Climate Resilience Assessment Summary

Tisza CCGT Environmental and Social Impact Assessment

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1 Introduction and Context

This document presents a summary of selected findings from the Environmental and Social Impact Assessment (ESIA) prepared for the Tisza Combined Cycle Gas Turbine (CCGT) Project.

The ESIA is a comprehensive assessment undertaken to identify, evaluate and manage the potential environmental and social impacts associated with the construction and operation of the Project. It has been developed in accordance with Hungarian regulatory requirements and international standards, including the IFC Performance Standards and the Equator Principles, which are applied by the Project's international financing partners.

The purpose of the ESIA is to ensure that potential risks are identified at an early stage and that appropriate mitigation measures are implemented to avoid, minimise or manage adverse impacts. This summary focuses on the Climate Resilience Assessment, which examines how the Project may be affected by physical climate risks over its lifetime, including both acute extreme weather events and long-term climatic changes. The objective is to provide a clear and accessible overview of the key findings for stakeholders and the public.

2 Purpose and Approach of the Assessment

The Climate Resilience Assessment evaluates the extent to which the Project is exposed to physical climate risks and how well it is designed to withstand and adapt to these risks over time. It considers both short-term extreme events, such as heatwaves, floods and storms, and long-term changes in climate patterns, including rising temperatures and shifts in precipitation.

The assessment is based on scenario-driven climate projections and considers how future climate conditions may evolve over the expected lifetime of the Project. This includes the identification of potential hazards, evaluation of vulnerabilities within Project design and operations, and assessment of potential impacts on infrastructure, operations and supply chains.

The analysis also examines the resilience of the Project in the context of its wider environment, including dependencies on external infrastructure such as energy supply, water resources and transport networks. In doing so, it provides a comprehensive understanding of how climate-related risks could affect both the direct operation of the plant and its supporting systems.

3 Methodology

The assessment follows a structured methodology that identifies relevant climate hazards, evaluates the sensitivity of Project components to these hazards, and determines the overall level of risk by combining likelihood and consequence.

Climate hazards are categorised into acute risks, such as extreme temperature events, flooding or storms, and chronic risks, such as gradual increases in average temperature, long-term changes in rainfall patterns and potential water stress. Each hazard is assessed in terms of its projected frequency and intensity under future climate scenarios.

The vulnerability of the Project is then analysed by considering how different components of the plant may respond to these hazards. This includes critical infrastructure such as turbines, cooling systems, electrical systems and site access, as well as operational aspects such as workforce safety and maintenance requirements.

The outcome is a risk-based assessment that identifies areas where mitigation or adaptation measures are required to ensure that the Project remains resilient under future climate conditions.

4 Key Climate Risks

The assessment identifies several climate-related risks that may affect the Project over its lifetime. Rising temperatures are expected to increase the frequency and intensity of heatwaves, which may affect both the efficiency of the power plant and the working conditions for personnel. Higher ambient temperatures can reduce turbine efficiency and increase cooling requirements, placing additional demand on water resources.

Changes in precipitation patterns may lead to both increased risk of flooding and periods of drought. Flooding could affect site infrastructure, access routes and nearby water systems, while prolonged dry periods may impact the availability of water for cooling purposes. The Project's reliance on surface water for cooling means that water availability and temperature are critical factors in maintaining operational stability.

Extreme weather events, including storms and heavy rainfall, may also affect site operations, infrastructure integrity and supply chain continuity. These events can lead to temporary disruptions, increased maintenance requirements and potential safety risks.

In addition to direct impacts, the assessment considers indirect risks related to disruptions in external infrastructure. These include potential interruptions to energy supply, transportation networks and workforce availability, all of which may be affected by extreme weather conditions.

5 Adaptation and Mitigation Measures

The assessment concludes that many of the identified climate risks can be effectively managed through appropriate design and operational measures. The Project incorporates engineering solutions aimed at ensuring resilience to projected climate conditions, including the application of relevant design standards and safety margins.

Temperature-related risks can be mitigated through equipment specifications designed to operate under higher ambient temperatures, as well as operational adjustments during extreme conditions. Flood risk is addressed through site selection, elevation considerations and drainage design, which aim to minimise the likelihood and impact of inundation.

Water-related risks are managed through careful assessment of water availability and the design of cooling systems that can operate under varying conditions. Monitoring of water temperature and flow is expected to play a key role in maintaining compliance with environmental requirements and ensuring operational continuity.

Operational procedures, including emergency preparedness and response plans, are also an important component of climate resilience. These procedures help ensure that the Project can respond effectively to extreme events and minimise potential impacts on safety and operations.

6 Residual Risk and Overall Resilience

After the implementation of mitigation and adaptation measures, the majority of identified climate risks are considered to be low to moderate. This indicates that the Project is generally well positioned to withstand the anticipated range of future climate conditions.

The assessment finds that the Project's design incorporates sufficient flexibility to respond to changing environmental conditions, and that the combination of engineering measures and operational practices provides a robust framework for managing climate-related risks.

Importantly, the assessment highlights that climate resilience is not a one-time exercise but an ongoing process. Continuous monitoring of climate conditions and periodic review of risk management measures will be necessary to ensure that the Project remains resilient over time.

7 Conclusions

The Climate Resilience Assessment concludes that the Tisza CCGT Project is capable of operating under projected future climate conditions with an acceptable level of risk. While certain climate hazards, such as increased temperatures and changes in water availability, present challenges, these can be effectively managed through appropriate design, planning and operational measures.

The Project demonstrates a proactive approach to climate resilience by incorporating future climate considerations into its design and by establishing systems for monitoring and adaptation. As a result, it is expected to maintain operational stability and reliability throughout its lifetime, even under changing climatic conditions.