EPSOG

Climate risk report 2023

Contents

Abbreviations

IPCC – Intergovernmental Panel on Climate Change

NECS – National Energy and Climate Plan

NENS – National Energy Independence Strategy

RES – Renewable energy sources

SBTi – Science Based Targets initiative

SSP – Shared Socioeconomic Pathways

TCFD – Task Force on Climate-Related Financial Disclosures

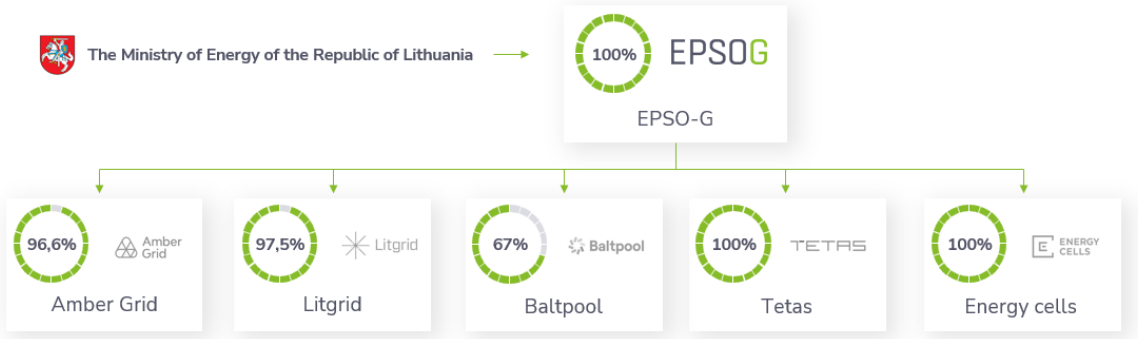
TSO – Transmission system operator

Introduction

About EPSO-G

EPSO-G is a Lithuanian state-owned group of five energy transmission and exchange companies. The shareholder's rights and obligations of EPSO-G holding are implemented by the Lithuanian Ministry of Energy. EPSO-G's main activities are to provide stable, continuous transmission of electricity via high-voltage grids and transportation of natural gas via high-pressure pipelines. The Group is also responsible for management, maintenance and development of these transmission systems. In addition, it administers and controls biofuels, natural gas and wood trading platforms to ensure a competitive market for energy resources and roundwood.

All EPSO-G Group companies perform activities that contribute to reaching the objectives of the Lithuanian Energy Strategy, namely they implement energy transmission and exchange infrastructure projects, including those aimed at integration of domestic infrastructure with EU energy markets and compliance with Energy Union objectives. The Group and its companies are also responsible for creating a sustainable long-term value for their shareholder – the Lithuanian state, its people and its economy.



An overview of the five companies being part of the EPSO-G Group is provided below.

Litgrid

Litgrid is the designated operator of the Lithuanian electricity transmission system. It maintains stable operation of the national power system, controls the flows of energy and ensures competition in the open domestic electricity market. The company is in charge of integrating the national power system into the European power infrastructure and electricity market. It is also responsible for high voltage (330 kV and 110 kV grids) lines, transformer substations and switchgears, and it runs strategic electricity cross-border links NordBalt and LitPol, linking Lithuania with Sweden and Poland, respectively.

Amber Grid holds the official role as Lithuania's natural gas transmission system operator, responsible for transporting natural gas through high-pressure pipelines serving system users. The company is responsible for the operation, maintenance, and enhancement of the natural gas transmission infrastructure, which encompasses gas transmission pipelines, gas compressor facilities, gas metering and distribution points, cathodic protection setups, as well as data transmission and telecommunications systems.

Its clients include power plants, district heating plants, industrial companies, medium-sized companies that operate in Lithuania as well as gas supply companies to which Amber Grid provides natural gas transmission services. Amber Grid is also involved in the development of a single gas market in the Baltic region. It holds a 34% of shares of the Lithuania's natural gas exchange operator – GET Baltic.

The company operates gas distribution stations, gas compressor stations and gas transmission pipelines.

Baltpool is the official operator of Lithuania's energy exchange, responsible for the organization and management of trading systems for solid biofuel products and roundwood. It serves as the administrator of public service obligation (PSO) funds and is in charge of collecting, disbursing, and overseeing these funds. Baltpool's core mission is to offer an efficient and competitive trading platform to market participants. Apart from EPSO-G, Baltpool's other shareholder is Klaipėdos Nafta, another state-controlled energy company.

Tetas operates in the area of construction and repair of engineering networks, namely electrical equipment of up to 400 kV. The company undertakes construction projects, such as constructing building structures, installs electricity supply and distribution equipment, builds electrical networks and prepares electrical engineering systems for buildings. It constructs electrical grids, installs electrical supply and distribution apparatus and engineering systems for buildings.

Energy Cells has been created to support the synchronization of the Lithuanian grid and to deploy energy storage facilities with a total capacity of at least 200 megawatts. These facilities will play a crucial role as a primary reserve, ensuring reliable, consistent, and user-oriented functioning of Lithuania's electricity transmission system both until its synchronization with continental Europe's networks and during the integration of rapidly expanding renewable energy sources.

Transition to climate neutrality – context and relevance for EPSO-G Group

Climate change is a growing global concern that affects economic activity more and more. The pressure to manage and report on climate-related issues is increasing, both from the fast-evolving regulatory environment and from the risk-aware financial sector. Climate change considerations are being incorporated into public strategic documents and business practices across many industries. Critical infrastructure sectors, such as energy and utilities, are among the most affected by these trends.

Climate-related risks – potential negative effects of climate change – can influence a company's performance and prospects through various channels. These impacts are naturally related to more frequent extreme weather events that can cause damage to buildings and strain infrastructure, bring about financial losses or indirectly upset a company's business by disrupting the supply chain. Climate change can also affect the conditions of operations, translating into higher operating costs and necessitating adaptations or investment outlays. These should be accounted for when developing costly, long-life infrastructure and buildings.

More importantly, countries are making efforts to decarbonize their economies (in line with the Paris Agreement), with energy system transformation playing a pivotal role. Transition to climate-neutrality – the centerpiece of the European Green Deal – requires transformation of the energy system by increasing the role of renewable energy sources (RES) in the final energy mix. The risks related to this transition will have a significant impact on the economic activities related to energy generation, transmission, and consumption. In this sense the energy sector is one of the Climate Policy Relevant Sectors[1] and at the same time, one of the critical infrastructure sectors, vulnerable to security of supply concerns and geopolitical tensions. The EPSO-G Group operates in a continuously and rapidly evolving energy and regulatory environment.

Against this background, EPSO-G, as a group of transmission system and energy exchange operators, has a key role to play in ensuring a smooth and reliable transformation of the energy system in Lithuania. It involves a transition to the energy system integrating high volumes of RES, enabling decarbonization of the sector, initiating system interconnection projects and facilitating climate-neutral energy exchanges. These focus areas are reflected in the 2030 Strategy, updated by the Group annually and aligned with the EU Strategy for Energy System Integration, which envisages an energy system with flexible energy flows between consumers and producers, leading to a reduction in inefficient resources use, facilitated by novel technological solutions that will enable the development of a circular energy system. At the same time, the demand for electricity is expected to increase, creating potential challenges in ensuring the adequacy of the electricity system. On a positive note, this can also trigger an effective development of the market for additional services, involving consumers to increase the flexibility of the system.

[1] Battiston, S., Mandel, A., Monasterolo, I., Schütze, F., & Visentin, G. (2017). A Climate stress-test of the financial system. Nature Climate Change, 7(4), 283–288;
Battiston S., Monasterolo I., van Ruijven B., Krey V. Mapping economic activities into climate scenarios and transition risk classes: the NACE-CPRS-IAM classification, NGFS Technical notes, 2022.

About the report

In 2023, building on the underpinnings of its 2030 Strategy, the EPSO-G Group performed a comprehensive analysis of climate-related risks and opportunities for its companies. This was grounded in the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). To summarize that analysis and the management's approach, the EPSO-G Group hereby presents its first climate-related disclosures, prepared in line with international best practices and standards. The decision to apply TCFD recommendations positions the Group well to refine its climate risk analysis and continue with transparent disclosures in accordance with leading international standards.

This report is the final stage of the work planned and announced in the 2022 Annual Report, which was to assess the transition and physical risks associated with climate change and develop measures and indicators to manage these risks, and finally, report in line with the TCFD recommendations. With this work we acknowledge the importance of climate risk analysis for the energy sector, given its crucial role in the transition towards a carbon-neutral economy, which requires a transformation of the energy system, including increased electrification and use of renewable energy. While the impact of climate-related risks can vary across the Group's companies, depending on a company profile, this report provides a summary analysis for the whole EPSO-G Group.

