



Measures to promote the resilience of critical mineral supplies

Japan Organization for Metals and Energy Security ; JOGMEC

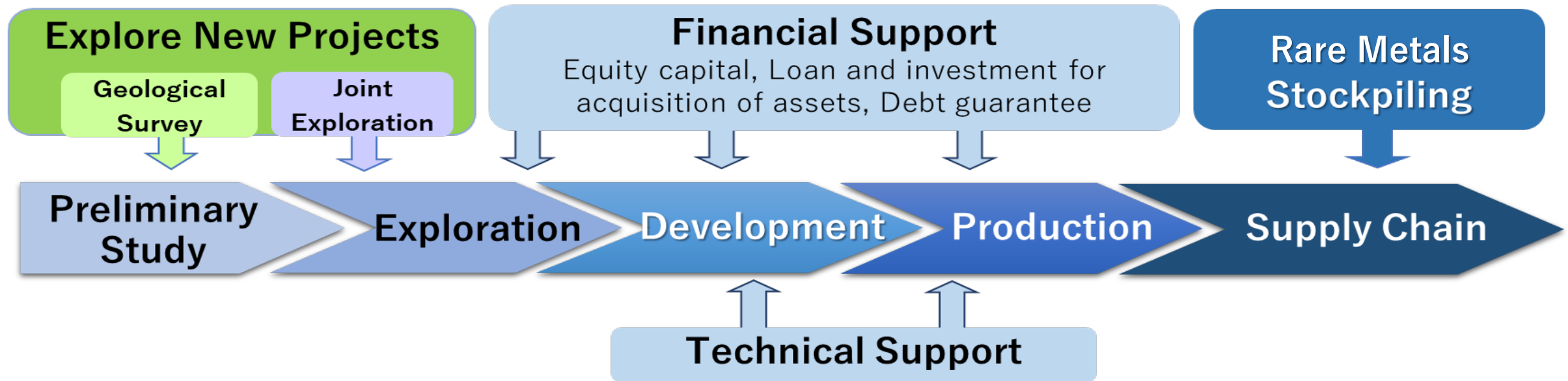
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JOGMEC Metals Unit's Activity

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- **About JOGMEC:** A policy implementation organization under the Ministry of Economy, Trade and Industry, Japan. JOGMEC has a variety of support tools for Japanese companies' activities to secure the stable supply of mineral resources.
- JOGMEC's support tools cover each stages as below. JOGMEC has previously been relatively focused on **upstream** projects.
- In recent years, the system has been extended to provide **midstream** support for smelting and refining as well.



JOGMEC Financial Support Achievements

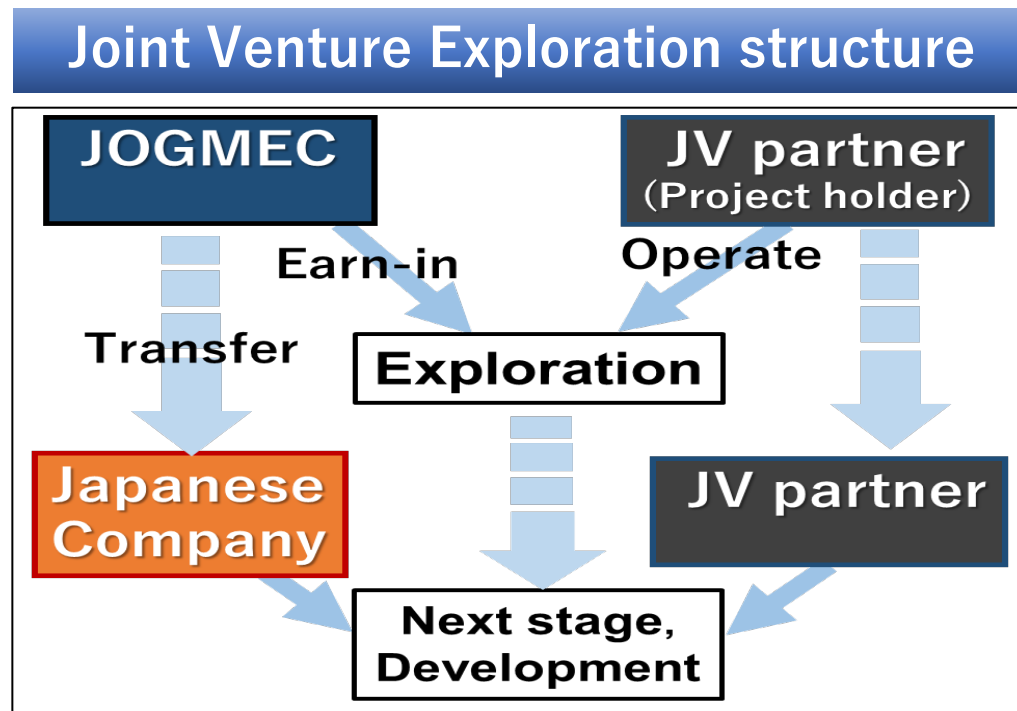
- JOGMEC provides financial assistance when Japanese companies enter mineral resource development projects. Achievements to date include as below.

