

**Annex to the guarantee request form for InvestEU operations**

**Sustainability Proofing Summary<sup>1</sup>**

The summary<sup>2</sup> is in line with the sustainability proofing guidance and should be presented only for direct financing.

**Identification of the project**

Project total cost (exclusive of VAT):	<input type="checkbox"/> below EUR 10 million <input checked="" type="checkbox"/> equal to or higher than EUR 10 million
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**EIA Directive**

	<input type="checkbox"/> Annex I projects (EIA required)  <input checked="" type="checkbox"/> Annex II projects (screening) <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> EIA required (project screened in)</li> <li><input type="checkbox"/> EIA not required (project screened out)</li> </ul> 2014 EIA Directive applicable <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Yes</li> <li><input type="checkbox"/> No</li> </ul>
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**Climate Assessment**

	<p>In accordance with the Environmental Code (1998:808), manufacturing operations including Northvolt’s operations are categorised as environmentally hazardous and therefore covered by requirements for a permit application including an EIA. The EIA also includes public consultations with relevant stakeholders.</p> <p>The operation is classified as an industrial emissions operation according to the Industrial Emission Regulation, which requires the company to report the BAT conclusions relevant to the business. Northvolt has stated that they will align fully with the BAT conclusions.</p> <p>According to the project’s EIA, no significant risks related to flood, heat or drought have been identified for the project site and its infrastructure.</p> <p>Due to the climate focused nature of the project, climate risk assessments have been carried out by Northvolt in accordance with TCFD and the EU Taxonomy’s DNSH criteria for Climate Adaptation. The TCFD methodology is considered an internationally recognised approach as defined in the above-mentioned guidance and goes beyond the vulnerability assessment. It also has a wider scope and assesses both risks and opportunities in the entire value chain at the company level.</p> <p>The TCFD assessment was carried out using two scenarios, 1) Net Zero Emissions by 2050– Low emissions scenario and 2) Representative</p>
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<sup>1</sup> In line with Article 8 (5) of the InvestEU Regulation and the sustainability proofing guidance ([C\(201\)2632 final](#)).

<sup>2</sup> In line with section 3.2 of the Investment Guidelines, the sustainability proofing summary shall be made public after the Investment Committee has approved the use of the EU Guarantee for a specific operation (with due regard to rules and practices regarding confidential and commercially sensitive information).

	<p>Concentration Pathways 8.5 – High emissions scenario<sup>3</sup>. The low emission (first) scenario did not find any significant risks. The high emission (second) scenario assesses potential risks such as rising water level, heat waves and potential outages in power supply. The occurrence of this scenario is considered to be unlikely at the place of operations.</p> <p>In response to the identified risks and opportunities in the TCFD an Action plan was developed to, among other measures, request suppliers to undertake climate-related risks and opportunities assessments.</p> <p>Additionally, for the year 2022, Northvolt reported that 99.2 % of the capital expenditures were aligned with the Taxonomy’s DNSH for Climate Adaptation.</p> <p>Northvolt’s climate mitigation proofing is based on a third party verified LCA that goes beyond the scope of the “Technical guidance on climate proofing of infrastructure in the period 2021-2027”, as it covers the entire value chain.</p> <p>A carbon footprint assessment has also been performed based on the “Technical guidance on climate proofing of infrastructure in the period 2021-2027” as Northvolt Ett is a Manufacturing industry of batteries and the project’s anticipated impact on GHG emissions exceeds 20,000 tonnes of CO<sub>2</sub> per year in terms of absolute emissions as well as relative emissions (depending on baseline values).</p> <p><u>Production phase</u></p> <p>The investment concerns the expansion of Northvolt’s existing manufacturing facility, which will increase production and supply of lithium-ion batteries. As EV batteries are a relatively new product it becomes important to clarify what the potential alternative scenarios to the investment are.</p> <p>1) The alternative implies that the batteries are produced by another producer with a higher carbon footprint – and it can be argued that the production phase of the investment is beneficial for the environment. Based on literature<sup>4</sup> Northvolt estimates that using a non-Northvolt setup, the average emissions per kWh is 98 kg CO<sub>2</sub> whereas a conservative estimation of a Northvolt cell production is 48 kg per kWh. Based on projected production capacity, the total CO<sub>2</sub> savings from production-phase during 2024-2030 is approximately 11.2 Mt CO<sub>2</sub>, according to Northvolt. The calculated CO<sub>2</sub> savings refer to batteries to be produced between 2024-2030 within the scope of the investment compared to the same number of batteries produced by another average lithium-ion battery producer.</p> <p>2) If the alternative implies that the batteries are not produced at all, the production phase of the investment cannot on its own be viewed as beneficial for the environment in the short term as this phase is associated with CO<sub>2</sub> emissions.</p>
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<sup>3</sup> Representative Concentration Pathways 8.5. shows a temperature increase of about 4.3°C by 2100, relative to pre-industrial temperatures.

