



Provincia de Santa Fe

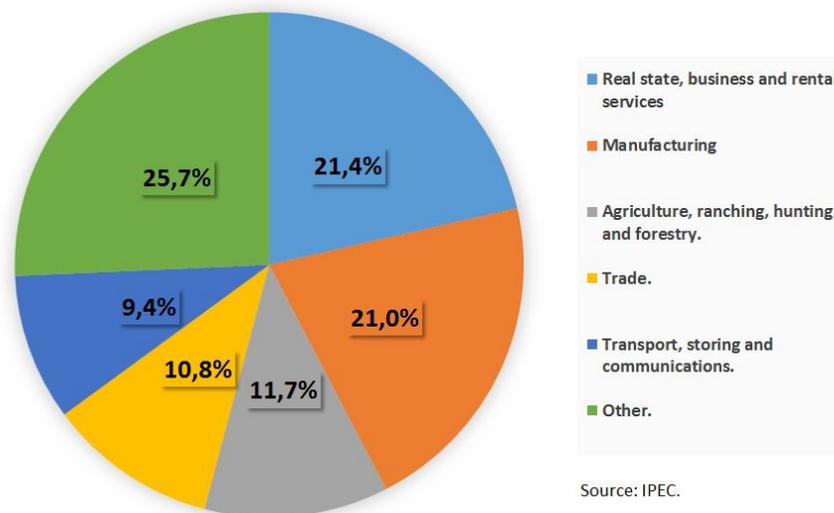
## Under2 MOU Appendix: Santa Fe

### *Profile: Province of Santa Fe*

The Province of Santa Fe, with a population of 3.453.674, is in the most important productive corridor of Argentina. The province's location maximizes its geo-economic strategic significance. Santa Fe offers first-class conditions for port activities: 700 km of coasts along the Parana, a river with excellent navigability, oceanic deep-draft navigation and multipurpose terminals that can handle multimodal transport from a great location for international trade. Geographic proximity to the country's primary markets of agricultural and industrial inputs, and of professional services and mass consumption centers support the privileged position of the province for the settlement of industries and corporate headquarters. The availability of qualified human capital, the education fabric and the assistance provided to the productive sector are key factors to tempt investors.

Every year, Santa Fe's productive structure creates 8% of the national GDP and 20% of the country's exports.

SANTA FE GEOGRAPHICAL GROSS PRODUCT BREAKDOWN FOLLOWING FIVE PRIMARY CATEGORIES. 2015



SANTA FE GEOGRAPHICAL GROSS PRODUCT SHARE IN ARGENTINA GDP, FOLLOWING TEN PRIMARY CATEGORIES. 2015



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Categories	Share (%)
Agriculture, ranching, hunting and forestry	17,8
Real state, business and rental services	16,1
Transportation, storage and communications	12,4
Manufacturing	10,7
Financial intermediation	9,3
Housemaid services	7,7
Teaching	7,7
Trade	6,6
Electricity, gas and water	5,6
Social and health care services	4,9
Other	1,2

Source: INDEC, IPEC.

The province is a diverse territory rich in natural resources; it is located at the heart of the *Llanura Pampeana*, one of the world's most fertile plains. Rich soils and variety of climates, the province has 20% of the grains growing area in the country, over 11 million hectares and more than 27,000 farms.

There are many productive poles disseminated across the province, featuring various industries, including forestry, cotton, sugarcane-ethanol, grains, oilseeds crushing, dairies, pork farms, poultry, aquaculture, fruits, vegetables, and beekeeping. Furthermore, an extensive range of non-traditional products shapes an ample and diversified offer of foods.

The province of Santa Fe is at the core of the largest oilseed complex of the world, and of the most important production pole of soybean biodiesel. A significant number of national and international crushing companies produce oils, flours, and pellets, representing 80% of the country's crushing capacity.

Over six million cattle heads, fed on pasture, are the basis of an industry deeply rooted in the province. Santa Fe meat processing industry is well known across the country for its volume, quality and the nutritional value of its products. A large number of meat processing companies produce approximately 40% of the country's total exports.

