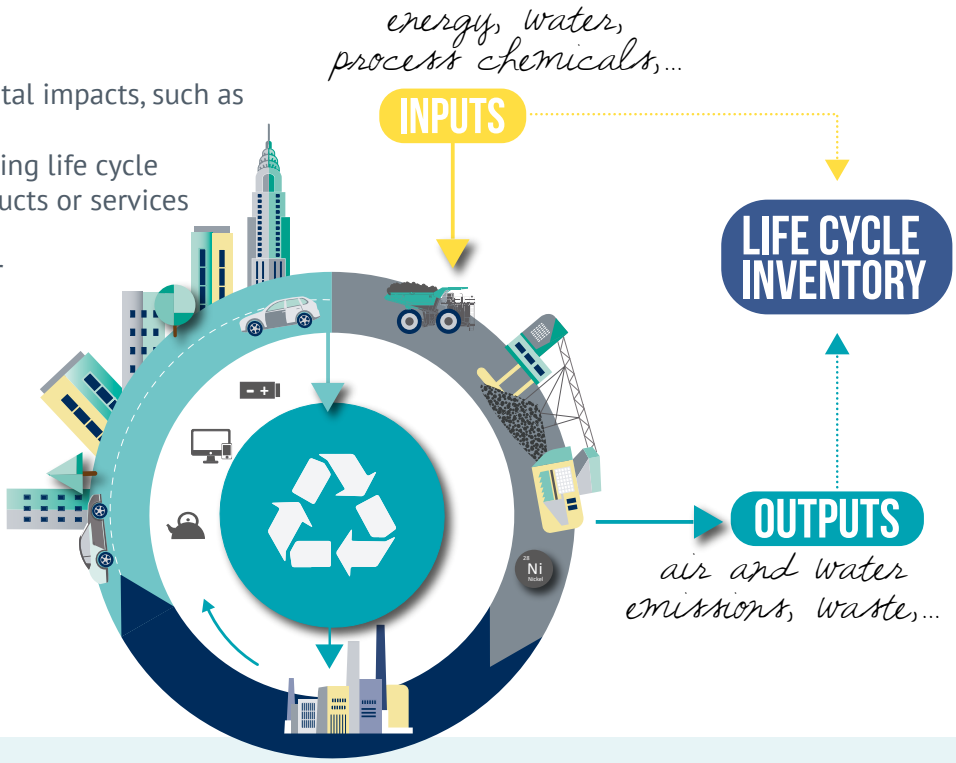
Nickel sulphate
LIFE CYCLE DATA

Member companies of the Nickel Institute updated their life cycle data for nickel products in 2018 and 2019. These producers are committed to provide stakeholders with the most recent life cycle data showing important parameters such as global warming potential, primary energy demand, or water demand for the production of different nickel products.

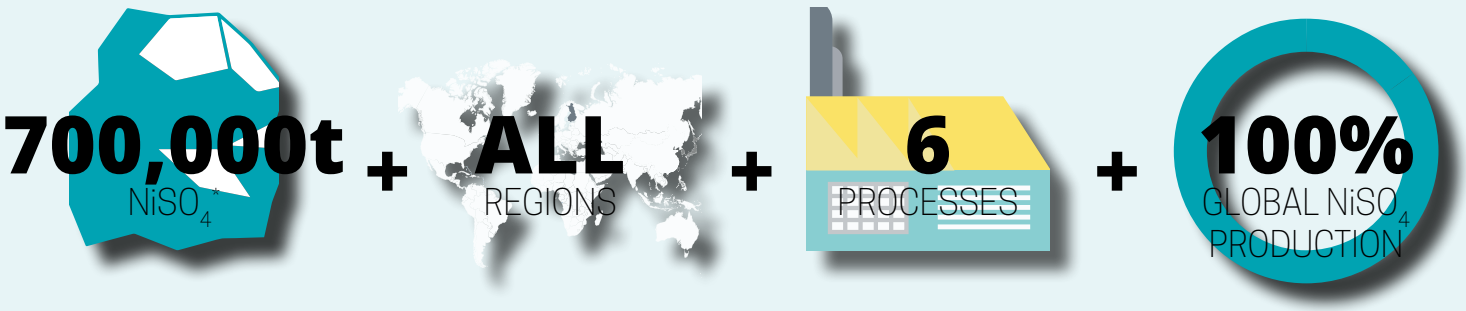
LIFE CYCLE DATA comprise all production stages of nickel and nickel products. The basis is the LIFE CYCLE INVENTORY (LCI), where inputs and outputs of each of the production stages are gathered. The inventory is used to conduct the LIFE CYCLE IMPACT ASSESSMENT (LCIA).

The LCIA calculates various environmental impacts, such as Global Warming Potential (GWP).
These impacts are the basis for conducting life cycle assessments (LCA), which compare products or services from an environmental perspective.
Nickel life cycle data flows into LCAs for many nickel-containing products, such as stainless steel pipes or batteries for electric vehicles.

The data collected by the nickel industry are compliant with the requirements of ISO 14040 standard series and have undergone an independent critical review.



WHAT IS COVERED BY THE LIFE CYCLE ANALYSIS ?



700,000t nickel sulphate* with an average nickel content of 22%

Data scaled up to cover nickel sulphate production on all continents

All currently applied production routes covered (including lateritic and sulfidic ores)

100% of global nickel sulphate production in 2017 assessed

GLOBAL WARMING POTENTIAL

4 kg CO_2eq / kg $NiSO_4$

4 kg CO_2 / kg nickel sulphate with primary extraction as process stage with highest grenhouse gas emissions

PRIMARY ENERGY DEMAND

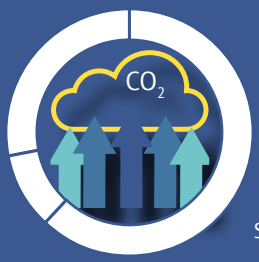
68 Mj / kg $NiSO_4$

Primary extraction accounts for 53% of the Primary Energy Demand of nickel sulphate

BLUE WATER CONSUMPTION

49 kg / kg $NiSO_4$

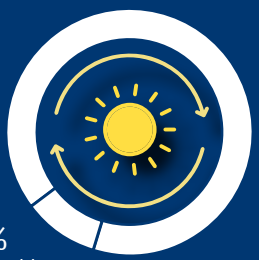
57% of blue water consumed relates to primary extraction



SCOPE 1-3 EMISSIONS

4 kg CO_2eq / kg $NiSO_4$

Scope 1 emissions account for 62% due to combustion of fuels, on site electricity generation and reductant use



ENERGY SOURCES

Renewable versus non-renewable

10% from of energy used from renewable sources

More detailed information and the full life cycle data set for nickel metal, ferronickel and nickel sulphate as well as the critical reviewer statement are available upon request.

Nickel INSTITUTE
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** All mentions of nickel sulphate and $NiSO_4$ relate to the crystal structure of nickel sulphate hexahydrate, $NiSO4 * 6H_2O$*

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