

Risk management

Boliden's operations are cyclically sensitive and are exposed to fluctuations in metal prices and exchange rates. Sustainability risks are evaluated continuously. The operations have an impact on the surrounding environment, and many processes are associated with work environment and safety risks. Boliden works unceasingly to reduce these risks, e.g. through scenario planning based on a range of different market fluctuations.

Operational risks

Operational risks are managed by the operating units in accordance with the guidelines and instructions established for each Business Area and unit.

Risk	Description of risk	Management and comments for the year
Health and safety	Boliden handles large material flows, both below and above ground. Employees and contractors are periodically exposed to heavy machinery and lifting, to high temperatures, and to substances that are hazardous to health. Deviations from established routines or inadequate maintenance can create dangerous situations and increase the risk of personal injury.	Boliden has a zero vision for accidents and established routines for health and safety. The number of accidents resulting in lost time (LTI) per million hours worked, including those suffered by contractors, decreased, year on year, and totalled 5.1 (6.3). The intensified work on developing Boliden's safety culture in recent years has begun yielding tangible results. These results are due to a continued focus on managerial involvement, preventative risk management, and improved involvement by employees in health and safety-related activities. Other important activities that have helped generate these positive results are increased knowledge of how the company handles organisational and social environmental challenges, such as stress, unhealthy workloads, and the need for a work-life balance.
Environmental impact	<p>Environmental impact Boliden's operations affect the air, water, land and biodiversity in the vicinity of those operations. The extraction of metals also creates waste products that must be processed safely. The risk is posed by both the ongoing and decommissioned operations.</p> <p>Carbon dioxide emissions Boliden's operations are energy-intensive and result in carbon dioxide emissions that can impact the climate. External environmental risks, such as climate change and changes to regulations and taxes, may affect Boliden, e.g. regulations and requirements relating to carbon dioxide emissions from processes. The EU's ETS emissions trading scheme may result in cost increases that jeopardise Boliden's competitive situation in the international market.</p> <p>Water management and dam safety Tailings ponds account for one of the risk scenarios for the mining industry. The risks comprise both the environmental impact of dam construction and the risk of a dam failure. Extreme weather conditions and changes in average rainfall levels affect this risk.</p>	<p>Boliden sets emission goals and monitors them closely. Efforts to manage the risk of emissions and discharges are based on risk analyses, ongoing monitoring and maintenance. Technological development aimed at ensuring optimum resource utilisation and minimizing potential waste volumes is an ongoing process.</p> <p>Boliden is working to reduce its carbon footprint through electrification and enhanced energy efficiency. Boliden works, through its industry organisations, to promote transparency in the Emissions Trading Scheme and to ensure that European metal producers are not disadvantaged. Boliden's goal is for its carbon dioxide intensity to be below 0.77 tonnes CO₂/tonne of metal. In 2018, the carbon dioxide intensity decreased to 0.64 (0.69).</p> <p>Boliden develops water balance models to ensure better resource utilisation and to create a wider safety margin in relation to emergency water discharges. Every operating unit with its own dam has a Dam Safety Manager and a Dam Operations Manager. The dams in Sweden are operated in accordance with the GruvRIDAS dam safety guidelines.</p>
Unplanned stoppages	Boliden's production essentially comprises continuous processes, and unplanned stoppages can affect production, emissions and discharges to air and water, and financial results. The stoppages can be long-term. Unplanned stoppages can, for example, occur due to technical problems, accidents or strikes.	Boliden carries out preventative maintenance work at all of its production facilities. Major maintenance shutdowns are carried out every year within the smelting operations, while maintenance work, albeit on a generally less comprehensive scale, is an integral part of day-to-day operations for the mines. Boliden has adopted a zero tolerance vision for accidents in order to help prevent unplanned stoppages.
Talent pool	A large number of Boliden's employees will retire over the next few years; technology will develop through digitalisation; and the competition for skilled manpower is increasing in many of the areas in which Boliden operates. The shortage of people with relevant training and experience increases the difficulty of recruitment work.	Implementation of a Group-wide Learning Management system began in 2017 in order to further develop these processes. Talent Forums are held at all units in order to identify key skills and to work with replacement planning. Management development programmes are conducted annually at various levels. Boliden conducts numerous employer branding activities, primarily at compulsory schools in the vicinity of our operations and at prioritised universities. There is also a considerable focus on attracting, retaining, and developing female employees. One example of this is Women at Work – a training programme for female employees designed to enhance their career development.

Market and commercial risks

Boliden's market and commercial risks are primarily managed within the individual Business Areas and at Group level.

