South America's Lithium Triangle and the Future of the Green Economy

ARGENTINA

January, 2020
South America's Lithium Triangle and the Future of the Green Economy
A new administration with a strong Federal stamp and Active Policy of Integrated Productive Development

**Mining: “A key sector for the country development”**
(Alberto Fernández, Diciembre 2019)

**Integrated vision of inclusive and sustainable development:**
- ✓ Local productive chains
- ✓ Endogenous territorial development
- ✓ Innovation and Knowledge Economy

**Transition to a Green Industrialization:**
- ✓ Electromobility and Renewable Energies
- ✓ Sustainable Development of Natural Resources
Argentina has the materials for the green energy transition

Mining as a Federal State Policy

One of the largest portfolios of copper projects to be developed

Top Gold & Silver mining companies operating in the country

1st Exploration destination
3rd Producer
3rd World Lithium Reserve

High underexplored Geological potential
Argentina is a Federal Republic and the resources are of provincial domain

<table>
<thead>
<tr>
<th></th>
<th>Federal Government</th>
<th>Provinces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Resources (including mineral deposits)</td>
<td>✗ (X)</td>
<td>✓ (✓)</td>
</tr>
<tr>
<td>Mining Code</td>
<td>✓ (✓)</td>
<td>✗ (X)</td>
</tr>
<tr>
<td>Mineral title &amp; permits</td>
<td>✗ (X)</td>
<td>✓ (✓)</td>
</tr>
<tr>
<td>Mining Investment Law</td>
<td>✓ (✓)</td>
<td>✗ (X)</td>
</tr>
<tr>
<td>Environmental regulations</td>
<td>✓ (✓)</td>
<td>✓ (✓)</td>
</tr>
</tbody>
</table>

The territory consists of:

- 1 Federal Government
- 23 Provinces and 1 Autonomous City
- +2000 Municipalities

COFEMIN
Consejo Federal Minero
Nation-Province consensus for Mining Policy

Secretaría de Minería
Argentina’s mining framework: legal aspects

**TITLE**
- **Belongs to the discoverer.** Must file claim with the Province
- "Free-entry system" Concession for all minerals type (no restricted minerals)

**TENURE**
- **Simple to maintain:** annual payment and executed investment plan (within 5 years of title)
- Granted in **perpetuity,** provided there is mineable ore and continued mining activity by owner

**PERMITS**
- **Unified, clear and timely environmental approval process.**
- **Environmental and construction permits** mostly granted and controlled by the **Provinces.**
ARGENTINA. MINING OPERATIONS AND ADVANCED PROJECTS

16 MINES

PRODUCTION
CONSTRUCTION
FEASIBILITY
PRE-FEASIBILITY
PEA (Preliminary Economic Assessment)
ADVANCED EXPLORATION
EARLY STAGE

With CAPEX
- Copper
- Lithium
- Gold
- Silver
- Potassium
- Uranium

Without CAPEX
- Copper
- Lithium
- Gold
- Silver
- Potassium
- Uranium

* Includes 2 ongoing capacity expansions
** Includes Lama-Pascua, Potasio Rio Colorado and Pachon which are being re-evaluated
18 ADVANCED PROJECTS

**Li**
- Ident. Res.: 93 Mt LCE
- CAPEX: 5,400 M USD
- Comb. aditional production LCE: 334,000 kt/y

**Cu**
- Ident. Res.: 65 Mt Cu
- CAPEX: 16,255 M USD
- Pot. aditional production: Cu 1,203 kt/y, Au 767 Koz/y, Ag 16.4 Moz/y, Mo 13 kt/y

**Au**
- CAPEX: 1,696 MUSD
- Pot. aditional production: Au 481 koz/y, Ag 13.3 Moz/y

**Ag**
- Ident. Res.: 4,530 Moz Ag
- CAPEX: 1,390 M USD
- Pot. aditional production: Ag 28 Moz/y, Au 42 koz/y

*1 of them are maintenance

MINES:
- Cauchari Olaroz, Jujuy
- Agua Rica, Catamarca
- Lindero, Salta

CONSTRUCTION:
- 2 projects

PEA TO DFS:
- 10 projects

ADV. EXPL.
- 6 projects

PFSB TO DFS:
- 5 projects

PEA:
- 2 projects

ADV. EXPL.
- 4 projects

MINES:
- 5 projects

PEA:
- 3 projects

ADV. EXPL.
- 2 projects

Secretaría de Minería
To have reserves does not guarantee production or market.
Primary production of Lithium 2018