Santa Fe's milk production area is the most important in Latin America. Annually, the province processes almost 3 billion liters of milk, supplying the domestic market with a large variety of dairy products, some of which are also exported.

Over 300 plants produce farm machinery and pieces for farm equipment. Ever since the late 19th century, the efforts and innovative spirit of local companies have progressed from producing a simple plow to the sophisticated equipment of today. At the same time, steelworks and metallurgical companies supply inputs and raw materials to the metalworking sector and the construction industry, in the province and all across Argentina.



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### *Mitigation and Adaptation Goals:*

One of the primary goals of this province is to contribute to reduce the greenhouse gases (GHG) emissions and to mitigate climate change. To attain this objective, the University of Rosario, the State Secretary of Energy and the Ministry of the Environment have triggered an articulation process to develop the first provincial GHG inventory that will constitute the basis for identifying priorities, monitoring progress as well as the results of the different programs. The inventory is planned to be completed by December 2018.

The mitigation and adaptation goals were set to:

- 1) Adapt the province of Santa Fe to the climate change.
- 2) Work out mitigation strategies focused on renewable energies, energy efficiency and sustainable consumption.
- 3) Develop a comprehensive strategy to address the impact of CO<sup>2</sup> and particulate material (PM10 and PM2.5) emissions on public health to enhance the well-being of citizens.
- 4) Educate and raise awareness of the required practices to mitigate the effects of the climate change.

### *Mitigation measures;*

#### **1) Renewable Energies**

- Call for investment projects on the generation of renewable energies to know private initiatives and make available the different tools the State can offer. In July 2017, the government of the province of Santa Fe called businesspeople, entrepreneurs, institutions, and citizens in general to present their ideas, blueprints or projects for the generation of renewable energies in the provincial territory.
- Distributed Photovoltaic and Wind Generation.  
PROSUMIDORES is a program aimed at encouraging the generation of renewable energy distributed to small urban demands. The program facilitates the repayment of renewable facilities through a monetary compensation based on the amount of energy generated.
- Thermal Solar Energy  
*Un sol para tu techo* (A sun for your roof) is a program aimed at facilitating the procurement of solar heaters and hot water tanks through a special line of credit. Those towns with no access to natural gas are the main focus of the program.
- Supplier Development:
  - Theoretical and practical workshops for solar heaters and photovoltaic equipment installers; also, for biodigester operators. These workshops are free of charge, delivered by



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professionals and experts and targeted to those working in this and allied fields.

- Registry of Renewable Suppliers. It includes information relative to the sale, installation, engineering and projects, training and workshops on solar, wind, geothermal energies as well as bioenergies. The registry is free of charge and of public access.

- Biomass:

- Bioenergy Village Biogas from waste and energy crops is generated and used to supply small towns. Chañar Ladeado is currently benefiting from this biogas production.

- *Programa Producción Más Energética* (Better Energy Efficiency Program). It fosters bioenergies generation projects with a focus on anaerobic biodigestion from residues collected from pig and dairy farms, as well as from dairy facilities located in the province.

- *Programa Digestión Más Activa* (More Active Digestion Program). It is aimed at optimizing the biodigesters not working at full capacity to enhance methane gas capture. Biodigesters can be found in different locations across the province.

- Solar Stations:

This project intends to create open-air entertainment areas in parks and squares supplied with hot water to prepare a beverage, power outlets to charge mobile phones and computers. The hot water station will be powered by solar collectors and the power outlets, by photovoltaic panels.

## 2) Energy Efficiency

- Housing Labeling

A pilot test to award an energy efficiency certification to 500 housing units in the city of Rosario. The goal is supplying citizens with a decision-making tool to buy, rent or build a housing unit based on energy efficiency.

- Energy Efficiency Training Courses

Technical presentations delivered by professionals and experts targeting education and non-education institutions across the province, including municipalities and communes.

