INTERNATIONAL ALUMINIUM

1.5 DEGREES SCENARIO A MODEL TO DRIVE EMISSIONS REDUCTION

The International Aluminium Institute has launched a new scenario, with supporting data, that is consistent with limiting global warming to 1.5 degrees. This scenario complements the existing work which includes:

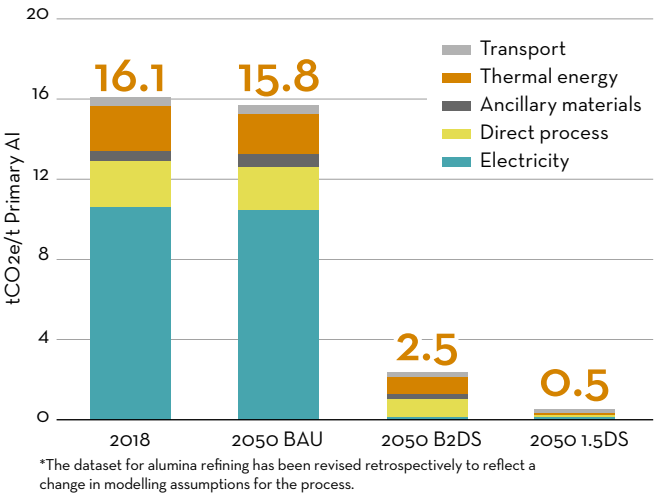
- Detailed historical emissions
- A 'business as usual' scenario (BAU) to 2050
- A 'Beyond 2 Degrees' Scenario (B2DS).

→ Both the 1.5 Degrees Scenario (1.5DS) and B2DS are consistent with the Paris agreement.

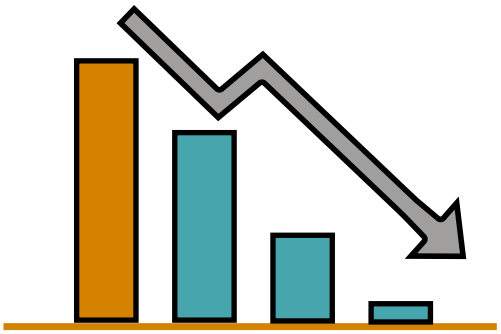
→ These scenarios will guide and inform the industry's efforts to meet global climate targets.

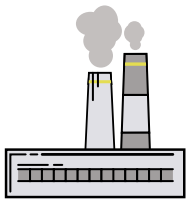
GREENHOUSE GAS INTENSITY PER TONNE

Alignment with climate goals will require significant reductions in carbon intensity of primary metal from current levels.



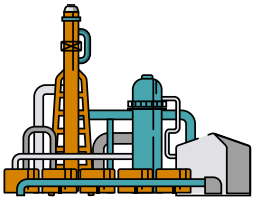
*The dataset for alumina refining has been revised retrospectively to reflect a change in modelling assumptions for the process.





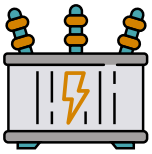
93%

Under the 1.5 Degrees Scenario, carbon intensity of direct emissions would need to reduce by 93% – vs 58% for B2DS – compared with 2018 levels.



94%

Under the 1.5 Degrees Scenario, thermal energy emissions from alumina, aluminium casting and mining would need to reduce by 94% – vs 59% for B2DS – from 2018 levels.



98%

Under both the 1.5 Degrees Scenario and B2DS, the carbon intensity from electricity would need to reduce by at least 98% compared to 2018.

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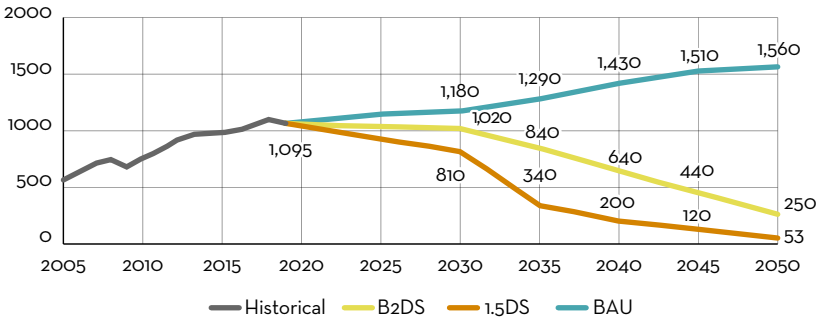
EMISSIONS REDUCTION

