# Lithium Universe Ltd: Phase 1 of Solar Panel Recycling to Focus on Silver Recovery

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Melbourne, Australia - Lithium Universe Ltd. (ASX:LU7) (FRA:KU00) (OTCMKTS:LUVSF) is pleased to announce that, following discussions with Dr. Binesh Puthen Veetti and his team at Macquarie University, the first phase of critical metals extraction from photovoltaic (PV) solar panel recycling technology will focus on silver metal. Silver is primarily used in photovoltaic (PV) solar cells as a key material for the electrical contacts that allow the flow of electricity generated by the solar panel. The average solar panel contains around 20 grams (0.7 oz) of silver, worth about A$36 per panel at today's silver prices.

Highlights

- Silver Extraction - First phase of critical metals PV recycling extraction

- Average solar panel contains around 20 grams of silver

- Silver demand is projected to reach a record 680 Mil oz in 2025

- Industrial demand growing at 7% CAGR - demand beginning to outpace supply

- Projected market deficit of around 117.6 Mil oz in 2025

- Price of silver increased from US$15/oz in 2018 to US$34/oz in 2025, a 126% increase

- Dr. Binesh and Macquarie University team developed silver extraction technology

- LU7 acquired global rights to PV solar panel recycling technology

- "Microwave Joule Heating Technology" (MJHT) from Macquarie University

- A new silver extraction technology, distinct from MJHT, will be presented to LU7 once the patent is finalized

- 60-78 mt of waste photovoltaic (PV) modules are expected to accumulate by 2050

- Only 15% of waste solar cells are recycled worldwide - rest in land fill

- Equivalent of A$154 billion of silver value in waste

- Discarded panels also contain silicon, gallium and indium, critical in advanced semiconductor and solar energy technologies

USE OF SILVER IN PV SOLAR CELLS

1. Conductive Paste: Silver is mixed with other materials to create a conductive paste, which is applied to the solar cells' surface. The paste is then baked onto the cells, forming silver contacts that help conduct the electricity generated by the solar panel.

2. Electrical Conductivity: Silver is known for its excellent electrical conductivity, making it an ideal material for transferring electricity from the solar cell to the external circuit. The metal forms the "fingers" (thin lines) and "busbars" (thicker lines) on the surface of the solar cells, which collect and transport the generated electrical current (see Figure 1*).

DEMAND FOR SILVER

The average solar panel is often reported to contain around 20 grams (0.7 oz) of silver, with some sources indicating a range of 3.2 to 8 grams per square meter. The value of silver in each panel is in the region of A$36 per panel (USD$34/oz) at today's price. The demand for silver in the solar industry is rising rapidly, driven by the global expansion of solar panel installations. In Australia, the goal of achieving 82% renewable energy by 2030 and a 43% reduction in carbon emissions is fuelling the growth of solar panel installations.

In recent years, photovoltaics have accounted for a significant share of total silver consumption, and this trend is expected to continue. In 2025, silver demand is projected to reach a record 680 million ounces, fuelled by a 7% increase in industrial demand, as shown in Figure 2*. This growth is largely driven by the increasing use of silver in various industries, with photovoltaics and AI emerging as the fastest-growing sectors.

Silver is both expensive and relatively scarce. Its extraction primarily involves mining ores such as argentite, which are then processed through smelting or chemical methods. As demand for solar energy and electronics continues to rise, silver supply is struggling to keep up. This ongoing imbalance between supply and demand is expected to result in a market deficit of around 117.6 million ounces in 2025. Such deficits have been a recurring trend in recent years, contributing to upward pressure on silver prices. This trend has already been reflected in the price of silver, which has risen from US$15/oz in 2018 to US$34/oz in 2025, marking a 126% increase over that period, as shown in Figure 2*.

The silver market is experiencing a shortfall, which is putting upward pressure on prices, underscoring the increasing importance of silver recovery through recycling. As traditional mining struggles to meet demand, recycling will play an increasingly vital role in securing the supply of this critical metal. The continued expansion of industries reliant on silver, coupled with supply constraints, suggests that silver's value will likely remain high in the coming years.

