

CLIMATE CHANGE RISK ASSESSMENT
NON-TECHNICAL SUMMARY

EVE Power Hungary Kft.

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1. Non-technical Summary

This is the non-technical summary (NTS) of the Climate Change Risk Assessment (CCRA) for the Large Cylindrical Cell for Passenger Car Project in Debrecen, Hungary.

A separate Social Impact Assessment (SIA), an IPPC/Environmental Impact Assessment (EIA) and a Human Rights Impact Assessment (HRIA) have been developed for the project.

The NTS describes the project, the methodology and process of the CCRA, transition Scenario Screen, potential transition risks and opportunities, supplements scenario analysis results, and the climate change risk management plan.

This report is prepared in both English and Hungarian. In case of any discrepancies or ambiguities, the English version shall prevail.

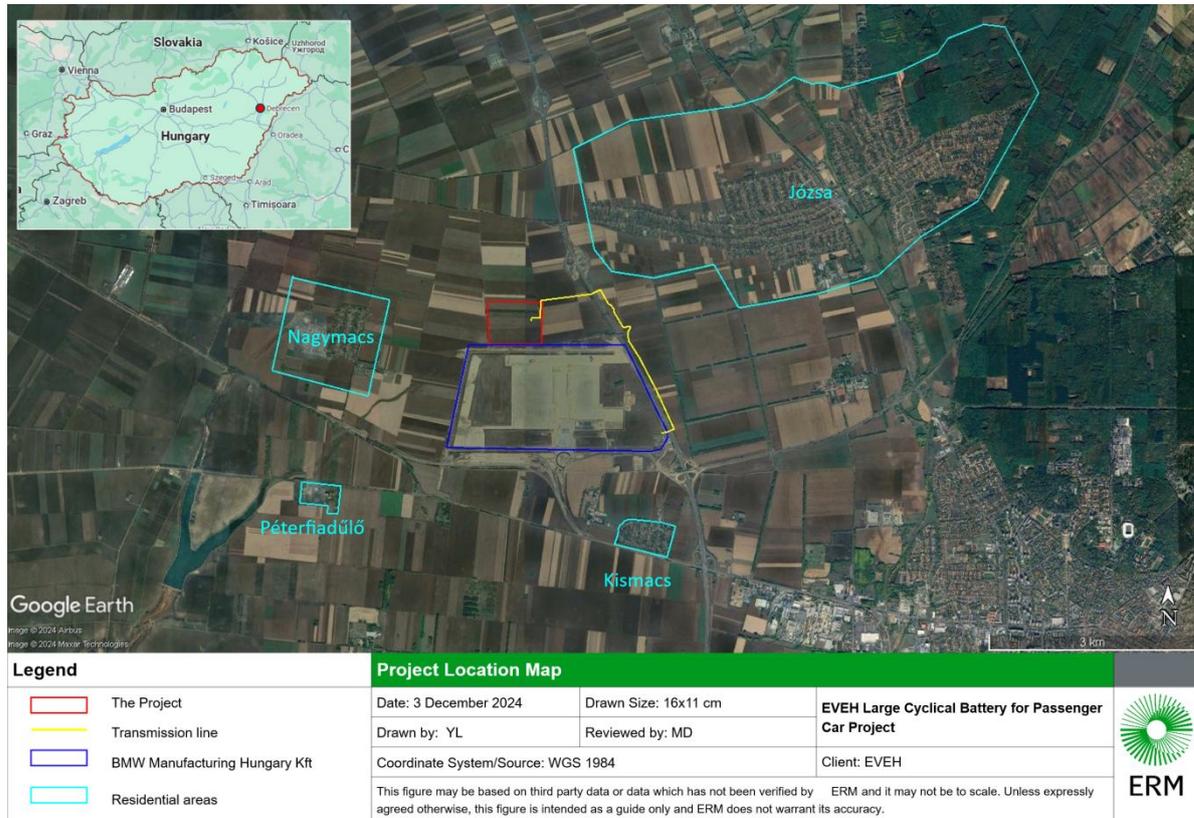
2. Overview of the project

EVE Power Hungary Kft. (hereinafter referred to as “EVEH”) is developing a large battery manufacturing plant (the “Project”) in Debrecen, which is situated in the North-West Economic Zone, Debrecen City, Hajdú-Bihar County, Northern Great Plain region, Hungary. The Project construction started in 2023, and operation is planned to commence in 2027.

2.1 Project Location

The Project is located at Plot No. 0237/405 in the North-West Economic Zone of Debrecen, Hungary. The Economic Zone is about 5 km west of Debrecen urban area, covering a total area of 500 hectares, with the Project occupying 45 hectares. As Hungary’s second-largest city and the county seat of Hajdú-Bihar, Debrecen has a total area of 465 km². Most residents live in the downtown area. Its southern suburbs are dominated by agricultural and industrial activities, while the eastern part focuses on forestry.

Figure 2-1 Project Location



2.2 Project Components and Layout

The proposed plant aims to produce lithium-ion batteries with an annual capacity of 30 GWh. The planned production plant will primarily supply the neighbouring BMW plant with cylindrical battery cells. Main components of the Project are listed in the table 2-1 below.

