechanism.** The Bank has established the PPM to provide an opportunity for the independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by the AIIB's failure to implement its ESP in situations when

¹⁴ The SEP will be part of the national EIA, and its development will be a requisite for the environmental permit. The national EIA approval process requires the disclosure of the EIA and public hearings before its approval.

¹⁵ <https://www.tierradelfuego.gob.ar/programa-de-apoyo-para-la-transicion-energetica/>.

¹⁶ <https://www.aiib.org/en/projects/details/2023/proposed/Argentina-Tierra-del-Fuego-Energy-Transition-Support-Program.html>

their concerns cannot be addressed satisfactorily through the Project-level GRM or the AIIB's management processes. More information about the PPM can be found by visiting: <https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>.

82. **Monitoring and Supervision Arrangements.** ES monitoring reports will be prepared by the Project Company every six months during construction work and annually after that. Supervision missions, including site visits, will be carried out annually. In addition, the Bank will leverage ultra-high-resolution satellite imagery to conduct remote ES due diligence and monitor Project activities.

E. Risks and Mitigation Measures

Table 6. Summary of Risks and Mitigating Measures

Risk Description	Assessment (H/M/L)	Mitigation Measures
Technical Risk	Medium	<ul style="list-style-type: none"> • International contractors with proven track record will undertake the civil works. • Turbines to be subject to minimum criteria and specifications.
Resources risk	Low	<ul style="list-style-type: none"> • Long term wind measurements confirming high yields.
Procurement Risk	Medium	<ul style="list-style-type: none"> • Project procurement to contemplate labor and work conditions. • Open procurement process for civil works and equipment in accordance with AIIB policies.
Financial Management Risk	Medium	<ul style="list-style-type: none"> • The following measures have been agreed: (i) the PIU will develop FM chapters of POM for the proposed Project based on the draft POM for CAF financed project; and (ii) the PIU's finance consultants will agree the final draft of the first IUFR and the Statement of Expenditure from the first replenishment application with the Bank's financial management

Risk Description	Assessment (H/M/L)	Mitigation Measures
		specialist before obtaining approvals from the PIU management.
Implementation Risk	Medium	<ul style="list-style-type: none"> • The Province will assign officials from different areas in addition to the specialists hired by the PIU. • Prior to the first disbursement, evidence of conformation of the PIU structure will be requested.
Environment and Social Risk	Medium	<ul style="list-style-type: none"> • A national EIA, including biodiversity risk assessments, is being carried out with public consultations and its approval is a precedent condition for the finance. In addition, an ESMP and SEP will be included as components of the EIA and requirement for the operations.
Macroeconomic Risk	High	<ul style="list-style-type: none"> • Argentina has an ongoing IMF Program. • Argentina exhibits a good track record in the MDB debt tranche. • The Province has a diversified economy and significant revenues in foreign currency due to royalties on hydrocarbon resources. • Sub-national debt is performing. Unlike the sovereign, no debt restructuring operation has been performed during 2020-2021.

Annex 1: Results Monitoring Framework

Project Objective: To establish wind power generation capacity in Tierra del Fuego Province.										
Indicator Name	Unit of Measure	Base-line	Cumulative Target Values					End Target	Frequency	Responsibility
			YR1 2024	YR2 2025	YR3 2026	YR4 2027	YR5 2028			
Project Objective Indicators:										
Electricity generation (renewable)	GWh	0					156	156	Annual	PIU
Greenhouse gas emissions avoided	Ton of CO2 equivalent	0					50,856	50,856	Annual	PIU
Number of people with improved access to energy (gender-disaggregated)	Population	0					98,000	98,000	Annual	PIU
Intermediate Results Indicators:										
Wind energy capacity installed	MW	0					33.6	33.6	Annual	PIU

Annex 2: Detailed Project Description

1. Context and baseline. The baseline (do-nothing) scenario can be summarized as follows:
 - The energy mix is 100 percent dependent on fossil fuels.
 - Energy generation technology obsolete and unreliable.
 - High gas consumption resulting in elevated energy generation costs.
 - The provincial grid is isolated from the national grid.
 - Current capacity is insufficient to cope with future demand increase.
2. Wind resource is a significant potential for energy generation in Tierra del Fuego, and the Project will serve as a first step towards harnessing this form of energy.
3. At the same time, because Tierra del Fuego is not connected to the SADI, and the inherent instability of the wind needed to move the blades of the wind turbines, the potential for developing wind power as a stable stand-alone technology will remain limited.
4. **Wind Survey.** The first wind measuring tower was installed in the Cape of Santo Domingo¹ in 2018 by the RGEN and certified by the Regional Center of Wind Energy. Wind data has been collected over the last four years using one measurement tower. Following this, a second measuring tower was added closer to the wind park site in 2019. This second tower has been collecting data for more than two years. According to the wind survey results, the average annual wind speed is 11 m/s at 60 meters, which results in exceptional wind resource that allows for wind speeds of at least 10m/s for at least 5000 hours per year². The wind turbines will turn on when average wind speed reaches 3 m/s.