<sup>4</sup> Life Cycle Analysis of Lithium-Ion Batteries for Automotive Applications”, by Qiang Dai, Jarod C. Kell, Linda Gaines, Michael Wang and “Lithium-Ion Vehicle Battery Production - Status 2019 on Energy Use, CO<sub>2</sub> Emissions, Use of Metals, Products Environmental Footprint, and Recycling”, by Erik Emilsson, Lisbeth Dahllöf.

3) If the alternative implies that the batteries are not produced at all this also includes emissions along the trajectory of what is currently being emitted by cars in comparison to an alternative of using EV batteries. An increased usage of EV batteries is expected to result in reduced carbon dioxide (CO<sub>2</sub>) emissions. According to Northvolt, its batteries are anticipated to be used in the transport, energy, and industrial sectors with total CO<sub>2</sub> savings of approximately 27.9 Mt from 2024 to 2030. The calculated CO<sub>2</sub> savings refer to usage of batteries produced in 2024-2030 within the scope of the investment.

Focusing on the production phase only, the environmental net-effect of increasing production is likely negative, but over time the environmental benefits of reduced CO<sub>2</sub> emissions will occur during the usage phase, as exemplified below.

#### Reduced emissions from transport sector

It can be assumed that an increased usage of electric vehicles will result in fewer traditional petrol and diesel driven vehicles. Fewer internal combustion engine vehicles in use are expected to result in reduced CO<sub>2</sub> emissions from the transport sector. Based on a third party verified LCA, Northvolt has calculated annual savings of CO<sub>2</sub> emissions in the transport sector to approximately 0.6-7.8 Mt CO<sub>2</sub> between 2025 and 2030. The calculated CO<sub>2</sub> savings refer to battery usage in personal and commercial electric vehicles with batteries produced 2024-2030 in the scope of the investment.

#### Reduced emissions from energy sector

The conversion to energy system based on fossil-free energy is crucial to mitigate climate change. One of the challenges with renewable energy is that the supply of fossil-free energy heavily fluctuates with weather conditions rendering a need for efficient energy storage. One key step in developing energy storage system (ESS) is the usage of lithium batteries, such as Northvolt's. Northvolt estimates that approximately 11 percent of batteries produced 2022-2030 will be used in ESS (this estimate is dependent on market conditions and may change). Assuming the amount of electricity used is constant and shifts from fossil to renewable energy sources, this implies reduced emissions from electricity generation. Based on a third party verified LCA, Northvolt has calculated the annual savings of carbon CO<sub>2</sub> due to battery usage in ESS to be approximately 0.02-0.63 Mt CO<sub>2</sub> between 2025 and 2030, assuming the use of ESS and a stable energy demand.

#### Reduced emissions from industrial sector

Northvolt's batteries are also used in machines, trucks and other equipment in the industrial sector. One of Northvolt's clients is a Swedish mining-company, which estimates that battery-powered equipment will break even compared to conventional machines in terms of embodied carbon emissions within three months of use. Thereafter battery-powered equipment will enable avoidance of fossil-fuels and direct emissions. The accuracy of the estimation has not been able to be verified, nonetheless, using electricity-driven machines rather than conventional machines should reduce the carbon footprint of the operation. Based on third party verified LCA, Northvolt has calculated possible annual savings of CO<sub>2</sub> emissions, in the industrial sector

with batteries produced 2024-2030 to be approximately 0.07-0.2 Mt CO<sub>2</sub> between 2025 and 2030.

Reduced emissions from production and extraction of raw material

The production of lithium-ion batteries relies on sourcing of raw materials. The extraction of these raw materials, such as cobalt, lithium, manganese and nickel, inherently results in CO<sub>2</sub> emissions. The operation includes the development of a recycling facility, which will be used to recycle end-of-life batteries and re-use the raw materials in production. Using recycled materials instead of sourcing virgin raw materials ultimately leads to reduced carbon dioxide emissions.

Northvolt's goal for the future is to recycle end of life batteries and re-use materials corresponding to 50 percent of all materials needed in production. However, the initial annual process capacity is 4 GWh and the aim of using 50 percent recycled materials should be viewed as a long-term goal. Given the emission associated with the construction of the recycling facility (exact figure unknown), the environmental net-effect of investing in the recycling park may be negative in the short term. In the long term, however, there will most likely be reduced emissions as the recycling capacity continues to increase and presents other battery-producers with an example of recycling end-of life batteries.