Although the Group has built a good methodological base to analyze climate-related risks, regular monitoring and strengthening of these capabilities is needed, as the companies operate in a dynamic energy market and regulatory environment. The Group plans to strengthen its climate risk analysis and management, as well as to continue with transparent climate-related reporting. Climate change poses risks but it also offers opportunities – to improve resource efficiency and tap into the market for additional services, responding to increased electricity demand and developing instruments that support the flexibility of the system. Managing climate-related risks and seizing opportunities will be crucial so as to fulfil the strategic vision of the EPSO-G Group's Strategy which is to be recognized as future energy leaders in the region.

Governance

At EPSO-G, sustainability principles are integrated into the Group's business processes, and the responsibilities for climate-related issues are reflected across the governance structure, starting with the Board and the C-suite.

Board oversight of climate-related risks and opportunities

Climate - related issues fall within the broad spectrum of sustainability, they have already been integrated into the decision-making process, whereby the Board of EPSO-G is responsible for setting, reviewing and monitoring the long-term strategic sustainability goals and indicators. The Board also endorses policies on the environment, equal opportunities, health and safety, anti-corruption, remuneration, performance evaluation and development and other sustainability related policies. Within its remit, the Board also approves the company's annual objectives, which include sustainability-related targets, as well as a Group-level list of risks – among others the risks related to sustainability.

As for climate-related issues specifically, the EPSO-G board ensures effective risk management and integrity with the strategy, mission and values at the Group level. This covers compliance with the Group's 2030 Strategy, including the climate-related goals mentioned in the Strategy section, such as integration of RES, seeking to ensure that Group companies play a key role in enabling a smooth transition to climate neutrality, initiating a dialogue with the regulator to create an environment facilitating climate neutrality solutions, applying green principles to the Group's public procurements. It also includes the risks identified and assessed for the company, as mentioned in the "Strategy" section of this report. In addition, the Group-level Board makes recommendations to companies on identification, evaluation, and more effective management of Group-level risks.

At the same time, each board at the company level ensures that effective risk management and related measures carried out within the entity are consistent with the strategy, mission, vision, and values. Each company board also approves the Plan of Risk Management Measures and its amendments, and evaluates the Company's Risk Management Quarterly Monitoring Reports.

Management's role in assessing and managing climate-related risks and opportunities

The CEO of EPSO-G organizes and controls the implementation of the Group's operational strategy and the relevant company strategy at operational level. The CEO also implements the decisions of the Shareholders' General Meetings of and the company board, as well as controls the subsidiaries' activities. All this includes the relevant climate targets which are given an increasing priority.

EPSO-G Sustainability Development Manager is responsible for monitoring and coordinating the achievement of the Group's sustainability objectives and the relevant environmental, social and governance objectives were delegated to individual functional units (e.g. environmental, occupational health and safety, human resources, risk, and compliance management, etc.) within the EPSO-G Group

companies. These sustainability goals now reflect climate matters more specifically, primarily through the relevant strategy objectives, as mentioned above under the board's responsibilities.

The roles and responsibilities related to climate risk management are summarized in the table below.

Position	Description of sustainability responsibility
Board of EPSO-G	The Board of EPSO-G is responsible for setting, reviewing and monitoring the long-term strategic sustainability goals and indicators. The Board also endorses policies on the environment, equal opportunities, health and safety, anti-corruption, remuneration, performance evaluation and development as well as approves the company's annual objectives, which include sustainability-related targets, as well as a Group-level list of risks – among others the risks related to sustainability. The Board of EPSO-G companies approves the Risk Management Measures Plan and its amendments within each respective company.
CEO	The CEO of EPSO-G organizes and controls the implementation of the Group's operational strategy and the relevant company strategy at operational level. The CEO also implements the decisions of the Shareholders' General Meetings of and the company board, as well as controls the subsidiaries' activities.
Sustainability Development Manager	The manager ensures the proper identification of risks and maintain the quality of risk management within managed function at the Group level. The Sustainability Development Manager is responsible for monitoring and coordinating the achievement of the Group's sustainability objectives.

Strategy

2030 Strategy

Recognizing the strategic challenges ahead, the Group has developed its long-term 2030 Strategy with a view to enable security, integration, and transformation of the Lithuanian energy sector. The new EU integrated energy system will be crucial to ensure a financially efficient transition to climate-neutral economy. Naturally, climate-related issues and challenges form an integral part of the 2030 Strategy. The strategic directions to achieve the Group's vision by 2030 include:

- a well-developed, liquid regional market and infrastructure attractive for investment in energy production,
- a targeted reduction of the environmental impact of activities and energy systems adapted to the decarbonization of the energy sector,
- integrated development of Lithuania's energy system,
- becoming recognized future energy leaders in the region,
- forming a customer-focused organization that creates new opportunities.

The Strategy builds on the directions outlined in the strategic documents relevant to the Group's operation, starting with the European Union's strategic guidelines outlined in the EU Green Deal and the Fit for 55 package, through Lithuania's relevant strategic plans, primarily the National Energy Independence Strategy (NENS), National Energy and Climate Plan (NECS), and National Climate Change Management Agenda. The update of the 2030 Strategy, currently being prepared, will be also informed by the EPSO-G energy system transformation strategy[2], finalized in late 2023.

In line with the objectives set out in the strategic plans, the Group is focused on enabling the decarbonization of the energy sector (preparing for the large-scale integration of RES), including the adaptation of the gas system to hydrogen transport, readiness to integrate significant amounts of offshore wind energy, and developing the Guarantees of Origin System. These strategic directions are aligned with the shareholder's expectations set for the EPSO-G Group – transforming energy and energy networks, enabling the necessary changes for the implementation of EU's Green Deal initiatives and NECS targets, ensuring good governance practices and operational and investment efficiency, and ensuring Lithuania's energy independence.

Integration and transformation of the energy sector will require innovative solutions. EPSO-G is ready to take the lead in laying the foundations for green energy and improving energy efficiency. In its Strategy, the Group has committed to implementing 35 radical and breakthrough innovation projects aimed at finding optimal solutions for RES integration, safe energy transmission, system integration and flexible development. The innovation ecosystem and projects will be funded with at least 0.5 % of transmission income in 2025, and at least 1% of transmission income in 2030.

The Group is also contributing to the decarbonization goals by reducing GHG emissions from its activities. In 2023, the Group calculated the GHG emissions generated by the activities of its companies and prepared plans for measures to reduce those emissions, which will be scheduled for validation by the Science Based Targets initiative (SBTi) in 2024. In addition, the Group has set itself broader sustainability targets which it intends to pursue consistently on the basis of the United Nations Sustainable Development Goals guidelines.

[2] Lithuania energy system transformation to 2050. November 2023.

The EPSO-G Group has also demonstrated its commitment to sustainable development as the first company in the Baltics to issue a sustainability-linked bond. The five-year bonds were acquired by institutional investors from Lithuania, Latvia, Estonia and Sweden, with the European Bank for Reconstruction and Development (EBRD) acquiring almost a third of the EUR 75 million issue. Sustainability-linked bonds were listed on Nasdaq Baltic Debt Securities List and the issue was recognized as a key event in the Baltic capital market at the Nasdaq Baltic Market Awards 2023.

Climate change and its impacts, including the challenges of strategic transformation of the energy system, are among the key external factors affecting the operations and prospects of the EPSO-G Group. In 2023, to better understand these challenges, the Group conducted a comprehensive analysis of climate-related risks and opportunities, based on the TCFD recommendations and international best-practices. Conducted analysis is preparing the Group for the future reporting obligations defined by the European Union under CSRD and international standards established by ISSB.

Climate-related risks identified over the short, medium, and long term

EPSO-G is aware of the potential adverse impacts of climate change challenges on its operations and on the overall business environment. Climate-related risks are divided into physical risks and transition risks, and they have the following characteristics:

- Physical risks are risks resulting from climate change. They are event-driven (acute physical risk) or they reflect longer-term shifts in climate patterns (chronic physical risk). These risks may carry financial implications for business, e.g. costs resulting from direct damage to assets or indirect impacts from supply chain disruptions. An organization's financial situation could also be affected by variations in water availability, sourcing, and quality, and by extreme temperature changes affecting the organization's premises, operations, supply chains, transportation needs as well as employee health and safety.
- Transition risks are risks stemming from the transition to a low-carbon economy. They include policy and legal, technological, market, and reputational risks. These risks may have financial implications for business, e.g. increased operating costs or asset impairment because of new or amended regulations related to climate. An organization's financial performance could also be impacted by changing consumer demands and the development and adoption of new technologies.