Table 7. Wind Survey Results

Height	10m	30m	60m
Average speed ¹⁰	9,6 km/h	10,6 km/h	11,3 km/h
Standard deviation	1,0	0,9	1,2

Source: Rio Grande Wind Park Feasibility Study

5. **Wind Yield and Capacity Factor.** Assuming the wind survey data above, full availability, and an installation of 8x4.2MW nominal capacity turbines³ at height 69 meters (wind speed minimum of 3 m/s and maximum 26 m/s), the feasibility study estimated that the wind plant could generate at a capacity factor of 56 percent or a yield of 4.9 MWh/MWp. The capacity factor level is considered high by international standards.

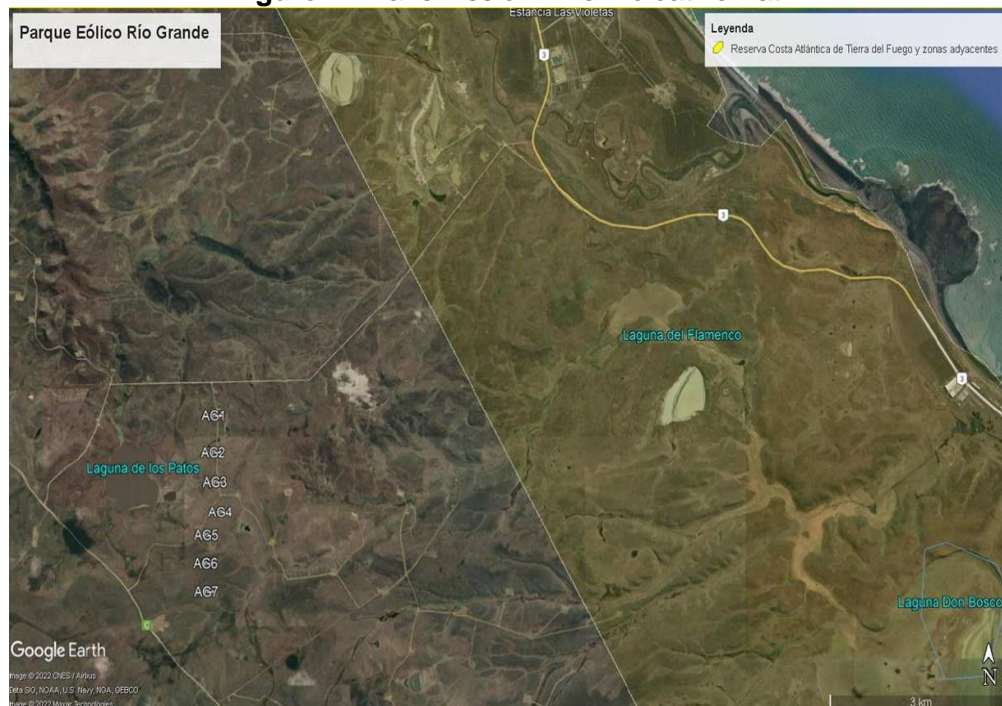
¹ Santo Domingo Station: Lat -53°40'57,0" / Lon -67°52'16,4" / h (gps) 89 m above sea level. Located around 11.5km away from the project site.

² For comparison, the long-term average wind speed in P000515 Lao PDR: Monsoon 600MW Cross-border Wind Power Project, is 6.47m/s at 110m hub height; and P000225 Kazakhstan: Zhanatas 100MW Wind Power Plant is 8.3m/s at 82.5m hub height.

³ The design was subsequently revised to 8x4.2MW for a total 33.6MW installed capacity.

6. **Transmission Line.** A medium-voltage transmission line is located close to the project site, which will allow to transmit the energy generated by the wind park to the electrical central station. The Project is expected to build a 33KW transmission line to increase the current transmission capacity and accommodate for a future increase in generation capacity of the wind park. The 33KW line will be aerial, “Line-Post” type, built on concrete columns. In addition, a fiber optic network will be laid over the columns, to be able to supervise and remotely control the operation and dispatch of the park from the operation center located in the city's power plant. The below Figure shows the proposed path for the transmission line, in parallel to Route 3, so access for connecting the wind turbines is not an inconvenience and the interconnection costs will be within reasonable values.