454.6 kt LCE

30% Brines
70% Hard Rock

EEUU
Brines
1%

Chile
Brines
19%

Argentina
Brines
7%

China
Brines/ Hard Rock
7%

Australia
Hard Rock
61%

Brasil
Hard Rock
2%

Zimbabwe
Hard Rock
2%

Namibia
Hard Rock
1%

Portugal
Hard Rock
<1%

Source: Own elaboration based on USGS, SNL and company reports
Secretaría de Minería
Operations and Advanced Lithium Projects

18 ADVANCED PROJECTS

OPERATIONS

• OLAROZ (ONGOING EXPANSION)
• FÉNIX (ONGOING EXPANSION)

CONSTRUCTION

• CAUCHARI-OLAROZ
• CENTENARIO RATONES

PEA TO DFS

10

ADVANCED EXPLORATION

6

>40 early stage projects

Puna area: 80,000 km²  23 Salars: >5,200 km²
Mines in Operation, Mines under Construction and Announcements of Expansion

### OPERATIONS

<table>
<thead>
<tr>
<th>Mine</th>
<th>Company</th>
<th>Capacity (2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fénix</td>
<td>Livent Corp</td>
<td>22.500 t LCE</td>
</tr>
<tr>
<td>Olaroz</td>
<td>Orocobre + Toyota + JEMSE</td>
<td>17.500 t LCE</td>
</tr>
</tbody>
</table>

### ANNOUNCEMENTS OF EXPANSION

<table>
<thead>
<tr>
<th>Mine</th>
<th>Company</th>
<th>Capacity after expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fénix</td>
<td>Livent Corp</td>
<td>28.500 t LCE (2021)</td>
</tr>
<tr>
<td>Olaroz</td>
<td>Orocobre + Toyota + JEMSE</td>
<td>42.500 t LCE (2022)</td>
</tr>
</tbody>
</table>

### 2 MINES UNDER CONSTRUCTION

<table>
<thead>
<tr>
<th>Project</th>
<th>Company</th>
<th>Capacity</th>
<th>Operation start year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cauchari-Olaroz</td>
<td>Lithium Americas + Ganfeng + JEMSE</td>
<td>40.000 t LCE</td>
<td>2021</td>
</tr>
<tr>
<td>Centenario Ratones</td>
<td>Eramet</td>
<td>24.000 t LCE</td>
<td>2021</td>
</tr>
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### Advanced Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Company</th>
<th>Capacity</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sal de los Ángeles</td>
<td>NextView New Energy Lion HK Ltd (Tibet)</td>
<td>25,000 t LCE</td>
<td>Feasibility Study undergoing Pilot Plant</td>
</tr>
<tr>
<td>Sal de Vida</td>
<td>Galaxy Resources Ltd</td>
<td>25,000 t LCE</td>
<td>Feasibility Study completed Pilot Plant</td>
</tr>
<tr>
<td>Salar del Rincón</td>
<td>Rincon Ltd</td>
<td>25,000 t LCE</td>
<td>Feasibility Study completed Demonstration Plant</td>
</tr>
<tr>
<td>Pastos Grandes</td>
<td>Millenial Lithium</td>
<td>25,000 t LCE</td>
<td>Feasibility Study undergoing Pilot plant undergoing</td>
</tr>
<tr>
<td>Tres Quebradas</td>
<td>Neo Lithium Ltd</td>
<td>20,000 t LCE</td>
<td>Feasibility Study undergoing Pilot plant 99.1% LCE</td>
</tr>
<tr>
<td>Sal de Oro</td>
<td>Posco</td>
<td>25,000 t LCE</td>
<td>Advanced exploration Pilot plant undergoing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project</th>
<th>Company</th>
<th>Capacity</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pozuelos – Pastos Grandes (PPG)</td>
<td>Litica - Pluspetrol</td>
<td>25,000 t LCE</td>
<td>Preliminary Economic Assessment in elaboration</td>
</tr>
<tr>
<td>Cauchari</td>
<td>Advantage Lithium Corp. (75%) + Orocobre Limited</td>
<td>20,000 t LCE</td>
<td>Preliminary Economic Assessment</td>
</tr>
<tr>
<td>Rincon Lithium Project</td>
<td>Argosy Minerals Ltd. (77.5%) + Privado</td>
<td>10,000 t LCE</td>
<td>Preliminary Economic Assessment</td>
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<tr>
<td>Mariana</td>
<td>International Lithium JV con Jiangxi Ganfeng Lithium Co. Ltd</td>
<td>10,000 t LCE</td>
<td>Preliminary Economic Assessment</td>
</tr>
<tr>
<td>Salar del Hombre Muerto Norte II</td>
<td>NRG Metals</td>
<td>5,000 t LCE</td>
<td>Preliminary Economic Assessment</td>
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<tr>
<td>Salinas Grandes</td>
<td>LSC Lithium Corp.</td>
<td></td>
<td>Advanced exploration</td>
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<tr>
<td>Salar de Pular</td>
<td>Pepinnini Lithium Limited</td>
<td></td>
<td>Advanced exploration</td>
</tr>
<tr>
<td>Rincón Project</td>
<td>Pepinnini Lithium Limited</td>
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<td>Advanced exploration</td>
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<tr>
<td>Kachi</td>
<td>Morena del Valle S.A.</td>
<td></td>
<td>Advanced exploration</td>
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<tr>
<td>Río Grande</td>
<td>LSC Lithium Corp.</td>
<td></td>
<td>Advanced exploration</td>
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</table>
Early stage projects in 23 Salars and 4 Pegmatite Districts