Risk	Description of risk	Management and comments for the year
Metal prices	Changes to metal prices have a significant impact on Boliden's profits and cash flow.	Boliden's policy is not to hedge metal prices, but rather to allow changes to be reflected in the result. There are some exceptions to this, e.g. when mining ore bodies with short residual lifespans or in conjunction with major investment projects. See also under the "Financial risks" section. Boliden also continuously hedges Smelters' metal price and currency exposure during the period between the purchase of raw materials and the sale of corresponding metals (with the exception of process inventory) in what is known as transaction exposure. See also under the "Financial risks" section.
Treatment and refining charges	Treatment and refining charges make up a large part of the smelters' gross profit and are determined by the supply/demand of metal concentrates.	The terms are negotiated annually by the major players in the mining and smelting industries. Boliden applies these terms internally and the majority of external contracts are based on these terms.
Customers	Boliden has a reliance on a small number of large copper customers. Reduced sales to industrial customers in Europe increase the risk of sales via the London Metal Exchange (LME), with slightly lower margins as a result.	Boliden endeavours to reduce the risks by maintaining a diversified portfolio of customers and long-term relationships, via its own northern European sales organisation. Boliden also has plans in place that would enable the production to be reorganised to produce LME-quality products that can be sold via LME.
Raw materials supply	A stable and reliable raw materials supply is important for creating the most profitable raw materials mix and thereby enabling the smelters to produce at high levels of capacity utilisation and consistent quality.	Boliden endeavours to conclude long-term agreements and partnerships with reliable external metal concentrate and recycling materials suppliers.
Energy prices	Energy accounts for approximately 13% of operating costs, and changes in energy prices can have a significant effect on profitability.	Boliden has long-term electricity agreements with slow-moving pricing clauses in Sweden and Norway. The agreement portfolios in Finland and Ireland have shorter terms and Boliden is more exposed to market prices. Changes in energy prices consequently affect the operating profit. Boliden monitors the potential for entering into longer term pricing agreements as and when favourable terms are offered.
Brexit	A no-deal Brexit can entail risks to transport flows in Europe.	Boliden has analysed potential scenarios and prepared for certain activities.

Financial risks

Boliden has a centralised treasury function that is responsible for managing financial risks with the exception of credit risks in trade and other receivables. The treasury function provides financial risk management support for the management and operating units. The treasury function is responsible for identifying and limiting the Group's financial risks in line with the financial policy adopted by the Board of Directors.

Risk	Description of risk	Management and comments for the year
Exchange rate and metal price risks	<p>The pricing terms for Boliden's products are primarily determined on raw materials exchanges such as the London Metal Exchange (LME) for base metals, the London Bullion Market Association (LBMA) for precious metals, and the currency and money market. Boliden's products are largely priced in USD and fluctuations in the USD/SEK/EUR exchange rates hence have a significant impact on Boliden's profits and cash flow. The Group's exchange rate and metal price exposure covers transaction exposure and translation exposure:</p> <p>Transaction exposure Boliden's transaction exposure comprises binding undertakings to customers and suppliers.</p> <p>Exposure in connection with binding undertakings When Boliden undertakes to participate in a transaction at a fixed value and which is not compensated for by a simultaneous opposite transaction of a corresponding size and nature, a transaction risk arises. The Group buys metals in the form of raw materials, which it processes into refined metals, and where the acquisition value of the raw materials as well as the exchange rates may differ from the final sales value. Such differences arise as a result of variations in quantities and processing and selling dates. Some customers are, furthermore, offered fixed prices in different currencies that are sometimes set well in advance of delivery.</p> <p>Exposure in connection with forecast cash flows This exposure also arises from future revenues that are affected by fluctuations in metal prices and exchange rates.</p>	<p>Transaction exposure in conjunction with binding undertakings is hedged with the exception of the smelters' process inventory. The Group uses futures contracts to ensure that the sale price and exchange rate correspond to those applicable in conjunction with the purchase of the raw material in question or with the signing of a sales agreement at a fixed price. Hedge accounting is applied to the futures contracts, thereby hedging the fair value in the Income Statement.</p> <p>Exposure in conjunction with forecast cash flows is normally not hedged in line with Boliden's policy. See also the "Market and commercial risks" section above.</p> <p>Boliden continuously calculates the way in which changes in metal and exchange rate markets will affect the Group's future financial position.</p> <p>The Group's total sensitivity to the factors listed (see sensitivity analysis table below) is calculated on the basis of the quarterly reports detailing the Group companies' planned exposure resulting from metal production, exchange rates and interest. The effects of different market scenarios can be quantified on the basis of the information on sensitivity to market changes, and can then act as source data for the management of financial risks and be reported to the Board of Directors, management, and the market.</p> <p>Boliden's policy is not to hedge metal prices and exchange rates in relation to the Group's future income. Boliden can, however, in order to limit the risk in certain situations, hedge part of the forecast cash flows, e.g. in conjunction with major investments or investments in mines with a short lifespan. The Group can use contracts to hedge metal prices and/or exchange rates for the cash flows from forecast metal sales. The derivatives are hedge accounted as cash flow hedging under Other comprehensive income. See page 58 for a sensitivity analysis of how the Other comprehensive income result is affected by a change in the value of financial derivatives (cash flow hedging).</p>

Financial risks, cont.