Figure 1. Transmission Line Indicative Path



7. **Wind Turbines.** Due to the wind resource, the wind turbines should be Class I A according to norm IEC 61400-1. There are many models in the market that would satisfy the requirement. The final decision will take into consideration technical, economic, logistic, maintenance and repair requirements, among others, during the tendering stage. A total of 8 turbines will be installed. The turbines shall be procured in accordance with the terms and requirements of the Bank.
8. **Logistics Considerations.** Given the location, the wind park project required carrying out a logistics feasibility study to confirm the ability of sourcing and delivering the wind turbines to the project site, and the determination of the most suitable route. In the case of Tierra del Fuego, the studies demonstrated that the most viable route is that the equipment should be transported by sea to the port of Punta Arenas (Chile) and from there by land

to Cape of Santo Domingo. Transfer from Ushuaia is considered unfeasible due to the curvature of the route and the existence of tunnels in the Cerro Castor area.

Annex 3: Economic and Financial Analysis

A. Approach and Methodology

1. The Project is expected to produce economic benefits through i) the generation of additional energy to households and industries, to cope with an increasing demand (assumed to grow at 7 percent p.a.), and ii) the avoided GHG emissions by introducing a renewable energy source. The analysis is expected to demonstrate that the Project is economically viable as the Economic Internal Rate of Return (EIRR) exceeds the social discount rate (set at 12 percent).
2. The financial analysis considered the proposed financial structure of the Project, namely, i) the generation and sale of energy by the Provincial company Terra Ignis LLC to the RGEC at a convened price, and ii) the distribution and consumption of electricity by households and industries at the established tariff scheme. Both sides are analyzed to determine if the Project produces enough revenues to repay the investment costs. Given the current country risk premium⁴ and the high-beta characteristics of green and renewable projects⁵, required financial return for the Project is assumed to be very high (around 25-30 percent), which would be deemed difficult to achieve.
3. Sensitivity analysis has been carried out to assess how the economic and financial outcome would be affected by changes in investment costs, energy generation and economic benefits / financial revenues.

B. Assumptions

4. The adopted assumptions are as follows:
 - i. The social discount rate has been set at 12 percent, in line with the discount rate for public projects in Argentina.
 - ii. Evaluation horizon is 30 years.
 - iii. The analysis is carried out in constant values.
 - iv. The Wind Park is expected to be completed in 180 days and start operations by mid-2024.
 - v. Project costs have been estimated using social prices (i.e., to reflect opportunity costs).
 - vi. The Project is expected to produce 118,119MWh / year, with a capacity factor of 46 percent⁶.
 - vii. The Project is expected to avoid 50,856 tCo2 / year. Shadow carbon prices recommended values are taken from AIIB's Guidance Note on cost-benefit analysis of Projects.
 - viii. Given the distortion introduced by the subsidized tariff policy, the economic value of

⁴ https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

⁵ https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/Betas.html

⁶ This might be considered a conservative assumption, as capacity factors in the area could exceed 50 percent.

incremental energy has been estimated considering the average contracted prices for renewable project under the RenovAR scheme for the Patagonia region (USD51.22/MWh)⁷.

- ix. The financial analysis assumes that the current tariff scheme (Provincial Decree 1383/2023) is applied to the final users by the RGEN. Meanwhile, the energy is purchased by RGEN to the Provincial company at a convened priced of USD0.09/KWh⁸.

C. Project Costs

5. Investment Costs are USD65m. This equals USD1.9m per MW of nameplate capacity installed. This value is in line with international costs⁹.
6. Operating, Maintenance and Administration Costs have been estimated using data from the Energy Secretariat of Tierra del Fuego Province and by carrying out consultations with sector specialists. Annual costs are estimated at USD658,118 (1 percent of investment costs), with the following breakdown:

Table 8. Breakdown of Operating, Maintenance, and Administration Costs

Item	USD
Operating Costs	60,966
Personnel	60,966
Maintenance Costs	531,852
External maintenance contract costs	531,852
Administration costs	65,300
Security costs	6,800
Vehicles	7,600
Insurance	40,000
Others	3,000
Land and internal road maintenance	7,900
Total Costs	658,118

D. Economic Analysis

7. The Project exhibits an Internal Rate of Return (EIRR) of 13.4 percent, above the cutoff rate of 12 percent, and an Economic Net Present Value of USD7.6m. 60 percent of economic benefits correspond to the economic value of incremental energy; meanwhile, the 40 percent remaining corresponds to the economic value of avoided GHG emissions. The breakdown of economic costs and benefits is presented in the below Table.

⁷ <https://www.argentina.gob.ar/economia/energia/energia-electrica/renovables/renovar>.

⁸ According to consultations carried out to the Energy Secretariat of Tierra del Fuego.

⁹ https://www.windustry.org/how_much_do_wind_turbines_cost.

Table 9. Breakdown of Economic Costs and Benefits of the Project

Item	Cash Flow	Present value (12 percent)
Investment costs	(65.0)	(65.0)
O&M costs	(18.3)	(4.0)
Incremental energy benefits	178.5	46.0
Avoided GHG emissions benefits	138.4	30.5
Total	233.5	7.6

8. The Project is deemed economically viable, as the EIRR is above the social discount rate of 12 percent. The Project generates significant economic benefits as it responds to the increasing demand for energy in the Province, and it allows to introduce a renewable energy source to the network.