Table 2-1 Main Components of the Project

Component	Note
Production Facility	
Electrode Workshop	A 2-storey building covering a land area of approximately 21,633.19 m ² . Main functions: 3 anode production lines and 3 cathode production lines
Assembly Workshop	A 2-storey building covering a land area of approximately 20,873.46 m ² . Main functions: Battery assembly
Formation Workshop	A 3-storey building covering a land area of approximately 16,568.63 m ² . Main functions: Battery testing, ageing and sealing.
Pipelines	Communal drinking water supply network; Grey water and diluted water network; and Fire water and sprinkler network
Auxiliary Facility	
Raw Material Warehouses	A 3-storey building covering a land area of approximately 4,000 m ² . Main functions: Store powder raw materials such as active cathode and anode materials, binders, conductive additives, and copper and aluminium foils.
Sorting Warehouse	A 3-storey building covering a land area of approximately 12,691.28 m ² . Main functions: Elevated warehouse storage system for finished battery cells
NMP and Electrolyte Tank Farm	Covers a land area of approximately 964.88 m ² . Main functions: Store and supply NMP and electrolyte solutions for electrode manufacturing and cell production.
Battery Test Lab	Covers a land area of approximately 1,035.26 m ² Main functions: Battery testing and dismantling.
Battery Disposal Building	Main functions: Damaged battery dismantling.
Utility Building	A 2-storey building covering a land area of approximately 8,938 m ² , to accommodate: <ul style="list-style-type: none"> • 2×17.5 MW and 1×14MW hot oil boilers heated by gas burners;

	<ul style="list-style-type: none"> • 3×15 t/h steam boilers heated by gas burners; • Compressed air and nitrogen supply system; • Cooling water system; • Industrial wastewater treatment facility; • Greywater treatment area and associated pump house; • Refrigeration equipment for air handling units; • Industrial dilution water preparation system; and • 570 m³ firewater storage tank.
Stormwater Collection System	Two stormwater retention ponds, with a volume of 3,500 m ³ for each. Main Functions: Two separate internal stormwater networks, one for clean stormwater and one for potentially oil-contaminated stormwater.
Hazardous waste temporary storage	A 2-storey building covering a land area of approximately 371 m ² . Main functions: Storage of hazardous waste from production and storage of hazardous raw materials (DMC, ethanol, thermal oil).
Multifunctional Building	A 3-storey building covering a land area of approximately 2,530.37 m ² . Main functions: include office space, kitchen and canteen, test labs, central server room and on-site fire station
Transformer Substation	Covers a land area of approximately 4,000 m ² . Main functions: The Substation receives power from 2*132 kV transmission lines and transforms voltage from 132kV to 11kV.
Other Building Units and Facilities	Consists of staff and VIP access points, a reception office, a guards' technical room, connecting bridges, smoking pavilions, and municipal waste collection points.
Associated Facility	
Transmission Lines	Two 7 km-length 132 kV transmission lines (underground cables), with a total length of 7.76 km, connecting the project substation with the Debrecen Eve 132/11 kV transformer substation. It will be constructed by contractors of EVEH 7 km-long 132 kV transmission lines and its ownership will be transferred to OPUSTITÁSZ during operation. The environmental impact of constructing and operating this underground cable was assessed in a preliminary study related to the establishment and infrastructure provision of the Debrecen North-West Economic Belt. The study concluded with the decision issued under registration number HB-03/KTF/00117-2/2019. Further social risks and impacts were assessed by the supplementary SIA document.
External Connection Pipelines	Connecting the drinking water, diluted industrial water and grey water pipelines to the Project. The external water pipeline networks will be

	<p>constructed and operated by the City of Debrecen (DJMV). The length and layout of the water pipeline networks are unknown at the time of preparing this report.</p> <p>The design, construction, and operation of the offsite water supply system serving the Project are under the responsibility of the local government, and EVEH does not have access to the related process documentation. Based on available information provided by EVEH, the environmental impact and risk assessments for the water supply system have already been integrated into the project development process in accordance with regulatory requirements. The environmental permit EVD (Előzetes Vizsgáló Dokumentáció - Preliminary Survey) has been obtained for the entire grey water system (grey water, diluting water, technology sewage). This EVD has also obtained a closing (approval) resolution HB/17-IKV/00049-2/2025. Therefore, no further assessment of this component is included in this report.</p>
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3. CCRA Methodology and Process

The purpose of the CCRA is to systematically identify and evaluate the potential physical and transition risks and opportunities associated with climate change that the project may face throughout its entire life cycle. It also clarifies risk types, likelihood of occurrence, and risk materiality categories, thereby providing a foundation for formulating risk response strategies and building climate resilience.

A comprehensive CCRA has been developed by ERM (Shanghai) Limited. ERM is an independent consultant to EVEH.

3.1 Physical CCRA Methodology

This physical CCRA is conducted through four key steps:

- Screening;
- Climate data collection;
- Climate data trend analysis;
- Risk review

Risk review involves reviewing climate data (baseline + future projections) to analyze

risk materiality, drawing on qualitative research from industry/academic/government sources. Climate data is primarily collected via ERM’s Climate Impact Platform (CIP), Global Climate Database (GCD), plus client-provided and public data sources. After data collection, ERM reviews the potential impacts of each climate hazard on the project, identifying material risks to areas like the main production workshop and air compression station (e.g., impacts of flooding and extreme heat).

Climate data analysis covers three time periods (**baseline, 2030, 2050**), with a focus on comparing risk changes between the baseline and 2050 (the end of the project’s operation).

Risk materiality is categorized into three types, as shown in Table3-1.