POTENTIAL SILVER EXTRACTION TECHNOLOGY

In June 2025, Lithium Universe entered into an exclusive licensing agreement ("Licensing Agreement") to acquire Macquarie University's Microwave Joule Heating Technology (MJHT). The platform is based on microwave technology, which selectively heats silicon wafers to soften the Ethylene Vinyl Acetate (EVA) thermoplastic encapsulant in solar panels, facilitating easy delamination and enabling the potential recovery of valuable materials at room temperature. This innovative approach eliminates the need for extreme heat (1400degC) typically required to separate materials like glass and silicon, as well as the use of expensive and hazardous chemicals in traditional methods. Delamination allows for selective material separation without mechanical crushing, which often results in cross-contaminated materials and reduced recovery rates.

Following the focus on silver extraction, Dr. Binesh and his team have informed the Company that they have developed a complementary silver extraction technology for delaminated silicon wafers from the microwave delamination process. The technology is currently in the patent submission stage, and the license will be made available to Lithium Universe once it is ready. The Company has not yet evaluated the proposed technology.

However, Lithium Universe has already begun independent research and patent searches to identify the most effective methods for extracting silver from discarded PV solar panels.

WHY RECYCLING OF SILVER IS LUCRATIVE

A report from the International Energy Agency (IEA) projects that global waste from PV solar panels will reach up to 8.0 million tonnes by 2030 and 60-78 million tonnes by 2050. By 2035, Australia is expected to accumulate 1 million tonnes of solar panel waste, valued at over A$1 billion (about 50 panels weigh about 1 tonne). Despite the growing challenge, only 15% of used PV cells are currently recycled, with the rest ending up in landfills. This low recycling rate is due to complex processes, high-temperature furnaces, and toxic chemicals, leading to poor recovery yields.

"In Fact, the Silver that's contained inside Solar Modules equates to in its totality, Australia's Biggest Silver Mine" (Australia Smart Energy Council)

Recycling and extracting silver from solar panels presents a lucrative business opportunity for LU7 due to the substantial amount of silver in each panel-approximately 20 grams, equating to around A$36 in value. With the growing volume of solar panel waste, this offers a readily available cheap feedstock for recycling. As the demand for silver increases, especially in industries like electronics and renewable energy, recovering silver from endof-life panels can become a valuable and sustainable revenue stream. The Company believes that the Macquarie University technology provides a more efficient recycling technology, positioning it to capitalize on this growing market while addressing environmental challenges.

EXTRACTION OF OTHER VALUABLE METALS

As part of the second phase, the Company will be investigating the extraction of other valuable metals in discarded PV solar panels such as silicon, gallium, and indium. These materials are not only essential to the clean energy transition but are also critical inputs in the semiconductor industry, where they are used in

advanced electronics, power devices, and high-efficiency photovoltaic cells.

China is the dominant global supplier of both gallium and indium, producing around 80% of gallium and over 60% of indium. Gallium is primarily a by-product of aluminum production, while indium is extracted during zinc mining. Other notable gallium producers include Germany, Kazakhstan, and Ukraine, though their contributions are smaller. For indium, Canada and Peru are significant producers, with Japan and South Korea focusing on refining and processing. These metals are crucial for high-tech applications like semiconductors, solar panels, and electronics. However, their supply chains are concentrated in a few countries, especially China, making them vulnerable to supply disruptions.

Executive Chairman, Iggy Tan stated, "While solar panels contain many critical metals and minerals, the followup extraction of these materials needs to be prioritized. Due to the large volume of residual material, rising prices, and supply shortages, the Company plans to focus on silver extraction as the first phase. Once we address silver extraction, we can then explore the extraction and recovery of other critical metals like silicon, indium, and gallium-critical in advanced semiconductor and solar energy technologies."

*To view tables and figures, please visit:
https://abnnewswire.net/lnk/HJ0M3H27

About Lithium Universe Ltd:

Lithium Universe Ltd (ASX:LU7) (FRA:KU00) (OTCMKTS:LUVSF) is a forward-thinking company on a mission to close the "Lithium Conversion Gap" in North America and revolutionize the photovoltaic (PV) solar panel recycling sector. The company is dedicated to securing the future of green energy by addressing two major strategic initiatives: the development of a green, battery-grade lithium carbonate refinery in Quebec, Canada, and pioneering the recycling of valuable metals, including silver, from discarded solar panels.

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