Absolute emissions (scope 1, 2 and 3)

Reported CO<sub>2</sub> emissions from Northvolt 2022

- Scope 1 (Use of fuels and fugitive emissions) - 2,190 t
- Scope 2 (District heating, cooling and electricity - 1,180 t (market based) 2,603t (location based)
- Scope 3 (Purchased goods and services, Upstream transportation & distribution, Capital goods, Business travel, Waste generation, Fuel and Energy related activity not covered in Scope 1 and 2) - 212,800 t.

The existing 16GWh plant is expected to reach the commercial operations date in 2024, while part of the project has reached start of production in 2022. Since the start of production most of the actual absolute emissions relate to the project implementation and not to the actual production. 2022 is therefore not a representative year for the emissions related to future production but the numbers are shared, primarily with the objective to be fully transparent and to demonstrate the granularity of Northvolt's emission reporting.

According to Northvolt sustainability report for 2022, the CO<sub>2</sub> emissions of their cell production is 33 kg CO<sub>2</sub> per kWh. At full production (61 GWh per year) that equals an absolute emission of 2.0 Mt CO<sub>2</sub> per year. However, Northvolt is working towards the publicly disclosed target of 10 kg CO<sub>2</sub>/GWh by 2030.

Relative emissions (scope 1, 2 and 3)

An increased usage of Northvolt batteries is expected to result in reduced carbon dioxide (CO<sub>2</sub>) emissions. According to Northvolt, the batteries are anticipated to be used in the transport, energy and industrial sectors with total carbon dioxide savings (relative emissions) of approximately 27.9 Mt CO<sub>2</sub> from 2024 to 2030. The calculated CO<sub>2</sub> savings refers to usage of batteries produced

	<p>in 2024-2030 within the scope of the investment. Obviously, the annual emission reduction will gradually grow in proportion to the increased production and use of the batteries. However, the anticipated CO<sub>2</sub> savings from 2024 to 2030 gives an annual average reduction of 4.65 Mt of CO<sub>2</sub> per year.</p> <p>The monetary value of GHG savings per year equals the estimated shadow cost of carbon for the specific year (€/tCO<sub>2</sub>e) times the estimated GHG savings (tCO<sub>2</sub>e). The estimates for shadow cost of carbon are from "EC technical guidance on climate proofing of infrastructure 2021-2027" and EIB's "Climate Bank Roadmap 2021-2025".</p> <p>Northvolt has already signed off-take agreements for deliveries in 2034 whereby the financial model stretches until the end of 2040. The lifespan of the infrastructure may continue beyond 2040 but there is no data at this stage to support this and monetise GHG.</p> <p>The data used for Absolute emissions originates from Northvolt's Sustainability report, which has undergone a limited assurance.</p> <p>The data used for Relative emissions originates from a third party verified LCAs conducted by Northvolt.</p> <p>In 2022, Northvolt introduced a Carbon Roadmap 2030 – a data-driven approach to secure a reduction of the cells production carbon footprint from 33 kg today to 10 kg CO<sub>2</sub>e/kWh by 2030 through coordinated actions across the value chain. The goal represents an approximate reduction in carbon footprint of 90% compared to an industry reference cell, according to Northvolt. This initiative is not driven by legal requirements but on a voluntary basis.</p>
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**Environmental Assessment**

