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World Lithium

Industry Study with Forecasts for **2019 & 2024**

Study #3331 | September 2015 | \$6300 | 308 pages

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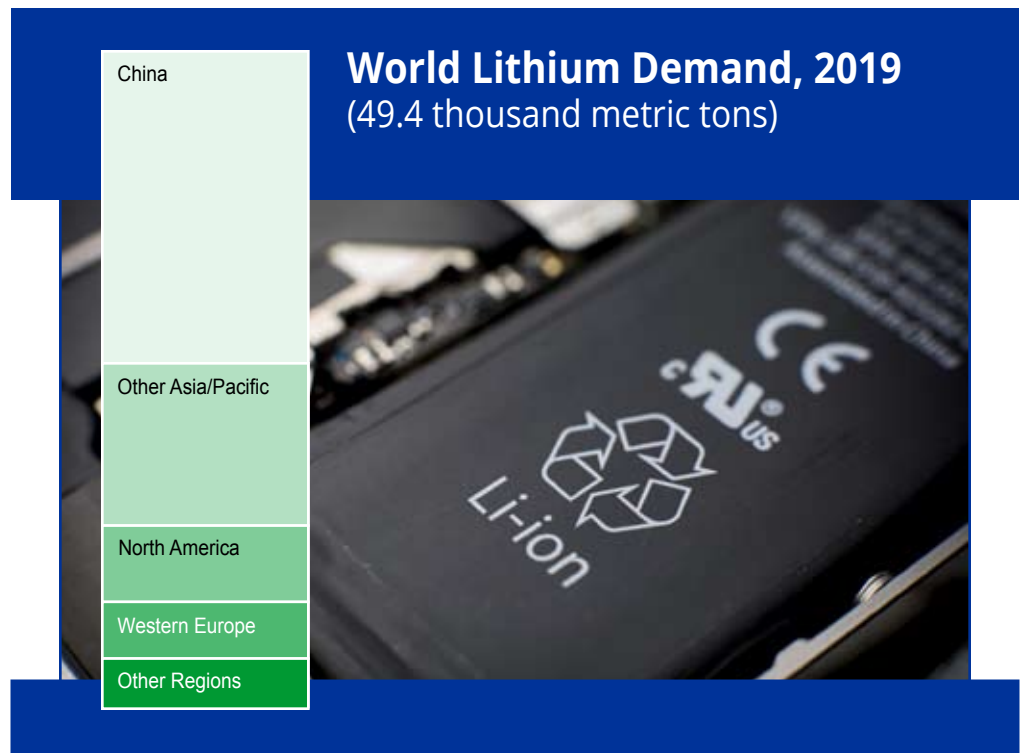
Growth will be driven by rapid expansion in the lithium-ion battery industry as world demand for hybrid and electric vehicles, energy storage systems, and high-drain portable electronics continues to grow.

World demand to rise 8.9% annually through 2019

Global demand for lithium metal is projected to rise 8.9 percent per year through 2019 to 49,350 metric tons. In lithium carbonate equivalent (LCE) terms, the value of the global lithium market is projected to reach \$1.7 billion. Torrid advances in the rechargeable battery market will fuel increases, driven by rapid expansion in the lithium-ion (Li-ion) battery industry as world demand for hybrid and electric vehicles (H/EVs), energy storage systems, and high-drain portable electronics continues to grow. Rising production of primary lithium batteries will also support market gains, especially as improving incomes in emerging economies spur shifts to better performing primary batteries. Other major markets for lithium -- including glass and ceramics, lubricating grease, and metallurgy -- are forecast to post relatively moderate gains. The lubricating grease segment will boast the best performance of these markets, spurred by the use of lithium-based greases in industrial and transportation equipment. Demand for lithium will also be strong in the smaller aluminum alloy market, where lithium is used to reduce weight and improve alloy strength.

Asia/Pacific region to see the fastest gains in demand

The Asia/Pacific region will see the fastest gains in lithium demand through 2019. China dominates the world lithium market due to the country's massive



output of goods manufactured with lithium -- including batteries, glass, grease, air conditioning equipment, and synthetic rubber. China is expected to register the world's strongest yearly increases in lithium demand, boosted by a nearly threefold expansion in the country's rechargeable battery segment. Other major suppliers of Li-ion batteries in the Asia/Pacific region, including South Korea and Japan, are also projected to see robust increases in lithium demand. Strong market gains in India will be driven by ongoing expansion in the country's manufacturing sector. Among other regions, North America is projected to post the fastest gains in lithium demand, buoyed by strong growth in the production of Li-ion batteries in the US. Li-ion battery output

is also forecast to expand in Western Europe, particularly in Germany.