Table 3-1 Risk Materiality Categories and Associated Definitions

Risk Materiality Category		Definition
Unlikely material		Short-term/limited-scope impacts with minimal financial effects
Likely material	Low to moderate	Short-to-medium-term/low-to-moderate-scope impacts with small-to-moderate financial effects
	High	Medium-term/low-to-moderate-scope impacts with moderate-to-high financial effects

The risk score (0 – 10) is a quantitative metric for assessing climate hazard impacts, calculated as:

$$\text{Risk Score} = \text{Hazard Normalized Value (0 - 1, representing hazard intensity)} \times \text{Exposure Rating Multiplier (0 - 10, representing asset vulnerability)}.$$

A higher score indicates greater asset exposure to/relevance with the climate hazard.

Table 3-2 interprets risk scores by categorizing them into five levels from “Minimal” to “Very High” with specified thresholds. For example, a hazard with a normalized value of 0.7 is rated “High”; if an asset has an exposure rating of 2 for that hazard, the

calculated risk score is 1.4 (0.7×2), corresponding to the “Low” level.

Table 3-2 Risk Score Category Thresholds

	Minimal	Low	Moderate	High	Very High
Hazard Risk Score	0 to 1	1 to 2	2 to 3	3 to 4	4 to 10
Normalized Values	0 to 0.2	0.2 to 0.4	0.4 to 0.6	0.6 to 0.8	0.8 to 1

3.2 Transition CCRA Methodology

The core objectives of this transition CCRA are to identify the project’s current/potential transition risks and existing risk management mechanisms (plans, processes, etc.). The assessment first identifies material climate-related risks/drivers relevant to the project, then conducts scenario-based analysis to quantify the risks/opportunities the project may face in transitioning to a low-carbon economy.

Scenario analysis uses two plausible future scenarios: Business as Usual (BAU) (aligned with IEA’s Stated Policies Scenario, STEPS) and Low Carbon (LC) (aligned with IEA’s Net Zero Emissions by 2050 Scenario, NZE). It evaluates “Scenario Indicators” (e.g., renewable energy price changes) by calculating the delta (percentage difference) between indicator values under LC and BAU scenarios. Combined with relevance weighting (based on ERM’s expertise), the risks/opportunities are characterized across 2030, 2040, and 2050.

The assessment follows four key steps:

- **Information Collection:** Gather project data via public information and the client’s Documents Requested List (DRL);
- **Climate Driver Identification:** Reference TCFD (Task Force on Climate-related Financial Disclosures) recommendations to conduct literature reviews (drawing on third-party research) to identify plausible scenarios, risks, and opportunities, which

are validated by the client before proceeding;

- **Transition Scenario Assessment:** Build scenario indicators (e.g., renewable energy supply, CO₂ pricing) to characterize transition risks/opportunities. Calculate the delta between LC (IEA NZE 2023) and BAU (IEA STEPS 2023) scenario values, apply relevance weighting (expert judgment), and assign Low/Moderate/High risk/opportunity ratings for 2030/2040/2050;
- **Reporting:** Deliver a summary heat map (to highlight risk/opportunity concentrations), a project findings summary, and recommendations for follow-up analysis.

4. Physical Climate Change Risk Assessment

4.1 Baseline and Projections Data

The physical Climate Change Risk Assessment (CCRA) uses baseline and projections climate data, compiled from international scientific bodies (e.g., IPCC, WR) via ERM's proprietary Climate Impact Platform (CIP). Two types of data are included:

- **Modelled data:** Simulates complex climate physical processes, covering historical, present, and future climatic conditions;
- **Reanalysis data (baseline only):** Corrects errors in previously recorded climate records (from observational or modelled data).

4.2 Climate Scenarios

The assessment uses climate data from the IPCC's 6th Assessment Report (AR6) (CMIP6, 2021), which improves on prior datasets with more model runs. It adopts two Shared Socioeconomic Pathways (SSPs) (aligned with TCFD guidance):

- **SSP 1-2.6:** A moderate pathway; mean annual temperature rise by 2100 (vs. pre-industrial levels) is ~1.8°C;

- **SSP 5-8.5:** A high-emission pathway; mean annual temperature rise by 2100 is ~4.4°C.

4.3 Time Horizons

Three time horizons are selected to align with the project's milestones:

- **Baseline:** Based on model-set baselines, corresponding to the project's construction start (July 2023);
- **2030s:** The near future of the project's operational phase;
- **2050s:** The far future of the project's operational phase.

4.4 Climate Data Results and Risk Review

A series of potential risks to the Project associated with extreme heat, extreme cold, wildfires, water stress and drought under baseline and future projected climatic conditions are included in the Table 4-1 below. Based on the risk review, flooding, extreme wind and precipitation-induced landslides risks for the project in the construction and operational phases are rated "unlikely material", so they are not listed in the table.