The following table presents the physical risks identified as material for the EPSO-G Group companies (with indication of companies that could be affected by each risk). However, none of the relevant physical risks is expected to occur significantly more frequently in 2050 than observed at present in the territory of Lithuania (according to the study of the risks of climate change prepared by Lithuanian Hydrometeorological Services [3]).

[3] Study of the risks of climate change in the middle of the 21st century. Lithuanian Hydrometeorological Services, Climate and Research Division; the analysis commissioned by the Association of Lithuanian Banks, Vilnius 2023.

		EPSOG	Litgrid	Amber Grid	TETAS	Baltpool	ENERGY CELLS
Acute physical risks							
Temperature-related	Heat wave	!	!	!	!		!
	Cold wave/frost			!			!
	Wildfire		!	!			
Wind-related	Storms, wind gusts, lightning		!	!			
Water-related	Drought			!			
	Heavy precipitation (rain, hail, snow)			!			!
	Flood (costal, fluvial, pluvial, ground water), extreme water level fluctuations	!	!	!			
	Snow and ice load, freezing rain and other icing phenomena, snow surface instability		!	!			
Solid mass-related	Landslide			!			
	Subsidence			!			
Chronic physical risks							
Temperature-related	Changing temperature, rise in air temperature during the cold and warm periods of the year			!			
	Temperature variability			!			!
Water-related	Changing precipitation patterns and types (rain, hail, snow/ice)		!				
	Precipitation or hydrological variability, declining river runoff			!			
	Saline intrusion			!			
	Sea level rise			!			
	Water stress			!			

Solid mass-related	Geohazards, incl. related to groundwater			!			
	Soil erosion			!			

The probability of occurrence of most of the identified risks is assessed as very small or small in the time horizon up to 2050.

The following transition risks were identified as material for the EPSO-G Group companies.

		EPSO-G	Litgrid	Amber Grid	TETAS	Baltpool	ENERGY CELLS
Policy and legal	Regulatory environment	!		!		!	!
	Risk of a "disorderly" energy transition due to the introduction of potentially distortive measures	!		!		!	!
	Legal liability and management accountability	!	!	!		!	!
Technology	Cost of transitioning to low-carbon technologies	!	!	!			!
	Transition risk for older assets, stranded asset risk	!		!			
Market	Uncertainty regarding consumer behavior, market signals and supply chain	!	!	!		!	!
	Changes in the prices of commodities and energy	!		!		!	!
Reputation	Reliability of the transmission system	!	!	!			!

	Expectations regarding climate-risk management	!	!	!		!	!
	Expectations regarding non-financial reporting	!	!	!		!	!

For the identified climate-related risks, EPSO-G conducted a climate scenario analysis which took into account three time horizons: short-term (2026), medium-term (2030) and long-term (2050), and followed the accepted climate risk assessment practices, i.e. it accounted for two reference scenarios developed by the Intergovernmental Panel for Climate Change (IPCC):[4]

- Paris-alignment scenario of average temperature increase limited to below 2°C (SSP1-2.6), and
- business-as-usual scenario of average temperature increase above 4°C (SSP5-8.5).

As for physical risks up to 2050 there are only small differences between the reference scenarios[5]. The scenarios do differ in terms of the scope of energy system transition. Therefore, the probability of occurrence of transition risks is significantly different between Paris-aligned scenario and business-as-usual scenario. The probability assessment of transition risks relevant for the energy sector relied on Deloitte's expert judgement, prepared in accordance with IPCC scenario assumptions, and was presented in the table below.

Probability assessment for transition risks

		2026		2030		2050	
		Paris-alignment	Business-as-usual	Paris-alignment	Business-as-usual	Paris-alignment	Business-as-usual
Policy and legal	Regulatory environment	Very high	Very high	Very high	Average	Very high	Small
	Risk of a "disorderly" energy transition due to the introduction of potentially distortive measures	Small	Small	Small	Average	Small	Large
	Legal liability and management accountability	Very small	Very small	Small	Small	Average	Average
Technology	Cost of transitioning to low-carbon technologies	Average	Average	Small	Average	Very small	Small

[4] IPCC, (2022), Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

[5] According to the Technical guidance on the climate proofing of infrastructure in the period 2021-2027, Draft Comission Notice: FAQ December 2022 Question 169 p. 69

	Transition risk for older assets, stranded asset risk	Small	Small	Large	Very small	Very high	Very small
Market	Uncertainty regarding consumer behavior, market signals and supply chain	Small	Small	Large	Small	Average	Small
	Changes in the prices of commodities and energy	Small	Small	Large	Small	Average	Small
Reputation	Reliability of the transmission system	Average	Average	Large	Small	Small	Small
	Expectations regarding climate-risk management	Average	Average	Large	Average	Very high	Large
	Expectations regarding non-financial reporting	Average	Average	Large	Small	Very high	Small

Impact of climate-related risks on the EPSO-G Group companies

In the next stage of the analysis, we assessed the potential impact of the identified climate-related risks on the EPSO-G Group operations, taking into account the transmission channels presented in Annex 2. The assessment scale referred to the scale defined in the EPSO-G Risk Management Methodology, with the impact defined as financial impact, relative to income level. The assessment process involved representatives of all EPSO-G Group companies and was conducted during a series of interactive workshops.

All in all, the physical climate risks for the EPSO-G Group are expected to have very small impact over the examined time horizon (up to 2050), with no significant increases identified during the period. The expected impact from transition risks are also small, albeit the assessment differs across companies and is significantly higher in case of Amber Grid. This preliminary assessment will serve as a starting point to expand the analysis and to disclose the effects of climate-related risks on the Group's financial position, financial performance and cash flows in more detail.

Impact assessment for physical risks

		2026		2030		2050	
		Paris-alignment	Business-as-ususal	Paris-alignment	Paris-alignment	Business-as-ususal	Paris-alignment
Acute physical risks							
Temperature-related	Heat wave	Very small	Very small	Very small	Very small	Very small	Very small
	Cold wave/frost	Very small	Very small	Very small	Very small	Very small	Very small
	Wildfire	Very small	Very small	Very small	Very small	Very small	Very small
Wind-related	Storms, wind gusts, lightning	Very small	Very small	Very small	Very small	Very small	Very small

Water-related	Drought	Very small	Very small	Very small	Very small	Very small	Very small
	Heavy precipitation (rain, hail, snow)	Very small	Very small	Very small	Very small	Very small	Very small
	Flood (costal, fluvial, pluvial, ground water), extreme water level fluctuations	Average	Average	Average	Average	Average	Average
	Snow and ice load, freezing rain and other icing phenomena, snow surface instability	Very small	Very small	Very small	Very small	Very small	Very small
Solid mass-related	Landslide	Very small	Very small	Very small	Very small	Very small	Very small
	Subsidence	Very small	Very small	Very small	Very small	Very small	Very small
Chronic physical risks							
Temperature-related	Changing temperature, rise in air temperature during the cold and warm periods of the year	Very small	Very small	Very small	Very small	Very small	Very small
	Temperature variability	Very small	Very small	Very small	Very small	Very small	Very small
Water-related	Precipitation or hydrological variability, declining river runoff	Very small	Very small	Very small	Very small	Very small	Very small
	Saline intrusion	Very small	Very small	Very small	Very small	Very small	Very small
	Sea level rise	Very small	Very small	Very small	Very small	Very small	Very small
	Water stress	Very small	Very small	Very small	Very small	Very small	Very small
Solid mass-related	Geohazards, incl. related to groundwater	Very small	Very small	Very small	Very small	Very small	Very small
	Soil erosion	Very small	Very small	Very small	Very small	Very small	Very small

Impact assessment for transition risks

		2026		2030		2050	
		Paris-alignment	Business-as-usual	Paris-alignment	Business-as-usual	Paris-alignment	Business-as-ususal
Policy and legal	Regulatory environment	Very small	Very small	Very small	Very small	Very small	Very small
	Risk of a "disorderly" energy transition due to the introduction of potentially distortive measures	Very small	Very small	Very small	Very small	Very small	Very small
	Legal liability and management accountability	Very small	Very small	Very small	Very small	Very small	Very small
Technology	Cost of transitioning to low-carbon technologies	Very small	Very small	Small	Very small	Small	Very small
	Transition risk for older assets, stranded asset risk	Very small	Very small	Very small	Very small	Very small	Very small
Market	Uncertainty regarding consumer behavior, market signals and supply chain	Very small	Very small	Very small	Very small	Very small	Very small
	Changes in the prices of commodities and energy	Very small	Very small	Very small	Very small	Very small	Very small
Reputation	Reliability of the transmission system	Very small	Very small	Very small	Very small	Very small	Very small
	Expectations regarding climate-risk management	Very small	Very small	Very small	Very small	Very small	Very small
	Expectations regarding non-financial reporting	Very small	Very small	Very small	Very small	Very small	Very small

Final risk assessment

Finally, for each of relevant risks we assessed overall risk level, that reflects a combination of probability assessment and impact assessment, as discussed and validated in consultation with all EPSO-G Group companies. The impact assessment was conducted at the level of each company and the consolidated result at the Group level is a weighted average of all companies' assessments (where weights are shares in the Group income in 2022).