Metal	Lithium	Rare Earth	Niobium	PGM/Cu/Ni
Project	Argentina/Jujuy Olaroz	Australia/West Australia Mt. Weld	Brazil/Minas Gerais Araxa	South Africa/Limpopo Platreef
Japanese company	Toyota Tsusho	Sojitz Corp.	Nippon Steel Corp., JFE steel, Sojitz	ITOCHU Corp., JGC Holdings Corp.
Partner etc.	Partner : Allkem, Jujuy Energia y Minería	Investing Company : Lynas	Investing Company : CBMM	Partner : Ivanhoe Mines, BEE
Support tool	Debt guarantee	Equity capital	Equity capital, Debt guarantee	Equity capital
Effective date	2012/9	2011/3	2011/3	2011/8
Project Overview	<ul style="list-style-type: none"> Extraction of lithium from brine and production of lithium carbonate. Production to commenced in 2014 JOGMEC has provided support from the stage of mineral resource assessment studies and infrastructure feasibility studies. Lithium hydroxide plant in Japan has been launched in 2022. 	<ul style="list-style-type: none"> REE production started since 2011. Japanese side has exclusive market right in Japan. This project supplies Light REE which is main raw materials of magnet for motor. Heavy REE supply which is heavily dependent on China will be planned from this project. 	<ul style="list-style-type: none"> Brazil holds the majority of the world's niobium reserves, and CBMM owns almost all assets. Niobium is used as an additive in the production of high-grade and special steel products. CBMM is a mining company established in 1955 with a niobium and refining plant. 	<ul style="list-style-type: none"> The grade and size of the deposit are large and its thickness makes mechanisation possible. Copper and Nickel are produced in addition to PGMs. Lamp-up of production are planned in early 2025.

Joint Venture Exploration to explore new projects

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- JOGMEC conducts exploration projects jointly with junior exploration companies, mining companies and state-owned corporations to identify promising projects. JOGMEC's position is transferred to Japanese corporations and promote continuous exploration and development.
- Since 2003, 138 projects have been implemented and 17 projects have been transferred to Japanese companies.



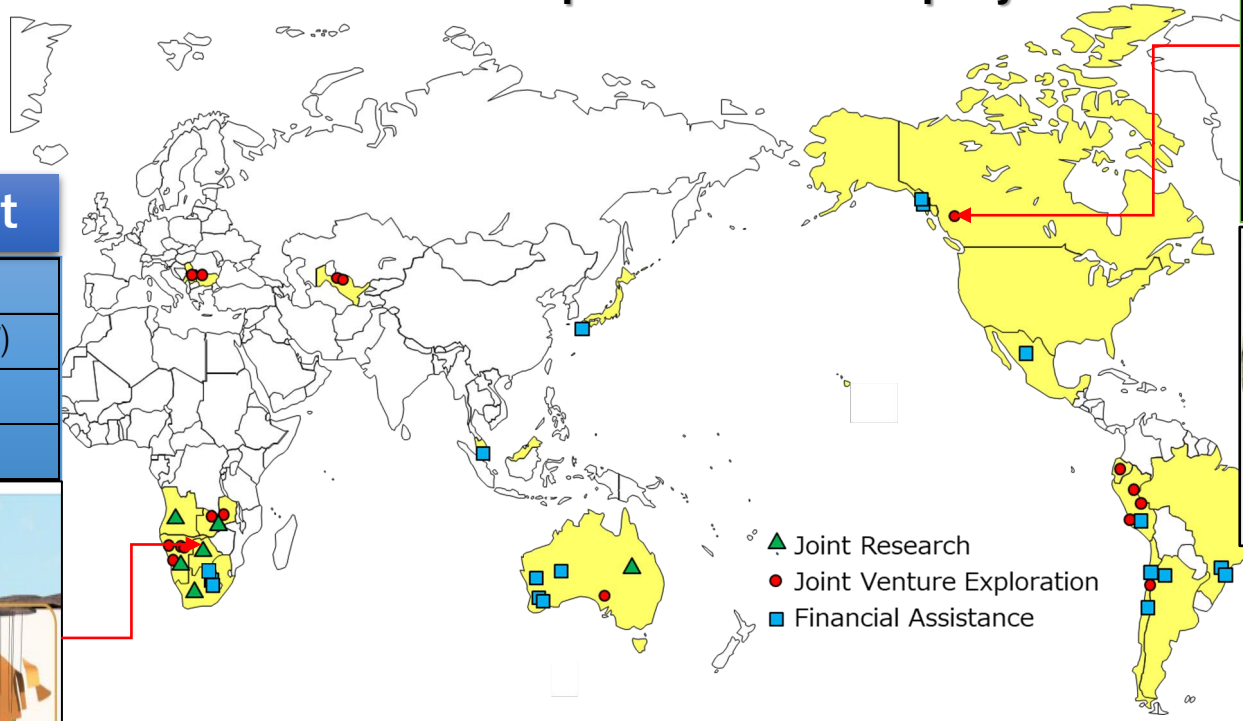
Drilling site in the Andean region of South America