E. Financial Analysis

9. The financial analysis is carried out from the standpoint of the provincial company Terra Ignis who would be in charge of the operation of the wind park. As previously described, the company would be selling the generated power to the RGEC, who would subsequently distribute the energy to residential and industrial users. The below Table provides information on the current tariff scheme for Rio Grande. As the Table shows, most users are big-sized industries. The weighted average tariff is USD0.087. For modelling purposes, it is assumed that the energy is sold to the RGEC at the average tariff.

Table 10. Variable Tariff Scheme for Rio Grande Users

Category	Share	USD / Kwh
Industrial demand (big-sized)	60.8	0.093
Industrial demand (medium-sized)	6.3	0.068
Residential users	23.6	0.075
Other users	9.3	0.094
Weighted Average		0.087

10. Considering both fixed and variable charges, The Project would be generating revenues of USD10.6m / year to the provincial company. The Financial Internal Rate of Return (FIRR) of the Project is 14.3 percent. This would yield a positive Net Present Value if the discount rate were to be maintained at 12 percent. While the Project is revenue-generating, the required return for investors in Argentina is likely exceeding such value under the current scenario. The Project can quickly repay for investment costs (payback period is 7.8 years) and generate positive cashflows. Therefore, it offers opportunities for scaling up and privatization.

F. Sensitivity Analysis

11. To assess how EIRR and FIRR are affected by changes in key variables, sensitivity analysis was carried out. The results are shown in the below Tables. The Project exhibits robust results i.e., the returns are positive and above the cutoff rate, except in the case of extreme scenarios (investment cost overruns are 25 percent and economic benefits / revenues fall are reduced by 30 percent).

Table 11. Sensitivity Analysis (Economic Analysis)

Investment costs	EIRR	Economic Benefits	EIRR
25%	10.6	30%	15.9
10%	12.1	15%	14.6
0%	13.4	0%	13.4
-10%	14.8	-15%	12.1
-25%	17.7	-30%	10.7

Table 12. Sensitivity Analysis (Financial Analysis)

Investment costs	FIRR	Tariff price	FIRR
25%	11.3	30%	18.8
10%	13.0	15%	16.6
0%	14.3	0%	14.3
-10%	15.9	-15%	12.0
-25%	19.6	-30%	9.5

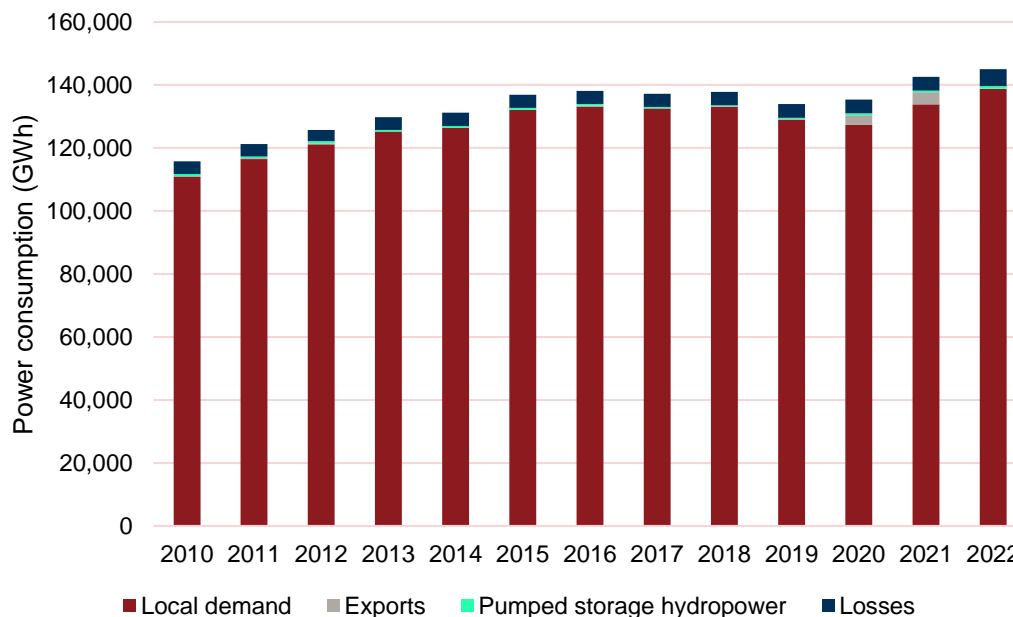
Annex 4: Member and Sector Context

The Project is located in the province of Tierra del Fuego, which is not currently part of Argentina's national electricity grid. The country context below covers Argentina's overall electricity sector, which mainly includes statistics and policies for the national electricity grid. While these are not directly related to Tierra del Fuego, they do put the Project in the context of national policies and trends. In addition, Tierra del Fuego could be connected to the national electricity grid in the future, as the Argentinian government has published plans to connect the province to the mainland via a subsea cable.