The assessment was based on the respective scale defined in the EPSO-G Risk Management Methodology.

For all physical risks the overall risk assessment remains small, which reflects both very low probability and very low impact assessments. No variation of overall risk assessment was identified until 2050.

Some transition risks in case of some scenarios and time horizons were assessed as average. This holds particularly for risks those related to the regulatory environment, transition risks for older assets, as well as the risks associated with expectations regarding climate risk management and reporting.

Final risk assessment for transition risks

		2026		2030		2050	
		Paris-alignment	Business-as-ususal	Paris-alignment	Business-as-ususal	Paris-alignment	Business-as-ususal
Policy and legal	Regulatory environment	Average	Average	Average	Small	Average	Small
	Risk of a "disorderly" energy transition due to the introduction of potentially distortive measures	Small	Small	Small	Small	Small	Small
	Legal liability and management accountability	Small	Small	Small	Small	Small	Small
Technology	Cost of transitioning to low-carbon technologies	Small	Small	Small	Small	Small	Small
	Transition risk for older assets, stranded asset risk	Small	Small	Small	Small	Average	Small
Market	Uncertainty regarding consumer behavior, market signals and supply chain	Small	Small	Small	Small	Small	Small
	Changes in the prices of commodities and energy	Small	Small	Small	Small	Small	Small
Reputation	Reliability of the transmission system	Small	Small	Small	Small	Small	Small
	Expectations regarding climate-risk management	Small	Small	Small	Small	Average	Small
	Expectations regarding non-financial reporting	Small	Small	Small	Small	Average	Small

Risk mitigation measures

In the risk analysis process a list of mitigation measures was proposed for each of the relevant climate-related risks. These measures can be used to form the ultimate list of measures relevant for the Company. In line with the TCFD reporting best practice, the assessment reflects a high-level analysis, not a full-scale modelling of risk materialization impacts. A more detailed analysis can be performed for risks for which final assessment is at a very high or extreme level.

Physical risks

Acute physical risks		
Temperature-related	Heat wave	Developing adaptation plan including: > Underground cabling for distribution networks > Implementation of smart networks to withstand more severe weather conditions > Updating the alocation of expenditures for maintaining energy infrastructure in adapting to climate change > Developing heatwave monitoring and warning system > Reviewing workplace regulations in connection to heatwave hazards dangerous for employees > Developing a protocol of action to reduce risks to workers during heat waves
	Cold wave/frost	> Thermal insulation of underground infrastructure to protect against the negative effects of frostbite > Developing frost weather monitoring and warning system
	Wildfire	Developing adaptation plan including: > Underground cabling for distribution networks > Cleaning and expanding the corridors of overhead power lines - formation of open (toothless) corridors of overhead power lines in order to avoid wildfires caused by energy infrastructure > Updating the allocation of expenditures for maintaining energy infrastructure in adapting to climate change > Developing fire weather monitoring and warning system
Wind-related	Storms, wind gusts, lightning	Developing adaptation plan including: > Underground cabling for distribution networks - priority should be given to sections located in wooded areas, where there is a greater likelihood of tree logging or debris > To clean and expand the corridors of overhead power lines - formation of open (toothless) corridors of overhead power lines in order to avoid power outages caused by tree breaks and power outages

		> Setting up crisis working groups, ensuring a quick response to disasters due to extreme weather conditions > Ensuring urgent access to overhead power lines in emergency situations by technical and /or legal means > Developing storm weather monitoring and warning system > Refinement of the adaptation of exposed infrastructure to storm hazards
Water-related	Drought	> Developing a water management strategy > Developing a drought monitoring and warning system
	Heavy precipitation (rain, hail, snow)	Developing an adaptation plan including: > Underground pipeline for transmission networks - priority should be given to sections located in Western and Eastern Lithuania, where the likelihood of rainfall is higher > Updating the corrosion protection of infrastructure in regions where precipitation will increase > Developing heavy precipitation monitoring and warning system
	Flood (costal, fluvial, pluvial, ground water), extreme water level fluctuations	> Developing floods monitoring and warning system > Ensuring urgent access to pipelines and other infrastructure in emergency situations by technical and /or legal means
	Snow and ice load, freezing rain and other icing phenomena, snow surface instability	> Trimming or removing trees threatening transmission lines > Developing icing phenomena monitoring and warning system > Ensuring urgent access to pipelines and other infrastructure in emergency situations by technical and /or legal means
Solid mass-related	Landslide	> Developing heavy precipitation monitoring and warning system (as the cause of Landslide hazard materialization) > Ensuring urgent access to pipelines and other infrastructure in emergency situations by technical and /or legal means
	Subsidence	> Identifying locations where the likelihood of subsidence impacting infrastructure of the company may be significant and conducting a targeted assessment
Chronic physical risks		
Temperature-related	Changing temperature, rise in air temperature during the cold and warm periods of the year	> Ensure that infrastructure parts sensitive to changing temperature would be more resistant, apply additional coating, etc.
	Temperature variability	> Ensure that infrastructure parts sensitive to temperature would be more resistant, apply additional coating, etc.

Water-related	Precipitation or hydrological variability, declining river runoff	> Ensure that pipelines installed underwater would be more resistant if exposed to air, apply additional coating, etc.
	Saline intrusion	>Updating the corrosion protection of pipelines and infrastructure in valve stations in regions where saline intrusion is possible to increase. New technologies might be applied. > Identifying places where the likelihood of salt cover forming on the infrastructure will increase > Developing salination monitoring and warning system
	Sea level rise	
	Water stress	> Developing water stress monitoring and warning system > > Developing a protocol of action to reduce operational risks during water stress periods
Solid mass-related	Geohazards, incl. related to groundwater	> Identifying locations where the likelihood of geohazards impacting infrastructure of the company may be significant and conducting a targeted assessment
	Soil erosion	> Identifying locations where the likelihood of deep soil erosion impacting infrastructure of the company may be significant and conducting a targeted assessment

Transition risks

Policy and legal	Regulatory environment	> Carrying out intensive regulatory monitoring and company impact assessment of legislation > Preparing early for implementation of regulatory requirements - developing a first-mover position > Participation o the Company in the removal of legal and administrative obstacles to the alignment of the energy system with the new requirements
	Risk of a “disorderly” energy transition due to the introduction of potentially distortive measures	> Creating an ambitious, feasible and detailed decarbonization plan on the basis of state documents, and consistently implement the assumptions made > Optimizing the capacity of existing gas compressors, rehabilitation and repairs of gas pipelines, the expansion of RES production for own use and the use of green energy, electrification of the vehicle fleet > Acquiring support from financial institutions pursuing portfolio decarbonization and investment in pro-climate projects and technologies > Acquiring debt financing to support the transition, e.g. issuing transition bonds, climate bonds

	Legal liability and management accountability	> Reviewing workplace regulations in connection to heatwave hazards dangerous for employees > Developing a protocol of action to reduce risks to workers during heat waves > Becoming familiar with the latest publications on litigation trends against the energy sector - especially in the EU, and monitoring the progress of court cases involving defendants' activities similar to those of the Company > Preparing for an independent assurance of the quality of reporting on climate issues (limited assurance and afterwards reasonable assurance in CSRD/ESRS) - in the case of possibility of greenwashing claims
Technology	Cost of transitioning to low-carbon technologies	> High emphasis on collaboration with researchers and start-ups in new technologies (energy cells technology and deployment, the adaptation of the gas system to transport hydrogen) > Establishing a technology innovation hub or accelerator independently or in cooperation with the state > Participation in industry partnerships developing and sharing knowledge and deployment of new technologies (energy cells technology and deployment, the adaptation of the gas system to transport hydrogen) > Acquiring support for innovative investments from financial institutions pursuing portfolio decarbonization and investment in pro-climate projects and technologies > Specialized climate forecasts for the period of return on investment or infrastructure operation > Dedicated monitoring of the latest climate and economic modeling results and translating them into risks for the company
	Transition risk for older assets, stranded asset risk	> Timely retrofitting of gas transmission grids, taking into account its resilience to climate change and taking into account higher variability of consumption (peaks of use) and production (RES) > Specialized climate forecasts for the period of return on investment or infrastructure operation - to plan investments in the reconstruction of existing facilities, reducing operating losses > Acquiring support for transition from financial institutions supporting facilitated transformation (e.g. multilateral development banks) > Acquiring debt financing to support the transition, e.g. transition bonds
Market	Uncertainty regarding consumer behaviour, market signals and supply chain	> Conducting an in-depth and long-term diagnosis of the upcoming changes in the paradigm of providing energy for the needs of residents, industry and the state > Overview of global system innovations in energy delivery models