Lithium hydroxide to outpace lithium carbonate

Lithium is most widely consumed in the form of lithium carbonate due to the compound's application in a wide range of end uses (including glass, ceramics, and batteries). However, lithium carbonate is losing market share to lithium hydroxide, which is increasingly favored for its superior performance in Li-ion cathode applications. Large volumes of lithium metal are also consumed in the form of mineral concentrates, which find applications in the production of glass, ceramics, and metal castings.

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WESTERN EUROPE

Germany: Lithium Markets

The market for lithium in Germany is forecast to advance 1.9 percent per year through 2019. Expansion in the automobile battery segment is the largest volume industry. Demand for lithium in this segment is projected to grow 1.9 percent per year through 2024, eclipsing the glass and ceramics segments. Demand for lithium in the country will remain flat through 2019, supported by demand for H/EV and energy storage batteries. Lithium-ion cell producer Leclanché, for instance, has expanded capacity at its site in Willstätt, where the company manufactures batteries for energy storage systems. Demand for lithium in primary battery applications will be limited by a lack of significant capacity and by the already high penetration of primary lithium in the region.

Germany's glass and ceramics market is forecast to register nominal gains through 2019. Overall flatness in domestic production of glass and ceramic products will contribute to slow increases in demand for lithium used as fluxes and in frits for glazes and enamels. However, the presence of major glass and ceramics producers, including locally based SCHOTT, will prevent a weaker performance through 2019. SCHOTT manufactures its ZERODUR line of low expansion glass-ceramics at a facility in Mainz.

Germany's lubricating grease market for lithium is projected to post nominal gains through 2019, based on slowing output of machinery, combined with flat trends in the motor vehicle industry. Expansion in synthetic rubber production will support demand for compounds such as butyllithium, which is employed as a catalyst in polymerization reactions. Germany benefits from the presence of

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SAMPLE
TEXT

TABLE VII-3

CHINA: LITHIUM DEMAND BY PRODUCT
(metric tons)

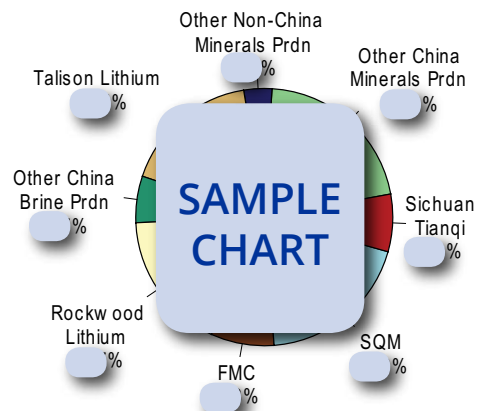
Item	2004	2009	2014	2019	2024
Gross Domestic Product (bil 2013\$)					
\$ GDP/capita					
Population (million persons)					
Battery Shipments (mil \$)					
Flat Glass Production (000 metric tons)					
grams lithium/mil \$ GDP					
grams lithium/capita					
Lithium Demand					
Lithium Carbonate					
Lithium Hydroxide					
Mineral Concentrates					
Other					
Lithium Mine Production					
Minerals					
Brine					

SAMPLE
TABLE

Source: The Freedonia Group, Inc.

CHART IX-1

WORLD PRIMARY LITHIUM MARKET SHARE BY VOLUME, 2014
(35,800 metric tons)



SAMPLE
CHART

Sample Profile & Table, & Study Coverage

TABLE VII-6
JAPAN: LITHIUM DEMAND BY MARKET
 (metric tons)

Item	2004	2009	2014	2019	2024
Manufacturing Value Added (bil 2013\$) grams lithium/000\$ MVA					
Lithium Demand					
Batteries:					
Primary					
Rechargeable					
Glass & Ceramics					
Lubricating Grease					
Metallurgy					
Other					
% Japan					
Asia/Pacific Lithium Demand					

Source: The Freedonia Group, Inc.

SAMPLE PROFILE

SAMPLE TABLE

STUDY COVERAGE

World Lithium is a Freedonia study that presents historical demand data (2004, 2009, 2014) plus forecasts for 2019 and 2024 by product and market in six regions and 19 nations. The study also considers market environment factors, details the industry structure, evaluates company market share and profiles 32 industry competitors worldwide.