## 3) Monitoring and Information Systems

The project aims at installing a Remote Monitoring Network in every renewable energy generation facility built by the State in the provincial territory. The goal is monitoring the proper operation of the facilities and measuring specific variables. The network will help to get better knowledge of equipment performance, gather data and information to develop a



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management tool for decision-makers as well as the means to assess the results of the policies implemented.

The project goals are:

- a.- Determine the feasibility of energy, photovoltaic, thermal and wind new undertakings, at different power levels.
- b.- Foster the creation of a new productive chain based on renewable energy technologies.
- c.- Use the data gathered by the Remote Monitoring Network as a training and research source.
- d.- Compare and interlink with data gathered by other government agencies and researchers.

#### **4) Sustainable Transport**

- Automotive Innovation and Development Pole (PIDA, its acronym in Spanish)

Aimed at helping in the transition towards a sustainable mobility, PIDA will develop the automotive industry in the province by linking the public with the private sector, from the design of pieces, equipment and sustainable cars to their approval. PIDA will be located in the Rosario Car Racetrack, in a densely populated area that offers excellent conditions to become an innovation and development center because it houses many car manufacturing companies, coachbuilders, motorcycle manufacturers, car part companies, R&D and training centers as well as highly qualified human resources.

- Hybrid Public Transport System
  - Biofuels: The goal is to continue diversifying the provincial energy matrix by increasing the biofuels blend from B7 to B25 in the fleet of official and public transport vehicles.
  - Hydraulic Units: The goal is to increase the public transport system sustainability by modifying the traditional buses engines so that they can run on a dual system: the original internal combustion engine and/or a hydraulic engine that converts the energy stored in the accumulator. The internal combustion engine will always work at its maximum efficiency speed and will turn off while the vehicle is not in service. The kinetic energy will be used to brake the vehicle. The above-mentioned characteristics reduce fuel consumption and the subsequent emissions of particulate material and greenhouse gases.
- Electric Transport
  - Trolleybuses: Rosario currently has three lines of trolleybuses. The municipality is waiting to receive some funding -requested to the Funding Council- to extend the electric bus system by adding two more lines.



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- Electric buses: The goal is to include electric buses to the current public transport fleet in two cities: Rosario and Santa Fe. This will reduce noise pollution by eliminating the emissions of greenhouse gases and particulate materials, which will, of course, improve the quality of life and public health.

- The required infrastructure for electric buses will be built. A significant advantage is that the power distributor company is part of the State Secretary of Energy, the authority that sets energy policies.

## 5) Technological Innovation and Development

- Second generation biofuels

There is an articulation in progress with a technology-based company that will be responsible for two projects:

- First generation sugarcane and other raw materials biorefinery integrated with the production of meat, biogas, and electricity.

- Second generation biorefinery. Bioethanol production from *Spartina argentinensis*, a local energy crop.

- Hydrogen Production from Biomass

Research and development on hydrogen production from the different types of biomass available in the province, namely, existing energy crops. R&D on this hydrogen as an alternative energy source.

- Fuel Cell Development

Using the province biomass potential to develop public transport units powered by fuel cells.

## 6) Cleaner Production

The provincial Cleaner Production Program targets companies and industries and aims at the implementation of a preventive environmental strategy integrated with productive processes, products, and services. The goals are reducing adverse effects on human health and the environment, saving raw materials, water and energy, eliminating hazardous inputs and reducing the volume and toxicity of waste and emissions.

The program aims at:

- a.- Reducing environmental impacts resulting from production and services, by improving



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processes and products;

b.- Bettering the competitiveness of public and private organizations, whether for profit or not for profit, by keeping their comparative advantages to reach, sustain and improve their positioning in the socioeconomic sphere, in their internal and productive aspects as well as in their external or market angles;

c.- Promoting the development and implementation of a comprehensive management plan for different industries;

d.- Training human resources in the above-mentioned topics, whether in companies, public agencies, technical and/or scientific institutions and allied consulting firms;

e.- Negotiating the improvement and updating of the current relevant environmental regulations.