- The structure is an unincorporated joint venture. The JV partner will be the operator and JOGMEC contributes to the exploration costs and farm in of the project. If the project get successful result, JOGMEC will transfer its position to Japanese companies through an open bidding process.

Topics of JOGMEC's JV Exploration projects

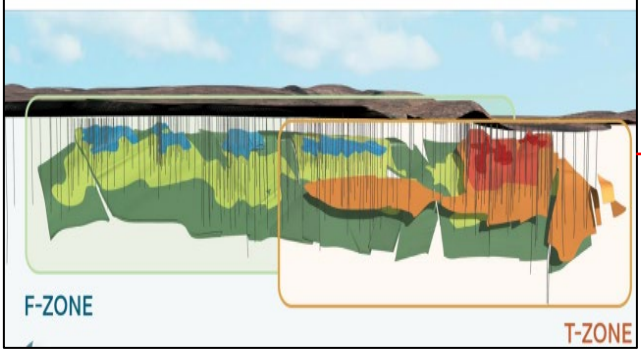
- On 29 March 2023, JOGMEC signed JV agreement with FPX, a Canadian exploration junior. It targets the Awarwa ore in Canada BC, an under-utilized resource that is different from the existing nickel ore type.
- On 9th June 2023, JOGMEC provides equity support to the Waterberg PGM project at Limpopo province in South Africa which had been transferred from JOGMEC to Hanwa Co., Ltd.

Location Map of JOGMEC's projects




Waterberg PGM project

Project Name	Waterberg PGM project
JV Partner	Platinum Group Metals (TSX-V)
Location	Limpopo, South Africa
Target	high-quality PGM deposits



Crow Nickel project

Project Name	Crow Nickel project
JV Partner	FPX Nickel Corp. (TSX-V)
Location	British Columbia, Canada
Target	Awaruite Nickel deposit



**DECAR NICKEL DISTRICT
Mineralization Advantages**

Key Attributes & Value Drivers	Style of Nickel Mineralization		
	Nickel Sulphide HIGH-GRADE (e.g., Western Australia)	Nickel Sulphide LOW-GRADE (e.g., Canada)	Awaruite FPX NICKEL
Long Mine Life Greater than 15 years		✓	✓
Large volume of production Greater than 200,000 tonnes per year		✓	✓
Low-cost mining Near-surface, large deposits		✓	✓
High nickel recoveries Greater than 50% of total nickel	✓		✓
High-grade, clean nickel concentrate Ni content: great than 60%			✓
Direct feed to EV market No smelting or H2SO4 required			✓
High payability for nickel product Payability greater than 90% LME nickel price			✓
Low-carbon nickel production Under 5 tonnes CO ₂ per tonne Ni produced		✓	✓

