



Applying the benefits of aluminum to facilitate advances in recycling and substantially reduce CO₂ emissions

Shinji Tanaka

Director, Member of the Board, and Executive Officer
UACJ Corporation

As an executive vice president of UACJ (Thailand) Co., Ltd., Shinji Tanaka was involved in the operations of integrated production lines. In April 2021, he was appointed to leading positions in three divisions at UACJ's headquarters, and plays a central role in business execution.

Reducing Scope 3 CO₂ emissions by making the most of aluminum's recyclability in the value chain

Reducing CO₂ emissions is recognized around the world today as an urgent challenge for combatting climate change. Many countries have accelerated their efforts to shift to a lower-carbon economy. In Japan, the government announced, in October 2020, its goal to make the country carbon neutral by 2050.

Against that backdrop, the wider use of aluminum in products is expected to contribute to reducing CO₂ emissions due to the metal's light weight and recyclability. As a world-leading aluminum products manufacturer, UACJ has included CO₂ emission reductions in its materiality issues as an important goal. Specifically, it set a reduction target of 22% by 2030 (compared with the fiscal 2019 level) along with new key performance indicators in its recently announced long-term management vision. To achieve this target, UACJ intends to apply innovative new technologies over the next decade in addition to its existing technologies. Moreover, the Company established its Climate Change Countermeasures Steering Committee, chaired by its president, to oversee the Group's efforts to address climate change. Under the committee's direction, three working groups were set up in April 2021 to formulate plans and strategies for achieving carbon neutrality, facilitating aluminum recycling, and promoting the shift to aluminum cans from containers made of plastic and other materials, respectively.

For many years, the UACJ Group has been reducing CO₂ emissions through measures to conserve energy and reduce its dependence on fuel. Consequently, it has already produced excellent results at the Scope 1 (direct emissions from its own sources) and Scope 2 (indirect emissions from purchased electricity) levels. At the Scope 3 (all other indirect emissions in the value chain) level, however, more measures will be needed

to further reduce emissions in the future. Among them, making greater use of recycled aluminum will be essential, since the production of aluminum from scrap emits 97% less CO₂ than the production of virgin aluminum from bauxite ore. To make the most of recycling, however, the Group must overcome certain technological challenges and establish aluminum recycling systems. These actions have been designated as important measures of its current mid-term management plan.

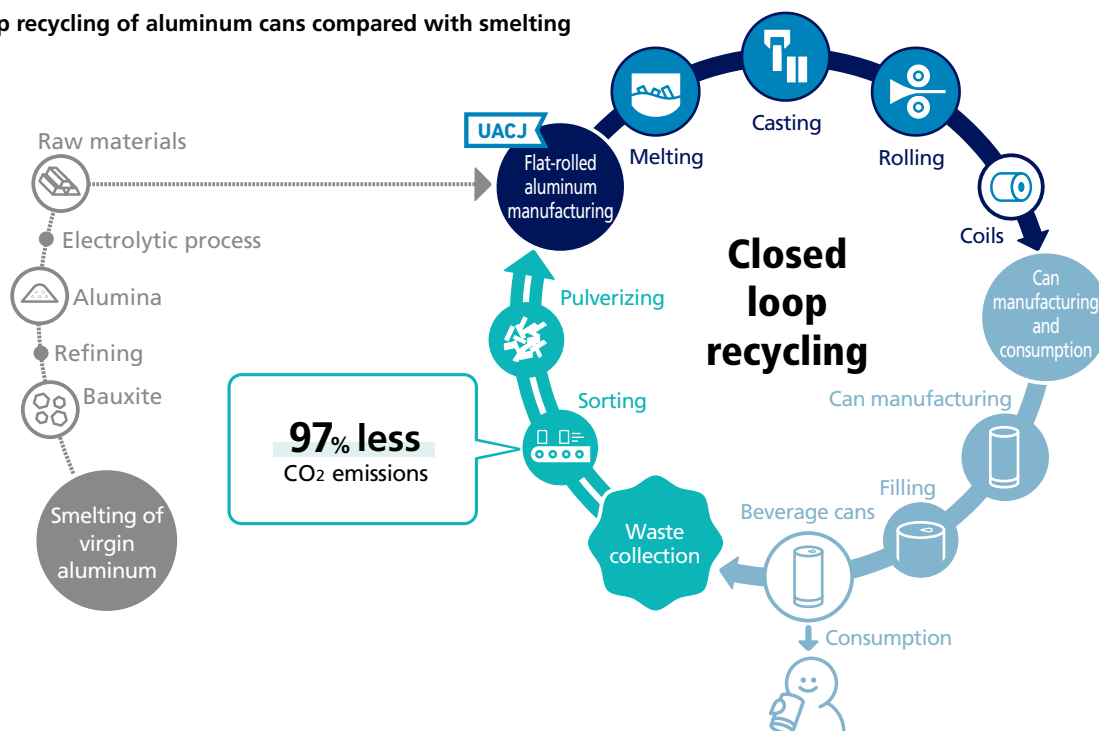
Aiming to raise the rate of beverage can recycling by separating aluminum alloys to increase the purity of recycled aluminum