	<p>The environmentally hazardous activities for the operation are covered by the provisions in the Environmental Assessment Ordinance (2013:251) regarding battery production, recycling of batteries, graphite electrode manufacturing, production of oxygen and nitrogen gas, along with the requirements for chemical or biological reaction on an industrial scale to produce more than 20,000 tons of non-metals, metal oxides or other inorganic compounds.</p> <p>Necessary environmental permit was issued by the Land and Environment Court of Umeå, January 18, 2021 (M 3739-19). The permit is for 200,000 tonnes capacity (circa 60 GWh production capacity) and covers Phase 1 and 2 Plants and Revolt 1. The environmental permit integrates local level requirements and exceptions, as well as facility/operations focused provisions. A strategic environmental assessment was performed as part of the environmental permit process. Necessary environmental permits are issued, and the project has carried out an environmental impact assessment (EIA) within the scope of the permit application, approved by the competent environmental authority.</p>
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	<p>Performed noise modelling suggests that the applicable limit value of 40 dBA equivalent free field value of noise will be complied at all potentially impacted residential buildings during night hours due to applied mitigation measures. Assessments of Northvolt's additional noise related to the increased traffic volumes, suggests that the equivalent noise level increases less than 3 dBA, which in practice is a nonaudible increase.</p> <p>To minimise the emissions to air, all processes that potentially could generate significant emissions will either be closed systems or connected to appropriate abatement technology that ensures low concentrations of emissions. The emissions to air, are not expected to jeopardise the compliance with any applicable ambient air quality standard or other applicable reference value.</p> <p>Water and chemicals will to the extent possible be recirculated within the facility and be in alignment with BAT consisting of several treatment steps which will be applied for the internal treatment of process wastewater. Due to efficient treatment and the all-around year high water flow in the recipients (Skellefteå river), the discharge of treated wastewater is not expected to impact the ecological or chemical status of the water quality of the river. Neither are the discharges expected to jeopardize the potential for the river to reach good ecological status.</p> <p>Hazardous substances (e.g., flammable liquids, corrosive substances, ammoniac solutions, condensed oxygen) will be handled within Northvolt's operation. Applied precautionary measures are considered sufficient to ensure an insignificant/low risk for the environment. Also, precautionary measures to minimize the risk of fire and potential impacts on the environment in the event of a fire, are in place. The risk is assessed to be of a limited nature and low in the EIA. The impacts on ambient natural values are assessed as limited.</p> <p>All other potential negative environmental impacts are considered low or insignificant in the EIA. Mitigation and/or precautionary measures are proposed for noise, air, water and hazardous substance management. Residual impacts were identified for hazardous substances, biodiversity, discharges to water, emissions to air and noise, but all the residual impacts in these dimensions have been assessed as low in the EIA report. Therefore, no further proofing has been conducted or mitigation measures been suggested.</p>
<b>Social Assessment</b>	
	<p><u>Labour and working conditions, and occupational and public health, safety and security</u></p> <p>Northvolt follows Swedish law in the company's HSE (Health, Safety and Environment) Roadmap, which describes the main targets and measures as follows:</p> <ul style="list-style-type: none"> <li>- Clear roles and responsibilities</li> <li>- Safety training</li> <li>- Local health and safety practices</li> <li>- Emergency preparedness and response</li> <li>- Chemical handling</li> </ul>

- Contractor safety on construction sites.

The permitting process did not identify any significant risks to public health, safety and security. The company receives third-party monitoring reports on working conditions including safety and injury reports regularly. The reports show that Northvolt prioritises health and safety at construction sites.

#### Protection and inclusion of vulnerable persons and/or groups

Northvolt is in a recruitment phase and currently employs people of 125 different nationalities. The company states that it recruits only best talent regardless of their gender, religion and/ or sexual orientation. The EIA also found no adverse impacts on vulnerable, marginalized discriminated against individuals and/ or groups has been identified for the operation. There is no/ small likelihood of the operation affecting Indigenous Peoples.

#### Gender equality

The share of women workers in Northvolt is currently around 30%. According to forecasts the staff is expected to triple once the expanded plants are fully operational. Northvolt aims to attract more female engineers, and female employees in general, to reach the target of 40% female employees.

#### Protection of cultural heritage

No significant risk on cultural heritage has been identified. The company is in dialogue with the local Sami population regarding the potential effects of the operation on e.g., reindeer herding in the area.

#### Stakeholder engagement

Northvolt engages in dialogue with the local community including the local Sami community. The company collaborates with the local stakeholders to ensure the region has sufficient capacity to provide high quality public services for the population, which is increasing due to an increase in economic activities connected to Northvolt. The company conducts surveys to track public sentiment toward the company.

#### Supply chain for critical raw materials

The operation has risks associated with some of the countries of critical raw materials supply. The main social risk of the operation relates to sourcing of critical raw materials such as cobalt and manganese. In response to the identified risk in the sector Northvolt has developed the following internal policies:

- Supplier Code of Conduct
- Sourcing and Procurement Policy
- Anti-Corruption Policy
- Risk-Assessment
- Due Diligence Process

Northvolt mitigates the risk through an extensive Supplier Code of Conduct (SCC) that each supplier must comply with. Any improvement measures are included in legal contracts with suppliers including the obligation to fulfil the SCC and Northvolt's anti-corruption policy as well as the agreement for monitoring and auditing the supplier. The SCC is followed up by continuous

	<p>screening and due diligence. Any risks in the supply chain are continuously monitored to make sure the policies above are followed.</p> <p>Given these limitations and according to its SCC Northvolt will source materials directly from producers and avoid to the extent possible bulk markets. This increases the transparency and traceability of Northvolt's operations compared to those battery manufactures sourcing materials from commodity markets. Northvolt also aims to shorten material supply chains by directly sourcing from producers that meet the requirements of the SCC. A significant part of the SCC and systemic monitoring of the SCC focus on human rights risks associated with the supply chain.</p> <p>The company has made progress in responsible sourcing. By for example increasing the share of recycled materials in its supply chain and actively exploring opportunities for sourcing of materials from mines and refineries closer to the Northvolt facilities. With an increasing demand for critical raw materials, the identification of high-quality suppliers may become more challenging especially in the bulk markets.</p>
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