Electricity Demand

In 2022, Argentina's electricity consumption reached 145 GWh according to the CAMMESA. Most of the electricity consumption was used to meet local electricity demand (139 TWh). Another 6 GWh was used for export, to charge pumped storage hydropower units, or lost during transmission and distribution (Figure 2). Electricity consumption growth has been slow in the last few years, due to the current economic crisis, with a CAGR of 1.35% between 2015 and 2022, compared to 3.7% between 2005 and 2015. Most of the demand is situated in Buenos Aires and its two surrounding regions – the Grand Buenos Aires and Litoral regions, which represented 62% of total electricity demand in 2022 (Table 13).

Figure 2. Argentina Electricity Consumption



Source: CAMMESA

Table 13. Electricity Demand by Province

Region	Demand (GWh)	Share of total
Gran Buenos Aires	51,931	37.4%
Buenos Aires	17,059	12.3%
Litoral	16,992	12.2%
Centro	12,422	9.0%
Noroeste	11,300	8.1%

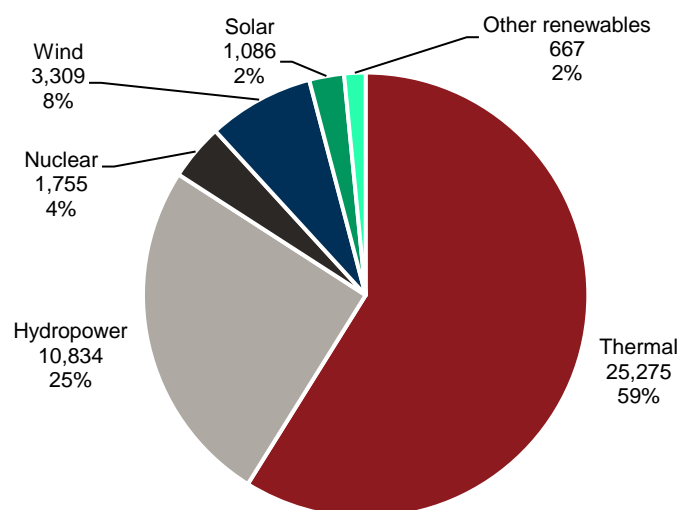
Region	Demand (GWh)	Share of total
Noreste	10,013	7.2%
Cuyo	8,497	6.1%
Patagonica	5,465	3.9%
Comahue	5,082	3.7%
Total	138,760	100%

Source: CAMMESA

Electricity Generation

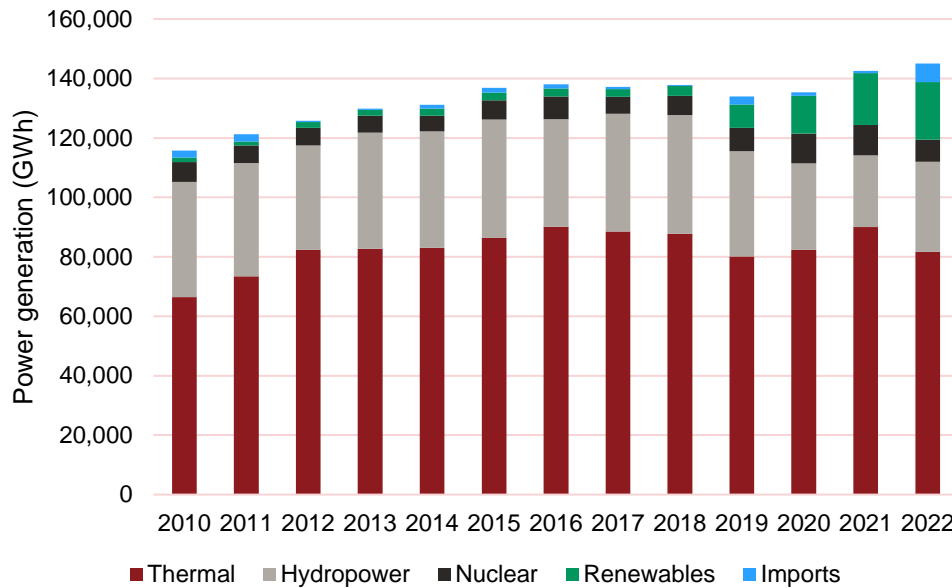
In 2022, Argentina had 43 GW of installed electricity capacity (Figure 3). Thermal electricity represented 59% of total installed capacity, totaling 25.2 GW. Wind and solar capacity are still underrepresented in the mix, reaching 3.3 GW and 1.0 GW, respectively. While wind and solar installed capacity have grown strongly between 2015 and 2021, boosted by a set of public policies (see below). However, the current economic crisis has delayed clean energy projects and represents a major challenge for renewables projects looking to secure financing. In 2022, Argentina only added 18 MW and 26 MW of wind and solar, respectively.