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PROVINCE</th>
<th>NAME OF SALAR/NAME OF PEGMATITE DISTRICT</th>
</tr>
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<tbody>
<tr>
<td>Salar de Diablillos</td>
<td>Catamarca</td>
<td>Salar de Diablillos</td>
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<tr>
<td>Antofalla</td>
<td>Catamarca</td>
<td>Salar de Antofalla</td>
</tr>
<tr>
<td>Kachi</td>
<td>Catamarca</td>
<td>Salar Carachi-Pampa</td>
</tr>
<tr>
<td>Salar Esccondido</td>
<td>Catamarca</td>
<td>Salar Carachi-Pampa</td>
</tr>
<tr>
<td>Hombre Muerto North</td>
<td>Catamarca</td>
<td>Salar del Hombre Muerto</td>
</tr>
<tr>
<td>Guayatayoc</td>
<td>Jujuy</td>
<td>Laguna Guayatayoc</td>
</tr>
<tr>
<td>Mina Teresa</td>
<td>Jujuy</td>
<td>Salina Guayatayoc</td>
</tr>
<tr>
<td>San José</td>
<td>Jujuy</td>
<td>Salinas Grandes</td>
</tr>
<tr>
<td>Navidad</td>
<td>Jujuy</td>
<td>Salinas Grandes</td>
</tr>
<tr>
<td>Olaroz/Cauchari</td>
<td>Jujuy</td>
<td>Salar de Olaroz-Cauchari</td>
</tr>
<tr>
<td>Paso</td>
<td>Jujuy</td>
<td>Salar de Jama</td>
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<tr>
<td>Jama</td>
<td>Jujuy</td>
<td>Salar de Jama</td>
</tr>
<tr>
<td>Salinas Grandes AdY</td>
<td>Jujuy</td>
<td>Salinas Grandes</td>
</tr>
<tr>
<td>Guayatayoc</td>
<td>Jujuy</td>
<td>Laguna Guayatayoc</td>
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<tr>
<td>Olaroz Minera Santa Rita</td>
<td>Jujuy</td>
<td>Salar de Olaroz</td>
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<tr>
<td>Cauchari de Pastos Grandes SA</td>
<td>Jujuy</td>
<td>Salar de Cauchari</td>
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<td>Guadalquivir</td>
<td>Salta</td>
<td>Salar Rio Grande</td>
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<tr>
<td>Pocitos</td>
<td>Salta</td>
<td>Salar de Pocitos</td>
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<td>Rio Grande</td>
<td>Salta</td>
<td>Salar Rio Grande</td>
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<td>Centenario</td>
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<td>Salar Centenario</td>
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<td>Stella Maris</td>
<td>Salta</td>
<td>Salinas Grandes</td>
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<tr>
<td>Cauchari Sur</td>
<td>Salta</td>
<td>Salar de Cauchari</td>
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<tr>
<td>Cruz</td>
<td>Salta</td>
<td>Salar de Pocitos</td>
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<td>Salar de Arizaro Brine</td>
<td>Salta</td>
<td>Salar de Arizaro</td>
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<td>Salar de Arizaro</td>
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<td>Salar de Arizaro</td>
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<td>Salar de Arizaro 2</td>
<td>Salta</td>
<td>Salar de Arizaro</td>
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<tr>
<td>Toliullar</td>
<td>Salta</td>
<td>Salar Tolliullar</td>
</tr>
<tr>
<td>Salar de Incahuasi</td>
<td>Salta</td>
<td>Salar de Incahuasi</td>
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<td>Arizaro</td>
<td>Salta</td>
<td>Salar de Arizaro</td>
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<tr>
<td>Terra Cotta/Salar de Pocitos</td>
<td>Salta</td>
<td>Salar de Pocitos</td>
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<tr>
<td>Pastos Grandes</td>
<td>Salta</td>
<td>Salar de Pastos Grandes</td>
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<td>Salar de Pular Lithea Inc</td>
<td>Salta</td>
<td>Salar de Pular</td>
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<td>Salar Tolliullar ADY</td>
<td>Salta</td>
<td>Salar de POCITOS</td>
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<tr>
<td>El Quemado</td>
<td>Salta</td>
<td>Distrito Pegmatitico El Quemado</td>
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<tr>
<td>Catamarca</td>
<td>Catamarca</td>
<td>Distrito Pegmatitico Ancasti</td>
</tr>
<tr>
<td>Villisman - Ancasti</td>
<td>Catamarca</td>
<td>Distrito Pegmatitico Ancasti</td>
</tr>
<tr>
<td>Mina Las Cuevas</td>
<td>San Luis</td>
<td>Distrito Pegmatitico Conlara</td>
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<td>La Estanzuela – Conlara</td>
<td>San Luis</td>
<td>Distritos Pegmatiticos La Estanzuela y Conlara</td>
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<tr>
<td>Mina Las Tapias</td>
<td>Córdoba</td>
<td>Distrito Pegmatitico Altaurina/Las Tapias</td>
</tr>
</tbody>
</table>