Risk	Description of risk	Management and comments for the year
Exchange rate risk	Translation exposure A translation difference arises when converting net investments in overseas operations into Swedish kronor, in conjunction with exchange rate fluctuations, which affects Other comprehensive income within the Group.	The effect of translation exposure is, in accordance with Boliden's financial policy, not actively eliminated ("equity hedging"). If an external borrowing requirement exists, however, the liability in a foreign currency is used as equity hedging against the foreign asset pool. The main borrowing currencies are EUR and SEK.
Interest risk	Changes in market interest rates affect the Group's profits and cash flows. The rapidity with which a change in interest rate levels affects the Group's net financial items depends on the fixed term of the loans and the duration of the loans.	Boliden's financial policy provides the scope for an average fixed interest term of up to 3 years. The Group's loan portfolio had, on 31 December 2018, an average fixed interest term of 0.9 years (0.5). Interest swaps are used to extend the fixed interest term.

Sensitivity analysis

Operating profit, excluding outstanding derivatives: The table below contains an estimation of the effect on the Group's operating profit of changes in market terms for the following year. The calculation is based on closing day prices on 31 December 2018 and on Boliden's planned

production volumes. The sensitivity analysis does not take into account the effects of metal price hedging, exchange rate hedging, contracted treatment and refining charges, or the revaluation of smelters' process inventory.

SEK m	2018				2017			
	Operating profit	Net financial items	Tax	Equity	Operating profit	Net financial items	Tax	Equity
Change in metal prices, +10%¹⁾								
Zinc	740	10	-165	585	920	12	-205	727
Copper	730	10	-163	577	820	11	-183	648
Gold	300	4	-67	237	285	4	-64	225
Silver	165	2	-37	130	165	2	-37	130
Lead	110	1	-25	87	135	2	-30	107
Nickel	100	1	-22	79	105	1	-27	83
Change in exchange rates, +10%								
USD/SEK	1,490	20	-332	1,177	1,600	21	-357	1,264
EUR/USD	970	13	-216	767	1,025	14	-228	810
USD/NOK	130	2	-29	103	145	2	-32	115
Change in TC/RC, +10%								
TC/RC copper	75	1	-17	59	90	1	-20	71
TC zinc	55	1	-12	43	50	1	-11	40
TC lead	-10	0	2	-8	-15	0	3	-12
Change in market rate, +1%²⁾		34	-7	26		53	-12	41

Other comprehensive income, taking into account outstanding derivatives: The table below contains an estimation of the effect on Other comprehensive income (income and cost items including reclassification adjustments not reported under the profit), before tax, of changes in the value of outstanding derivatives based on the closing day prices on 31

December 2018. Changes in the value of financial derivatives in respect of binding undertakings and translation exposure have a very limited or no effect net on the profit or Other comprehensive income. The table below hence contains the effect of changes in the value of derivatives intended to counter the Group's forecast exposure.

SEK m	2018	2017
Translation exposure, net investments in overseas operations, exchange rate, +10%³⁾	Other comprehensive income	Other comprehensive income
NOK/SEK	138	154
EUR/SEK	1,586	1,431
Effect of interest +1%, gold +10%, USD/SEK +10%⁴⁾		
Interest derivatives, interest swaps	5	15
Currency derivatives, USD/SEK	3	16

1) Based on forecast sales for the coming twelve months.

2) Based on closing day debt portfolio excluding interest swaps (31/12).

3) Based on closing day balances (31/12).

4) Based on outstanding derivatives (31/12).

Financial risks, cont.

