

# Sales de Jujuy

Lithium solutions for a growing global market



# Sales de Jujuy

## The Partnership

はじめに

April 2015 marked the commencement of commercial lithium carbonate production for Sales de Jujuy S.A.'s (SDJ) 17,500 metric tonne lithium carbonate plant at Salar de Olaroz, located in the Puna region of Northern Argentina.

The cornerstone lithium brine project was founded in a joint venture between Australian ASX & TSX listed company Orocobre Limited (Orocobre), Japanese trading company Toyota Tsusho Corporation (TTC) and the mining company of the provincial government of Jujuy Argentina (JEMSE).

SDJ operates from its head office located in Jujuy, Argentina. SDJ is responsible for the daily management and operation of the Olaroz Lithium Facility project, reporting directly to Sales de Jujuy Pte. Ltd., Orocobre and TTC's joint venture holding company based in Singapore.

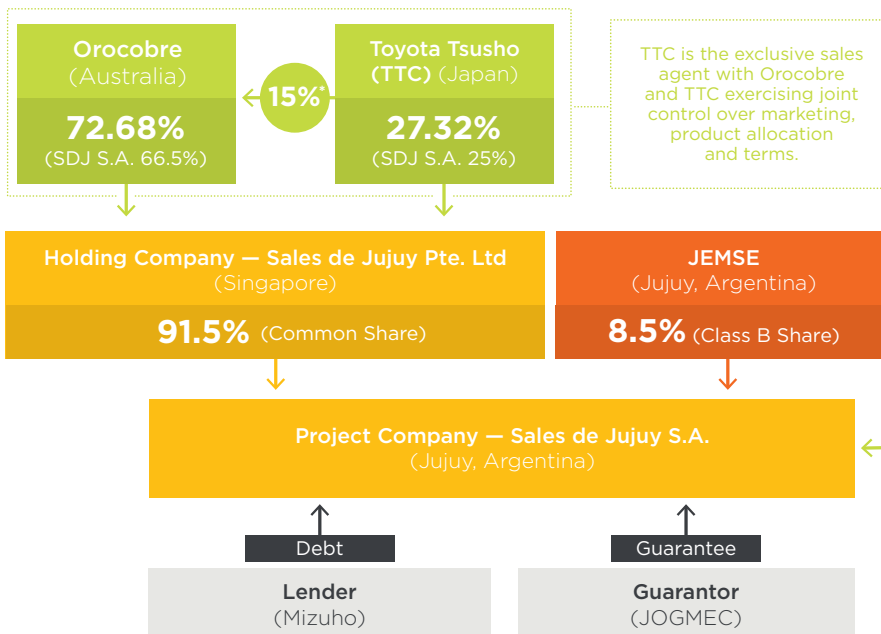
SDJ combines the industry knowledge, strength and expertise of the three project partners to produce and supply high quality products to the global lithium market.

Sales de Jujuy(SDJ社)は、アルゼンチン北部プーナ地方のオラロス塩湖に位置する精製プラントにて、年間17,500トンの炭酸リチウムの生産へ向け、2015年4月より量産を開始しました。

本プロジェクトは、Orocobre Limited(豪州証券取引所・トロント証券取引所上場企業)、豊田通商株式会社、フワイ州エネルギー鉱山開発会社(JEMSE)の3社の合同出資で構成されています。

各社の知見、技術と専門性を結集させて現地に設立された事業会社がSDJ SAであり、オラロスリチウムプロジェクトのオペレーションの一括管理を担っています。

### Investment Structure:



\*TTC - 15% equity holding in Orocobre.

## Commercial Sales

### 商業販売

SDJ is supplying its quality assured lithium carbonate, in partnership with TTC as the sales agent into a diverse range of markets and customers around the world.

For enquiries please refer to the full list of contact details on the back of the brochure.

本プロジェクトで生産された高品質の炭酸リチウムは、販売代理権100%を取得している豊田通商グループにより世界中のお客様のもとへお届けしています。

お問い合わせ先は、本カタログ裏面をご参照ください。

## Location

### 地理条件

The Olaroz Lithium Facility is located in Jujuy Province in northern Argentina, approximately 230 kilometres northwest of the capital city of Jujuy.

The operations are at an altitude of 3,900 metres above sea level and produce lithium carbonate from the Salar de Olaroz brine resource which contains high concentrations of lithium and potash brine.