		> Proactive shaping of the energy market environment > Detailed development of possible changes in the business model
	Changes in the prices of commodities and energy	> Participation in the formation of groups working together to stabilize the energy market and support orderly transition > Establishing long-term contracts on the basis of carried out diagnosis and foresight of changes in the energy and commodity markets
Reputation	Reliability of the transmission system	> Design, expansion, timely installation and retrofitting of electricity receiving transmission/distribution grid to Amber Grids objects, taking into account its resilience to climate change and higher variability of consumption (peaks of use) and production (RES) > Early adaptation of the electricity transmission and distribution networks to the growing role of the infrastructure based on RES. > Ensuring sufficient gas supply throughput > Promotion of decentralized household and industrial energy storage > Ensuring additional energy reserves or energy storage (gravity storage, pumped storage power plants) that would meet the increased demand during peaks of energy consumption (heat and cold waves) > Educating the public and raising awareness by encouraging the reduction of electricity consumption during periods of extreme weather (especially during heat waves), saving and eliminating unnecessary needs.
	Expectations regarding climate-risk management	> Counting Scope 3 greenhouse gas emissions > Developing emission reduction plans beyond 2030 with the inclusion of Scope 3 > Following the recommendations of ISO 14091 - recommended as a model way to conduct robust climate risk assessment and vulnerability for the EU Taxonomy > Adopting an iterative approach to making progress in climate risk management, outlining a plan for next steps in deepening the quality of management > Carrying out regular monitoring of climate risk management reporting context (in Company's own economic sector and in sectors close to it) > Engaging in dialog with stakeholders (investors, shareholders, civil society etc.) in relation to climate risk management expectations > Dedicated monitoring of the latest climate and economic modeling results and translating them into risks for the company

	Expectations regarding non-financial reporting	> Counting and reporting Scope 3 greenhouse gas emissions > Developing emission reduction plans beyond 2030 with the inclusion of Scope 3 > Preparing for an independent assurance of the quality of reporting on climate issues (limited assurance and afterwards reasonable assurance in CSRD/ESRS) > Carrying out diagnosis of what kind of data needs to be obtained and what are the most reliable sources and processes. Establishing processes for collecting, checking the quality and reliability of data > Adopting an iterative approach to making progress in reporting, outlining a plan for next steps in deepening the quality of reporting > Preparing early for implementation of regulatory requirements - developing a first-mover proactive position in relation to non-financial reporting > Carrying out regular monitoring of non-financial reporting on climate-related issues context (in Company's own economic sector and in sectors close to it) > Adapting good practices of non-financial reporting on climate-related issues and seeking solutions to difficulties encountered in Company's own reporting process > Reaching out for professional advice on non-financial reporting on climate-related issues > Preparing early for implementation of regulatory requirements - developing a first-mover position in relation to non-financial reporting

Climate-related opportunities

Climate change can result in negative economic impacts, but at the same time the transition to climate neutrality presents many promising business opportunities. These are related to the use of low-emission energy sources, improved resource efficiency, development of low-carbon goods and services in response to shifting consumers' preferences, as well as access to attractive sources of green financing and transition-related supportive policy instruments.

The EPSO-G Group – given its key role in ensuring a smooth and reliable transformation of the energy system – can build on these opportunities and improve climate resilience of its business model. It would allow strengthening the Group's competitiveness, growth prospects and long-term viability under changing climate conditions and the climate-neutral economy of tomorrow. The table below provides an overview of areas of potential climate-related opportunities.

Areas of potential opportunities		Related projects and activities
Resource efficiency	Improving operating efficiency in Group processes	Reducing own energy consumption (e.g. installing LED lighting); Energy efficiency improvements (infrastructure and/or buildings); Reducing own energy consumption - programs of reducing energy usage; Energy efficiency improvements (infrastructure and/or buildings: new type of compressors, installing LED lighting etc.);
	Improving the efficiency of electricity transmission operations	Implementing measures to reduce energy losses;
	Improving the efficiency of gas processing and transmission operations	Optimizing / expanding the capacity of existing gas compressors, rehabilitation and repairs of gas pipelines;
	Water management	Optimizing water management system;
Energy sources	Development of hydrogen as an energy source	Adapting gas transmission infrastructure to hydrogen transmission
	Shifting to lower-emission energy sources	Investment in RES and green energy (PV panels for powering own buildings) Greening / electrification of the transport fleet; Green electricity supply contracts.
Products/Services	Decarbonization of the energy system	Developing the hydrogen transmission system by adapting gas transmission infrastructure to hydrogen transmission and developing new hydrogen transmission infrastructure

Areas of potential opportunities		Related projects and activities
	(electrification of the country's economy and transition to other climate-neutral energy sources)	Developing the transmission system for synthetic fuels and the raw materials (e.g. CO_2) needed to produce them, through the development of pipelines or other infrastructure needed to transport energy sources;
		Development of system flexibility services - investment in the development of energy storage capacity and related services (energy storage) to efficiently complement variability in generation and consumption;
		Developing solutions for long-term seasonal storage of energy (hydrogen, heat, other forms);
	Shifting toward decentralized energy system	Investing in new electricity and gas transmission infrastructure to ensure system security for the transmission of larger volumes of energy and to ensure access to transmission networks for increasingly decentralized generation capacity; Ensuring the trading of new products (H2, CO_2, guarantees of origin, etc.) on the "Baltpool" exchange market
	Digitalization of the energy system	Adapting smart energy systems and network management systems
		Open and commercialize a large volume of data in the energy sector (Big Data)
Technology / Inovacijos	Developing new technologies to support the transition (opportunities related to new products & services)	Facilitated investment in new technologies
Market	Trend towards greater access to financial resources for energy transition as a result of policy decisions - support for sustainability-aligned investment projects	Access to new markets and sustainable finance products, enabling bigger public finance resources for energy transition, including the introduction of subsidized supporting mechanisms

Areas of potential opportunities		Related projects and activities
	Cooperation with financial institutions on green financing (integrating sustainability aspects into financial markets)	Advanced cooperation with financial institutions in the area of green financing, responding to investors' expectations (green finance framework)
	Development of a common Polish-Lithuanian-Latvian- Estonian-Finnish natural gas transmission tariff area by 2025	Ensuring competitive gas prices
	Access to climate adaptation and insurance risk solutions	Considering other climate adaptation measures and insurance risk solutions
Resilience	Policy incentives increasing resilience	Co-financing from EU funds and local government programs to support transmission system development
	Climate adaptation and resilience – strengthening growth prospects and long-term viability	Developing a first-mover approach - front runner in implementing regulatory requirements, introducing climate adaptation measures

Risk Management

Risk management at the EPSO-G Group is based on a structured approach which consists in methodological evaluation of risk probability and risk impact, and application of the proper risk management measures. In the climate risk analysis, the relevant climate-related risks were assessed to identify risks with very high or extreme final risk assessment. Following this high-level analysis the selected risks may be examined in more detail and incorporated into the Group-wide risk management processes and enterprise risk management system.

Processes for managing risks

The risk management processes are defined in the EPSO-G Group's Risk Management Policy approved by the EPSOG Board and Risk Management Methodology, approved by the CEO. These documents contain a uniform risk management system that is based on common principles and follows good practices according to COSO ERM (Committee of Sponsoring Organizations of the Treadway Commission Enterprise Risk Management) methodology applicable in international business. All Group companies comply with EPSO-G's Risk Management Policy and, by using the Risk Management Methodology of the Group, identify the relevant risks, assess them, set risk monitoring indicators and develop risk management plans that are subject to approvals of the boards of individual group companies. After assessing the risks identified and managed within the Group companies and evaluating the risk levels (impact on the Company's activities as well as on EPSO-G Group as a whole), the Board of EPSO-G approves the EPSO-G group-level risk list.