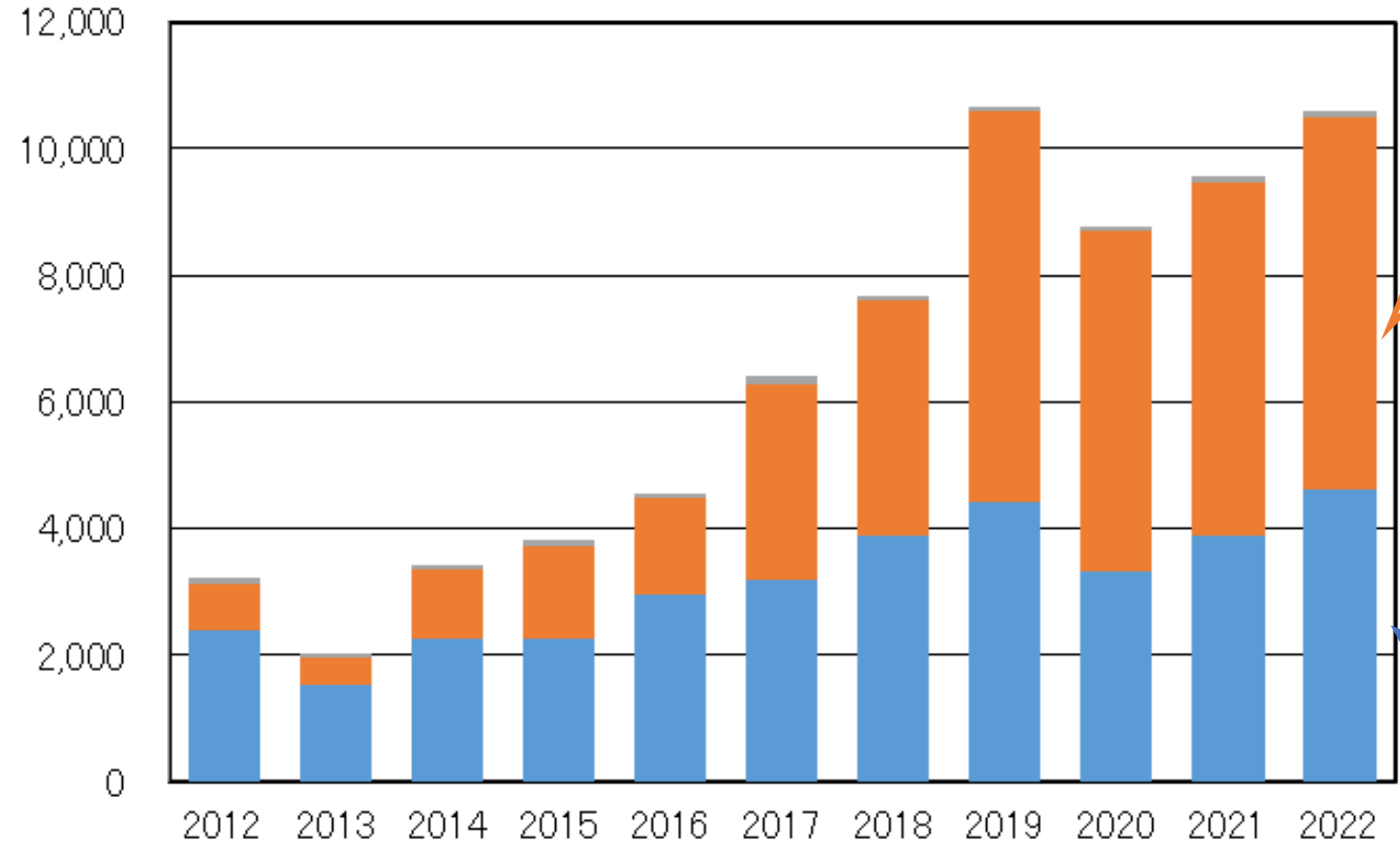
- ▲ Joint Research
- Joint Venture Exploration
- Financial Assistance