Figure 3. Argentina Installed Capacity Mix, 2022



Source: CAMMESA

Argentina generated 139 TWh of electricity in 2022 (Figure 4). The country's electricity generation mix was dominated by gas electricity (57%), followed by hydropower (22%), wind (10%), and nuclear (5%). Argentina also imports small amounts of electricity, mostly coming from Brazil. The country has set a goal for non-hydro renewables to reach 20% of the electricity mix by 2025 and recent efforts to increase deployment have resulted in a higher share of non-hydro renewables in the electricity mix (13.9% in 2022 compared to 2% in 2017).

Figure 4. Argentina Electricity Mix

Source: CAMMESA

Transmission and Distribution

SADI is a wide area synchronous grid that links the regional networks of all Argentinian provinces, except for Tierra del Fuego which operates its own isolated networks. Compañía Nacional de Transporte Energetica en Alta Tension operates the national electricity transmission grid under a long-term agreement with the government. There are three primary companies (Edenor, Edesur and Edelap) in the distribution market. CAMMESA is responsible for managing Argentina's wholesale electricity market and the national interconnection system, planning energy capacity needs, monitoring the operation of the market, administering the dispatch of electricity, managing electricity trade with other countries, and acting as public off-taker in certain power purchase agreements (PPA).

Due to challenges in ensuring a reliable and continuous supply of electricity in Tierra del Fuego, a resolution¹⁰ by the Argentinian government was published in 2021 with plans to connect it to the mainland via a subsea cable. This would effectively bring the province into SADI and the national electricity grid.

Market Structure

Argentina has a competitive and deregulated electricity sector. The areas of generation, transmission and distribution are open to the private sector. Private and state-owned electricity generation companies operate in a competitive market, electricity generators sell their electricity in a wholesale electricity market operated by CAMMESA. As part of this system, large power consumers (with annual demand of 300kW or more) can enter bilateral PPAs with electricity generators.

¹⁰ <https://microfe.cammesa.com/static-content/CammesaWeb/download-manager-files/Mem/RESOL-2021-12-APN-SE-MEC.pdf>

Renewable Energy Policy

The country passed the 'Legal Regulations on National Promotion for the Use of Sources of Renewable Energy'¹¹ (thereafter the Renewable Energy Law) in 2015 and has been holding renewables auctions since then. The legislation set a series of targets for the share of renewables in national electricity consumption, starting with 8% by 2017 and gradually rising to 20% by the end of 2025. Argentina did not meet the initial milestone, with renewables supplying just 2% of electricity demand in 2017. This share had grown to just over 13.9% in 2022.

The Renewable Energy Law also established advantageous conditions for the development of wind and solar, giving associated projects access to incentives such as accelerated depreciation and exemption from VAT and import duties. On the demand side, large consumers are required to rely on renewables for at least 8% of their electricity needs (as at the end of 2017), gradually increasing to 20% by the end of 2025, which may be achieved by signing bilateral PPAs. The law also included the establishment of a fund for renewable energy (*Fondo para el Desarrollo de las Energías Renovables*, FODER) which provides guarantees that mitigate the country risk for project developers and their financiers.

Argentina has also taken steps to stimulate growth in distributed electricity generation. In November 2018, the government published a decree stipulating that all users can install distributed generation sources (such as rooftop solar) and sell the surplus electricity generated into the grid and requiring new public buildings to use distributed generation resources from renewables.

The country's climate change commitments also support the growth of renewable energy. In November 2021, the GoA submitted the update of its second Nationally Determined Contributions (NDC)¹², committing unconditionally to not exceeding the net emissions of 349 million tons of carbon dioxide equivalent (MtCO₂e) in 2030. The target applies to all sectors of Argentina's economy. In November 2022, it submitted a long-term strategy (LTS) to the UNFCCC¹³ that includes a target to reach GHG neutrality by 2050.

Renewable Energy Auctions

In early 2016, the GoA launched the RenovAr initiative¹⁴. It is an auction-based renewable energy program designed to scale up private renewable generation capacity¹⁵. Under this scheme, PPAs had a standard 20-year length and were denominated in US dollars. Outside of government contracts, there are no restrictions on the duration of bilateral PPAs between corporations and clean energy generators. Renewable developers that participate in this market can request priority dispatch in the quarterly rounds of the Renewable Energy Term Market (MATER). Despite

¹¹ [https://www.energia.gob.ar/contenidos/archivos/Reorganizacion/renovables/legislacion/ARGENTINA_-_Renewable_Energy_Law_Act_27191_\(English_version\).pdf](https://www.energia.gob.ar/contenidos/archivos/Reorganizacion/renovables/legislacion/ARGENTINA_-_Renewable_Energy_Law_Act_27191_(English_version).pdf)

