STATE OF THE COBALT MARKET IN 2020

COBALT INSTITUTE
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Cobalt demand was robust despite COVID-19 with annual growth of 5%

Consumption of cobalt by application

57% Batteries for electric vehicles, tablets and smartphones

5% increase

- Sales of new electric vehicles increased 42% compared to 2019 (mostly in Europe).
- Demand in lithium-ion batteries rose by 10% year-on-year.
- Sales of new energy vehicles to increase 30% year-on-year to 2025.

13% Nickel-based alloys

12% drop

- Shutdown in aerospace.
- Slow recovery might have longer term impact on cobalt demand.

8% Tool materials

12% drop

- Drop-off in global industrial production.

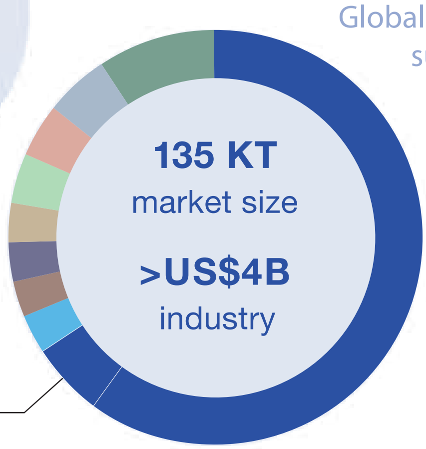
Global supply

- 66% DRC
- 5% Australia
- 4% Russia
- 4% The Philippines
- 3% Papua New Guinea
- 3% Canada
- 3% Cuba
- 3% Zambia
- 9% others

ASM – Artisanal & small-scale mining was an important source of cobalt supply in 2020.

ASM – 9% of DRC mine production in 2020, ≈100k people involved.

Global mine supply chart



Asia is the largest cobalt-consuming region

- **32%** China
- **23%** Europe
- **18%** Japan, South Korea
- **18%** North America

Cobalt production trends

Cobalt mining

6% drop to 145 KT

- COVID-19-related production suspensions in Canada, Morocco, Madagascar, South Africa.
- The world's biggest mine was put on care and maintenance in late 2019.

Refined production

5% drop to 132 KT

- Reduced availability of feedstocks.
- COVID-19-related shutdowns.
- Weaker industrial demand due to the pandemic.

Cobalt recycling

= 10.6 KT

- 65% battery recycling
- 24% tungsten carbide recycling
- 11% recycling of alloy scraps & catalysts