Many people associate aluminum recycling with beverage cans. In Japan, about 94% of aluminum is recycled*, but of that amount, just 70% is recycled to produce aluminum cans. To further reduce waste after products are recycled, it is important to recycle used product materials into the same kind of product, an approach known as closed-loop recycling.

There are numerous types of aluminum alloys, ranging from the 1000 to 8000 series. The body and ends of a beverage can, for example, are usually made of different alloys. Since these cans are collected and recycled as single items, however, the purity of the recycled metal decreases after repeated recycling, reducing the quality compared with the original product. This process is known as downcycling.

Together with the New Energy and Industrial Technology Development Organization, UACJ has been conducting research on separating alloys as a means to raise the purity of such recycled aluminum to a level near the original material. By solving this technical problem, the Company hopes to facilitate closed-loop recycling as soon as possible to make progress towards a circular economy.

Closed loop recycling of aluminum cans compared with smelting



* The recycling rate of aluminum in Japan in fiscal 2020 (April 1, 2020, to March 31, 2021) according to a study by the Japan Aluminum Can Recycling Association

Helping develop recycling systems across the global supply chain

The creation of aluminum recycling systems is another vital way to facilitate recycling. Systems that collect used products for recycling are essential because the more used aluminum that is recovered, the less newly smelted aluminum will be needed.

The UACJ Group cannot establish these systems independently, as they must span across the supply chain as a whole. In the case of beverage cans, for example, recovered aluminum should come not only from municipalities that collect cans discarded by consumers, but also from can manufacturers that produce scrap aluminum in their manufacturing processes. Different product lifecycles should also be taken into account. Products with a short lifecycle, like beverage cans, can be collected in a comparatively short amount of time, while those with a long lifecycle, such as auto parts, may require more than

a decade until they can be recycled.

By taking these factors into account, the UACJ Group is working to establish systems that effectively recover aluminum with the goal of raising the overall recycling rate. It also hopes to help establish such recycling systems in other countries. In Thailand, for example, the Group is actively promoting the development of a beverage can recycling system.

To encourage greater participation and cooperation among suppliers and consumers, the Company believes that in addition to the message, aluminum recycling is good for the environment, it is important to emphasize the fact that aluminum recycling can reduce CO2 emissions by 97% compared with smelting. With this in mind, the Company launched UACJ Smart as a new brand of environmentally friendly products in June 2021.

Through these initiatives and efforts to help establish aluminum recycling systems, the UACJ Group is working to reduce the environmental impact of aluminum production while supplying products that benefit society.

Responses to climate change

Basic approach

Working from the premise that the global environment is essential to all life, the UACJ Group believes that addressing climate change proactively is an important responsibility for any member of society, and as such has designated this as one of the Group's management materialities. The UACJ Group deems both the promotion of closed-loop recycling—which it is hoped will be extremely beneficial with regard to efforts to achieve carbon neutrality by reducing emissions of greenhouse gases such as CO₂—and the development of the aluminum products that are so useful in energy conservation as being important themes for management.

In September 2021, we declared our support for the proposals of the TCFD (the Task Force on Climate-related Financial Disclosure), and joined the TCFD Consortium, an organization of businesses that support the TCFD in Japan. Going forward, we will work to take our response to climate change even further through the analysis and assessment of risks and opportunities that climate change represents to the UACJ Group based on scenarios we have tailored to our business.



Governance

On April 1, 2021, UACJ established a Climate Change Countermeasures Steering Committee chaired by the company president as an organization for initiatives to

address climate change. Through this committee, we have established working groups for carbon neutral measures, recycling promotion, and promotion of conversion to aluminum. The results of working group studies and activities are reported to the Management Committee and to the Board of Directors if necessary through the Climate Change Countermeasure Steering Committee for resolution, so that management is directly involved with governance.

Strategy

UACJ is analyzing the risks and opportunities associated with medium- and long-term climate change when climate change scenarios for a target of 1.5°C are taken into consideration, and is creating a roadmap for the achievement of this target. Beginning in next fiscal year, we will disclose and report through media such as our corporate website and integrated report, and work to communicate with our stakeholders.