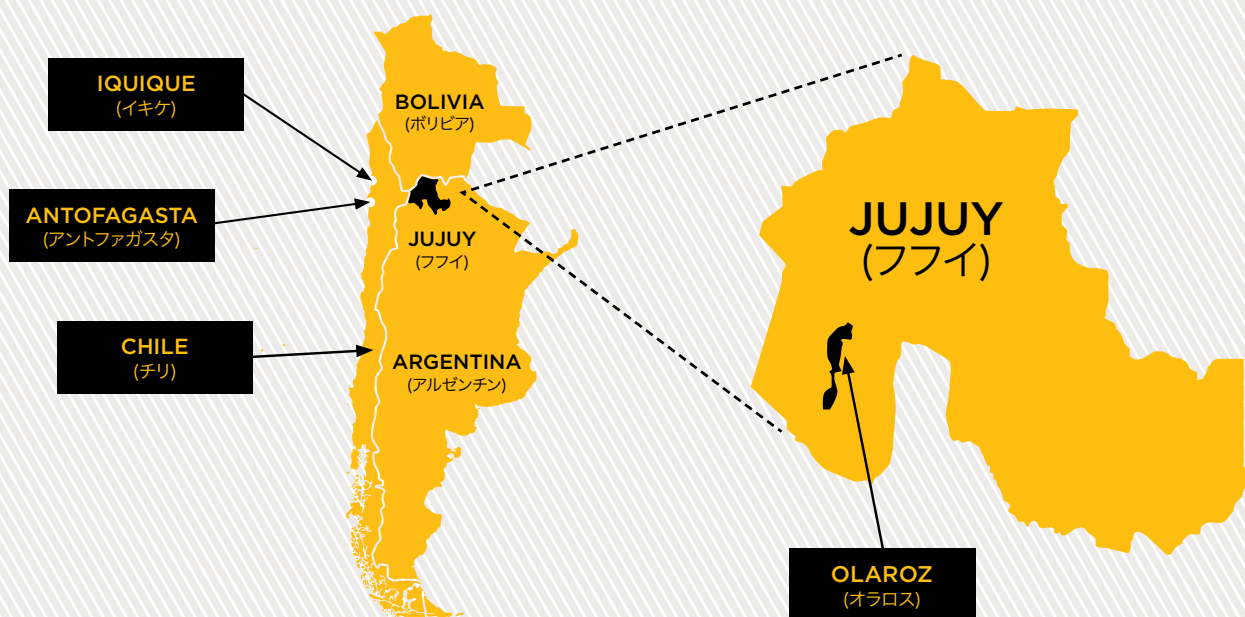
The Facility is supported by favourable conditions in terms of both the operating environment and local

infrastructure. Very limited rainfall combined with dry, windy conditions enhances the brine-evaporation process. The Facility is also serviced by gas pipelines, high voltage electricity, and paved highways. Three major seaports, Buenos Aires in Argentina and Antofagasta and Iquique in Chile are serviced by international carriers and are easily accessible by road and/or rail.

オラロスのリチウム工場は、アルゼンチン北部のフフイ州に位置し、市内から北東へ230kmほど離れた場所にあります。

標高3,900mに位置する塩湖からは、炭酸リチウムの原料となる高いリチウム純分とカリウム純分を含むかん水が採掘されます。

さらに、オラロスリチウムプロジェクトは環境面、インフラ面において非常に好条件な立地に位置しており、降水量が少なく乾燥した気候は、かん水の蒸発プロセスにおいて最適な条件といえます。また安定したガス・電気の供給があり、周辺道路は舗装整備されています。原料の輸入および商品の輸出をするうえで、南米の主要港であるアルゼンチンのブエノスアイレス港、隣国チリのアントファガスタ港、イキケ港へはいずれも陸路でアクセスが良く、安定した供給体制を整えています。



“ The technology developed has a very low fresh water consumption.



## Products and Supply

### 製品の供給

SDJ began supplying customers with lithium carbonate samples for testing and approval purposes from the on-site pilot plant in 2013 and commenced commercial production in 2015. This has established a track record of delivering a quality product. SDJ offers a range of products in a variety of packaging and delivery options to meet customer requirements. Tailor-made product specifications are also available on a case by case basis.

2013年よりパイロットプラントで生産された炭酸リチウムサンプルの提供を開始し、2015年より量産品の供給を開始しました。幅広い品質に対応するだけでなく、梱包や出荷方法についても多様なご要望にお応えできるよう取り組んでおります。

## Environment and Sustainability / 環境と持続可能性

The process is designed to have a high processing recovery of lithium. Low unit costs and cut-off grades support high resource recovery, thereby minimising waste.

The process route is designed with a zero liquid discharge design. All waste products are stored in permanent impoundments (the lined evaporation ponds). At the end of the project life, the ponds will be capped and returned to a similar profile following soil placement and planting of original vegetation types.