Table 4-1 Overview of Potential Risk Areas at the Start and End of Operations Associated with the Project

Physical risk category	Extreme Heat		Extreme Cold		wildfires		Water Stress and Drought	
Risk area	Risk materiality category and time-period							
	Construction phase (baseline)	Late operational phase (2050)	Construction phase (baseline)	Late operational phase (2050)	Construction phase (baseline)	Late operational phase (2050)	Construction phase (baseline)	Late operational phase (2050)
Production Facility	Unlikely material	Low to Moderate	Unlikely material	Low to Moderate	-	-	Unlikely material	Low to Moderate
Substation	Unlikely material	Moderate	Unlikely material	Low to Moderate	-	-	-	-
Utility and Tank Farm	Unlikely material	Low to Moderate	Unlikely material	Low to Moderate	-	-	Unlikely material	Low to Moderate
Schedule (delays)	Unlikely material	N/A	Low to Moderate	N/A	-	-	-	-
Health and Safety of Staff	Low to moderate	High	High	Low to Moderate	-	-	Unlikely material	Low to Moderate
Site Personnel, Residents	-	-	-	-	Unlikely material	Low to Moderate	-	-
Public Facilities, Infrastructure and Services, Construction and	-	-	-	-	Unlikely material	Moderate	-	-

Physical risk category	Extreme Heat		Extreme Cold		wildfires		Water Stress and Drought	
Risk area	Risk materiality category and time-period							
	Construction phase (baseline)	Late operational phase (2050)	Construction phase (baseline)	Late operational phase (2050)	Construction phase (baseline)	Late operational phase (2050)	Construction phase (baseline)	Late operational phase (2050)
maintenance equipment and machinery								

A brief description of various potential physical risks is as follows.

Extreme heat poses risks across multiple aspects: workshops face component aging and fire hazards; substations have issues such as equipment overload and insulation breakdown, which may lead to power supply instability; utilities suffer reduced cooling efficiency and fire risks; the construction phase is prone to delays, problems with building materials/equipment, ground settlement, and resource shortages; personnel health and safety are also threatened.

Extreme cold and snow pose risks across multiple aspects: workshops face component aging, material failure, and potential roof structural safety hazards; substations have issues such as equipment malfunction and reduced conductor performance; utilities encounter risks like chemical property changes, seal failure, and system freezing; the construction phase is prone to delays, problems with building materials/equipment, and transportation disruptions; personnel health and safety are also threatened.

Wildfires not only threaten the health and safety of on-site personnel and surrounding residents (including direct or indirect risks such as injury or death from open flames and smoke, and falling trees), but may also prevent personnel from reporting to work—this risk is classified as Low to Moderate. Additionally, high temperatures caused by wildfires may trigger secondary fires and explosions in the project area. Meanwhile, wildfires can damage project facilities, equipment, power supply infrastructure, and building materials through open flames, ignition of flammable substances, and smoke. This in turn requires increased capital expenditure for repairs, delays the provision of essential public services, and in the long term will drive up insurance premiums and reduce property values, with the risk level classified as Moderate during the operational phase.

Water stress poses multi-dimensional risks to the project: at the workshop level, it may cause production process disruptions, impaired cleaning of machinery and components, and failure of equipment heat control, which impact revenue and operating expenditure

respectively; for utilities, there are fire hazards due to insufficient fire-fighting capacity and potential reduced efficiency of HVAC systems; employees' health and safety also face fire safety threats due to water shortages for fire-fighting systems. Overall, all these risks adversely affect operating expenditure or revenue.

5. Transition Climate Change Risk Assessment

This transition CCRA focuses on the Project's operational phase (excluding construction due to its short duration and minimal low-carbon transition impacts). Geographically, operational risks are assessed within Hungary, while product-related risks/opportunities take a global perspective.

Two IEA scenarios underpin the assessment:

- **BAU (STEPS):** Reflects existing policies, with global warming exceeding 1.5°C by 2030 and ~2.6°C by 2100;
- **LC (NZE):** A normative pathway to global net-zero CO₂ emissions by 2050, limiting warming to ~1.5°C by 2050 and 1.4°C by 2100.

Data is primarily from IEA WEO (World Energy Outlook) 2023, supplemented by NGFS (Network for Greening the Financial System) Phase IV where applicable; EU/global datasets are used due to limited Hungary-specific transition data.

Time horizons are 2030, 2040, and 2050, aligning with TCFD's short/medium/long-term recommendations and battery industry trends.

5.1 Transition Risk Identification

Risk identification uses scenario analysis to quantify material climate risks/opportunities, based on ERM's Project knowledge and value chain insights. Following TCFD, risks are categorized into **Policy, Market and Technology, Legal, and Reputation.**

5.2 Risk/Opportunity Review

The transition scenario assessment summarizes the Project’s assessment findings, including the relative significance and exposure timeframe of risks/opportunities. The Transition Scenario Screen prioritizes next steps via financial driver analysis and further assesses/manages identified risks/opportunities. Final climate risk ratings are shown in table 5-1 below.

Each identified risk is assigned a designation; red-marked risks are high negative consequences of transition factors, potentially manifesting as revenue erosion (carbon pricing), higher capital/operational expenditure (GHG emission reduction via efficiency), and stranded asset risks.