COMPANY PROFILES

Galaxy Resources Limited
 Level 1/16 Ord Street
 West Perth, Western Australia
 61-8-9215-1111
 http://www.galaxyresources.com.au

Revenues: \$1.1 billion (2014)
 Employees: 100 (2014)

Galaxy Resources is a lithium resources company with assets in Australia, Canada, and Argentina. As of mid-2015, it was still in the exploration and development stage. In April 2014, Galaxy Resources sold the Galaxy Lithium Jiangsu Company Limited subsidiary (China), which made lithium carbonate at a plant in Jiangsu, China.

The Company is involved in the world lithium industry via the development of lithium projects in Argentina, Canada, and Australia. Galaxy Resources' main operation in Argentina is the Sal de Vida Lithium and Potash Brine Project, known as Sal de Vida. Sal de Vida is situated in the Lithium Triangle, a region where Chile, Argentina, and Bolivia meet, and a region that, according to the Company, accounts for 60 percent of global lithium production. By the end of 2014, the Company had acquired the last remaining outstanding tenements in the project, resulting in the ownership of all the land parcels needed to build extraction and processing facilities in the future.

In Canada, Galaxy Resources' presence include the James Bay Lithium Pegmatite Project in Quebec, which contains indicated mineral resources of 11.75 million metric tons grading at 1.3 percent lithium oxide and inferred mineral resources of 10.47 metric tons grading at 1.2 lithium oxide. This project is amenable to open pit extraction and has

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Related Studies

World Battery Materials

This study analyzes the world market for battery materials. It presents historical demand data (2004, 2009 and 2014) and forecasts (2019 and 2024) by battery material type (e.g., metals, chemicals, carbon/graphite, polymers) and application (primary batteries, secondary batteries) by world region and major country. The study also considers market environment factors, details industry structure, evaluates company market share and profiles industry players. **#3329.....November 2015.....\$6200**

World Batteries

Global battery demand is forecast to rise 7.8 percent per year to \$120 billion in 2019. China will remain the largest national market as well as one of the fastest growing. Secondary batteries will outpace primary types. Rechargeable lithium-ion batteries will be the fastest growing products. This study analyzes the \$83 billion world battery industry, with forecasts for 2019 and 2024 by type and market for six world regions and 16 countries. The study also reviews battery technology, evaluates company market share and profiles industry participants. **#3309.....July 2015.....\$6700**

World Tungsten

World demand for processed tungsten will rise 4.2 percent yearly to 146,400 metric tons in 2019. The Asia/Pacific region, led by China, will continue to dominate supply and consumption, while India will be the fastest growing market. Tungsten alloys will pace gains by product, while cemented carbides remain the largest segment. This study analyzes the 119,100 metric ton world tungsten industry, with forecasts for 2019 and 2024 by product for six world regions and 16 major countries. The study also evaluates company market share and profiles industry players. **#3306.....July 2015.....\$6200**

Lubricants

US lubricant demand will rise less than one percent annually to 2.5 billion gallons in 2018, valued at \$27.5 billion. Although growth will be modest, this will be a reversal of an outright drop in demand between 2008 and 2013. Improved efficiency and less frequent oil replacement will be a common trend throughout light vehicle and other lubricant markets. This study analyzes the 2.4 billion gallon US lubricant industry, with forecasts for 2018 and 2023 by basestock, product and market. The study also evaluates company market share and profiles industry competitors. **#3143.....March 2014.....\$5200**

Battery & Fuel Cell Materials

US demand for battery and fuel cell materials is expected to grow 4.3 percent annually through 2017 to \$6.1 billion. Polymers, metals and other materials will lead gains. Material usage in secondary batteries will outpace primary batteries, while fuel cells will be the fastest growing application overall from a small base. This study analyzes the \$4.9 billion US battery and fuel cell material industry, with forecasts for 2017 and 2022 by type, function and application. The study also evaluates company market share and profiles industry players. **#3115.....January 2014.....\$5100**

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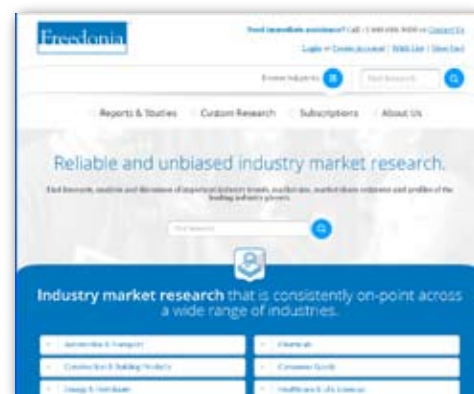
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