- Brine is extracted from wells with minimum impact on freshwater resources outside the salar. Because the lithium is in sedimentary aquifers with relatively low permeability, drawdowns are limited to the salar itself. This is different from halite hosted deposits such as Salar de Atacama, Salar de Hombre Muerto and Salar de Rincon where the halite bodies have very high near-surface

permeability; the drawdown cones can impact on water resources around the Salar affecting the local environment.

- Solar energy is used to concentrate the lithium in the brine, which has a lower carbon footprint than other alternatives.
- The technology developed has a very low maximum fresh water consumption by industry standards of <20 l/s.

SDJ has achieved ISO accreditation for ISO 31000 Risk Management, and re-accreditation for ISO 9001 Quality Control and ISO 14001 Environmental Management. The company has also implemented the OHSAS 18001 Occupational Health and Safety Management System.

## Quality Resource

### 潤沢な資源

SDJ is the newest brine based global lithium carbonate supplier in over twenty years through its flagship operation, Salar de Olaroz. The first sale of lithium carbonate from the Olaroz Lithium Facility occurred in April 2015 following seven years of planning, development, construction and commissioning. Since this time, volumes have continued to grow.

Olaroz hosts a JORC/NI43-101 compliant, high quality, low-cost and long life resource. The measured and indicated resource of 6.4Mt lithium carbonate equivalent (LCE) is capable of sustaining current continuous production for 40 years with only 15% of the current resource extracted.

オラロスリチウムプロジェクトは過去20年間で類を見ないほどの高品質、かつ豊富なりチウム埋蔵量を持ち、比較的 low cost での採掘が可能です。7年間の計画、開発、建設期間を経て2015年4月に販売が開始され、生産量を伸ばしております。

また、本プロジェクトはJORC/NI43-101 (鉱物資源プロジェクト情報開示基準)を満たしています。想定埋蔵量は炭酸リチウム換算で6.4百万トン、現行採掘量で今後40年間安定生産を続けた場合においても、想定埋蔵量の15%に満たないほど潤沢な資源量を誇ります。

オラロスリチウムプロジェクトの生産工程は、高い回収率及び低コストで廃出物を最小限に抑えた設計になっています。

廃液排出ゼロでデザインされた本プロジェクトでは、廃棄物は蒸発池で堆積され、プロジェクトが寿命を終えた後に、埋め立てられ、プロジェクト開始と同様の環境に戻される予定です。

かん水は、塩湖外の水質に極力影響を与えないよう井戸を通じて抽出されます。オラロスは岩塩鉱床のように表面付近の透過性が高くなく、水位低下によって周辺の環境に影響を及ぼすようなことはありません。

かん水中のリチウム濃度を上げるために、太陽光エネルギーによる蒸発、濃縮工程を採用しています。

開発された技術により、水の消費量は20リットル/秒未満に節減されます。

SDJは、ISO 31000リスクマネジメントのISO認定、ISO 9001品質管理およびISO 14001環境マネジメントの再認定を取得しています。また、OHSAS 18001労働安全衛生マネジメントシステムを導入しています。

# Lithium and the Market

## About the Market

### 市場

The lithium market recorded its' second consecutive year of strong growth in 2017 providing support for increased lithium carbonate prices.

2017年、リチウム市場は2年連続の大幅な成長を記録し、それに伴い炭酸リチウム価格も上昇しました。

Existing producers of lithium carbonate and hydroxide in the ex-China market operated above ~70% utilisation rates during 2017 despite some supply challenges.

At the current rate of growth, it is forecast that global Electric Vehicle (EV) penetration will climb to greater than 3.5% by 2020 which will require 140kt of LCE. This is in addition to the 2017 market size of approximately 233kt LCE.