Table 5-1 Transition Scenario Screen and Potential transition risks and opportunities, supplements scenario analysis results

Ref No.	Risk Type/ Opportunity	Risk / Opportunity Drivers	Potential Financial Consequence	Scenario Indicator	Short Term (2030)	Medium Term (2040)	Long Term (2050)
Risk							
1	Policy and Legal	Regulatory-driven energy and material efficiency gains from using recycled materials	Impact on CAPEX (Capital Expenditure), OPEX (Operating Expenditure) and Revenue	Energy intensity (worldwide)	Limited Risk	Low Risk	Moderate Risk
2	Policy and Legal	Regulatory-driven reductions in GHG emissions	Impact on CAPEX and OPEX	CO ₂ emissions intensity (worldwide)	Moderate Risk	High Risk	High Risk
3	Technology	The emergence of hydrogen FCEV (Fuel Cell Electric Vehicle)	Impact on Revenue	Ratio of total final consumption of hydrogen to electricity in transport (world)	Limited	Limited	Limited

Ref No.	Risk Type/ Opportunity	Risk / Opportunity Drivers	Potential Financial Consequence	Scenario Indicator	Short Term (2030)	Medium Term (2040)	Long Term (2050)
4	Reputational Risk	Stakeholder expectations on ESG issues	Impact on CAPEX	Qualitative assessment through a review of publicly available sources, e.g. news and articles linked to the Project	Indirectly captured	Indirectly captured	Indirectly captured
Opportunity							
5	Products & Services	Electrification trend for the industrial and transport sectors	Impact on Revenue	Total final consumption of liquid and gaseous fuels in the industrial and transport (world)	Low Opp	Moderate Opp	High Opp
6	Market	Increasing demand for electric vehicle (EV)	Impact on Revenue	Total final consumption of electricity in transport (world)	Moderate Opp	High Opp	High Opp

5.2.1 Risk Review

- **Policy and Legal: Regulatory-driven Energy and Material Efficiency Gains from Using Recycled Materials**

The EU Battery Regulation, which entered into force in August 2023, has established a unified regulatory framework based on the concept of the full life cycle to ensure the sustainability and safety of batteries, and requires manufacturers to meet certain mandatory ratios for the use of recycled materials. In the future, the battery manufacturing industry will need to meet these requirements within the specified timeframes, facing pressure from increased CAPEX and OPEX.

- **Policy and Legal: Regulatory-driven Reductions in GHG Emissions**

Policy changes may significantly impact the energy system and thus the reduction of greenhouse gas (GHG) emissions. A risk related to policy-driven CAPEX requirements

for reducing GHG emissions associated with the Project's operations has been identified. This section covers the EP4 requirement to verify the Project's alignment with local policies and climate change strategies.

In December 2019, the European Commission (EC) launched the European Green Deal, the EU's flagship strategy to transform its economy and achieve climate neutrality (net-zero greenhouse gas emissions) by 2050. Its intermediate target is to cut GHG emissions by 55% by 2030 compared to 1990 levels.

As an EU member state, Hungary adopted the Climate Protection Law (Law No. XLIV) in June 2020, which enshrines into law the 2030 emissions reduction target (a 40% cut from 1990 levels), energy efficiency goals, renewable energy targets, and the 2050 net-zero emissions goal.

In the future, driven by potential GHG emissions from the supply chain and government decarbonization targets, the battery manufacturing industry will face increasing pressure to reduce GHG emissions.

- **Technology: The Emergence of Hydrogen FCEV**

Fuel Cell Electric Vehicles (FCEVs) have advantages such as fast refueling and long driving ranges in scenarios like long-haul trucking, making them a strategic choice for decarbonizing hard-to-electrify sectors. However, their near-to-mid-term popularization is constrained by heavy infrastructure investment, high costs of low-carbon hydrogen and components, and limited applicable scenarios. According to scenario analysis in the IEA's 2024 Global Hydrogen Review, FCEV development relies on policy support, infrastructure construction, and technological breakthroughs—only under the Net Zero Emissions (NZE) scenario can they be expected to dominate the transport sector by 2050. For the Project, the substitution risk from FCEVs is low during the loan tenor (the next nine years), and they will not materially weaken demand for large cylindrical NMC (Nickel, Manganese, Cobalt) batteries. In the medium to long term, if hydrogen costs decrease and infrastructure improves rapidly, FCEVs may replace large-capacity batteries in niche segments such as very long-haul trucking, but this will not hinder the overall growth of the NMC battery market.

- **Reputational Risk: Stakeholder Expectations on Climate Related Issues**

Three types of risks need to be considered in the internal assessment of reputational risk: climate-related challenges from NGOs or regulatory authorities, inconsistency with EVE's ESG commitments and global climate goals, and shareholder pressure due to the project's mineral supply chain.

The project is not included in BankTrack's "Dodgy Deals" (High-Risk Projects/Transactions) database. Battery production relies heavily on the mineral supply chain. Energy transition minerals such as lithium, nickel, and cobalt are characterized by high energy consumption and high emission intensity in their extraction and processing. Moreover, growing demand is driving production toward more energy-intensive methods, which may lead to increased emissions in the future. Nevertheless, the lifecycle climate benefits of clean energy technologies remain significantly superior to those of fossil fuel-based counterparts. The expansion of mineral supply is crucial for enabling clean energy transitions. When managed responsibly, it can help alleviate poverty and increase incomes; otherwise, it may trigger environmental issues (such as ecological disruption and pollution) and social problems (such as corruption and human rights violations), thereby disrupting supply chains. Collaborative management by enterprises and governments is essential. Relevant EU regulations have strengthened corporate supply chain due diligence obligations, and enterprises' fulfillment of these responsibilities is also in line with their commercial interests. However, industry performance is uneven, with artisanal and small-scale mining facing substantial challenges.

