

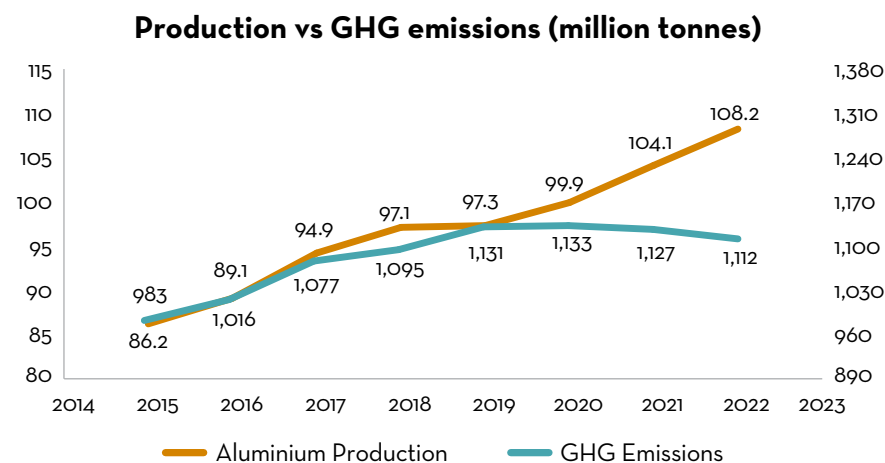
# GREENHOUSE GAS EMISSIONS DECLINE IN ALUMINIUM INDUSTRY

New data from the International Aluminium Institute (IAI) shows that, for the first time, total greenhouse gas emissions from the global aluminium sector did not grow, even though production increased.

This data shows that aluminium production grew by 3.9% between 2021 and 2022 – from 104.1 million tonnes to 108.2 million tonnes. At the same time, industry greenhouse gas emissions declined slightly, from 1.13 gigatonnes CO<sub>2</sub>e to 1.11 gigatonnes CO<sub>2</sub>e.

In the same time frame, GHG emissions intensity for primary production (the average emissions quantity in producing one tonne of primary aluminium) declined by 4.4% – from 15.8 tonnes CO<sub>2</sub>e per tonne, to 15.1 tonnes CO<sub>2</sub>e per tonne.

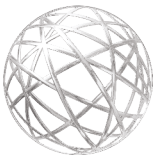
## PRODUCTION VS GHG EMISSIONS



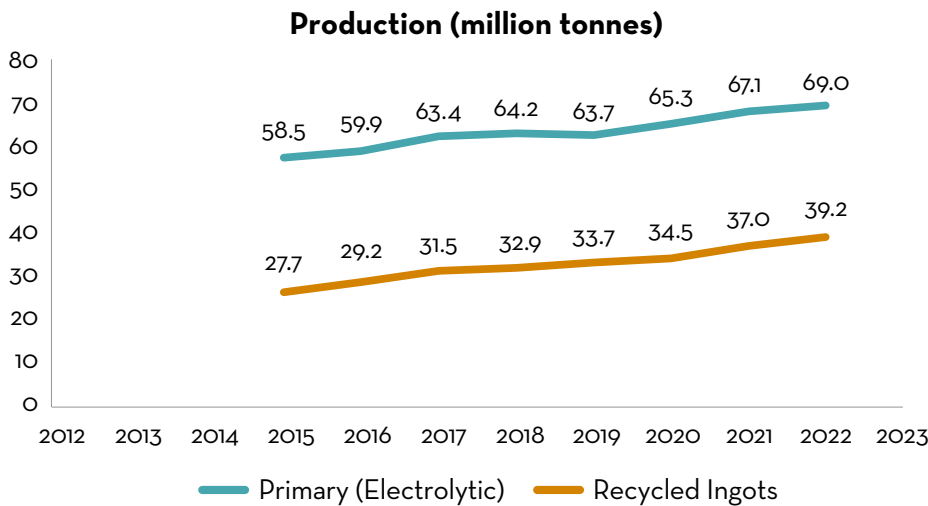
**21,000,000 tonnes CO<sub>2</sub>e**  
GHG emissions declined by 21 megatonnes CO<sub>2</sub>e across the aluminium industry in 2020-2022.