Risk management

A TCFD Response Team that has been set up within the secretariat of the Climate Change Countermeasures Steering Committee is tasked with identifying risks and opportunities in line with the TCFD framework, and creating scenario road maps. As UACJ has a policy of addressing climate change as a unified Group, the TCFD Response Team includes members from broad cross-section of organizations within the Group, including sales, manufacturing, legal, risk management, public relations, sustainability promotion, and the finance division.

The "UACJ SMART" environmentally friendly product brand

In June 2021, UACJ announced the release of the new "UACJ SMART" environmentally friendly product brand. UACJ SMART products are aluminum products for which raw materials have been obtained and manufacturing processes controlled with greater care than our traditional products. By using more raw materials from recycled sources we hope to commercialize aluminum products that are effective in reducing CO₂ emissions across the entire supply chain. We will actively promote the development of UACJ SMART brand products in a range of genres, including can stock, vehicles, and IT products.

Eco Friendly Product Brand

UACJ SMART

The origins of UACJ SMART

An abbreviation for "Sustainable Materials with Aluminum R (Recycle/Reduce/Replace) Technology." We hope to help bring a sustainable society to reality by leveraging the characteristics of aluminum, such as its light weight and recyclability.

Anticipated impact on UACJ Group business (risks and opportunities)

| Risks/Opportunities (Type) | | Content of risks and opportunities | |
|----------------------------|---------------------------------------|------------------------------------|--|
| Risks | Transitional risks | Policies/Regulations | We are told that at present more than 90% of the carbon dioxide emissions associated with aluminum products made by the UACJ Group can be attributed to electricity generated through thermal power to produce the new ore that is one of the raw materials we use. Accordingly, any decision to institute carbon pricing systems associated with power generation by the countries from which we import new ore will lead directly to higher manufacturing costs. |
| | | Market | We must hasten the creation of a system that will allow the collection and recirculation of recycled materials more effectively and in a broader capacity. Delaying the creation of this system will hinder the acceleration of closed-loop recycling, and may also increase costs unnecessarily as procurement of recycled materials becomes more difficult. |
| | | Reputation | A large amount of electricity is consumed in the process of mining new aluminum ore, refining it to alumina, and then smelting the result into aluminum. Since most electricity is currently derived from thermal power sources, there is a trend towards negative campaigns being held against the use of aluminum due to it being environmentally unfriendly. This must be overcome through the promotion of closed-loop recycling. |
| | Physical risks | Acute, chronic | The increasing frequency with which natural disasters assail manufacturing facilities in Japan and overseas means that there is a greater risk to continued production, while recovery costs grow. Moreover, rising temperatures cause working conditions to deteriorate, and are increasingly likely to have a negative effect on the stable continuation of production (production volumes). |
| Opportunities | Recycling-related technologies | | The UACJ Group will take the lead in constructing a system that allows closed-loop recycling—which is expected to reduce CO ₂ emissions throughout the supply chain—of a broader range of products in a more efficient manner. This will give us an opportunity for differentiation from our competitors and competing materials. |
| | Introduction of carbon pricing | | As the economic value of reducing CO ₂ increases, we hope to be able to leverage the light weight and easy heat transfer characteristics of aluminum products to help reduce CO ₂ emissions both by our direct customers and across the entire supply chain. We expect that this will lead to an increase in the sales of our products. |
| | Progress in market decarbonization | | We anticipate that the demand for environmentally friendly aluminum products made using closed-loop recycling will grow in areas such as food and beverage containers and equipment used for transportation, as will opportunities for sales. |
| | Market | | We anticipate an increase in the demand for aluminum products as materials suitable for the development of infrastructure. We also think there will be an increase in demand for aluminum as a material for beverage containers and air conditioners. |
| | Materials that can be recycled easily | | Through closed-loop recycling we hope to present the market with the appeal of aluminum products as exemplified in the can-to-can concept. Products can be reborn over and over again in their original form, as environmentally friendly materials that reduce environmental impact and help to bring about the growth of a sustainable society. |

Indices and targets

UACJ has designated “addressing climate change” as one of its materiality issues, and in UACJ Vision 2030 (released in May 2021) set a KPI for fiscal 2030 of reducing CO₂ emissions by 22% compared with fiscal 2019 under a BAU scenario¹. From fiscal 2020, we have been calculating and publicizing emissions of greenhouse gases for scopes 1, 2, and 3², and will promote efforts to cut emissions to reach our fiscal 2030 target.

¹ BAU (Business as usual): Maintaining the current circumstances (production amount, product makeup) without any countermeasures

² Scope 1: Emitted directly through in-house combustion of fuel
 Scope 2: Emitted indirectly when generating electricity for use in-house
 Scope 3: Upstream and downstream emissions throughout the entire supply chain

Reduction targets for CO₂ emissions throughout the entire supply chain