5.2.2 Opportunity Review

- **Products & Services: Electrification Trend for Industrial and Transport Sectors**

In 2024, the total public and private investment in electrification across sectors such as buildings, transportation, and industry is projected to increase by 4% to USD 660 billion,

matching the 2022 peak and exceeding the expected upstream investment in oil and gas by approximately 10%. Growth is mainly driven by electric vehicles and heat pumps. Battery technology advancements spurred by electric vehicles are also spilling over into energy storage, portable electronics and other fields, broadening revenue streams. Electrification is key to decarbonization, and switching to technologies such as electric vehicles (EVs) and heat pumps delivers significant energy efficiency gains: battery electric vehicles (BEVs) achieve an energy conversion rate of over 80%, far higher than internal combustion engine (ICE) vehicles (16%-25%) and hybrid electric vehicles (HEVs) (24%-38%), while heat pumps consume less than a quarter of the energy of traditional gas boilers for heating. Electrification and energy efficiency improvements reinforce each other, optimizing the power grid and facilitating the integration of renewable energy. Under the Net Zero Emissions (NZE) scenario, by 2030, the two may drive a more than 70% reduction in oil demand (equivalent to China's total oil consumption in 2024) and a 50% reduction in natural gas demand (equivalent to Europe's total natural gas consumption in 2024).

- **Market: Increasing Demand for Electric Vehicle (EV)**

The growth in EV sales in major markets and emerging regions is driving a surge in battery demand. The IEA's Global EV Outlook 2024 projects that under its three scenarios, battery demand will increase by 4.5 to 12 times between 2030 and 2035. Cars remain the primary source of demand, though non-car EV segments will see faster growth. By 2030, global battery manufacturing capacity is expected to exceed 9 TWh, with output sufficient to meet demand under the APS scenario and over 90% of that under the NZE scenario.

This Project produces large cylindrical NMC lithium-ion cells. While solid-state batteries (SSBs) offer advantages in energy density and safety, they face barriers such as low room-temperature ionic conductivity, poor interfacial contact, and high manufacturing costs. In the near term, SSBs will only be suitable for high-end passenger vehicles and are unlikely to substitute NMC cells on a large scale within the nine-year

loan tenure. EVE is developing LMFP batteries, which are adapted to extreme temperatures and heavy-duty vehicles. Compatible with existing NMC production lines, LMFP batteries do not overlap with SSBs in market positioning, further reducing substitution risks. The Project has secured firm orders, demonstrating the resilience of its technical route.

6. Alternatives Analysis

This section focuses on the project’s current carbon emission status, assessing the feasibility of low-carbon alternatives while balancing greenhouse gas intensity optimization, cost-effectiveness, and environmental/social impacts.

The gas boiler currently used in the project is a mature technology in the battery industry; heat pumps are suitable for low-to-medium temperature scenarios, electric boilers are constrained by local grid capacity, solar thermal systems mostly serve as auxiliary systems, and hydrogen boilers are still in the experimental stage.

Table 6 错误!文档中没有指定样式的文字。 -1 Comparison of the Alternatives

Subjects/Options	Heat Pumps	Electric Boilers	Solar Thermal System	Hydrogen Boilers	Project
Technical feasibility and suitability	Heat Pumps are ideal for providing low to moderate heat (<150°C), common in non-intensive industrial processes like heating water or maintaining facility temperatures.	Good replacement for gas boilers in facilities transitioning to electrified heating, while currently, the local grid capacity may not be adequate to support the high power draw of industrial-scale electric boilers.	Weather-dependent, with reduced efficiency on cloudy days or during winter, therefore often used as a supplemental system in the hybrid system.	Still in the experimental stage and has not been brought into large-scale commercial use.	The most widely used technology in the production process.
GHG emissions	Low	Low given the Hungary energy mix	Low	Low	Medium

Subjects/Options	Heat Pumps	Electric Boilers	Solar Thermal System	Hydrogen Boilers	Project
		context			

Among technically/financially feasible, cost-effective and low-GHG options, the project’s current design has lower environmental and social impacts: Technically, it adopts mature, cost-effective technology widely used in battery manufacturing. A feasibility study on GSHP (Ground Source Heat Pump) for cooling/preheating is ongoing (supplier discussions in progress). Electric boiler alternative is unfeasible now due to local power limits/high industrial electricity prices, but could be considered long-term if power conditions improve.

7. Climate Change Risk Management Plan

7.1 Overview of Climate Change Risk Management Plan (CCRMP)

This section presents the CCRMP aligned with Equator Principles 4 (EP4, updated May 2023), focusing on four core objectives: identifying the project’s physical and transition climate risks; assessing each risk’s likelihood and impact; developing mitigation measures (climate adaptation, GHG reduction); and tracking implementation via monitoring/reporting for effective execution.

7.2 Defined Roles and Responsibilities

Under the CCRMP framework, multiple roles collaborate on full-cycle climate risk management:

- **Core leads:** Chief Risk Officer (plan development/implementation), Environmental Compliance Manager (regulatory compliance/GHG reduction)
- **Operational roles:** O&M personnel (energy efficiency/risk reporting), Climate Risk Analyst (risk assessment), Regulatory Affairs Specialist (regulation tracking)
- **Support roles:** Stakeholder Engagement Coordinator (external communications), Emergency Response Team (climate emergencies), external experts/auditors

(professional support), Board of Directors (oversight)

- All roles work together to ensure the project's climate resilience and sustainability; employees receive risk awareness training.

7.3 GHG Strategy, Policies & Management Approaches

GHG reduction strategy: Focuses on operational efficiency (advanced tech investment, regular maintenance) and aligns with Hungary's NDC commitments (carbon offset via reforestation).