The above chart shows the relationship between aluminium production (primary and recycled aluminium) and GHG emissions (including full value chain primary aluminium, recycled aluminium and semis production) between 2015 and 2022. Aluminium production grew steadily in that period, from 86.2 million tonnes to 108.2 million tonnes. GHG emissions rose materially in the first half of the period, from 983 million tonnes in 2015 to 1,131 million tonnes in 2019, but, after peaking in 2020 (1,133 million tonnes), have declined to 1,112 million tonnes.

Aluminium smelting is the most significant component of the aluminium industry’s GHG emissions. Globally, in 2022, 59% of GHG emissions generated during primary aluminium production (mine to cast house) were generated by the production of electricity. Shifts towards hydropower and renewable electricity sources, and increased recycling, have contributed to the observed decoupling.



## PRODUCTION OF RECYCLED ALUMINIUM

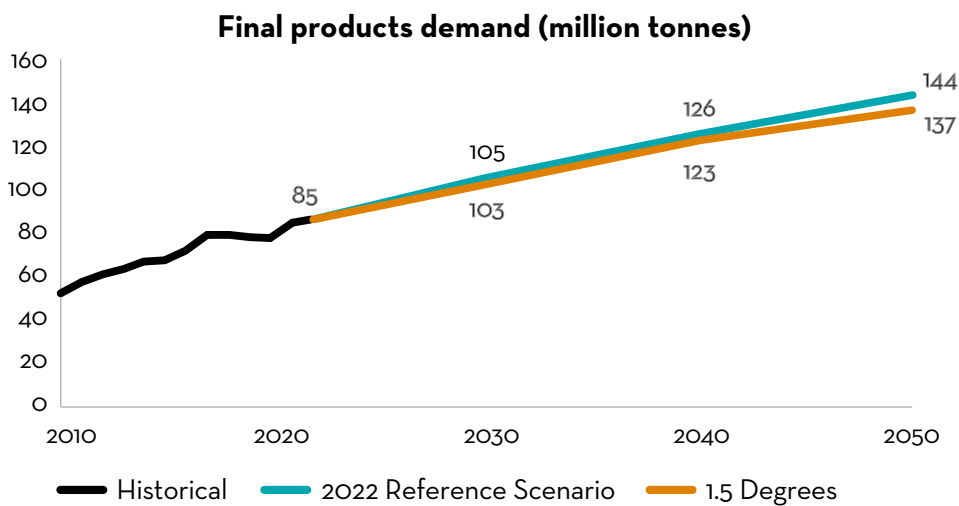


**42%**

Production of recycled aluminium has grown by 11.5 million tonnes – more than 42% – since 2015, from 27.7 million to 39.2 million in 2022. This is a sharper increase than primary aluminium, which has increased by 18% (to 69 million tonnes) in the same period

Aluminium is a key enabler to reduce emissions in other sectors, such as automotive, transport, building & construction and food & drink packaging. This demand is met by both primary and recycled aluminium.

## FINAL PRODUCTS DEMAND

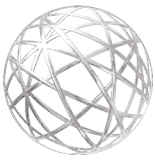


**7 million tonnes**

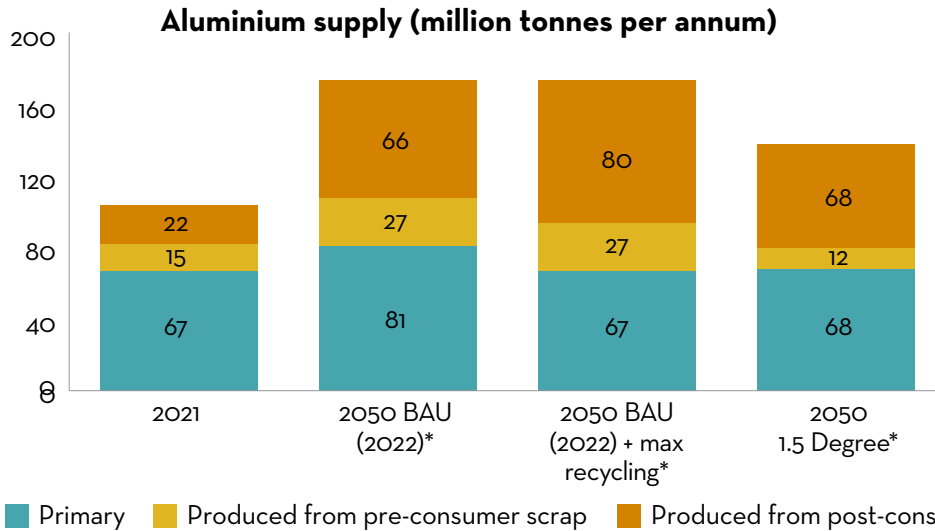
Even in an aggressive 1.5 Degree world (car sharing, moving away from individual transport to public transport, long-lasting products, re-use, full circularity, etc) final product demand is still estimated to grow significantly, with a difference compared to the reference scenario of only 7 million tonnes.