Japanese imports of lithium materials

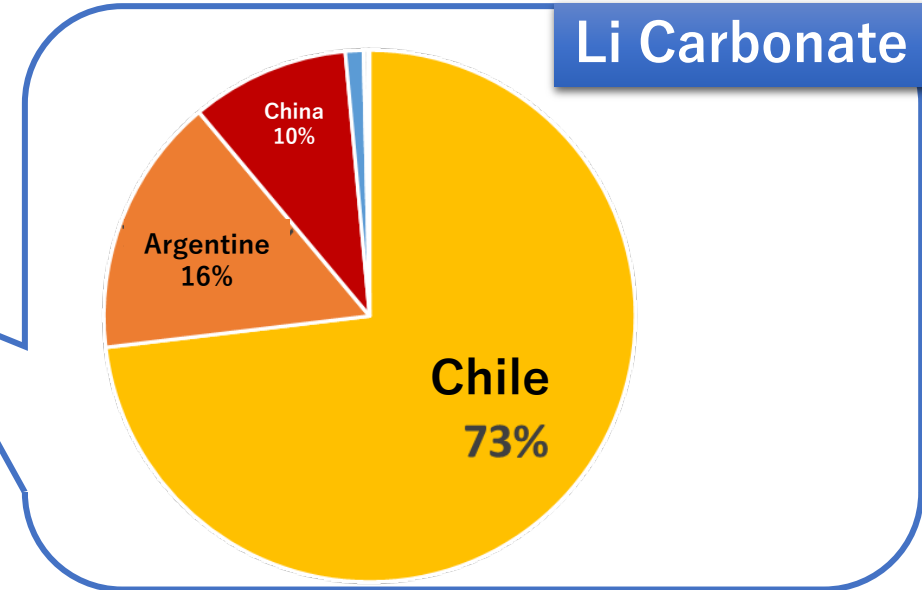
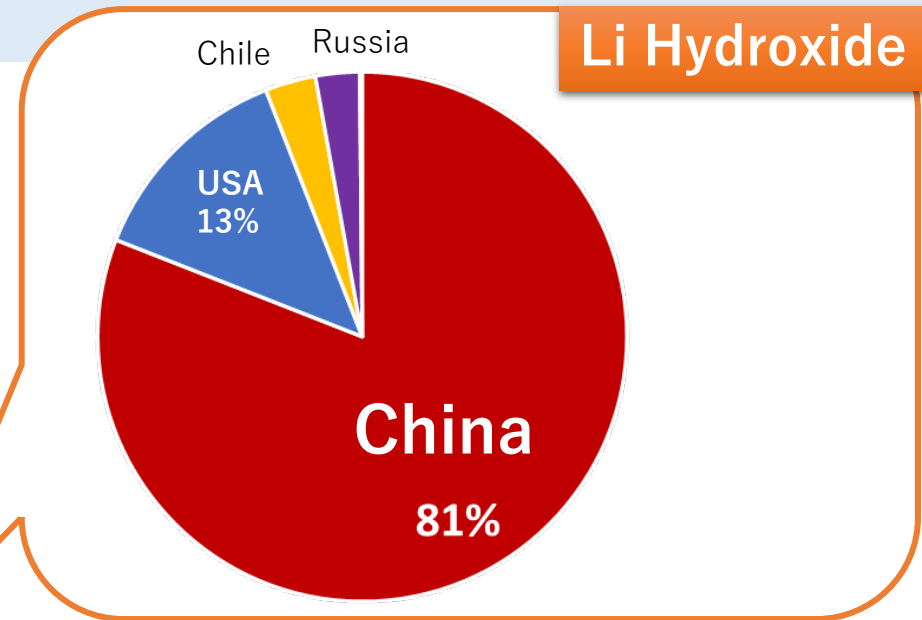
Hi-Ni LiBs' market has grown up and lithium hydroxide has increased rapidly in Japanese demand. Chinese share of Li hydroxide in import is more than 80%.

Japanese imports of lithium materials

(純分) ■ Li Metal ■ Li Hydroxide ■ Li Carbonate



※JOGMEC



As part of **Economic Security Promotion**, a major new **grant programme** for new **upstream and midstream projects** will be launched in 2023.

- **Battery minerals** (lithium, nickel, graphite, etc.) and **rare earths** were initially selected as target minerals, with gallium and germanium recently added.
- Conditions for eligible projects include the acquisition of mineral **off-take** and the supply of a **fixed quantity of production to Japan**.
- Mine development costs are rising due to the deepening and deepening of target areas and the decline in ore grades, as well as additional costs for **environmental protection and human rights** issues.
- With other countries competing to secure concessions due to unprofitable investments, more in-depth support measures were needed.
- The scope includes not only Upstream projects, but also **Midstream**, a project to develop processing technology; the first project selected was a domestic **pilot plant project for waste LiB**.

Use multilateral cooperation frameworks to explore new projects

- ◆ Through the **Mineral Security Partnership (MSP)**, joint projects are sought to diversify the supply chain for critical minerals. It also aims to promote high **ESG standards** in project implementation to counter the monopoly situation caused by production with environmental impacts.