¹² UNFCC, https://unfccc.int/sites/default/files/NDC/2022-06/Argentina_Segunda%20Contribuci%C3%B3n%20Nacional.pdf

¹³ UNFCC, <https://unfccc.int/sites/default/files/resource/Estrategia%20de%20desarrollo%20resiliente%20con%20bajas%20emisiones%20a%20largo%20plazo%20a%202050.pdf>

¹⁴ <https://www.argentina.gob.ar/economia/energia/energia-electrica/renovables/renovar>

¹⁵ To further enhance the confidence of investors and financiers, the World Bank Group (WBG) supported the preparation of the first RenovAr tenders and provided a \$480 million guarantee to backstop certain government obligations under the program.

challenges, Argentina set a new annual record for wind and solar additions in 2020, with 1.4 GW connected to the grid.

In early 2023, the government announced the opening of country's first public auction for non-hydro renewables since 2019 (Argentina held the third and last round of its 'RenovAr' public auction in 2019). Launched in February 2023, the 'RenMDI auction' includes a total of 620MW of renewable energy capacity, divided into two parts:

- Regional and provincial projects that allow substitution for a maximum power of 500MW, with a focus on biomass, solar with/without storage, and wind power with storage.
- Projects that allow the incorporation of small-scale renewables generation, up to a maximum capacity of 120MW. Winning bids will get 15-year supply contracts with CAMMESA.

Annex 5: Sovereign Credit Fact Sheet

Background. Argentina is an upper-middle-income country with population of around 46 million, income per capita of around USD13,000 (USD26,000 in purchasing power terms) and total GDP of around USD600 billion (third largest in Latin America). The economy has a developed manufacturing sector and is well endowed in natural resources. In particular, the competitive and export-oriented agricultural sector (soybean, beef, corn, wine) is an important source of foreign exchange. The top three export markets are Brazil, China, and the US. Argentina is also known for a skilled labor workforce and high-quality education attainment.

Good prospects are nonetheless held back by shortcomings in economic management. Argentina ranks 126 out of 190 economies on the ease of doing business (as of 2020). Competition in the product and labor markets is weak. Furthermore, Argentina has a long history of severe macroeconomic instability, driven by spells of unsustainable and unpredictable fiscal and monetary policies, which have led to recurring episodes of economic crises, high inflation, devaluations, FX shortages, capital controls as well as occasional deposit confiscations and high-profile defaults. The history of booms and busts and the lack of policy credibility means that citizens have a strong propensity to hold dollars, making reserves accumulation difficult, despite generally positive external balances.

Most recently, in 2018, concerns over debt service capacity led to sudden capital outflows. Argentina lost access to international markets and requested a USD57 billion IMF program, of which some USD45 billion had been disbursed. However, a new balance of payments crisis hit in 2019, prompting the reintroduction of capital controls, reprofiling of domestic-currency debt, and a default on foreign-currency sovereign debt. In 2020, a new government completed a sizable debt operation with private bondholders. In March 2022, a new 30-month, USD44 billion IMF program was put in place, effectively restructuring the previous one.

The key tenets of the IMF program are fiscal and monetary tightening. A medium-term fiscal consolidation, that aims at a primary balance by 2025, is expected to restore debt sustainability and remove pressure from prices and the current account. Monetary tightening, as to achieve decisively positive real interest rates, would encourage demand for local currency assets, allowing the government to fund itself in domestic markets and thus improving external liquidity. A measured depreciation would then help unwind the sizeable real exchange rate overvaluation and rebuild FX reserves. Restoring policy credibility is critical to this strategy, to sustain demand for and confidence in local assets and help regain market access by 2025.

Selected Macroeconomic Indicators	2020	2021	2022	2023*	2024*	2025*
GDP growth 1/	-9.9	10.7	5.0	-2.5	2.8	3.3
CPI Inflation (end-of-period) 1/	36.1	50.9	94.8	120.0	60.0	45.0
Federal government fiscal balance	-8.3	-4.5	-4.2	-4.1	-4.0	-2.2
Federal government debt	102.8	80.8	84.7	89.5	79.9	76.9
Public gross financing needs	18.5	18.2	16.7	8.9	16.6	10.3
Current account balance	0.8	1.4	-0.7	-0.6	1.2	0.8
External debt	83.1	59.1	59.1	64.2	55.8	53.3
Gross external financing needs	25.7	18.9	16.0	16.4	12.1	11.8
Gross official reserves (USD billion) 2/	39.4	39.7	44.6	27.9
Exchange rate (ARS/USD) 2/	84.2	102.8	177.1	367.0

Source: IMF Report 23/312, AIB staff estimations; in percent of GDP unless indicated otherwise; '*' = projections

Notes: 1/ percent change y/y; 2/ data from central bank, end-of-period, for 2023: as of Sep 1

Recent developments. Economy rebounded strongly in 2021, by 10.4 percent, following the pandemic-induced, 9.9 percent contraction. Positive momentum carried into 2022, with growth estimated at 5.4 percent, helped by still favorable external conditions. However, in 2023, Argentina has been affected by a severe drought, worst in 60 years, which has devastated export crops and caused serious economic impact, estimated at USD18-25 billion, with lower expected growth, lower export earnings, and the related hit to fiscal revenues and international reserves.