*Excludes products which are re-used.*

Demand for finished aluminium products has grown steadily since 2010. Aluminium’s role in global decarbonisation efforts means that demand is likely to continue growing; the challenge is to keep emissions down while meeting requirements for increased production.



## ALUMINIUM DEMAND GROWTH UNDER ALL SCENARIOS



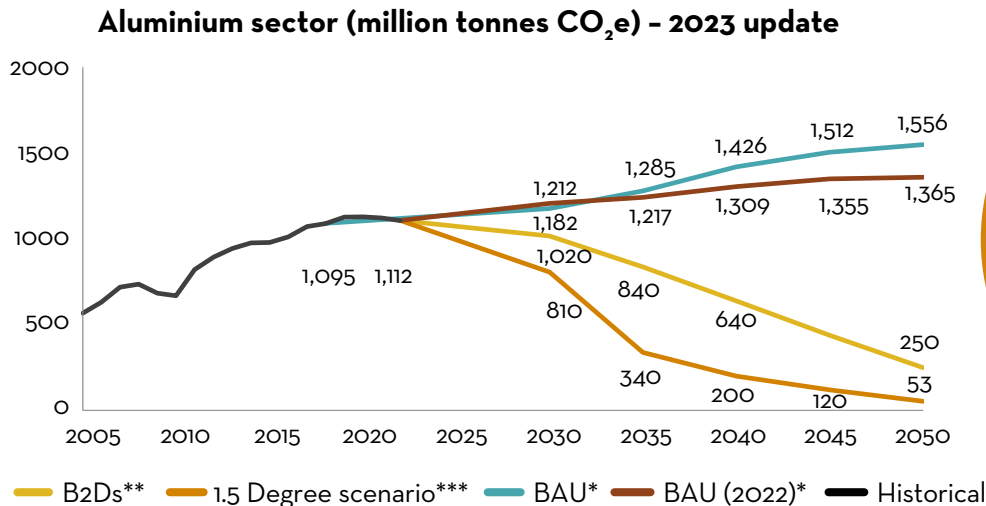
**42-67%**

Supply of aluminium is forecast to grow between 2021 and 2050 by between 42-67% under all scenarios, from 104 million tonnes (MT) to 148MT (1.5 Degree Scenario) or 174 MT (BAU). Demand does not decrease in any scenario.

\*IAI Scenario

In both the Business As Usual (BAU) Scenario with maximum recycling activity and in the 1.5 Degree Scenario, primary aluminium supply in 2050 is predicted to be roughly the same as in 2021 - 67 or 68 million tonnes. The most significant increase in aluminium supply in all scenarios will come from post-consumer scrap, which is expected to approximately triple in both the BAU Scenario (from 22 million tonnes per year to 66 million tonnes per year) and 1.5 Degree Scenario (to 68 million tonnes). In the BAU Scenario with maximum recycling, it could grow to as much as 80 million tonnes.

## IAI EMISSIONS SCENARIO



**191 million tonnes**

Due to declining emissions between 2018 and 2022, IAI has revised its Business as Usual Scenario (BAU) down by 191 million tonnes of CO<sub>2</sub>e by 2050.

\*IAI Scenario \*\*Top down scenarios based on IEA B2DS and Net Zero 2050 \*\*\* Top-down scenario based on IEA Net Zero 2050

IAI GHG Pathways to 2050 (IAI, 2021), Aluminium industry reports decline in greenhouse gas emissions (IAI, 2023)

IAI has revised the Business As Usual Scenario down due to an increase in recycling rates and the GHG intensity reduction from 16.1 (2018) to 15.1 (2022) tonnes CO<sub>2</sub>e per tonne of primary aluminium. The new BAU Scenario now forecasts emissions to increase to 1.4 billion tonnes instead of 1.6 billion tonnes in 2050 from currently 1.1 billion tonnes.