- **Compliance & disclosure:** Adheres to domestic/international GHG regulations; regularly discloses emissions, reduction initiatives and carbon neutrality progress.
- **Management approaches:** Establishes emission inventories, sets short/long-term reduction targets, and conducts continuous climate risk assessments.
- **Risk response methods:** Mitigation (energy efficiency, carbon offset), Transfer (insurance/contracts), Acceptance (emergency plans, infrastructure resilience), Control (audits, training, information disclosure).

7.4 Monitoring Metrics & Implementation Support

EVEH has built a monitoring system with four pillars to manage climate risks and advance GHG reduction:

- **KPIs:** Monitors GHG emission intensity, reduction target progress, energy efficiency, carbon neutrality progress, operational resilience, and climate risk early warning indicators (water stress, wildfire alerts).
- **Data collection:** Gathers emission (CEMS/on-site inspections), energy efficiency, renewable energy integration, carbon neutrality, and climate risk data.
- **Reporting mechanisms:** Conducts internal cross-departmental reporting, regulatory compliance reporting, and transparent stakeholder disclosure.
- **Continuous improvement:** Adjusts monitoring indicators/plans dynamically, collects feedback, invests in low-carbon tech R&D, and enhances employee training.

7.5 Project-specific Set of Adaptation Measures

A Project-specific set of adaptation measures has been identified, building on the findings of the physical and transition risk assessments, as follows. Adaptation measures are measures that can enhance positive impacts of the project or measures that can minimise negative impacts.

Table 7-1 Proposed Climate Adaptation Recommendations

Risk Category	Hazard	Risk Materiality Category for Operation	Recommended Adaptation Measures	
Physical climate risk	Extreme Heat	Low to Moderate	Production Facility and Tank Farm	<ul style="list-style-type: none"> • Cooling System Assessment: Evaluate the capacity and effectiveness of the cooling systems to meet increased demands during high-temperature conditions. Consider alternative cooling technologies and strategies to ensure adequate cooling without putting excessive strain on water resources. • Maintenance and Inspection: Develop a proactive maintenance schedule and inspection plan to address accelerated component degradation. Regularly monitor the condition of critical components and perform necessary maintenance to prevent unplanned downtime. • Fire Preparedness and Prevention: Establish comprehensive fire preparedness plans, including fire prevention measures and firefighting capabilities. Collaborate with local authorities and firefighting agencies to ensure a prompt response to any potential wildfires.
			Substation	<ul style="list-style-type: none"> • Load Analysis and Capacity Planning: Conduct a thorough load analysis to assess the potential increase in electrical demand during high-temperature conditions. Plan for the capacity needed to handle higher loads and prevent overloading of transformers, circuit breakers, and other equipment. • Insulation Testing and Maintenance: Regularly inspect and test insulation materials to identify signs of degradation or breakdown. Implement a comprehensive maintenance program to address insulation issues and reduce the risk of

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				<p>electrical faults.</p> <ul style="list-style-type: none"> Transformer Monitoring and Efficiency Optimization: Monitor the performance of transformers and identify any efficiency reductions caused by high temperatures. Implement measures to optimize transformer efficiency and minimize power losses. Corrosion Prevention and Equipment Inspection: Implement measures to protect substation components from corrosion and wear caused by extreme heat. Conduct regular inspections to detect any signs of premature aging and deterioration. Enhanced Equipment Monitoring: Install advanced monitoring systems for electrical equipment to detect early signs of failures and malfunctions. This will help facilitate proactive maintenance and prevent unexpected disruptions.
			Health and Safety of Staff	<ul style="list-style-type: none"> Implement health and safety protocols to protect plant personnel from the effects of extreme heat. Provide adequate cooling facilities, encourage frequent hydration, and consider adjusting working hours during periods of intense heat.
	Extreme Cold	Low to Moderate	Production Facility and Tank Farm	<ul style="list-style-type: none"> Heating System Assessment: Evaluate the capacity and effectiveness of the HVAC systems to meet increased demands during low-temperature conditions. Maintenance and Inspection: Develop a proactive maintenance schedule and inspection plan to address accelerated component degradation. Regularly monitor the condition of critical components and perform necessary maintenance to prevent unplanned downtime.

Risk Category	Hazard	Risk Materiality Category for Operation	Recommended Adaptation Measures	
			Substation	<ul style="list-style-type: none"> • Load Analysis and Capacity Planning: Conduct a thorough load analysis to assess the potential increase in electrical demand during low-temperature conditions. Plan for the capacity needed to handle higher loads and prevent overloading of transformers, circuit breakers, and other equipment. • Insulation Testing and Maintenance: Regularly inspect and test insulation materials to identify signs of degradation or breakdown. Implement a comprehensive maintenance program to address insulation issues and reduce the risk of electrical faults. • Transformer Monitoring and Efficiency Optimization: Monitor the performance of transformers and identify any efficiency reductions caused by cold temperatures. Implement measures to optimize transformer efficiency and minimize power losses. • Corrosion Prevention and Equipment Inspection: Implement measures to protect substation components from corrosion and wear caused by extreme cold. Conduct regular inspections to detect any signs of premature aging and deterioration. • Enhanced Equipment Monitoring: Install advanced monitoring systems for electrical equipment to detect early signs of failures and malfunctions. This will help facilitate proactive maintenance and prevent unexpected disruptions.
			Health and Safety of Staff	<ul style="list-style-type: none"> • Implement health and safety protocols to protect plant personnel from the effects of extreme cold. • Provide adequate heating facilities and consider adjusting working hours during periods of intense coldness.