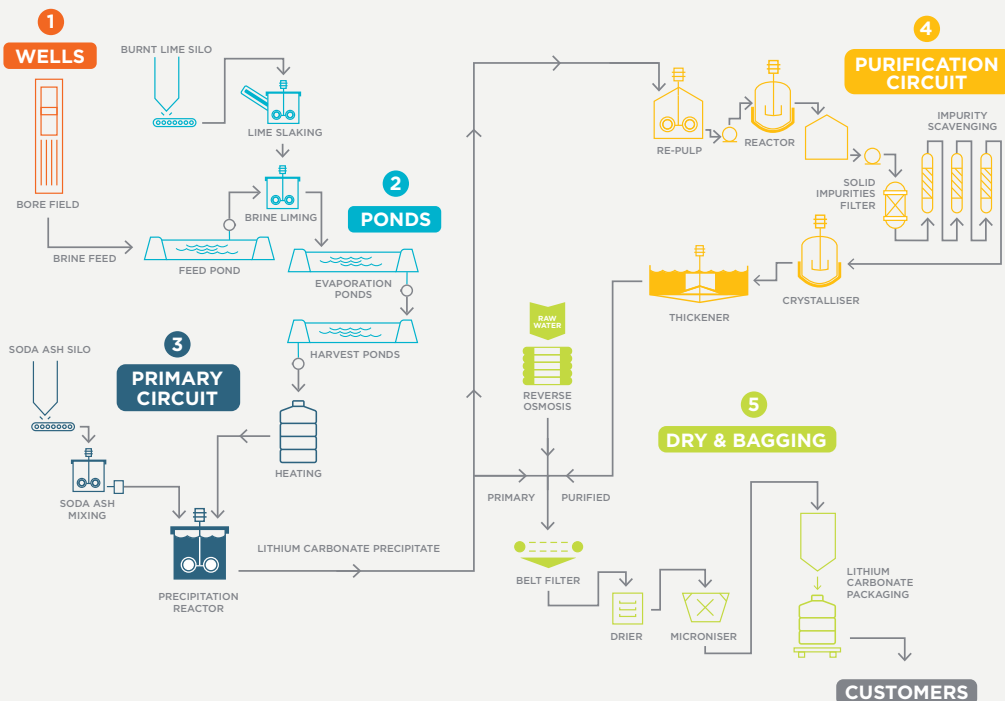
We have identified this as our 'base' demand case. The market has a range of different views varying from 2% to greater than 8% EV penetration by 2020 and forecasts continue to be upgraded by industry commentators.

中国外での炭酸リチウムと水酸化物の既存の生産者は、各々供給課題はあるものの、2017年に約70%以上の稼働率を達成しました

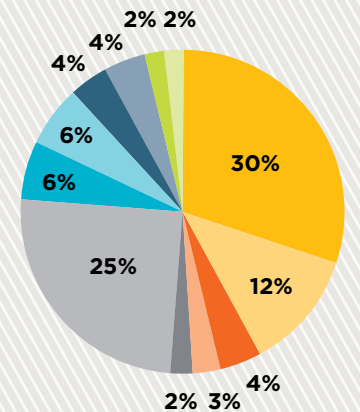
世界のEV普及率は現状の成長率で進む場合、2020年までに3.5%以上上昇することが予測されています。EV市場の成長を受け、2017年時点での炭酸リチウム換算23.3万トンの世界需要量は約40万トンまで増加することが見込まれています。

2020年におけるEV普及率は2%から8%以上まで様々な見方がありますが、世界の環境意識の高まり、技術革新を受けて、上昇していくことが予測されております。

### The Olaroz Process



### Lithium Demand by End Use 2018 Forecast / 用途別需要予測(2018)



- Automotive
- Portable Electronics
- ESS Applications
- Power Devices & Other
- Aftermarket
- Glass & Ceramics
- Greases
- Other
- Metallurgical Powders
- Polymer
- Primary Battery
- Air Treatment

“ Forecasts for EV penetration rates are trending upward.



## Responding to Demand 供給サイド

In response to strong demand for lithium salts, SDJ is now in the planning and approval for the Stage 2 expansion at the Olaroz site of 25kt per annum which will increase the total production capacity of lithium carbonate at Olaroz to 42,500 tonnes.

Orocobre and TTC are well advanced with plans for a proposed 10,000 tonne per annum lithium hydroxide plant in Japan. The plant will process lithium carbonate into a very high quality lithium hydroxide suitable for the production of cathode used in lithium ion battery manufacture.