MORE THAN 40 PROJECTS FROM PROSPECTING TO EXPLORATION
Direct employment from mining operations (metalliferous, non-metalliferous and lithium) is in a growing path with a peak of 2,244 employees in 2018. The indirect employment can up to two-fold the direct one.
Local communities participation in the activity is increasing

Olaroz, Susques, recorded, in 2018, 162 communities’s employees, 42% of the staff and Pirquitas-Chinchillas, Rinconada employed 284, a 59% share
CURRENT SITUATION AND GROWING PATH OF LITHIUM EXPORTS

2019 Exports: U$S 189,8 Millions

Lithium Carbonate
Lithium Chloride (in LCE)
Exports (right axis)

Source: Secretaría de Minería

Ministerio de Desarrollo Productivo
Argentina
Probable exports by 2022: US$ 1.046\textsuperscript{e} Millions

CURRENT DEVELOPMENT SCENARIO

- PROBABLE

Investment: US$ 1.442 millions

4 OPERATIONS

(CURRENT OPERATIONS WITH THEIR RESPECTIVE EXTENSIONS AND CURRENT CONSTRUCTION OF NEW OPERATIONS)

Installed capacity of 129 Kt LCE from 2022

Installed capacity (LCE)

Source: Own elaboration based on JORC & NI 43-101 reports from the operating companies
Kt LCE : Thousands of tonnes LCE
\textsuperscript{e} : Valued production at a price of 8,011 US$/t LCE
SCENARIO BASED ON ANNOUNCED INVESTMENTS

POSSIBLE

Investment: U$S 3.690 millions

10 OPERATIONS (4 IN CURRENT EXECUTION + 6 NEW OPERATIONS)

Possible exports by 2024: U$S 2.101\textsuperscript{e} millions

Source: Own elaboration based on JORC & NI 43-101 reports from the operating companies

Kt LCE : Thousands of tonnes LCE
\textsuperscript{e} : Valued production at a price of 8,011 U$S/t LCE
Argentina has the potential to more than three-fold the mineral exports.

Our goal is to start-up some of the advanced projects.

34 MORE ADVANCED PROJECTS

TOTAL CAPEX 27,250 M U$S

**61%**

7 PROJECTS COPPER

**15%**

15 PROJECTS LITHIUM 20%

**1%**

1 PROJECT URANIUM

**7%**

1 PROJECT POTASH

**5%**

4 PROJECTS SILVER

**6%**

5 PROJECTS GOLD

**1%**

1 PROJECT URANIUM

**7%**

1 PROJECT POTASH

**5%**

4 PROJECTS SILVER

**6%**

5 PROJECTS GOLD

**Construction of 5 copper, 3 gold, 3 silver, +6 lithium projects**

2019

- Lithium: 270
- Gold: 619
- Copper: 2121
- Silver: 190

2030

- Lithium: 5420
- Gold: 1752
- Copper: 2101
- Silver: 734
- Others: 758

*10,765*
Strengths of the XXI Century Argentina Mining

Peaceful country with a stable democracy and absence of social turmoils

Innovative and entrepreneur environment developed for the provision of mining goods and services

Copper & Lithium World-Class projects to be developed to supply the electromobility boom

Legal framework without restricted minerals, 3% royalties upperbound and willingness for new mining investments

Political decision and policy management to put the geological potential in value

... Thanks