Risk	Description of risk	Management and comments for the year
Refinancing and liquidity risk	The risk that Boliden will be unable to obtain the requisite financing or to meet its payment undertakings due to insufficient liquidity.	<p>Boliden limits the refinancing risk by ensuring that its loan liability has a good spread in terms of counterparties, financing sources and durations. Satisfactory current liquidity is ensured by making use of unutilised credit facilities with market- and operations-adjusted loan durations and the refinancing requirement is regularly reviewed. The refinancing requirement is dependent, first and foremost, on market trends and investment plans.</p> <p>The loan agreements carry loan covenants which oblige Boliden to comply with certain defined key ratio conditions in order to avoid early repayment. A deterioration in the global economic climate may entail increased risks in respect of profit performance and financial position, and the risk of Boliden coming into conflict with loan terms and conditions. Boliden has complied with all loan covenants in 2018. The average term of total loan facilities was 3.5 years (2.4) at the end of the year, which is in accordance with established Group policy. On 31 December 2018, Boliden's current liquidity totalled SEK 9,964 m (8,768) in cash and cash equivalents and unutilised binding credit facilities with a term in excess of one year. See also Note 26 on financial liabilities and maturity structure. Boliden has a structure of cash pools that enables a central overview of liquidity flows and ensures efficient management of the Group's liquidity.</p>
Credit and counterparty risk	<p><i>Credit risks in financial operations</i> <i>The term, credit and counterparty risk, refers to the risk that a counterparty in a transaction may fail to fulfil their obligation, thus causing the Group to incur a loss. Boliden's financial exposure to counterparty risk mainly occurs when trading in derivative instruments.</i></p> <p><i>Credit risks in trade and other receivables</i> <i>The risk of the Group's customers failing to fulfil their obligations constitutes a credit risk.</i></p>	<p>Boliden's financial policy mandates a Standard & Poor's credit rating of A when entering into a transaction, and a maximum investment of cash and cash equivalents per counterparty. The credit quality and counterparty spread for derivatives is adjudged to have been good in 2018. On 31 December 2018, the credit risk in derivative instruments corresponded to a market value of SEK 154 m (141), which relates to Boliden's receivables from external counterparties.</p> <p>Offsetting of financial assets and liabilities is regulated under ISDA agreements (International Swaps and Derivatives Association) which handle both offsetting between contracted counterparties during day-to-day operations and in conjunction with special circumstances, such as failure to pay. Boliden, during the course of its day-to-day operations, net reports market values in the same currency with a single counterparty that mature at the same time and the excess sum is paid by the party with the biggest liability. In the event of a breach of contract, all outstanding obligations covered by ISDA agreements are terminated. The outstanding sum in the majority of ISDA agreements is paid by the counterparty with the biggest liability.</p> <p>Credit risks are managed through an established credit rating process, active credit monitoring, short credit periods, and daily routines for monitoring payments. The requisite provisions for bad debts are also monitored continuously. The quality of trade and other receivables is deemed to be good. Write-downs of outstanding trade and other receivables on 31 December 2018 have only been effected in very limited amounts and have also, historically speaking, been insignificant. See also Note 19, Trade and other receivables. Credit insurance is also used from time to time.</p>
Risk management and insurance	The risk of damage that causes financial impact.	The objective of the Risk Management function at Boliden is to minimise the total cost of the Group's damage risks. This is achieved both by continuously enhancing the damage prevention and control work conducted within the operations, and by introducing and developing Group-wide insurance solutions.
Financial reporting	The risk of inaccurate financial and operational reporting.	Boliden has an efficient internal control structure. Control functions exist both locally, in individual units, and within Business Areas and at the Head Office. All of the functions work within a Group-wide internal control framework for financial reporting that is based on COSO. The framework's controls are tested annually, both internally and by external auditors. The operational reporting is followed up and controlled by the Group's Controller function, which works closely with the local units and Business Areas.

Other risks

Risk	Description of risk	Management and comments for the year
Legal risks	Boliden's various operations are widely subject to licensing requirements and to wide-ranging environmental and other regulations. Boliden may become involved in commercial disputes and legal proceedings.	Boliden's operations are, to a large degree, dependent on the retention/renewal of existing licences and the acquisition of new ones. Boliden continuously monitors legal developments in relevant spheres and implements, follows up on and ensures compliance with applicable laws and regulations. Boliden is active in the environmental law sphere, amongst others, through its membership of industry and trade associations, in the form of lobbying activities, and by means of presentations and educational measures for decision-makers and other stakeholder groups. Information on legal proceedings and disputes is provided in Note 30.
Political risks	Political decisions can have an effect in Sweden and the countries in which Boliden and Boliden's commercial partners operate. Examples of such decisions may include changes to different types of tax, reclamation management, and licensing processes.	Boliden and industry organisations are often an expert body to which reports are referred for comment ahead of impending political decisions that impact Boliden's operations.
Risks to confidence	Boliden may suffer incidents that adversely affect confidence in the company, when, for example, suppliers, customers and/or employees fail to live up to the environmental, quality, ethical etc. requirements adhered to by Boliden or in the event of accidents. See also pages 38–39 and 44.	Evaluations and sanction monitoring of customers and suppliers and Boliden's business partners, is carried out within the framework of Boliden's CR work before any partnership is entered into and during the course of the business relationship. This is done using questionnaires that are completed by prospective business partners, and which are evaluated systematically. Customer and supplier audits are also carried out, as necessary, to ensure a level that is within the framework of Boliden's requirement structure. Discrepancies may result in the termination of the partnership. Boliden trains its employees in anti-corruption and competition law. Boliden has a crisis management group with established routines for managing crises and complex events.