## **7) Comprehensive Management of Municipal Solid Waste**

Provincial Law 13.055/09 is one of many that forbids waste disposal in 'spontaneous' waste dumps or dumping grounds. It was in the context of such regulations that GIRSU, Spanish acronym for the Comprehensive Management of Municipal Solid Waste, was implemented. GIRSU includes the generation, initial disposal, collection, transport, treatment, transfer and final disposal of municipal waste. It is carried out through the so-called Environmental Centers. Small towns and communes partnered and created fourteen regional consortia, responsible for the joint building of Environmental Centers to dispose of the waste generated in those towns and communes.

The program aims at:

a.- Reducing the volume of municipal solid waste,

b.- Increasing awareness among citizens,

c.- Fostering the involvement of micro entrepreneurs, either individually or jointly, cooperatives and small and mid-size companies, and NGO's in the different steps of municipal waste disposal,

d.- Motivating and pursuing changes in productive activities and consumption habits that result in waste that is difficult or costly to treat, recycle and reuse,

e.- Fostering responsible consumption, raising awareness about objects and products which raw materials, wrapping and presentation lead to bulky waste that is difficult or costly to dispose of,

f.- Promoting industries from recycled materials and recycled inputs,

g.- Gradual implementation of a system leading to extended producer responsibility, that is, making producers responsible for the costs of managing the final disposal of their difficult to



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recycle products.

## 8) Energy Education:

Training Program on renewable energies and energy efficiency targeting technical and agro-technical schools staff. Developing the necessary teaching materials, installing biodigesters and solar heaters in schools. Raising awareness using basic training cycles on renewable energies and energy efficiency.

### *Adaptation Measures:*

**1) Water Security:** The forecasted intensive events of rain and prolonged droughts require better land use planning, building cities capacity to cope with extreme events and better emergency response systems. To attain such goals, the following measures are implemented:

- Drawing up joint measures with the Inter-Ministerial Commission for Land Administration to define precise guidelines for populations at water risk.
- Specific aid plans for municipalities and communes to improve their urban infrastructure and enhance their civil emergency planning.
- Developing contingency plans, capacity building to assist during extreme weather events, seasonal flooding and low water seasons that lead to water shortage.
- Integrated management of water resources in six macro basins located in the province to address water issues, considering everyone's needs.

**2) Natural Resources:** The fewer low-temperature days, the prolonged dry and humid periods, and the frequency of extreme events are greatly affecting biodiversity. To avoid the loss of species and the reduction of animal populations, the following measures will be adopted:

- Submission of the Tree Law, stating that preservation of the woodland is a public policy.
- Recovery of 200,000 hectares of native forest by implementing 130 forestry management plans.
- Identifying species at risk due to climate change. Revisiting strategies to preserve biodiversity. (Biologic corridors)
- Revisiting the forest sustainable management strategy.
- Reviewing hunt and fishing regulations.

**3) Production:** The constant changes in climate variables negatively impact on agriculture and cattle farming and may affect their sustainability. The following mitigation measures will be adopted:



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- Increase farming resiliency.
- Build ranching capacity to cope with climate change.

**4) Public Health:** Summer and winter temperature increases have allowed the dissemination of endemic tropical diseases. Furthermore, more arachnids and snakes can be found in urban areas. Health care services face higher demand, which requires:

- Increasing diagnostic and treatment capacities of endemic diseases (dengue fever, zika fever, chikungunya virus).
- Launch campaigns to control endemic diseases vectors.
- Training medical resources to diagnose and treat these usually tropical diseases.
- Strengthen medical care capacities to treat insect, arachnid and snake bites.

**5) Environmental Education & Training:**

Adaptation measures will be implemented; dissemination and training initiatives will raise awareness and involvement. To attain such goals, the following initiatives will be implemented:

- Raising awareness on climate change, its causes and effects.
- Disseminating adaptation and mitigation practices.
- Articulating activities with the Ministry of Education to introduce new and specific contents in formal and non-formal education programs.