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	Flooding	Unlikely Material	NA	NA
	Extreme Winds	Unlikely Material	NA	NA
	Wildfires	Low to Moderate	Project Facilities, Site Personnel	<ul style="list-style-type: none"> • Vegetation and Buffer Zone Management: Implement regular vegetation clearing and establish defensible buffer zones around critical facilities (production workshop, substation, warehouses) to reduce combustible fuel load. • Fire Detection and Suppression Systems: Ensure site-wide fire detection, hydrant coverage, and suppression systems are fully functional, tested regularly, and designed to operate under high-heat conditions. • Emergency Preparedness and Training: Conduct regular fire drills, employee training, and coordination exercises with municipal fire services to ensure rapid response and safe evacuation. • Critical Asset Protection: Maintain clear zones around transformers, storage tanks, and hazardous chemical areas; prohibit combustible storage in these areas to reduce ignition and escalation risks. • Monitoring and Early Warning: Introduce routine hot-weather monitoring and integrate wildfire alerts from local authorities into the site’s emergency response system for proactive risk management.
	Rainfall-Induced Landslides	Unlikely Material	NA	NA

Risk Category	Hazard	Risk Materiality Category for Operation	Recommended Adaptation Measures	
	Water Stress	Low to Moderate	Production Facility	<ul style="list-style-type: none"> • Water Usage Efficiency: Conduct a comprehensive water usage audit to identify areas where water consumption can be reduced in production processes, including cooling systems, chemical handling, and cleaning operations. Introduce water-saving technologies, such as precision sprinklers, low-flow systems, and dry cooling methods. • Water Consumption Monitoring: Implement real-time water usage monitoring systems across all production processes to track consumption patterns and identify areas for further optimisation. • Develop Stormwater Harvesting Expansion Plans: Expand rainwater harvesting to capture runoff from additional areas such as roofs, parking lots, and other impervious surfaces. • Regular review and update of assessment: Regularly review and update (e.g., every three to five years if no significant changes occur) the risk level of water stress and drought based on the latest climate data (e.g., WRI Aqueduct¹) during the Project operation phase, and implement appropriate mitigation measures accordingly. • Water Stress Monitoring: Incorporate water stress monitoring into the Project’s Environmental and Social Management System, including early warning indicators such as canal flow levels, WWTP output variability, and seasonal drought forecasts, as well as routine coordination with local water authorities. • Emergency/Alternative Water Supply Planning: Develop an

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				<p>emergency water management plan, including options such as agreements with municipal authorities for prioritized allocation during drought years, contracts with third-party suppliers for water trucking, or installation of on-site storage tanks to provide short-term buffering capacity.</p> <ul style="list-style-type: none"> • Production Adjustment Protocols: Establish clear procedures for scaling back or prioritizing production in case of water shortages, for example by identifying critical production lines that must be sustained, defining phased shutdown measures, and setting thresholds for when adjustment protocols should be triggered. • Wastewater Reuse Expansion: Explore opportunities to increase the proportion of reclaimed wastewater beyond the current 10%, including upgrading the wastewater treatment station to enable higher recovery rates and incorporating advanced recycling technologies.
			Health and Safety of Staff	<ul style="list-style-type: none"> • Roll out a water conservation awareness program for employees to foster a culture of water responsibility and encourage best practices in water usage, both at work and at home
Transition Risk	Regulatory-driven energy and material efficiency gains from using recycled materials	Likely Low to moderate during medium to long term operation	<ul style="list-style-type: none"> • Supply Chain Energy Efficiency: Collaborate with suppliers to improve energy efficiency in relevant recycled critical minerals production. This can help reduce the overall energy consumption and carbon emissions, making the Project more sustainable. • Monitoring and Adaptation: Continuously monitor the local and regional policy trends of carbon pricing mechanisms on critical minerals and derived impacts on the Project's CAPEX, OPEX and Revenue, and be prepared to adapt policies and strategies accordingly. Flexibility and adaptability are key in managing 	

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	Regulatory-driven reductions in GHG emissions	Likely High during medium to long term operation	<p>risks associated with changing carbon prices.</p> <ul style="list-style-type: none"> • Diversify Energy Sources: Diversify energy sources by incorporating renewable energy options such as solar, wind, and biomass into energy mix. • Invest in Energy Efficiency: Implement energy-efficient technologies and practices for the Project to reduce emissions per unit of electricity generated. This can include upgrading equipment, optimizing processes, and adopting best practices in energy management. • Regulatory Compliance: Ensure that the operations adhere to regulatory requirements for emissions reductions. Establish clear and enforceable emissions limits and penalties for non-compliance. • Capacity Building: Invest in workforce training and development to equip the operators and managers with the skills and knowledge needed to operate efficiently and with lower emissions. • Monitoring and Reporting: Establish robust monitoring and reporting systems to track emissions data regularly. Transparency in emissions data can help identify areas for improvement and ensure compliance. • Just Transition: Implement policies that consider the social and economic impacts of emissions reductions on the workers and communities. Support programs for job transitions and economic diversification in affected regions. • Innovation and Research: Monitor the latest research and innovation to develop cleaner and more efficient technologies for power generation.
	The Emergence of Hydrogen FCEV	Likely Limited throughout the assessed timeframe	NA