Aluminium Sector (million tonnes CO_2e)



53 million tonnes

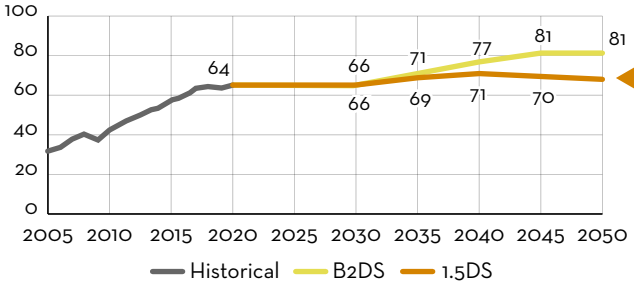
Total greenhouse gas emissions from the aluminium sector in 2050 under the 1.5 Degrees Scenario are expected to be 53 million tonnes (down from 1.1 billion today) vs 250 million tonnes under B2DS and 1.6 billion under BAU. About a quarter of these reductions would need to happen in the next 10 years under the 1.5 Degrees Scenario.

ALUMINIUM PRODUCTION

For the 1.5 Degrees Scenario, almost no aluminium is lost to landfills or incinerators due to better collection systems by 2050, lifetimes are increased, and demand is in line with the needs of net-zero societies.

Primary production

Primary Aluminium (million tonnes)



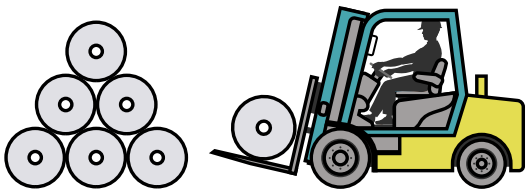
68 million tonnes

Under the 1.5 Degrees Scenario, 68 million tonnes of primary aluminium will be produced annually, which is 4 million more tonnes than is produced today. Under B2DS, 81 million tonnes will be produced.

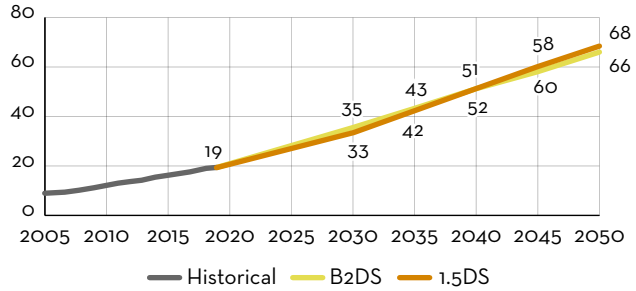
Recycling production

81 million tonnes

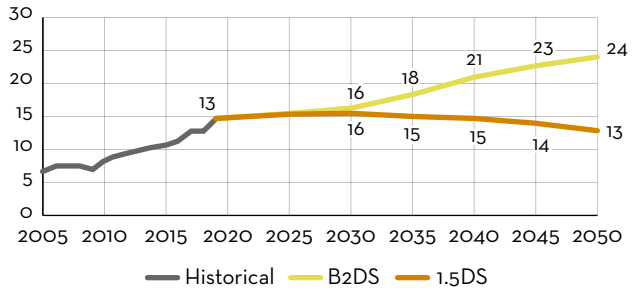
In 2050, under the 1.5 Degrees Scenario, 81 million tonnes of aluminium will be produced from recycled scrap – 68 million tonnes from post-consumer scrap, and 13 million tonnes from new/manufacturing scrap.