The following main criteria have been established to determine if a risk should be included in the EPSO-G group-level risk list:

- The risk is directly identified in the strategy of the Group companies;
- The risk has a material impact on the achievement of strategic goals;
- Risks assessed as top (extreme) and very high level.

On a quarterly basis, following the assessment of the changes in the key risk indicators used by all companies of the Group and the effectiveness of their risk management, EPSO-G's Audit Committee presents its conclusions and recommendations to the Boards of individual companies.

Integration of processes for identifying, assessing, and managing climate-related risks into the organization's overall risk management

The processes for identifying and assessing climate-related risks (consisting of the completeness and materiality assessment, probability assessment and impact assessment) is treated as a high-level analysis to identify climate-related risks with very high or extreme final risk assessment. The next recommended step would be to integrate such risks into the overall risk management model. For these risks the Company may undertake a more detailed analysis and include in the Group's risk management processes (define risk owners, risk appetite, risk management indicators and more concrete mitigation measures relevant for reducing the impact of the materialisation of the risks in the future).

Metrics and targets

EPSO-G has included several climate-related performance indicators and targets into its 2030 Strategy, reflecting the recognition of its key role in enabling Lithuania's energy transition. These metrics focus on GHG emissions generated in the Group's activities (RES integration, reliability of gas and electricity transmission infrastructure, and R&D projects. EPSO-G's current performance and 2030 targets for relevant indicators are presented in the table below.

	2022	2023	2030 target
GHG emissions generated in the Group's activities			
Total CO2e emissions (Scope 1), tCO2e	38,275	52,599	-50 %
Total CO2e emissions (Scope 2, marked-based) tCO2e	210,749	205,600	
Total CO2e emissions (Scope 3) tCO2e	44,572	73,810	Target is not defined yet
RES integration, energy system decarbonization			
RES connected to the electricity system (distribution and transmission grids) in accordance with RES developers' commitments	1.533	2.336	>11,4
Availability of RES gas entering the gas system	0.05	0.05	1.5
Reliability of gas and electricity transmission infrastructure			
Customer satisfaction	GCSI index performance of Group companies between 63 and 83	≥80	≥80(among market leaders)
AIT - average interruption time (electricity TSO)	0.354	≤0.934	≤0.934
ENS, the amount of electricity not transmitted over the transmission network, MWh* (electricity TSO)	10.617	≤27.251	≤27.251
Number of unplanned interruptions due to operator liability* (gas TSO)	0	0	0
Duration of unplanned interruptions due to operator liability*, hours and minutes* (gas TSO)	0	0	0
Research & Development			
Implementing radical and breakthrough innovation projects			35 projects / at least 1% of transfer revenues

*The values of the reliability indicators of transmission services 2023-2030 indicate the critical values of the design indicators set by NERC, which are intended not to be exceeded.

Annexes

Annex 1.Climate-related risks

Physical risks

The first stage of our examination consisted of a rigorous analysis and materiality assessment of the extensive list of climate-related risks provided in the Classification of climate-related hazards (in the Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021). This was followed by considering international best practices and sector-relevant climate-related disclosures. The resulting list of climate-related risks expected to impact EPSO-G's operations and financial situation is presented in the table below. As already indicated, the analysis was conducted separately for each company of the EPSO-G Group, and separately for infrastructure, buildings and offices. The table provides a summary list and description of climate-related risks run by the entire EPSO-G Group (the risks are relevant to varying degrees for individual group companies).

		Description
Acute physical risks		
Temperature-related	Heat wave	A period of abnormally hot weather often defined with reference to a relative temperature threshold, lasting from two days to months (IPCC, 2021). Heat waves put burden on water, energy, and transportation, leading to power shortages or blackouts, thus affecting economic activity and buildings' operations. Heat can also damage materials (e.g. through deformation) and thus lead to the impairment of means of production and infrastructure.
	Cold wave/frost	Days where maximum temperature, or nights where minimum temperature, falls below the 10th percentile, where the respective temperature distributions are generally defined with respect to the 1961-1990 reference period (IPCC, 2021).

		Description
		Cold waves can cause overhead and underground infrastructure damage and heat loss on thermal routes during extreme frosts.
	Wildfire	A large and destructive fire of vegetation including field, forest and bush fire. Increasing heat waves contribute to an expansion of fire (EEA, 2021). Wildfires are posing a threat to overground infrastructure. Additionally, fire weather in forest areas increases the risk of fire ignition by a failing overhead transmission system. Wildfires can also damage buildings by direct damage from fire, as well as by clogging ventilation and air filtration systems with smoke containing hazardous air pollutants, including PM2.5, NO2, ozone, aromatic hydrocarbons, or lead (WHO, n.d.).
Wind-related	Storms, wind gusts, lightning	Storm: wind speed from 75 to 88 km/h; Heavy storm: wind speed from 89 to 102 km/h; Hurricane storm: wind speed from 103 to 117 km/h (DWD Encycopedia, n.d.) A storm damages infrastructure or buildings by impairing constructions (damage caused by the strong wind or by displaced objects). Storms result in higher number of accidents on power transmission lines, downed transmission lines or gradual weakening of infrastructure leading to more frequent repairs. Overhead lines and transformers are also affected by increasing lightning activity. Storm surges can cause flooding.
Water-related	Drought	An exceptional period of water shortage for existing ecosystems and the human population (due to low rainfall, high temperature, and/or wind) (IPCC, 2021). Underground infrastructure can be affected by drought and consequential ground movement, substation and network earthing systems can be adversely affected by drought conditions.
	Heavy precipitation (rain, hail, snow)	Precipitation significantly above the usual amount. Definitions per precipitation type: For rain: The precipitation amount exceeds 15 to 25 l/m2 in 1 hour or 20 to 35 l/m2 in 6 hours. (DWD, n.d.) For hail: Storm with hailstones of at least 1.9 cm (0.75 inch) in diameter (US National Weather Service, n.d.).

		Description
		For snow: Snowfall over 10 cm per 12 hours or over 15 cm in 24 hours (NOAA, n.d.). Heavy precipitation can cause damage to buildings, disturb ground stability and disrupt urban and road infrastructure. Flooding triggered by heavy precipitation poses a risk to all economic activities connected to the area affected. (DWD, n.d.)
	Flood (costal, fluvial, pluvial, ground water), extreme water level fluctuations	The overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged (IPCC, 2021). Inundation and potential damage to pipelines, towers, substations, or infrastructure (flooding of sites, flooding of neighboring sites - leaving some sites stranded), causing power, water, and gas outages, and further landslides and mudslides. Shifting flood areas may affect existing sites in the future.
	Snow and ice load, freezing rain and other icing phenomena, snow surface instability	Damage to overhead infrastructure and buildings due to snow load. Increased accident risk due to ice load. Underground carparks and building bases affected.
Solid mass-related	Landslide	Mass-movement landforms and processes involving the downslope transport, under gravitational influence of soil and rock material en masse (EEA, n.d.). Landslides are more widespread than any other geological event and may occur anywhere in the world. They can accompany heavy rains or be a result of droughts, earthquakes, or volcanic eruptions. Areas most vulnerable to landslides include steep terrain, land burned by wildfires, land modified by human activity, e.g. deforestation or construction, channels along a stream or river, or any area exposed to surface runoff, or with heavily saturated land (WHO, n.d.). Events caused by acute hazards (e.g. heavy rainfall or floods) are affecting riverbank stability and scour, surface water runoff scour, landslips, slope stability. The result may include toppled electricity poles and buried pipelines or other transmission infrastructure, making them harder to reach in case of repairs.

		Description
	Subsidence	Process by which an area of land (gradually) sinks to a lower level than the land surrounding, disturbing ground and infrastructure stability. Subsidence can severely impact the critical infrastructures as well as buildings. Increasing drought risks increase the risk for subsidence gradually. Especially buildings/infrastructure built on poor foundations such as clay-rich soil are at risk of being affected by subsidence.
Chronic physical risks		
Temperature-related	Changing temperature, rise in air temperature during the cold and warm periods of the year	Faster wearing of infrastructure, implying a shorter lifetime.
	Temperature variability	Adverse effects on infrastructure due to more frequent freeze-thaw cycles and other fast cycling between temperature extremes: shortened and reduced durability, faster wear, increased failure rate of structural materials and infrastructure components.
Water-related	Changing precipitation patterns and types (rain, hail, snow/ice)	Extreme precipitations causing disturbance of ground stability. Infrastructure affected by river flooding due to increased winter rainfall.
	Precipitation or hydrological variability, declining river runoff	Ground stability potentially affected. Some pipes are installed underwater and meant to operate submerged in it. Declined river runoff puts them at risk of the need to be moved.
	Saline intrusion	Sea level rise and saline intrusion may pose a threat to the gas terminal relevant to the operations of one of the Group companies (supply chain risk).
	Sea level rise	Sea level rise and saline intrusion may pose a threat to the gas terminal relevant to the operations of one of the Group companies (supply chain risk).
	Water stress	A situation where there is not enough water of sufficient quality to meet the demands of people and the environment (EEA, 2021).