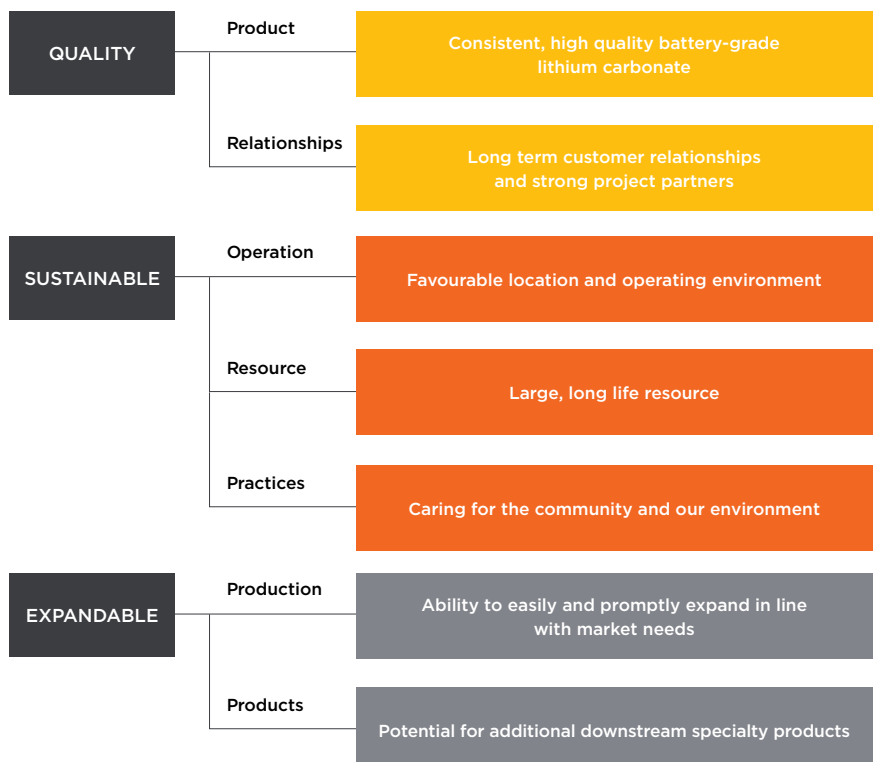
SDJ 社では、市場の動向に応じ、年間生産量2.5万トンの拡張計画に向けた許認可を申請中、オラロスで年間4.25万トンの炭酸リチウム生産を目指します。

Orocobre社と豊田通商は、中長期的なりチウムの安定供給を目指すとともに、日本での電池向け水酸化リチウム生産事業も視野に入れたバリューチェーン構築を検討しています。

## Outlook 展望

SDJ is a customer-focused company and we are committed to satisfying the immediate needs of our customers whilst fostering mutually beneficial long-term supply partnerships. SDJ intends to grow production levels in line with market demand to ensure the secure supply of quality products to our customers with an emphasis on continuous improvement. The flexibility of our manufacturing process combined with the future potential of our resource enables us to tailor long term product solutions for customers.

SDJ社は持続性を尊重しながら市場の需要に長期的に応え、高品質な製品を継続的に供給していきます。市場の需要に即した生産レベルへ対応し、豊富な資源と柔軟な生産プロセスで、お客様からの様々なご要望に沿いリチウムを供給していくことが私たちの使命です。





The success of the project to date is largely due to our Shared Value policy and the engagement with local stakeholders.

## Corporate Social Responsibility

### 企業の社会的責任

SDJ is a business founded and operated on a commitment to sustainable development. The success of the project to date is largely due to our Shared Value policy and the engagement with local stakeholders. The Olaroz project is recognised as providing a significant long term economic and environmentally sustainable benefit to the community. The company has been developing and delivering collaborative social and environmental programs in our local communities for years, and has a deep respect for the people and the land around our operations. SDJ's socially responsible activities have resulted in a number of prestigious government and private awards over the years for undertaking outstanding corporate socially responsible activities within the local communities.

In December 2017 Orocobre released its inaugural Sustainability Report. The report was prepared in accordance with the Global Reporting Initiative (GRI) Standard - a global benchmark for sustainability reporting and the document outlines the company's ongoing commitment to the local communities in which Orocobre operates, the environment and responsible management of natural resources and the safety of our people, suppliers and communities.



SDJはサステナビリティの原理に基づきプロジェクトを展開し、環境維持を前提とした持続可能な価値創出を目指しています。現地の関係各社や周辺コミュニティ等のステークホルダーとの強い信頼関係により今日に至るまでのプロジェクトの大きな進捗が支えられており、事業を通じて

2017年12月、Orocobre社が発表したサステナビリティレポートは、世界基準のベンチマークであるGRI(Global Reporting Initiative)に従って作成され、地域社会に対して環境や資源への継続的な責任管理、スタッフ、サプライヤー、コミュニティへの安全性をコミットメントしています。

豊かな社会づくりに貢献する価値創造企業として広く認知されています。今後も人・社会・地球と共に発展していくことを目指します。





## Contact Details

### General Enquiries

#### Sales de Jujuy

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**[salesdejujuy.com](http://salesdejujuy.com)**

#### Orocobre Limited

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**Phone:** (+617) 3871 3985

**Email:** [mail@orocobre.com](mailto:mail@orocobre.com)

**[orocobre.com](http://orocobre.com)**

### Commercial Enquiries (販売代理店)

#### Toyota Tsusho Corporation

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Nagoya-shi Aichi 450-8575, Japan

**Phone:** (+81 52) 584 5000

**Email:** [1060-li\\_marketing@dist.toyota-tsusho.com](mailto:1060-li_marketing@dist.toyota-tsusho.com)

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