Post-consumer scrap (million tonnes)



Pre-Consumer scrap* (million tonnes)



*Pre-consumer scrap generated during the production of final products from semis

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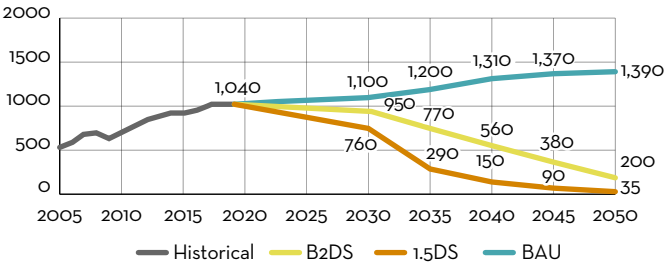
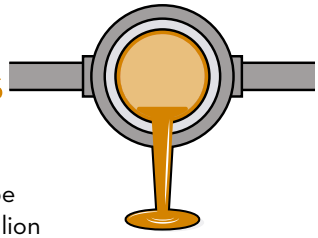
PROCESS EMISSIONS

Primary (million tonnes CO_2)



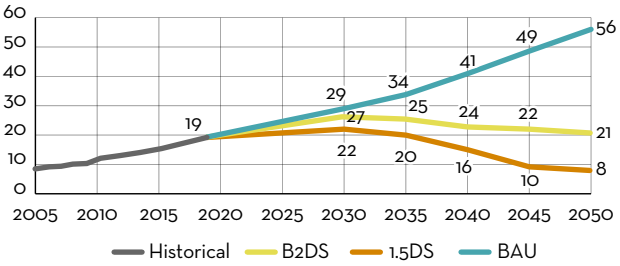
35 million tonnes



CO_2 emissions from primary aluminium in 2050 under the 1.5 Degrees Scenario would be 35 million tonnes – vs 200 million tonnes under B2DS.

95% Recycling saves about 95% of the greenhouse gas emissions versus primary production.

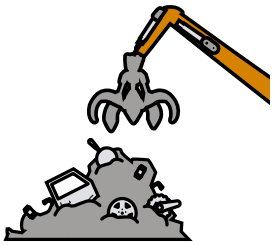
Recycling (million tonnes CO_2e)



8 million tonnes

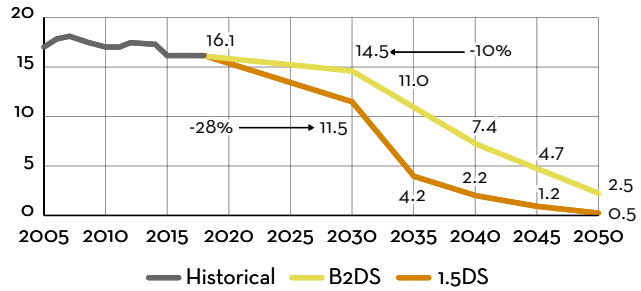
CO_2e emissions from the process of recycling in the aluminium sector in 2050 under the 1.5 Degrees Scenario would be 8 million – less than half of that under B2DS (21 million tonnes).

PROCESS EMISSIONS INTENSITY

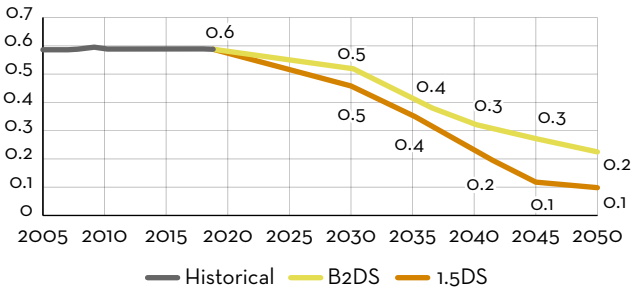


Under the 1.5 Degrees Scenario, the intensity of primary production (0.5 tonnes of CO_2e/tonne) would be below current intensity of recycling (0.6 tonnes of CO_2e/tonne), while the intensity of recycling would reduce to 0.1 tonnes of CO_2e per tonne under the same scenario. Emissions per tonne of recycled aluminium under 1.5 Degrees Scenario will be half (0.1) of that under B2DS (0.2) by 2050.

Primary Aluminium Process Emissions (t CO_2e/t)



Recycled Aluminium Process Emissions (t CO_2e/t)



0.5 Under the 1.5 Degrees Scenario, by 2050 greenhouse gas emissions from primary aluminium production will be 0.5 CO_2e per tonne vs 2.5 under B2DS. About a third of the emission intensity is expected to be reduced under a 1.5 Degrees Scenario and by 10% for B2DS by 2030.

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