		Description
		Limited access to freshwater for facility use. Increased costs of water.
Solid mass-related	Geohazards, incl. related to groundwater	Riverbank stability and scour, surface water runoff scour, landslips, slope stability, ground creep - as a long-term, slow and irreversible process. Potential severe impact on the statics of critical infrastructure as well as buildings: possible mechanical unsealing of pipeline and gas leakage, disruption in technological processes.
	Soil erosion	Disturbance of ground and infrastructure stability: possible mechanical unsealing of pipeline and gas leakage, disruption in technological processes.

Transition risks

The main categories of transition risks were identified based on TCFD recommendations. These were analyzed in the context of the energy sector, considering international best practice and sector-relevant climate-related disclosures. The resulting list of climate-related risks expected to impact EPSO-G's operations and financial situation is presented in the table below. As already indicated, the analysis was conducted separately for each company of the EPSO-G Group. The table provides a summary list of climate-related risks run by the entire EPSO-G Group (the risks are relevant to varying degrees for individual Group companies).

The indication of time horizons—short (2026), medium (2030) or long term (2050)—over which the effects of transition risks could be expected to occur relies on Deloitte's expert judgement, on the basis of IPCC scenario assumptions.

Transition risks		Description	Time horizon according to the < 2°C scenario	Time horizon according to the 4+°C scenario
Policy and legal	Regulatory environment	The climate targets set by the EU requiring a rapid restructuring of the energy system. Regulations and institutional frameworks, the physical power system and technological opportunities and markets for energy products changing fast. Difficulties with long-lasting processes of obtaining permits, the need for large and simultaneous investment expenditures and raising capital, challenges with intensified designing process and construction works.	Short- to long-term	Short- to medium-term
	Risk of a "disorderly" energy transition due to the introduction of potentially distortive measures	"Disorderly transition" is understood as energy transition that is not well-managed, introduced rapidly due to increasing climate threats but lacking enough time to be carefully planned out. The risk here is connected to:	No significant change	Medium- to long-term

Transition risks		Description	Time horizon according to the < 2°C scenario	Time horizon according to the 4+°C scenario
		• decreasing the possibility of shielding the most disadvantaged, • less time and more uncertainty for the economy and affected businesses, primarily those who are primary targets of decarbonization measures, e.g. the energy sector, • chaotic decision-making, changes in decisions as a result of chaotic business environment, • the impact of systemic risks on the economic system - difficulties in acquiring capital.		
	Legal liability and management accountability	The risk of the company being sued for: • greenwashing (unsubstantiated claims of sustainable actions), • damages for climate-related physical risks which could have been prevented, had the company taken appropriate measures, • not transforming the business and not responding to changing business needs. Due to its crucial role in the functioning and transformation of the energy system the Group can be expected to face increased risk of litigation in case of greenwashing, climate-related damage, or lack of adequate business transformation.	Medium- to long-term	Medium- to long-term
Technology	Cost of transitioning to low-carbon technologies	Investment and transition costs to climate-neutral power system (due to the growing use of renewable sources and the progressive electrification, including electric mobility).	Short-term	Short- to medium-term

Transition risks		Description	Time horizon according to the < 2°C scenario	Time horizon according to the 4+°C scenario
		Transition to a carbon-neutral economy requires investment and incurring costs, which translates into a need for high expenses and/or taking credit. For Amber Grid, the expenses will be primarily related to: • building and maintaining new infrastructure for renewable energy production and distribution - primarily hydrogen infrastructure, including adapting gas transmission infrastructure to hydrogen transmission, technology-permitting, • phasing out conventional energy sources, incl. the costs related to asset stranding.		
	Transition risk for older assets, stranded asset risk	• Transition risk for older assets, stranded asset risk. • Risk of deterioration of the company's financial position due to the burden of assets associated with high-carbon activities losing the ability to generate revenue for the company due to the need to terminate carbon-intensive activities.	Medium- to long-term	No significant change
Market	Uncertainty regarding consumer behaviour, market signals and supply chain	• Uncertainty of the speed of the trend toward electrification and decarbonization in various sectors. This will have an impact on the speed of necessary investments covered above. • Supply chains are prone to shocks, such as the COVID-19 pandemic, which has significantly hindered international trade, or Russia's full-scale invasion of Ukraine in 2022, which has also increased energy security concerns.	Medium-term	No significant change

Transition risks		Description	Time horizon according to the < 2°C scenario	Time horizon according to the 4+°C scenario
	Changes in the prices of commodities and energy	• Changes in the prices of commodities and energy, evolution of energy mix, changes in electricity consumption, changes in competitive environment. • Difficulties in planning operations in a dynamically changing business environment consisting of many hard-to-predict factors. Risk of making decisions under high uncertainty without sufficient data. Exposure to making decisions resulting in suboptimal outcomes.	Medium-term	No significant change
Reputation	Reliability of the system	• Incidents and malfunctions due to the growing complexity and transformation of the energy system and the increased frequency and seriousness of adverse climatic events. Difficulties in balancing the system, maintaining its stability with a large share of RES. Risk of breakdowns, disruptions in the operation of supply and meeting contracts.	Short- to medium-term	Short-term
	Expectations regarding climate-risk management	• Stakeholders' expectations in terms of climate risk management, incl. in the context of EU Taxonomy alignment. • In the case of not carefully conducted climate risk management and non-transparent communication of the results of these processes, there is a risk of reducing the confidence of financial and rating institutions and, consequently, reducing access to capital. There is also a risk of arousing dissatisfaction among shareholders and communities leading to potential claims.	Medium- to long-term	Long-term

Transition risks		Description	Time horizon according to the < 2°C scenario	Time horizon according to the 4+°C scenario
	Expectations regarding non-financial reporting	• Higher expectations regarding non-financial reporting on climate-related issues (increased costs due to additional data collection and reporting requirements). • Expectations linked with reporting are associated with the general trend of increasing environmental and climate awareness (as described with regard to consumer behavior under market risks), which drives the evolving regulatory pressure on climate reporting, also from investors that increasingly incorporate climate risks into their decisions.	Medium- to long-term	No significant change

Annex 2. Transmission channels of climate-related risks to the operations of the EPSO-G Group companies

Physical risks

		Potential effects
Acute physical risks		
Temperature-related	Heat wave	• Cost of repairs following electricity disruptions due to grid overload during higher peak energy demands at the time of heat wave. • Damage caused by overheating of lines and transformers during heat wave.

		Potential effects
		• Cost of repairs (including due to loss of stability of the superstructure) caused by shortened and reduced durability, faster wear, increased failure rate of structural materials and infrastructure components attributed to heat waves. • Cost of repairing, fines and compensations caused by mechanical unsealing of pipeline and gas leakage attributed to heat waves. • Financial impact of lower productivity of workers during heat waves – cost of additional workers, measures to secure workers' wellbeing. • Financial impact of accidents on power transmission lines or at work attributed to heat waves. • Investment in repairing and adapting infrastructure sensitive to heat waves. • Increased operating costs of sensitive infrastructure.
	Cold wave/frost	• Cost of repairs and other interventions attributed to cold waves and frost episodes. • Cost of repairing, fines and compensations caused by mechanical unsealing of pipeline and gas leakage attributed to cold waves/frost episodes.
	Wildfire	• Cost of damage to infrastructure caused by fire ignition by a failing overhead transmission system during fire weather in forest areas, or leakages, breaks in supply etc. • Capital expenditure on repairing damage to burned infrastructure. • Capital costs for securing the network against future similar incidents. • Cost of lawsuits and compensations resulting from fire ignition by a failing transmission system, or leakages, breaks in supply etc. • Cost of insurance premiums associated with wildfires.
Wind-related	Storms, wind gusts, lightning	• Cost of damage due to accidents on power transmission lines and pipelines caused by trees and infrastructure falling: leakages, breaks in supply etc. • Cost of repairing damaged infrastructure. • Cost of more frequent repairs of weakened overhead infrastructure affected by storms/gusts/lightnings. • Capital cost of securing the network against similar future incidents. • Cost of lawsuits and compensation for damage caused by downed infrastructure for third parties. • Investment in repairing and adapting infrastructure sensitive to storms/gusts/lightings.