Argentina continues to be under macroeconomic stress. It remains shut off from international capital markets. Since 2022, the peso has been depreciating by around 40-50 percent annually. Gross FX reserves declined sharply in 2023 and are insufficient in relation to the needs, at less than 40 percent of what the IMF would deem adequate. Net FX reserves (excluding liquid FX liabilities) are negative. FX shortages (at the official rate) are pervasive, including due to hoarding by the public, with a black-market premium of up to 100 percent, as of mid-2023. Inflation is currently running at over 100 percent (up from 50 percent in early 2022). It has been driven by robust growth to-date, high energy, and food prices, pass-through from depreciation, monetization of public debt, backward-looking indexation and unanchored inflation expectations (at 160 percent, as of June 2023). Domestic capital markets are shallow and volatile, and confidence has been damaged by the prospects of debt restructuring.

To manage the situation, the authorities have been relying on an increasingly complex set of unorthodox measures. Various capital controls and import restrictions are in place to conserve foreign reserves. Multiple parallel exchange rates exist for different transactions. The central bank has been actively intervening in the FX market to control depreciation. It has also been backstopping the domestic debt markets and the Treasury through secondary market purchases (effectively monetizing the fiscal deficit). Given difficulties in raising new funds, the authorities have been actively reprofiling domestic debt through voluntary debt exchanges. While these unorthodox measures could be regarded as necessary, given the circumstances, they are nonetheless believed to be important factors causing severe economic distortions and perpetuating the problems they are trying to address.

The IMF program has been off to a promising start, particularly following the appointment of a political heavyweight as a finance minister in mid-2022. Fiscal policy has improved, with stronger expenditure controls, civil service hiring freeze, better targeting of subsidies and social spending, as well as robust revenues. The primary deficit in 2022 came to 2.3 percent of GDP, better than expected. Meanwhile, monetary policy has been gradually tightened to 155 percent, as of June 2023, from 45 percent in early 2022), to make real interest rates positive. By April 2023, Argentina has completed four program reviews, with most targets met.

However, performance has deteriorated in 2023. Because of the severe drought and political infighting ahead of the October 2023 general elections, the authorities were unable to stay on course, which has led to policy reversals and missed targets. In July and August 2023, the IMF reset the program and agreed to the combined fifth and sixth reviews. The review has unlocked USD7.5 billion of fresh IMF financing, allows official creditors to disburse under their programs, and effectively helps shore up Argentina through to the elections. The next review is scheduled for November 2023, with the new government.

Outlook and risks. In 2023, GDP is expected to contract sharply, by 2.5 percent, due to the drought, tighter policies, FX shortages and economic distortions. Inflation will remain high.

The banking sector is generally stable. Banks report adequate capitalization and maintain very high levels of liquidity to hedge against the volatile macroeconomic environment and the risk of

withdrawals by skittish depositors. In any case, the sector is small, with assets of around 40 percent of GDP and private sector loans below 10 percent of GDP, which speaks to a difficult operating environment for the private sector and subdued demand for credit.

According to the IMF, public debt is sustainable, albeit not with high probability.¹⁶ The risk of sovereign stress is high in the long term, but moderate in the medium term thanks to the breathing space provided by the 2020 debt restructuring. Public debt has increased sharply to over 100 percent of GDP, due to the 2018 crisis and then the pandemic, but has since declined to below 80 percent, thanks higher growth, negative real interest rates and real exchange rate appreciation. Excluding intra-public sector holdings, debt is around 60 percent of GDP.

While debt exchanges have been successful, so far, in reducing domestic rollover risks, fixing confidence in domestic markets is key for longer-term sustainability. So is fixing the domestic FX market and regaining international market access before large redemptions resume in 2025. The authorities have been struggling to secure external financing, and are resorting to bridge loans, ad hoc purchase schemes from exporters, and to tapping swap lines. Argentina's sovereign credit ratings are in the CC-CCC range.

That said, if strictly implemented, and barring more unforeseen shocks, the IMF program should help strengthen debt sustainability. Additionally, this will require a credible commitment by the authorities to policies and reforms that would restore macroeconomic stability over time, along with some implementation track record. This is what is expected from the new government. However, given the size of economic imbalances, and the history of political disagreements and policy reversals, this will be a challenging task.

¹⁶ The probability qualification is mandated by IMF policies in case of large borrowers. Otherwise, debt would normally be assessed simply as "sustainable" (albeit with high risks).