		Potential effects
		• Increased operating costs of sensitive infrastructure. • Expenses linked with employee security. • Cost of employee accidents during storms/gusts/lightings. • Possible increase of insurance premiums associated with storms/gusts/lightnings.
Water-related	Drought	• Cost of damage to underground infrastructure attributed to summer drought . • Cost of damage and disruptions to ground movement, substation and network earthing systems adversely affected by drought conditions.
	Heavy precipitation (rain, hail, snow)	• Cost of damage to ground stability of energy transmission infrastructure resulting from heavy precipitation. • Cost of disruption to urban and road infrastructure caused by heavy precipitation. • Possible increase of insurance premiums associated with heavy precipitation. • Expenses linked with employee security.
	Flood (costal, fluvial, pluvial, ground water), extreme water level fluctuations	• Cost of damage to pipelines, towers or other infrastructure. • Cost of disruption of urban and road infrastructure caused by floods. • Possible increase of insurance premiums associated with floods. • Expenses linked with employee security.
	Snow and ice load, freezing rain and other icing phenomena, snow surface instability	• Cost of damage to overhead line structures. • Financial impact of work stoppages during extreme weather event: cost of additional workers. • Expenses linked with employee security. • Costs of employee accidents during extreme weather event.
Solid mass-related	Landslide	• Cost of damage to and repairs of infrastructure affected by riverbank stability and scour, surface water runoff scour, landslips, slope stability attributed to landslides. • Costs of lower availability of buried pipelines due to landslides in case of repairs. • Costs of fines, lawsuits and compensation for interruptions in supply etc.
	Subsidence	• Cost caused by disturbance of ground and infrastructure stability: damage repairs. • Losses and fines due to leakages, breaks in providing supply, not meeting requirements of contracts with clients.
Chronic physical risks		

		Potential effects
Temperature-related	Changing temperature, rise in air temperature during the cold and warm periods of the year	• Disturbance of remote-control system due to accumulator discharge. • Cost of additional workers, cost of measures to secure workers' wellbeing, prolonged work time for maintenance/repair works. • Cancelled repair works. • Costs of fines, lawsuits and compensation for interruptions in supply etc.
	Temperature variability	• Financial impact of reduced workers' productivity of in extreme temperatures: cost of additional workers, cost of measures to secure workers' wellbeing, prolonged work time for maintenance/repair works. • Cost of monitoring of the condition of infrastructure in connection to durability, rate of wear and tear. • Cost of repairs caused by shortened and reduced durability, faster wear & tear, increased failure rate, corrosion. • Cost of repairs caused by condensation in pipelines, valves, and valve control elements. SCADA system disturbance, discharged batteries, remote parameter reading disturbances. • Costs of fines, lawsuits and compensation or interruptions in supply etc.
Water-related	Changing precipitation patterns and types (rain, hail, snow/ice)	• Cost of damage to substations affected by river flooding due to increased winter rainfall in new locations previously not exposed to this hazard.
	Precipitation or hydrological variability, declining river runoff	• Costs of maintenance and repairs of underwater pipelines meant to operate submerged in case of decreased river runoff and functioning in inappropriate conditions. • The advantage of exposing the pipeline, which has been operating submerged, is the opportunity to inspect the pipeline coating etc. • Costs of leakage and not meeting contracts' requirements in case of damage to pipelines attributable to changes in precipitation variability.
	Saline intrusion	• Cost of not meeting contracts' requirements in case of damage to the gas terminal not owned by Amber Grid, but relevant to its operations.
	Sea level rise	• Cost of not meeting contracts' requirements in case of damage to the gas terminal not owned by Amber Grid, but relevant to its operations.
	Water stress	• Cost and availability of water for technological purposes.

		Potential effects
Solid mass-related		• Cost and availability of water for workforce.
	Geohazards, incl. related to groundwater	• Cost of damage to and repairs of destabilized infrastructure; pipeline exposure causes high probability of damage to the pipeline. • Difficulties to reach infrastructure objects. Difficult control of on-site and remote-control infrastructure. • Cost and fines resulting from not meeting contacts' requirements in case of damage to pipelines attributable to geohazards.
	Soil erosion	• Cost of repairs of exposed pipelines (protective coating inspection and repair, pipeline underground depth etc.). • Costs and fines resulting from limited agricultural activities (low depth of underground pipeline causing extreme risk of mechanical damage due to agricultural activities). • Costs of fines, lawsuits and compensation for interruptions in supply etc.

Transition risks

Transition risks		Potential effects
Policy and legal	Regulatory environment	• Investment in projects aligning business activities with EU regulations. • Investment and incurring costs of rapid restructuring of the energy system. • Cost of adjusting system to regulations and institutional frameworks. • Cost of adjusting to technological opportunities and markets for energy products changing fast. • Cost of feasibility studies, design and environmental assessment studies. • Cost related to stranding assets of infrastructure based on fossil fuels. • Cost of capital (loans, credits, bonds etc.). • Insurance cost for new investments. • Cost of failed projects.
	Risk of a “disorderly” energy transition due to the introduction of potentially distortive measures	• Uncertainty and confusion in the energy market, chaotic business environment. • Instability affecting investment projects, cost of failed projects. • Impact of systemic macroeconomic risks – access to capital, cost of capital, insurance costs.
	Legal liability and management accountability	• Fines for damages to third parties due to climate physical risks whose materialization could have been prevented but the company failed to do so. • Fines for greenwashing (unsubstantiated claims of sustainable actions). • Management accountability for the lack of the company's transformation and failure to prepare the company for changing business needs.
Technology	Cost of transitioning to low-carbon technologies	• Investment and incurring costs of transforming infrastructure to carbon neutral power system. • Cost of feasibility studies, design and environmental assessment studies. • Cost related to stranding assets of infrastructure based on fossil fuels.

Transition risks		Potential effects
		• Costs of capital (loans, credits, bonds etc.) • Insurance costs for new investments. • Cost of failed projects.
	Transition risk for older assets, stranded asset risk	• Cost of writing off of asset value attributed to energy transition. • Cost of impairment of assets due to shorter estimated future time of operation. • Costs related to stranding assets of infrastructure based on fossil fuels. • Cost of capital (loans, credits, bonds etc.). • Cost of failed projects and retrofitting.
Market	Uncertainty regarding consumer behaviour, market signals and supply chain	• Fluctuations of consumer and market sentiment and associated market signals. • Losses induced by changes in consumer behaviour and trends towards decarbonization and green energy, changes in electricity consumption, changes in competitive environment. • Cost of difficulties in management of higher energy demand in case of reindustrialization of Europe and growth of high-energy consuming production sites in the region. • Cost of difficulties in management of evolving supply chains and energy use, also due to more fragmented global economy.
	Changes in the prices of commodities and energy	• Cost of failed investment projects. • Cost of feasibility studies, design and environmental assessment studies. • Cost of capital (loans, credits, bonds etc.). • Cost of external data, analysis and modelling. • Insurance costs for new investments.
Reputation	Reliability of the transmission system	• Cost of repairing damages of infrastructure. • Cost of supply disruptions. • Fines or compensations in case of breaching the contracts on supplying electricity to clients. • Cost of additional monitoring of the system's adequacy and resilience. • Cost of solutions for balancing the system, maintaining its stability with a large share of RES. • Cost of insurance premiums associated with malfunction of the system attributed to the growing complexity of the electricity system.

Transition risks		Potential effects
	Expectations regarding climate-risk management	• Cost of developing climate risk management policies and processes. • Cost of climate risk and vulnerability assessment aligned with EU Taxonomy alignment requirements. • Cost of climate-related capacity building of employees. • Cost of hiring new specialists in climate-related fields. • Cost of collecting internal climate-related data. • Cost of purchasing external climate-related data. • Cost of external climate-related consultancy. • Cost of preparation the transparent disclosures of climate risk management practices. • Cost of monitoring the confidence of financial and rating institutions and, consequently. • Cost of reduced access to capital (and higher cost) in case of climate risk management communication sand practices failure. • Cost of claims attributed to dissatisfaction of shareholders and civil society.
	Expectations regarding non-financial reporting	• Cost of additional internal climate-related data collection efforts. • Cost of acquiring new climate-related skills and capacities by employees in order to meet reporting requirements of regulators, investors and civil society. • Additional costs of external climate-related consultancy. • Additional external climate-related data purchase.